EFFECTIVENESS OF INFORMATION COMMUNICATION TECHNOLOGY LITERACY SKILLS IN UTILIZATION OF E-RESOURCES BY FOURTH YEAR UNDERGRADUATE STUDENTS AT KARATINA UNIVERSITY LIBRARY.

LUCY WANENE MUGERA
E65/OL/NY1/26645/2015

A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF EDUCATION IN PARTIAL FULFILLMENT OF THE REQUIREMENT OF THE DEGREE OF MASTER OF LIBRARY AND INFORMATION SCIENCES OF KENYATTA UNIVERSITY.

APRIL, 2019
DECLARATION

I declare that this proposal is my original work and has not been presented in any other University / Institution for consideration of any certification. This research proposal has been complemented by referenced sources duly acknowledged. Where text, data (including spoken words), graphics, tables have been borrowed from other sources, including the internet, these are specifically accredited and references cited using current APA system and in accordance with anti-plagiarism regulations.

Signature: ……………………………. Date …………………

Lucy Wanene Mugera

E65/OL/NY1/26645/2015

This proposal has been submitted for examination with my approval as university supervisor.

Signature: ……………………………. Date …………………

Dr. Milka Mathu

Lecturer

Department of Library and Information Science

Kenyatta University
DEDICATION

I dedicated this work to my beloved husband Jackson Gichuru Waruhiu and my dear daughter Loise Wambura Gichuru who have been a continuous source of inspiration and putting up with my absence throughout my study.
ACKNOWLEDGEMENT

I wish to thank Almighty God for His protection, guidance and love throughout the entire course. I wish to recognize the effort of the following persons who made invaluable contribution to the success of this work. I acknowledge the mentorship of my supervisor Dr. Milka Mathu who tirelessly guided me through the undertaking of this research project. I also appreciate Karatina University library management and all the students who participated.

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CONTENTS

DECLARATION ........................................................................................................ii
DEDICATION ......................................................................................................... iii
ACKNOWLEDGEMENT ......................................................................................... iv
CONTENTS ........................................................................................................... v
LIST OF TABLES .................................................................................................... viii
LIST OF FIGURES ................................................................................................ ix
LIST OF ABBREVIATIONS & ACRONYMS ........................................................ x
ABSTRACT ........................................................................................................... xii

CHAPTER ONE .................................................................................................... 1
INTRODUCTION AND BACKGROUND OF THE STUDY ..................................... 1
  1.1 Introduction ...................................................................................................... 1
  1.2 Background to the Study ................................................................................ 1
  1.3 Statement of the problem ............................................................................... 5
  1.4 Purpose of the Study .................................................................................... 6
  1.5 Objectives of the Study ................................................................................ 6
  1.6 Research Questions ...................................................................................... 6
  1.7 Significance of the Study .............................................................................. 7
  1.8 Limitations and Delimitations of the Study .................................................. 8
  1.8.1 Limitations of the Study .......................................................................... 8
  1.8.2 Delimitations to the Study ....................................................................... 8
  1.9 Assumption of the Study ............................................................................. 8
  1.10 Theoretical and Conceptual Framework .................................................... 9
  1.10.1 Theoretical Framework ......................................................................... 9
  1.10.2 Conceptual Framework .................................................................... 11
  1.11 Operational Definition of Terms ................................................................ 14

CHAPTER TWO .................................................................................................. 15
REVIEW OF RELATED LITERATURE ................................................................ 15
  2.1 Introduction ................................................................................................... 15
  2.2 An Overview of ICT Literacy Skills ............................................................ 15
  2.3 Adequacy of Available ICT Facilities ......................................................... 16
2.4 Types of E-resources Frequently Used ................................................................. 18
2.5 Strategies Employed to Enhance ICT Literacy Skills Acquisition ......................... 22
2.6 Challenges to Utilization of E-resources .............................................................. 24
2.7 Summary of Literature Review and Research Gap .................................................. 25

CHAPTER THREE ........................................................................................................ 27
RESEARCH DESIGN AND METHODOLOGY ......................................................... 27
3.1 Introduction ............................................................................................................. 27
3.2 Research Design ..................................................................................................... 27
3.3 Location of the Study ............................................................................................. 27
3.4 Target Population .................................................................................................. 28
3.5 Sampling Technique ............................................................................................. 28
3.6 Sample Size Determination .................................................................................. 29
3.7 Research Instruments ............................................................................................ 30
   a) Questionnaire for Students .................................................................................. 30
   b) Interview Schedule for Chief Librarian and Library Staff .................................. 31
3.8 Pilot Study .............................................................................................................. 31
3.9 Validity and Reliability .......................................................................................... 32
   a) Validity ................................................................................................................. 32
   b) Reliability ............................................................................................................. 32
3.10 Data Collection Techniques ................................................................................. 33
   a) Questionnaires ..................................................................................................... 33
   b) Interviews ............................................................................................................ 33
3.11 Data Analysis ........................................................................................................ 34
3.12 Logistical and Ethical Consideration ..................................................................... 34

CHAPTER FOUR ......................................................................................................... 36
DATA ANALYSIS, PRESENTATION AND DISCUSSION ............................................. 36
4.1 Introduction ............................................................................................................. 36
4.2 Response Rate ....................................................................................................... 36
4.3 Demographic Information ....................................................................................... 37
   4.3.1 Gender of the respondents ............................................................................. 38
   4.3.2 Age of the respondents .................................................................................. 38
4.4 Adequacy of Available ICT Facilities in the Library ................................................. 40
4.5 Types of E-resources Most Frequently Used in the Library ............................................. 43
4.6 Strategies Employed to Enhance ICT Literacy Skills .................................................... 48
4.7 Challenges in the Utilization of E-resources ................................................................. 49

CHAPTER FIVE .............................................................................................................. 52

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS ............................................ 52

5.1 Introduction .................................................................................................................. 52
5.2 Summary of Findings .................................................................................................... 52
   5.2.1 Social Demographic Information ........................................................................ 52
   5.2.2 Adequacy of Available ICT Facilities in the Library ................................................. 52
   5.2.3 Types of E-resources Most Frequently Used .............................................................. 53
   5.2.4 Strategies Employed to Enhance ICT Literacy Skills ................................................. 54
   5.2.5 Challenges in the Utilization of E-resources .............................................................. 54
5.3 Conclusions .................................................................................................................. 55
5.4 Recommendations ........................................................................................................ 56
   5.4.1 Recommendations .................................................................................................. 56
   5.4.2 Recommendations For Further Research ................................................................. 58

References ......................................................................................................................... 59

Appendix A: Letter of Introduction ..................................................................................... 64
Appendix B: Questionnaire for Students ............................................................................. 65
Appendix C: Interview Schedule for Chief Librarian and other Library Staff ......................... 71
Appendix D: Time Schedule ............................................................................................... 73
Appendix E: Financial Budget ............................................................................................. 74
Appendix F: NACOSTI Research Authorization ................................................................. 75
Appendix G: NACOSTI Permit ........................................................................................... 76
LIST OF TABLES

Table 3.1  - Target population ........................................28
Table 3.2  - Sample size..................................................30
Table 4.1  - Respondents Response Rate.............................37
Table 4.2  - Gender of the Respondents.............................38
Table 4.3  - ICT Facilities Available in the Library.................41
Table 4.4  - Rating the Level of ICT Literacy Skills................42
Table 4.5  - Rating the Level of Usefulness of E-Resources........45
Table 4.6  - Strategies Employed to Enhance ICT Literacy Skills..48
LIST OF FIGURES

Figure 1.1 - Conceptual framework........................................................11
Figure 4.1: - Age of the Respondents in Years........................................39
Figure 4.2 - Types of E-resources Most Frequently Used.......................43
Figure 4.3 - Frequency of use of E-resources........................................46
Figure 4.4 - Skills Possessed by Students in the use of E-Resources........47
Figure 4.5 - Challenges in the Utilization of E-resources.........................50
# LIST OF ABBREVIATIONS & ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>AST</td>
<td>Adaptive Structuration Theory</td>
</tr>
<tr>
<td>CUE</td>
<td>Commission of University Education</td>
</tr>
<tr>
<td>CDROM</td>
<td>Compact Disk Read Only Memory</td>
</tr>
<tr>
<td>DVD</td>
<td>Digital Optical Disc</td>
</tr>
<tr>
<td>E – JOURNAL</td>
<td>Electronic Journals</td>
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<tr>
<td>E – MAGAZINES</td>
<td>Electronic Magazines</td>
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<tr>
<td>E – RESOURCES</td>
<td>Electronic Resources</td>
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<td>E – REFERENCES</td>
<td>Electronic references</td>
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<tr>
<td>ICT</td>
<td>Information Communication Technology</td>
</tr>
<tr>
<td>IPS</td>
<td>Institute of Professional studies</td>
</tr>
<tr>
<td>LAN</td>
<td>Local Area Network</td>
</tr>
<tr>
<td>MAN</td>
<td>Metropolitan Area Network</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>NGO</td>
<td>Non – Governmental Organization</td>
</tr>
<tr>
<td>NACOSTI</td>
<td>National Commission for Science, Technology and Innovation</td>
</tr>
<tr>
<td>OPAC</td>
<td>Open Access Catalogue</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>---------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>UCU</td>
<td>University Common Unit</td>
</tr>
<tr>
<td>UPS</td>
<td>Uninterruptable Power Supply</td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nation Educational Scientific and Cultural Organizations</td>
</tr>
<tr>
<td>VCD</td>
<td>Video CD</td>
</tr>
<tr>
<td>WAN</td>
<td>World Area Network</td>
</tr>
<tr>
<td>WWW</td>
<td>World Wide Web</td>
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</table>
The ICT literacy skills have enhanced the quality of e-resources retrieval through digital technologies and skills. Users of these skills graduate with the essential decisive ICT skills, understanding plus capabilities to be effective library users. The aim of this study was to investigate the effectiveness of Information Communication Technology (ICT) literacy skills on utilization of e-resources by fourth year undergraduate students at Karatina University Town Branch library. The study was guided by the following objectives: to establish adequacy of available ICT facilities, determine the types of e-resources, establish the strategies employed to enhance ICT literacy skills and to examine the challenges in the utilization of e-resources. The study was based on adaptive structuration theory that put into perspective how the users of new technology and ICT literacy skills holds high spirit for their possibility to change individual users for betterment of self. Descriptive survey design was adopted in carrying out the research. The target population was made up of 76 fourth year undergraduate regular students and four librarians. The Sloven formula was used to determine the sample size of the fourth year undergraduate students which yielded 64 respondents. The study adapted systematic random sampling technique to sample population of the students. The University librarian and library staff were purposively selected and included in the study. Self-administered questionnaires and interview schedules were used for data collection from the respondents. The reliability and validity of the instruments was tested through pilot study which was done at Dedan Kimathi University Nyeri where nine questionnaires were distributed to the fourth year undergraduate students and one librarian. The data was analyzed by use of descriptive statistics with the help of the Statistical Package for the Social Sciences (SPSS) package version 20.0. The findings were presented in form of tables and figures. The study established the following findings: that the ICT facilities were available and functional but they were inadequate hence ICT literacy skills not effectively utilized. The e-resources were not enough and others not current and updated. ICT policy was not update. There was no adequate funds hence applying to donors or fundraising to collect money and poor internet connection leading to a lot of time used trying to download. Consequently, the study drew the following conclusions: Most of the students utilize the e-resources fully. Certain individual students have varying information needs which depends on the level of knowledge on how to use ICT literacy skills within the library. The content available in the e-resources was insufficient to cater for students intending to acquire knowledge and also inaccessible due to slowness in downloads. The study recommended that ICT department of the University establishes a way of improving internet accessibility which in turn will improve on the uses of ICT literacy skills in the process of e-resources retrieval. Allocation of sufficient funds for acquiring the ICT facilities and have the policy revised regularly and made elaborate for the users. It should also be made available in other alternative formats such as softcopy, CD, VCD, OR DVD. The study also recommended that the CUE should come up with guidelines on the content for delivering ICT literacy skills by universities and their libraries. Karatina University should also consider increasing ICT facilities and e-resources in order to enhance effectiveness of ICT literacy skills use by students.
CHAPTER ONE
INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Introduction
This chapter addresses the background information to the study, statement of the problem, the purpose of the study, objectives of the study, research questions, significance of the study, limitations and delimitation, assumptions, theoretical and conceptual framework and operational definition of terms.

1.2 Background to the Study
Information and Communication Technology (ICT) in libraries hold strong position into every implication on library and its services. The introduction of ICT literacy skills in libraries necessitated retooling and acquisition of the skills required to operate in the worldwide information society. The capacity of users to exploit e-resources depend on the level of ICT literacy skills possessed, education and mastering of the skills convened (Menuo, 2007). Menuo reiterated that users ought to be sensitized to be proficient in using computers, use workstation networks, use of the internet, use basic applications such as word processing, spreadsheet, e-mail, presentations, use of digital multimedia tools and programs. ICTs are technologies used to correspond, create, access, integrate, evaluate and disseminate information. Such technologies include computers, the internet, telephone, and audiovisual equipment.

Oliver and Towers (2006), pointed out that ICT literacy are needed by users in enabling meaningful use of ICT suitable to their desires. ICT literacy skills is a comparative gauge of
user’s ability to comfortably make suitable use of ICT for instructive knowledge purposes. Authors further pointed out that, skills remain the fundamental essentials of computer unit and ICT skills that measures the degree and coverage on ICT functioning and uptake among library users. However, Amunga (2007), opined that for users to gain on e-resources and services, librarian ought to have acquired the required skills to be able to help the users during the training that is available to students upon admission. Nevertheless, retrieval and utilization of the resources is a major issue despite the library training the students on ICT literacy skills. Wasike (2007), noted that dissemination of these resources in university libraries is faced with numerous hindrances including inadequate user knowledge on ICT literacy skills. In the enlightenment of the rising emphasis on e-resources and services in advanced institutes of education, it’s fundamental for the students who are popular consumers of e-resources be taken through vigorous ICT literacy skills training to acquire pertinent skills to aid in exploiting the e-resources and services to the maximum.

On the same vein Tearle (2006), opined that there are distinct parts of skills and knowledge such as capacity to autonomously operate individual computer softwares, capability to use software for work presentation, capacity to utilize the network and various features such as communication tool among users, and skill in accessing and making use of material from World Wide Web (WWW). Muhinja (2013), studied internet usage by university students and the outcome of the study showed little usage. The internet has provided a broader access to worldwide information resources including e-journals, online databases, along with other sources of digital resources which are ineffectively used. These skills and expertise involve the knowledge of technologies along with application of their significance. The use of
expertise for information and understanding involves skills and ability to access, retrieve, store, manage, combine, evaluate and disseminate (Prytherch, 2005).

Oloo (2009), states that most countries have made ICT skills integral part of either their national policies or laws relating to the college and university in learning sector. In Australia, the government has stipulated objectives to colleges and universities with respect to ICT literacy skills advancement. The management requires students to clear with the college or university as certain, productive, and creative managers of the new technologies (Tearle, 2006). Colleges and universities are expected to incorporate ICT skills into their operations. In the Philippines, Indonesia, Uzbekistan, Malaysia, Vietnam the national government incorporated goals for ICT literacy skills in an education system. In Asia and the Pacific, including emerging countries, lecturers, tutorial fellows, students and other staff are being taught in the use of ICT skills to a certain degree of scope (Sibangani, 2008). Most of the training programmes bear common objectives meant at creating awareness to students plus lecturers, knowledge acquisition and literacy skills in the use of computer skills for easier e-resources retrieval (Institute of Professional Studies, 2006).

In Nigeria, the Federal Ministry of Education set up a committee in 1998 to ensure the democratization of computer literacy skills at the national level as a way of improving quality and facilitating national development. One of the committee’s recommendations was that computer literacy skills ought to be introduced to lecturers and students to all levels of the learning systems (Idowu and Adagunodo, 2004). Since then, both the national and state governments including the management of public and private institutions have called for increased training and retraining of students and faculty on various ICT literacy skills so as to
provide them with the requisite ability needed to meet the challenges of academic activities and retrieval of e-resources (Amunga, 2007).

In Kenya, the government approves the constructive outcome of ICT literacy skill by converting the nation to middle-level economy as envisioned in Kenya Vision 2030. It also recognizes the role of (ICT) plays in technological, socio-economic, and political growth if Kenya has to create strides in attaining the Millennium Development Goals (MDGs). West & Turner (2007), stated that efforts to implement ICT literacy skills in Colleges and Universities in Kenya were first initiated and given prominence through publishing of Sessional paper No.1 of 2005. The idea was to equip both public and private colleges and universities with ICT infrastructure (West & Turner, 2007). The publication stated that; students, lecturers, and communities in Kenya ought to contribute in acquiring ICT literacy skills necessary to make them take advantage from the knowledge-based economy. This encompassed transforming teaching and learning in colleges and universities embrace ICT literacy skills appropriate for 21st Century (UNESCO, 2006). However, Horo (2006), concluded that studies carried out in Kenya points out that there are lots of e-resources, which are not fully exploited due to inadequacy of ICT literacy skills. Oliver and Towers (2006), also observed that education sector in Kenya has inadequate connections to network infrastructure. However, a few schools have express access to high-speed connectivity through internet service providers.

Although Karatina University Town Branch Library is equipped with various e-resources, the extent to which these e-resources are utilized by the students is not clear. Studies carried out on the utilization of e-resources in Kenya have not clearly established this status hence the need for this study.
1.3 Statement of the problem

Libraries are established to provide information and information resources to their users for consultation, information and knowledge gathering. The advent and adoption of information and communication technologies (ICTs) has revolutionalized the way knowledge and information is generated, organized, stored, retrieved and accessed. This has transcended all industries, libraries being no exception. The provision of resources by libraries in electronic formats calls for the possession of different set of skills by users on top of the traditional literacy skills used for exploitation of hardcopy formats.

Institutions of higher learning provide their clients with ICT literacy skill on enrolling at the earliest possible opportunity to enable them to use computer and relate technologies to gather information and knowledge for study and self-development. The ICT literacy skills are further expounded during library user education and orientation, where ICT literacy skills are further sharpened.

Therefore without effective utilization ICT literacy skills such as basic computer operations, software applications, internet use, OPAC, web navigation and database management, the electronic resources acquired by the library can easily go to waste. The examinations provided at the end of the semester are not enough to evaluate the effectiveness of ICT literacy skills possessed by students, hence the need to conduct such a study.

According to Karatina University library research done record, there is no recent evaluation that has been carried out to assess the effectiveness of ICT literacy skills of students. In view of the above, this study therefore, sought to carry out a comprehensive investigation on effectiveness on ICT literacy skills on the utilization of e-resources by fourth-year undergraduate students at Karatina University Town Branch library.
1.4 Purpose of the Study

The purpose of the study was to investigate the effectiveness of ICT literacy skills on the utilization of e-resources by fourth-year undergraduate regular students at Karatina University.

1.5 Objectives of the Study

This study was guided by the following research objectives to:

i) Establish the adequacy of the available ICT facilities for use at Karatina University library.

ii) Determine the types of e-resources most frequently used by fourth-year undergraduate regular students of Karatina University library.

iii) Establish the strategies employed to enhance ICT literacy skills by fourth-year undergraduate regular students at Karatina University library.

iv) Examine the challenges in the utilization of e-resources by fourth-year undergraduate regular students at Karatina University library.

1.6 Research Questions

This study was guided by the following research questions;

i) How adequate are the available ICT facilities for utilization of ICT literacy skills by fourth-year undergraduate regular students at Karatina University library?

ii) What types of e-resources are most frequently used by fourth-year undergraduate regular students at Karatina University library?

iii) What strategies are employed for the enhancement of ICT literacy skills by the fourth year regular students at Karatina University library?
iv) What are the challenges faced in the exploitation of e-resources by fourth-year regular students at Karatina University library?

1.7 Significance of the Study

The application of ICT literacy skills to all spheres of life has a challenge that cannot be overemphasized in our present information society. The results to this research would helpful to faculty members, students plus practicing librarians on adopting and adapting the new information acquisition, aggregation, access, storage, retrieval, and utility. The faculty and students would benefit from the findings of the study as a roadmap to curriculum review. The findings would be of value to Karatina University management (council and Senate), lecturers, tutorial fellows, non-teaching staff, students, parents and other stakeholders in education, who needed to understand the contributions of the effectiveness of information communication technology literacy skills on utilization of e-resources. The study findings would be of immense importance to Commission of Universities Education (CUE) and University administration in planning, budgeting, and establishment of information communication technology facilities in academic libraries. The results of study were useful for library staff development strategy by the University administration. The findings were of significance to the policymakers in other Universities. The policymakers benefited in drawing up ICT policy design and implementation of strategies to be used in the public administration of the Universities. The results of the study also enriched the existing literature in ICT literacy skills.
1.8 Limitations and Delimitations of the Study

1.8.1 Limitations of the Study

The researcher encountered problems such as uncooperative personalities who may not be willing to provide adequate and accurate information. The researcher got the library management acceptance and support to get the fourth year undergraduate regular students to co-operate. The researcher also used people soft skills to overcome this, through the use of courteous language and tact. Some of the respondents were not able to understand the questions hence much time were involved in translating and assisting them to fill the questionnaires.

1.8.2 Delimitations to the Study.

In spite of existence of different kinds of computer literacy skills, the researcher only focused on ICT literacy skills on the utilization of e-resources Karatina University Town Branch library. The study was confined to the Karatina Town Branch library but not other Karatina University Branches. The study was also limited to fourth year undergraduate students but not first, second, third years and postgraduate students.

1.9 Assumption of the Study

The researcher made the following assumptions to guide the study:

1) That the respondents would provide all the pertinent information..

2) That the respondents have the ICT literacy skills and know how to access e-resources.
1.10 Theoretical and Conceptual Framework

1.10.1 Theoretical Framework

According to Feldner (2007), Adaptive Structuration Theory is based on Anthony Giddens' structuration theory. This theory is formulated as the production and reproduction of the social systems through use of new technology and resources in interaction. Giddens (2014), states that AST criticizes the technocentric view of technology use and emphasizes the social aspects. Organizations and institution of higher learning using information technology for their work dynamically create perceptions about the role and utility of the new technology, and how it can be applied to their digital activities.

This research was guided by the Adaptive Structuration Theory (AST) of (Feldner, 2007). This theory (AST) has been used in a number of years in the information as well as ICT skills and systems to study the utilization on new technologies in Universities (West & Turner, 2007). Proponents of AST argue that, developers and users of the (ICT) literacy skills embrace high hopes for the possible change to individual information users to the betterment of self. However, intended changes seldom happen inconsistently. AST examines the change procedure from two advantages; the type of structures given by advanced technological skills and structures that arise as users network with these technological skills. Giddens (2014), posits that the past decade has brought advanced ICT literacy skills, which have revolutionized information retrieval process through sophisticated technologies.

The relevancy and applicability of this theory to the study is that, Karatina University Town Branch library is also an academic library like any other with many students but some with little ICT literacy skills. These students are entitled to the maximum utilization of e-resources
within the library and hence the adaptation of the new ICT literacy skills. As per the theory, the University student has high hopes to experience a change of individual self for betterment in the usage of ICT literacy skills. People adapt ICT literacy skills and systems to their specific information requirements, or they resist using them at all. There are broad variances in the patterns of workstation skills use and consequently the effects on decision making. The setup of ICT literacy skills and systems to be used in the management of information resources is meant to cut across sections of the library.
1.10.2 Conceptual Framework

![Conceptual Framework Diagram]

**Independent Variables**
- Adequacy of Available ICT Facilities
  - Computers
  - Internet

**Types of E-resources**
- Electronic-books
- Electronic-journals
- Online databases

**Strategies to Enhance ICT Literacy Skills Acquisition**
- Increase the funding
- Workshops and seminars on ICT literacy
- Development of good education system

**Intervening Variables**
- Reading environment
- Library location
- User education
- Library promotion

**Dependent Variable**
- Utilization of E-resources

**Challenges on Utilization of E-resources**
- Inadequate funds
- Poor internet connectivity and telecommunication
- Inadequate ICT facilities

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Figure 1.1: Conceptual Framework on Effectiveness of Information Communication Technology Literacy Skills on Utilization of e-resources

*Source: Researcher, (2018).*
The independent variables in this study are the availability of ICT facilities in the library, type of e-resources most frequently used, strategies employed to enhance ICT literacy skills and the challenges in the utilization of e-resources. The dependent variable is the utilization of e-resources. Figure 1.1 shows the diagrammatic representation of the interaction of variables related to the effectiveness of ICT literacy skills on the utilization of e-resource at Karatina University Town Branch library. The particular concern of the study was to investigate the effectiveness of ICT literacy skills on the utilization of e-resources by fourth-year undergraduate regular students at Karatina University Town Branch library. The focus was on the interaction of independent variables with the dependent variable.

**Independent Variables**

Identification of ICT facilities such as the server, computers, telephones, internet, fax machines, digital cameras, digital scanners, modems, internet cables, routers, and online information sources assists in the retrieval of e-resources hence their maximum utilization. Adequate and functional ICT facilities will lead to high utilization of e-resources.

Type of e-resources most frequently used such as electronic-books, e-journals, online databases, e-thesis and dissertation, e-magazines, e-references, emails, online chats, and websites focuses on the extent to which the users are able to retrieve, access and exploit them. With current and updated e-resources lead to maximum utilization of e-resources.

Strategies employed to enhance ICT literacy skills are; increase the funding for the library, having staff capacity building, workshops and seminars on ICT literacy, development of latest indexing methods and techniques to spout information from the internet and continuous...
training on ICT literacy skills to all users within the university to enhance the utilization of e-resources.

Challenges in the exploitation of e-resources which includes; inadequate funds, poor internet connectivity and telecommunication, low bandwidth, delay in implementation of ICT guidelines and policies on ICT skills plans, poor human resource, and inadequate ICT facilities which affect the retrieval of e-resources hence their underutilization. With minimal challenges would lead to maximum exploitation of e-resources by students.

**Dependent Variable**

**Utilization of E-resources**

The utilization of e-resources is the dependent variable and it’s a positive aspect to the users and is dependent on the above for independent variables. With adequate and functional ICT facilities, enough current and updated e-resources, good strategies for enhancing ICT literacy skills usage and minimizing the challenges in the utilization of e-resources, the utilization of e-resources would be enhanced.
1.11 Operational Definition of Terms

**Academic Library:** These are libraries in learning organizations at any level such as Universities, Colleges, and Research institutions.

**Electronic Information Resource:** Any information resource that the documents provide access in an electronic format

**ICT literacy:** It’s the capability to access and utilize ICT facilities, understanding about ICT and appliance of ICT in libraries.

**ICT literacy skills:** They are skills and understandings necessary to users in enabling significant use of ICT.

**Information:** This is the processed data for usefulness, usage, storage for future use.
CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter presents various intellectual works that have been reviewed in the area of ICT literacy skill. It contains work related to ICT facilities available, type of e-resources most frequently used, the strategies employed to enhance ICT literacy skills, challenges in the utilization of e-resources and summary of literature review.

2.2 An Overview of ICT Literacy Skills

According to Horo (2006), the ICT literacy skills enhance the quality of e-resources retrieval through digital technologies and skills. Users of these skills graduate with the essential decisive ICT skills, understanding plus capabilities to be effective users. The ICT Literacy society is an open-ended culture environment that includes electronic resources, electronic services, and electronic communication. The generation, acquisition, storage, retrieval and dissemination of human and world phenomena form the basic activities of human life and universal existence through e-resources and information retrieval.

For the university to function effectively there must be an ability to find, access, evaluate, use and create e-resources in many formats for academic, social or global purposes. ICT literacy skills are necessary, considering the complexity in finding, selecting and using e-resources as a result of information explosion. Ayoku and Lumade (2005), described ICT literacy skills as the capability to localize, assess, manage and use e-resources for problem-solving, decision making and research. Lwoga E., Site A., Busagala, L. and Chilimo W. (2009), noted that ICT literacy skills covers many products that manipulates, keep, retrieves, or receives, disseminate
data by electronic means. It encompasses machines which rapidly evolve technologies such as smartphone, internet, networks such as LAN, MAN, WAN, facts manipulation capabilities and the software for using the technology (Primon, 2007). A library is set up to quench the information needs of its users, where a librarian uses the ICT literacy skills and tools to acquire, organize and disseminate the e-resources to the users. Therefore, the capacity to identify, evaluate, control, incorporate, generate and communicate message using ICT tools in the ICT environment, forms the overall perception of ICT literacy skills (Pernia, 2010).

2.3 Adequacy of Available ICT Facilities

The adequacy of available information resources and facilities to aid in accessing and utilizing e-resources are of paramount importance if a library is to truly serve, meet and even exceed their users’ needs and requirements. The ICT infrastructure and facilities precede the acquisition and provision of digital information resources since they lay the basis by which e-resources are to be availed, retrieved, accessed and utilized. It has become so important that every country, organization or institution and individuals want to identify and embrace it. Adequate ICT facilities in any institution of higher learning are the foundation of ICT literacy skills acquisition. The availability of basic facilities such as enough computers, modems, telephones and ICT infrastructures inspires the library users to acquire ICT literacy skills and actualization of their easy e-resources identification, selection, retrieval, access and also their utilization. According to Blakes (2010), the available ICT facilities in the Kenyan University libraries are not adequate in number for digital or electronic library operations. ICT infrastructural facilities are essential facilities in the present globalized world. However, low availability and or unavailability of some ICT facilities such as the internet, e-mail, teleconferencing, digital cameras, the digital scanner, and online information sources are the
main problems and hindrances facing the utilization of ICT literacy skills at Universities and Colleges in Kenyan libraries. Blakes also stated that lack of adequate technological skills to support the use of ICTs in the library services manifests in substandard or absence of national ICT guidelines, poor internet connectivity, low bandwidth, and insufficient provision of power. Faboyinde (2011), asserted that there is a general lack of viable National Information Infrastructure (NII) in most countries of sub-Saharan Africa. This attributed to lack of funds in present global economic meltdown. It also implies to any gadget and software to be used in accessing, evaluating, managing, integrating, creating and communicating information and understanding. Despite the scholarly researchers who have indicated lack of enough ICT facilities, the researcher's field data indicates that there no enough ICT facilities at Karatina University library Town Branch. This leads to poor utilization of e-resources by students of the University.

Institutions, universities included need on a continual basis to upgrade and increase the ICT facilities available to their libraries if these libraries are to acquire and provide information in the electronic format. Libraries ought to include in their annual operational plans and budgets provisions for acquisition of ICT facilities before submission to university management for consideration. The university management ought to try and provide adequate ICT facilities to their libraries if they are to enhance the effectiveness of ICT literacy skills by their users in exploitation of e-resources. This is because ICT and related technologies are the backbone and a platform upon which electronic resources are provided, accessed and utilized. When organizations provide their libraries with enough ICT facilities to serve their clients they provide not only an opportunity for training and gaining proficiency in ICT skills but also an avenue for the skills use and application.
2.4 Types of E-resources Frequently Used

According to Prytherch (2005), e-resources are sources comprising of facts, computer programmes preset for interpretation and manipulation by a central processing unit such as condensed (CD-ROM) remotely accessed through networks such as the internet by use of digital devices directly linked to computers.

Christophe (2011), perceives e-resources as digitized information materials that can be accessed by means of computer and online search. The library subscribes to many e-resources so as to provide the users with free access to them through the use of ICT literacy skills. Giddens (2014), states that many library resources for example books, journals, dissertation, correspondents, pictures, motion films are accessible in digital or electronic format.

On the user's perspective, digital possessions embrace benefits including time and place ease, appropriateness, capacity to explore directly to text, capacity to disseminate and share information, and ability to link to further reading material. Haneefa (2007), affirms that ICT skills are the computer-based competences that facilitate search, retrieval, use of e-resources and also supporting the information processing requirements of the individual, groups, and institutions. According to Christophe (2011), advance in ICT skills technology has enhanced the potential for widespread online search and retrieval of e-resources by users and other researchers.

E-resources can be retrieved easily by searching the internet through the author, title, full text of the article, date, journal category and subject category through use of ICT literacy skills (Bodomo, 2007). E-resources have characteristics of flexibility, portability, searching facilities access, dissemination, and benefits in term of time and space (Giddens, 2014).
According to Gardiner & Ronald (2013), the following are some of the e-resources mostly used by the library users;

E-Books are publications in digital form comprising of transcript, imagery, legible on the flat-panel of workstations and other electronic gadgets. Electronic-books are accessed through use of ICT literacy skills at low costs, improved comfort that provides a larger variety for assortment of titles. With e-books, referencing is made easier through bookmarks that allow users to annotate pages (Bodomo, 2007).

E-Journals are one application of ICT skills and information technology. They are online and published regularly at varying frequencies: weekly, fortnightly, monthly, quarterly hence referred to as periodicals. They contain up-to-date articles on recent topics. According to Christophe (2011), the main types of e-journals are:

Academic Scholarly Journals which are written by researchers for research purposes. They contain high-quality information for academic work; professional/trade journals written by professionals in a specific field for individuals operating in this platform for occupational news and professional practice issues and lastly general journals which are aimed at the general public with specific interest in a topic, such as computer active and the economist (Calvert, 2008).

E-newspaper are available on the internet or World Wide Web. It is an electronic version of a traditional newspaper, which is either as a stand-alone publication or as the online version of a printed periodical. E-newspapers contain serious hard news, to features, to arts and entertainment and to sports. E-newspaper has quick news, its free of charge, no individual
E-magazines are one application of information technology which is published on the World Wide Web. An online periodical is available on the internet, on bulletin board systems and on other public computer networks. Electronic-magazines generate income based on the online advertisement, targeted search to website visitors, affiliations to vend websites, merchandise purchase capabilities, promoter index links, or other informational/commercial rationale. They deliver content across multiple platforms and devices (Gui, 2011).

E-thesis and dissertation is a database published through e-format. It's a digital version available to the public through the internet. They are transformed to a manageable document file (PDF) and stored for electronic capitulation to the University’s institutional storage area. The student's innovative research is created, submitted and accessed electronically. It provides worldwide access to scholarly works, there is sharing and collaborating with universities, the publication is quicker, cheaper, and needs small storage space (Asner & Polani, 2010).

E-databases are structured compilation of information of a specific discipline or subject area. Information contained by electronic-databases can be searched and retrieved electronically. They are huge, frequently updated files of digitized knowledge related to a particular subject, comprising of records of standardized systems structured for simplicity and quick of search. They are updated on a regular basis as new issues are published and indexed. Most e-databases used in libraries are catalogs, full-text reference resources, periodical indexes, and abstracting services. They are up-to-date, and accessed anywhere (Singh and Gautam, 2010).
Reference database is the digital edition of the written reference compilation that contains the complete manuscript of articles and the bibliographic records that can be accessed nearby or tenuously through computer networks (Menou, 2007). They are Dictionaries, Almanacs, and Encyclopedias, available on the internet in electronic format. They have ease of accessibility, usable, readability and affordability. They provide numerous points of access to numerous of simultaneous users. They are faster to surf or explore, quicker to obtain the data from, and to combine the information into other supplementary facilities and cross-search on different publications. They contain vast amount of information made up of varied media i.e. audio, images, video and moving picture (Haridasan, 2013).

The Online Public Access Catalogue (OPAC) is a digital retrieval system comprised by brief bibliographic information, mainly journals, records, and audiovisual resources accessible in a certain library (Haneefa, 2007). It is web-based and will only work on campus. To use the OPAC system the users need to enter access point to locate any materials in the library (Blakes, 2010). However, the researcher feels that there are other types of e-resources such as search engines, e-mails, tele conferencing, internet chatting, and blogs which have not been mentioned by other scholarly researchers and are of a great imperative to the utilization of e-resources by students.

The available electronic resources provide users with a variety of choices from where to choose from. These different e-resources can either be born digital or file converted digital format. They also have different structures and organization, which influences the way they access. This calls for possession of an application of wide range of ICT skills proficiency suitable to each kind of users to enable their effective access and exploitation. A library that
has a wide variety of e-resources avails to their clients an array of ICT skills sharpening avenues as they continue to use the different types.

2.5 Strategies Employed to Enhance ICT Literacy Skills Acquisition

Libraries and their parent organizations are charged with this enormous responsibility of continuous transfer of ICT tacit knowledge to library users so as to enable them to utilize the e-resources provided to the maximum through the use of ICT literacy skills. In achieving staff development, the Commission of University Education (CUE) has been putting efforts to fund institution of higher learning libraries in Kenya on ICT literacy skills sensitizing (West & Turner, 2007).

Womboh and Abba (2008), opined that the Commission of University and public bodies should sponsor short and long training courses for both the library users and librarians on ICT. Library services providers should devise innovative indexing methods plus assessing techniques to retrieve the information from the internet.

Igun (2009), recommended on the educating of the librarians on the 21st century where they must follow supportive education that emphasizes on acquisition of understanding, professional skills and capabilities. Igun reiterated that on one hand formal educational structure get people with information and hypothetical comprehension but limited practical ICT skills, while on the other hand the apprenticeship system produces people with inadequate practical ICT skills without hypothetical knowledge.

World Summit on Information Society (WSIS), (2010), advocated on tailoring of particular training programmes on the utilization of ICT skills so as to acquire the educational requirements of information seekers including all category of users, archivists, librarians and
museum professionals. However, Pond (2009), advocated the utilization of the evidence-based procedure to advance and improve ICT skills training programmes in emerging countries.

Chiware (2010), was of opinion that the achievement of African University libraries in digital age depends on the sufficient training on ICT skills to initiate and manage digital or e-resources. Lwoga, et al. (2009), was of the opinion that Universities should promote ICT literacy skills experts to build up software and hardware in support to the local needs. They should adopt, sustain, modify and configure existing ICT skills solutions to the specific requirement.

Considering the need for a lasting solution to favorable training strategies, Lwoga, et al. (2009), suggested that some strategies will help promote ICT literacy skills and digital literacy. Among them are adequate funding, system upgrade, development of new indexing strategies and techniques to draw information from the internet and envelopment approaches through NGOs, government, private companies, academies and research institutes.

However, for any endeavor to be accomplished for both individuals and organizations there is need to have ways and means of attaining the same. This is more so for libraries in order to make them contribute immensely to individual user's personal development through maximum utilization of e-resources and by use of ICT literacy skills.

The library needs to put in place strategies that will help in continual identification of ICT skills gap frequently, say annually. This will help them to come up with programs and activities that will address these gaps by empowering the users with the new updates, thereby
enabling them to be more effective in the utilization of e-resources available. This can be done through re-orientation of user programs conducted at the beginning of new semester.

The user education programs ought to be made short and brief. However, they should be interesting to the users. The emphasis of such programs and activities should be geared towards practicals and tacit knowledge acquisition by the users. Feedback also needs to be sought from users so as to ensure their effectiveness. This will go far in ensuring that users are adequately prepared to handle any new digital phenomenon to their advantage.

2.6 Challenges to Utilization of E-resources.

In every human endeavor that is supposed to change the status quo and improve for better, there will always be things that give impetus or pose restrictions for its application and adoption. ICT literacy skills acquisition for utilization in learning has its own share of bottlenecks. Jordan (2007), opined that ICT literacy skills acquisition is a booster to academic library user's work. However, many problems have been a hindrance to ICT literacy skills acquisition. He suggested that obstacles to adequate ICT literacy skills stem from both lacks of ICT literacy and funding. Lwoga, et al. (2009), acknowledged the following barriers to effective utilization of e-resources; inadequate ICT facilities, low bandwidth, inconsistent donor support, insufficient ICT skills training, underutilization of ICT facilities available, and unskilled ICT personnel.

Chiware (2010), opined that digital age is real and African University libraries expresses numerous hindrance in the execution of the digital library development ranging from human resources, funding, sensitizing, and preservation of skills, telecommunication infrastructure, poor internet connectivity and copyright issues. Chiware also pointed out that the thriving
utilization of e-resources dependent on the assurance of management and availability of finances.

Chiware (2010), pointed out that delay in the execution of ICT strategies on ICT skills strategy holds back the utilization of e-resources. Balarabe (2008), identified poor financial provision for ICT literacy skills development which is a hindrance to maximum utilization of e-resources. Despite the contributions by several authors on the challenges on the utilization of e-resources, the researcher perceives that there are more challenges which were not highlighted by authors and have affected tremendously the utilization of e-resources within the Karatina University library. These challenges include; lack of maintenance of ICT infrastructure, constant interruption of electricity supply, political interferences internally and externally, lack of national ICT policy and technophobia among the students.

2.7 Summary of Literature Review and Research Gap

The researcher concludes that, ICT literacy skills are significant as it is a condition for interaction of the e-resource services and sharing. It promotes e-learning, handling of e-books/e-journals and formation of e-repositories. Library activities need ICT skills to attain extra proficient and effective working and providing cutting-edge library services to all cadres of users.

However, several studies have discussed the importance of ICT skills within Colleges and Universities. The studies have also discussed the application of these ICT skills and the impact they have on organizations. There exists limited literature on how users of University libraries in Africa and in Kenya have utilized e-resources for the benefit of acquiring the information required at the right time and format. However, very few studies have discussed
the influence of ICT literacy skills on exploitation of e-resources. Still, in Karatina University Town Branch Library, there exists limited knowledge on how fourth year undergraduate students utilizes the e-resources hence a research gap that this study seeks to investigate and fill in.
CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter provides specific process that was used in the study. It represents research design, study site, the target population, sampling techniques and sample size, data collection tools, data collection procedure, data analysis, logical and ethical considerations.

3.2 Research Design

This study adopted a descriptive survey design that described uniqueness of a population being studied. It was used to gather information on the effectiveness of ICT literacy skills on the utilization of e-resources at Karatina University library. It entailed noting and narrating the behavior of a respondent without manipulating it whatsoever. The research design was used since it sought to get information which described presented phenomena by probing people about their values, perception, attitude, and behavior. Questionnaires and interview schedules were used to gather data. The study used both quantitative and qualitative approaches.

3.3 Location of the Study

The locale of the study was Karatina University Town Branch library in Nyeri County. The institution is located 500 meters from Karatina Town on the slopes of Mt Kenya. Karatina University library was selected because it has a large population of students and staff. It also has fully equipped digital library with adequate e-resources.
3.4 Target Population

The study consisted of 76 fourth year undergraduate regular students and three library staff and chief librarian at Karatina University Town Branch library giving a total of 80 respondents. Fourth-year students were targeted because it was assumed that they had used ICT literacy skills in the process of acquiring knowledge through information retrieval since first year of their learning in the Karatina University.

Table 3.1 Target Population

<table>
<thead>
<tr>
<th>Kind of respondents</th>
<th>Target population</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth year undergraduate students</td>
<td>76</td>
<td>95%</td>
</tr>
<tr>
<td>Chief librarian</td>
<td>1</td>
<td>1.2%</td>
</tr>
<tr>
<td>Senior librarian</td>
<td>1</td>
<td>1.2%</td>
</tr>
<tr>
<td>Senior library assistant</td>
<td>1</td>
<td>1.2%</td>
</tr>
<tr>
<td>Library assistant</td>
<td>1</td>
<td>1.2%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>80</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: Office of the registrar, Karatina University Town Branch (2017).

3.5 Sampling Technique

The study adopted systematic random sampling technique to get sample population of the students. Systematic sampling was relevant in that, every student had an equal chance of inclusion and bias was minimized. In the random systematic sampling, $K^{th}$ item was eliminated from the list of all the 76 student subjects. The $K^{th}$ value for this study case was 6, where it was struck off from the list of 76 students hence i.e. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44
The study also used purposive sampling technique to get sample population from the librarians. This entailed census method for the librarians working in Karatina University library Town Branch.

### 3.6 Sample Size Determination

In quantitative research, an appropriate sample size needs to be calculated so as to make inference about the target population. Generally, the larger the sample sizes the more accurate the estimation. However, in this study a sample population of 64 fourth year undergraduate students was selected. The study employed Sloven's formula to determine the minimum number of respondents required from the student sample size. The following formula was used to get the sample size of the student respondents.

\[
S = \frac{P}{1 + P (0.05)^2}
\]

Where:

- \( S \) = Sample size
- \( P \) = Target population
- 0.05 = Level of significance

Therefore;

\[
= 76 / 1 + 76 (0.05)^2
\]

\[
= 76 / 1 + 0.19
\]

\[
= 76 / 1.19
\]

\[
= 63.86,
\]

Therefore there was approximately 64 student respondents sample size.
Table 3.2 Sample Size Determination

<table>
<thead>
<tr>
<th>Category of Respondents</th>
<th>Sample size</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth year undergraduate students</td>
<td>64</td>
<td>94</td>
</tr>
<tr>
<td>Chief librarian</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Senior librarian</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Senior library assistant</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td>Library assistant</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>68</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Field Data (2017).

Table 3.2 indicated that the sample size for fourth years undergraduate students were 64. The sample size for chief librarian was one, for senior librarian was one, senior library assistant was one and library assistant was also one giving a total of 68.

3.7 Research Instruments

The researcher used two sets of data collection tools. That is a structured self-administered questionnaire for students and an interview schedule for the librarians.

a) Questionnaire for Students

A questionnaire is a list of study questions asked to subjects and designed to extract particular information from respondents (Kerlinger, 2005). The questionnaires had both closed ended and open ended questions. The closed-ended questions gave an easy way of coding, while the open ended ones allowed the researcher to get a wide and free opinion from the respondents. It is an inexpensive means of obtaining required information from the respondents. It provided an opportunity for respondents to provide frank and in-depth anonymous answers.
The study questions focused along the dimensions of the ICT facilities available, types of e-resources, strategies employed to enhance ICT literacy skills and the challenges in the utilization of e-resources.

b) Interview Schedule for Chief Librarian and Library Staff

According to Cooper and Schindler (2004), an interview schedule is a pre-coded questions to provide quick, and easy qualitative information where the interview schedule's structure and content are the same to that of the questionnaire. Cohen & Manion (2004), states that the interview schedule allows the researcher to get in-depth data pertaining study objectives. It included both open and structured questions. These questions were important more so for responses which didn’t need explanation. Open ended questions gave room for respondents to give their sentiments. This helped in gathering qualitative data.

3.8 Pilot Study

The researcher undertook a pilot study so as to test the reliability of the research tool before the real research was conducted. Pilot study was conducted at Dedan Kimathi University library with a sample size of ten respondents. Nine undergraduate regular students and one librarian was used for piloting. Dedan Kimathi University was chosen as it has a similar status as Karatina University library being both public and fully fledged universities hence expected that the characteristics of their population are similar. This helped to ensure that the data collected was reliable. The questionnaires were analyzed to establish their appropriateness. Piloting enabled researcher to restructure, modify and eliminate any ambiguity for items in the questionnaire. Piloting tested logistics and assembles information prior to the larger study. Piloting can disclose shortcomings in the design of a proposed process and can then be
addressed in good time. It aided in making alterations to ensure that data collection tools was going to measure what its intended.

3.9 Validity and Reliability

a) Validity
Mugenda & Mugenda (2003), defines validity as the degree to which outcomes obtained from the analysis of the data actually represents the phenomenon being studied to evaluate the degree to which a research study measures what it intends to measure. To ensure validity of this research, the research instrument was subjected to a pilot study before the final research, considering average completion rate of 85%, the questionnaire was adjusted appropriately. Any item found to yield inappropriate information was removed such questions on level of education and religion. To ensure validity, the researcher adapted content validity of the questionnaires to indicate whether the tested items signify the content that the text is intended to measure.

b) Reliability
Moskal & Leydens (2004), defines reliability as the extent to which a test consistently measures whatever it is measuring. Measuring the reliability of instruments occurs in different ways. The test-retest method is the simplest method for testing reliability and entails testing the same subjects after two years, establishing that there is a correlation between the results (Michael, 2015). The researcher distributed the questionnaires to different respondents and same results were attained hence the instrument was considered reliable.
3.10 Data Collection Techniques

The researcher used the following methodologies to collect data:

- Self-administered questionnaire
- Interviews

ler administered a self-structured questionnaire which was physically distributed to fourth-year undergraduate regular students of Karatina University Branch Library after being issued with a research permit from National Commission Science Technology and Innovation (NACOSTI).

The researcher used the library to assist in distributing student's questionnaires in the University library. An introductory letter was stapled to all questionnaires requiring the respondents carefully read the instructions and answer the questions or explain appropriately and accordingly.

b) Interviews

According to Balarabe (2008), an interview is a technique of administering a list of questions that involves face-to-face communication with respondents. Gay (2011), states that interview method of data collection was used because respondents could not directly be observed, respondents could offer historical information and lets the researchers regulate over the line of asking questions. The interview schedule was organized in line with the research objectives and research questions. The researcher made an appointment for face-to-face interview with chief librarian of the university, senior librarian, senior library assistant and a library assistant. The interview with the chief librarian took place in her office. The interview with other
librarians and assistant took place in the senior librarian's office. The responses from all library staff were recorded by the researcher on the blank space left on the question papers and later used as a validity check. The information sought helped meet the objectives.

3.11 Data Analysis

The researcher analyzed quantitative data that was collected through questionnaires by use of descriptive statistics such as percentages and frequencies and with the help of Statistical Package for the Social Sciences (SPSS) Package Version 20.0. Qualitative data which was collected through interviews was analyzed through content analysis. Qualitative data was used to supplement the quantitative data. The results were presented in form of tables, charts, graphs, and percentages.

3.12 Logistical and Ethical Consideration

Mugenda & Mugenda (2003), defines logistics as to those processes, activities or actions that a researcher addresses or carry out to ensure effective completion of a research. During pre-fieldwork, a research permit was got from Karatina University, National Commission for Sciences, Technology, and Innovation (NACOSTI), County Commissioner and County Director of education. The researcher also sought permission from the University of study for ease of access to respondents. The researcher also developed a comprehensive work plan and budget for logistical issues. Logistically, the data collected was analyzed and the research instrument was kept for future reference.

The ethical consideration included; high level of ethical standards and their acceptability was put into practice throughout the interaction between the researcher and the respondents involved in data collection process. It clearly stipulated to the respondents that, participation
in the study was of important but voluntary. The researcher provided the respondents with the
detailed descriptions of the nature of the study and discusses with them the structured
questionnaire and interview schedule. The respondents were guaranteed of high level
confidentiality, respect, and anonymity in the process of data collection. The information
acquired from respondents was accessed by the researcher and the person who transferred the
raw data to the computer by the use Statistical Package for the Social Sciences (SPSS)
Package Version 20.0.
4.1 Introduction

This chapter presents the findings, interpretations and discussions according to the objectives and research questions. The findings present data from the responses received from the questionnaires and interview schedules. The data from the study was analyzed quantitatively and qualitatively. Quantitative data from completed questionnaires was cleaned, coded and entered into the Statistical Package for the Social Sciences (SPSS) Package Version 20.0. Qualitative data collected through interviews was analyzed through narratives and descriptions.

4.2 Response Rate

Out of all the respondents, the return rate on the students was above average; more than half. A total of 64 questionnaires were distributed to fourth year undergraduate regular students, where 51 turned up for filling in the questionnaires. The chief librarian and other three library staff were interviewed where they demonstrated enthusiasm in the process of interviews. The information gathered from the interview was incorporated to the data collected with questionnaires. The results are shown in Table 4.1.
### Table 4.1: Response Rate

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Sample Size</th>
<th>Return Rate</th>
<th>Non returned</th>
<th>Returned Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth year undergraduate</td>
<td>64</td>
<td>51</td>
<td>13</td>
<td>80%</td>
</tr>
<tr>
<td>Chief librarian</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Senior librarian</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Senior library assistant</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>Library assistant</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>68</strong></td>
<td><strong>55</strong></td>
<td><strong>13</strong></td>
<td><strong>80%</strong></td>
</tr>
</tbody>
</table>

Source: Field Data (2018).

The study realized a response rate of 80% of the study subjects. Non return rate was 20% which was represented by 13 respondents who did not turn up to fill the questionnaires. The study subject was considered satisfactory based on Glen (2013), who opined that a 50% response rate is enough, 60% response is considered good while 70% and above was considered very well, therefore the response rate of 80% was considered a well-represented study response.

### 4.3 Demographic Information

The researcher found it appropriate to find out the respondents’ gender and age to be able to know the dominant gender which utilizes ICT skills effectively and the age bracket which utilized the ICT skills effectively.
4.3.1 Gender of the respondents

The study sought to establish the gender of the respondents to be able to establish which gender utilizes ICT literacy skills more effectively than the other as shown in Table 4.2.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Responses in percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>19</td>
<td>34.5</td>
</tr>
<tr>
<td>Female</td>
<td>36</td>
<td>65.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: Field data (2018)

Table 4.2 shows that the majority of the respondents were female at 36 (65.5%) where 32 were fourth year undergraduate students, one chief librarian and three library staff. Nineteen (34.5%) were male fourth year undergraduate students. This indicated that the study captured both genders. This meant that female students were likely to consider ICT literacy skills more effective and important than male.

4.3.2 Age of the respondents

The study further attempted to find out the age of the respondents so as to establish the age bracket which utilizes ICT literacy skills effectively. The respondents were asked to state their age bracket. The results are showed in figure 4.1
From Figure 4.1 the results from the study shows that majority of the respondents (56.4%) were aged between 20 – 25 years, (23.6%) were between 26 – 30 years, (12.7%) were between 31 – 35 years and those above 36 years were represented by (7.3%). This shows that, majority of the students were young but had knowledge on how to utilize the ICT literacy skills. This is because they had used the e-resources for the previous three years.

Further the results from the study showed that majority 37(67%) of the students were taking Bachelor of commerce, 11(20%) supply chain management and 7(13%) were taking human resource management. This indicated that all these students in different programmes used ICT.
literacy skills effectively for utilization of e-resources for research, assignment and knowledge acquisition.

4.4 Adequacy of Available ICT Facilities in the Library.

Objective one of the study sought to find out the availability of ICT facilities for the acquisition of ICT literacy skills in the library. This helped the researcher to know whether the available facilities are useful to the respondents or not.

The findings indicated that majority of the respondents 49(96%) utilized the ICT skills to retrieve the e-resources whenever they were in need. Some respondents indicated that they were not conversant with the ICT 2(4%) hence didn’t utilize the e-resources. Majority of the respondents 48(94%) showed that, they had undergone a training to be sensitized on ICT skills such as use of Microsoft word, excel, access, internet connectivity before they joined university. Few respondents (6%) indicated that they got the ICT skills when they joined university which was a compulsory common university course.

The study also found out that the library had acquired ICT facilities for the acquisition of ICT literacy skills and accessing e-resources. The results are shown in Table 4.3.
Table 4.3 Adequacy of Available ICT Facilities in the Library

<table>
<thead>
<tr>
<th>ICT Facilities</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Camera</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Scanner</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Internet</td>
<td>19</td>
<td>35</td>
</tr>
<tr>
<td>E-Mail</td>
<td>19</td>
<td>35</td>
</tr>
<tr>
<td>Computers</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Printers</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Video Projectors</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Mobile Phones</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Audio Tapes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>DVD</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Others</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>55</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Field Data (2018)

The study findings in Table 4.3 indicated that most of the enumerated facilities that were available were inadequate but functional. The results indicated that most of the respondents 19(35%) used internet and email respectively whenever they wanted to explore the e-resources. Some of the respondents 6(15%) used computers to access the e-resources. Three (5%) used digital cameras, 2(4%) used printers, mobile phones respectively while 1(2%) used scanner, video projectors, audio tapes and DVD respectively. Others did not comment anything.
Further the chief librarian and library staff clarified that the ICT facilities which were in Karatina University library were not enough for usage by all the regular undergraduate students as it was indicated by the respondents. The findings of this study concurs with Blakes (2010), that availability of ICT facilities in the Kenyan University libraries are not adequate in number for digital or electronic library operations. In addition, Blakes asserted that, low availability and or unavailability of some ICT facilities such as the internet, e-mail, teleconferencing, digital cameras, the digital scanner, and online information sources are the main problems and hindrances facing the use of ICT literacy skills in Universities and Colleges in Kenyan libraries.

In addition the study sought to find out the level of ICT literacy skills among the fourth year undergraduate students. The results are shown in Table 4.4.

**Table 4.4: Rating the Level of ICT Literacy Skills**

<table>
<thead>
<tr>
<th>Level of ICT Literacy Skills</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>18</td>
<td>32.7</td>
</tr>
<tr>
<td>Very good</td>
<td>34</td>
<td>61.8</td>
</tr>
<tr>
<td>Good</td>
<td>2</td>
<td>3.6</td>
</tr>
<tr>
<td>Fair</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>No skills</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

*Source: Field Data (2018)*

Table 4.4 shows that more than half of the respondents 34(61.8%) had very good ICT literacy skills. This helped them access, retrieve and make maximum use of e-resources as required. 18(32.7%) indicated having excellent skills for the utilization of e-resources. This meant that they had confidence in use of e-resources within the University library. In addition, the chief
librarian and other library staff confirmed that majority of the respondents had excellent and very good ICT literacy skills which they used to utilize the e-resources. Two (3.6%) indicated that they had good skills. One (1.8%) stated that the ICT skills were fair while none indicated had no skills.

4.5 Types of E-resources Most Frequently Used in the Library.

Objective two of the study sought to determine the types of e-resources most frequently used by the respondents in the library. The study wanted to find out the available e-resources and frequency in usage by respondents. The results are shown in Figure 4.2.

Figure 4.2 Types of E-resources Most Frequently Used in the Library.

Source: Field Data (2018)

The data presented in Figure 4.2 shows that most of the respondents used e-journals and e-thesis/dissertation 13 (23%) and 11 (20%) respectively as their primary source for their projects or reports. Nine (16%) used e-databases which is comprised of many internet e-
resources for their research and other assignments. The study revealed that majority of the fourth year undergraduate students used e-resources for searching relevant information in their areas of specialization but claimed that these e-resources were not enough and others were not current and updated. Other respondents 8 (14%) agreed that they visited the library to use e-books. Further, the chief librarian and library staff indicated that, repository consisted of all kinds of e-research projects, e-thesis and e-dissertation done by the researchers in an institution and are accessed online. As it was indicated by the respondents, e-thesis /dissertations are part of repository at Karatina University. The finding of the study concurs with Giddens (2014) that most library resources for example books, journals, dissertation, correspondents, pictures, motion films are accessible in digital or electronic format. The results of the study agree with Gardiner & Ronald (2013) that e-resources included e-books, e-journals, e-thesis/dissertation, OPAC, e-references, e-databases, e-newspapers, e-mails and e-magazines. It was further clarified by the chief librarian and library staff that, there had been an ICT Policy which guides the usage of e-resources and other ICT infrastructures within the University library.

In addition the study sought to find out the extent to which the e-resources were useful among the fourth year undergraduate students. The results are shown in Table 4.5.
Table 4.5: Rating the Level of Usefulness of E-Resources

<table>
<thead>
<tr>
<th>Level of usefulness of e-resources</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>12</td>
<td>21.8</td>
</tr>
<tr>
<td>Very useful</td>
<td>40</td>
<td>72.7</td>
</tr>
<tr>
<td>Useful</td>
<td>2</td>
<td>3.7</td>
</tr>
<tr>
<td>Fair</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Field Data (2018)

Table 4.5 shows that most of the respondents 40(72.7%) indicated that the e-resources were very useful and met their academic needs. Twelve (21.8%) indicated that the e-resources were excellent and also met their needs to their satisfaction. Two (3.7%) said the e-resources were useful and one (1.8%) said that e-resources were fair. There is none who stated that the usefulness of e-resources was poor. This was further affirmed by the chief librarian and library staff that the e-resources were very useful and also excellent.

The study also wanted to find out the frequency of library visits by fourth year undergraduate students. The results are shown in Figure 4.3.
Figure 4.3 Frequency of Use of E-resources in E-library

Source: Field Data (2018)

Figure 4.3 shows that majority of the respondents 31 (57%) said that they used e-resources daily. This helped them to utilize and make use of their ICT skills to access, retrieve and utilize the available e-resources, 9 (16%) used e-resources weekly for their searches and doing the assignments. Six (11%) used e-resources twice in a year. Four (7%) used e-resources monthly and others 5 (9%) stated that they used e-resources anytime they were free. The chief librarian and the library staff confirmed that majority of the respondents used e-resources daily and weekly hence maximum utilization of ICT literacy skills.

Additionally, the study intended to establish the specific skills possessed by fourth year undergraduate students in the use of the e-resources. This helped the researcher to establish...
the level of ICT skills possessed and the usage of e-resources. The results are presented in Figure 4.4.

**Figure 4.4 Skills Possessed by Students in the use of E-Resources**

Source: Field Data (2018)

Figure 4.4 shows that 16(29%) of the respondents possessed skills on internet application. These skills allowed them to ultimately utilize e-resources fully. The skills allowed the students to navigate the websites hence retrieving the e-resources. Some respondents 11(20%) knew how to use database management systems which assisted them to retrieve information with ease. These students used several databases which had e-journals, e-articles, e-books. 8(15%) had knowledge on how to use computer systems and also application softwares which assisted in the retrieval of e-resources. Seven (13%) were able to formulate search queries which assisted in online information retrieval. These search queries included Boolean such as NOT, AND, OR, XOR. 6(11%) used library tools such as CDROM, OPAC,
subject Gateways to access the e-resources for user need satisfaction. The study results concur
with Horo (2006), that ICT literacy skills enhance the quality of e-resources retrieval through
digital technologies. Users of these skills graduate with the essential decisive ICT skills,
which becomes effective users who are able to find, access, use and create e-resources in
many formats for academic, social or global purposes. It was also confirmed by the chief
librarian and library staff that most of the respondents possessed skills which allowed them to
navigate the websites in the process of retrieving the e-resources.

4.6 Strategies Employed to Enhance ICT Literacy Skills

Objective three of the study sought to establish the strategies employed to enhance ICT
literacy skills to be able to utilize e-resources. The findings are exhibited in table 4.6.

Table 4.6: Strategies Employed to Enhance ICT Literacy Skills

<table>
<thead>
<tr>
<th>Strategies Employed</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous sensitization and training</td>
<td>44</td>
<td>80</td>
</tr>
<tr>
<td>Workshops and seminars</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Employment of more library staff</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Increase the number of computers</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Use of UPS</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>55</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Source: Field Data (2018)

From the study results in Table 4.6, majority of the respondents 44(80%) indicated that there
should be continuous sensitization and training of the library users for easier retrieval of e-
resources to avoid wastage of time. Seven (13%) respondents stated that there should be
organized workshops and seminars based on how to improve ICT literacy skills. The chief librarian and library staff clarified that, the strategies used to enhance the ICT literacy skills for maximum utilization of e-resources included; continuous sensitization and training of the library users, adequate funding from the parent organization, the library overdue charges, sale of old newspapers and fines charged. It was also clarified that, there had been short courses training for users and library staff, system upgrade by hired programmers, approaching some sponsors such as United States of America (USA) and United Kingdom (UK) governments. The study was in agreement with Womboh and Abba (2008), who indicated that the Commission of University Education and public bodies should sponsor short and long training courses for both the library users and library staff on ICT skills.

4.7 Challenges in the Utilization of E-resources

The fourth objective of the study sought to examine the challenges encountered in the process of utilization of e-resources. This helped the researcher to come up with suggestions on how to overcome the challenges in the usage of e-resources within the University library. The results are presented in Figure 4.5.
Figure 4.5 Challenges in the Utilization of E-resources

Source: Field Data (2018)

Figure 4.6 indicates that 23(42%) of the respondents experienced a challenge of poor internet connection. This lead to poor utilization of e-resources hence hindering students from accessing and retrieving the e-resources. Eight (15%) said that there was a challenges of inadequate finance. Due to financial constraints, there was also a challenge of poor ICT infrastructure. 5(9%) said that there was a challenge of few staff to attend to all the users. Others 3(5%) reported of unreliable internet service providers, technophobia and erratic power supply respectively. This affected the download of e-resources from the internet which leads to wasting time for the users. Other respondents 2(4%) indicated that there was a challenge of inadequate computers for the number of students on campus. All these challenges were further clarified by the chief librarian and library staff who indicated that the university had a plan of action for addressing these challenges to the satisfaction of users. The
findings of this study concurs with Lwoga’s study (2009) which acknowledged challenges to effective utilization of e-resources; inadequate ICT facilities, low bandwidth, inconsistent power supply, insufficient ICT skills training, underutilization of ICT facilities available, and unskilled ICT manpower.

In addition, respondents suggested that there should be continuous sensitization and training to all library users through workshops and seminars within the university. They also suggested that, there should be addition of computers and also the staff due to delay in service delivery to the respondents.
CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary on the findings, conclusions and recommendations based on the study objectives. The study sought to investigate the effectiveness of ICT literacy skills on the utilization of e-resources by fourth-year undergraduate regular students at Karatina University library. Additionally, this chapter provides a direction for further studies.

5.2 Summary of Findings

5.2.1 Social Demographic Information

The study captured more female (65.5%) than male (34.5%). The results of the study revealed that majority of the respondents were below 25 years. It also indicated that the respondents were taking undergraduate programme.

5.2.2 Adequacy of Available ICT Facilities in the Library

The study findings established that ICT facilities were available and functional but they were inadequate to cater for the students. This was supported by 61.8% of respondents. Therefore the students needed to have more ICT facilities to cater for their academic work and reduce the wastage of time and energy as major resources hence explore the e-resources to the optimum.

The study also established that, although most students had undergone a training to be sensitized on ICT skills before they joined university, regular sensitization and training for the
students and staff ought to be done on a continuous basis to reflect on the needs of new updates on the skills and usage and refresh the old ones.

It was also established that although there has been an ICT Policy which guided through the usage of e-resources and other ICT infrastructures within the University library, this ICT policy was not update hence should be revised regularly as the new technologies evolve every year hence new emerging technological changes.

The study found out that most of the students had very good ICT literacy skills (72.7%) which they used to utilize the e-resources and therefore the University library management should plan and have continuous sensitization to the students in the University.

5.2.3 Types of E-resources Most Frequently Used

The study found out that majority of the respondents 23% used e-resources such as electronic books, electronic journals, electronic thesis/dissertation, OPAC and electronic references for their academic work such as research projects, thesis writing, for personal development through using free internet to read e-newspaper and e-magazines. They also used them for searching relevant information in their area of their specialization. The students claimed that these e-resources were not enough and others not current and updated. The study also revealed that the content available in e-resources was insufficient to cater for the students intending to acquire knowledge and also inaccessible due to slowness in downloads affected by poor power supply.

The research revealed that majority of the respondents 61.8% had very good ICT literacy skills which helped them to access, retrieve and make maximum utilization of electronic resources. The research revealed that although majority of the respondents 56% visited the
library daily for the use of e-resources which helped them to utilize and make use of their ICT skills to access, retrieve and use the available e-resources, there is need for a workshop or a seminar to sensitize them on importance of using the library ICT literacy skills.

The study also found out that majority of the respondents 29% possessed skills on internet application. These skills allowed them to ultimately utilize e-resources and navigate the websites in the process of retrieving the e-resources.

5.2.4 Strategies Employed to Enhance ICT Literacy Skills

The findings of the study showed the strategies employed to enhance ICT literacy skills. They were; continuous sensitization and training of the library users and staff on how to enhance ICT literacy skills for easier retrieval of e-resources, organized workshops and seminars based on how to improve ICT literacy skills, employment of more library staff, increasing the number of computers and use of UPS when the lights are off hence no distraction to access of e-resources.

The study findings established that though there is no adequate funds for library operation, there can be other ways to source for the funds such as applying to donors or fundraising to supplement the regular budget.

5.2.5 Challenges in the Utilization of E-resources

The research findings showed that some of the challenges to effective utilization of e-resources included inadequate ICT facilities, inconsistent power supply, insufficient ICT skills training, underutilization of ICT facilities available, and unskilled ICT manpower. There was need to have a plan of action on how to resolve the challenges.
From the study it was also found out that poor internet connectivity was a major constraint to users who said that they used a lot of time when trying to download and save information from the internet. This discouraged them from frequent visits to the library for use of the internet to retrieve the e-resources.

5.3 Conclusions

The study concluded that ICT facilities were available and functional but they were inadequate to cater for the students. Therefore the students needed to have more ICT facilities to cater for their academic needs and hence explore the e-resources to the maximum. Individual students within this group (fourth year undergraduate students) had varied information needs which depends on the level of knowledge on how to use ICT literacy skills within the library. Those with high level of ICT skills knowledge, utilize e-resources most hence benefiting more than others.

The study concluded that e-resources mostly used were e-books, e-journals, e-thesis/dissertation, OPAC and e-references. It was also concluded that the content available in e-resources was insufficient to cater for all students intending to acquire knowledge and also inaccessible due to slowness in downloads affected by poor power supply. These e-resources were fully utilized for the academic work such as research projects, thesis writing, for personal development and also for searching relevant information in the area of specialization. Those with high level of ICT literacy skills knowledge utilized e-resources fully and benefited more than others.
The study concluded that continuous sensitization and training of library users and library staff, applying to donors or fundraising to collect money, organized workshops and seminars were major strategies used to enhance ICT literacy skills.

The study concluded that inadequate ICT facilities, poor internet connection, inadequate computers and inadequate sources of funds are major constrain as shown by the majority of the respondents. These are key areas that need to be sorted as a matter of urgency to improve on retrieval of e-resources within the library by fourth year undergraduate students.

5.4 Recommendations

Based on the conclusions drawn from this study the researcher deemed it necessary to make the following pertinent recommendations.

5.4.1 Recommendations

It was established that ICT facilities were available and functional but they were inadequate to cater for the students. Therefore this study recommends that there should be acquisition of more ICT facilities to cater for students’ academic needs and reduce the wastage of time and energy as major resources hence explore the e-resources to the optimum.

The study findings from the interview with the chief librarian and library staff indicated that there was an ICT policy for guidance on the use of e-resources. This point to a strong need to have the policy revised regularly and make it elaborate for the users. The policy should also be made available in other formats such as CD, VCD, OR DVD. The study recommended that digital library and ICT department should collaborate in updating and also upgrading the ICT policy and systems.
The e-resources mostly used such as e-books, e-journals, e-thesis/dissertation, OPAC and e-references helped the fourth year undergraduate students to retrieve the required information. The study findings also indicated that the content available in e-resources was insufficient to satisfy the needs and requirements of the users. The content was also inaccessible due to slowness in downloads and internet turn-down. The students claimed that these e-resources were not enough and others not current and updated. Therefore this study recommends that there should be more e-resources which are updated and current electronic resources to provide for the user needs and requirements.

The study recommended that there should be continuous sensitization and training of library users and library staff, university should seek stakeholders’ assistance for continuous application to donors, there should be organized fundraising to collect money and also there should be several organized workshops and seminars at least once a month to enhance ICT literacy skills for the strategies to be of benefit to the students.

The study findings established that there were several challenges to effective utilization of e-resources such as inadequate ICT facilities, inconsistent power supply, insufficient ICT skills training, availability of inadequate computers, and unskilled ICT manpower. This study recommends that there is need to have a plan of action on how to resolve these challenges. These are key areas that need to be sorted as a matter of urgency to improve on retrieval of e-resources within the library by fourth year undergraduate students. The study also recommends that there should be allocation of sufficient funds for acquiring more ICT facilities, expansion and improvement of e-resources and services. Although funding may be one of the salient challenges in the long run internal training arrangements ought to be conducted regularly to sensitize both the staff and the users on the importance of ICT skills.
literacy acquisition. Different motivational speakers of high intellectual and diverse backgrounds may be invited from time to time to sensitize both the staff and the users on variety of issues on utilization of e-resources. This helps to increase the awareness levels of both the staff and the users.

The study also recommends that the CUE should come up with guidelines on the content for delivering ICT literacy skills by universities and their libraries. Karatina University management should consider increasing ICT facilities and e-resources in order to enhance effectiveness of ICT literacy skills use by students. Karatina university faculty and library staff should ensure that they update frequently their ICT literacy skills contents for delivery to students. Karatina university management should also source for more funds to be able to subscribe more and updated e-resources from different publishers and also expand the e-library for more space hence improve the utilization of e-resources and services.

5.4.2 Recommendations For Further Research

This study researched on the effectiveness of ICT literacy skills in utilization of e-resources by students at Karatina University Library, Nyeri County. The researcher recommends that more research be undertaken on the level of knowledge on ICT literacy skills and utilization of e-resources to specific user group, for example, the second year or third year undergraduate students within a specific University library.
References


Appendix A: Letter of Introduction

Lucy Wanene Mugera,
Kenyatta University, Department of Library & Information Science,
Email: wanenel@yahoo.com.
Mobile no. 0725 315 365.

Dear Respondents,

My name is Lucy Wanene Mugera, I am a postgraduate student at Kenyatta University in the school of education, department of Library and Information Science. I am undertaking a Master degree in library and information and I am carrying out a study on “Effectiveness of ICT literacy skills on utilization of E-resources at Karatina University Library” Kenya.

I kindly request you for your participation in responding to the research questions needed to meet the objective of the study. There are no correct or wrong responses, all responses will be treated with high level of confidentially and will not be traceable to you, so please just tick the responses or explain appropriately the information that conform to your situation. Your honest contribution in facilitating the same will highly be appreciated.

Further information you can get in touch with me at 0725315365 or email: wanenel@yahoo.com.

Thank you.

Lucy Wanene Mugera
Department of Library and Information Science.
Appendix B: Questionnaire for Students

Research Questionnaire No. -------------------------- Date --------------------------

Topic: Effectiveness of Information Communication Technology literacy skills on exploitation of e-resources by fourth year undergraduate students at Karatina University library.

NOTE:

i) This questionnaire is formulated for study purpose only.

ii) Your response and cooperation will be highly appreciated.

iii) All information given will be treated with outmost confidentiality.

iv) Attempt all questions ticking or explaining where necessary.

A) Background Information.

1. What is your gender? (Tick one)
   i) Male
   
   ii) Female

2. How old are you in years? (Tick one)
   i) 20 – 25
   
   ii) 26 – 30
   
   iii) 31 – 35
   
   iv) 36 and above

3. What degree programme are you enrolled in? ---------------------------------------
B) Adequacy of Available ICT Facilities in the Library.

4. Are you conversant with ICT? (Tick one)
   i) Yes
   ii) No

5. Have you been sensitized or trained on ICT literacy skills since you joined University?
   i) Yes
   ii) No

   If your response is yes, indicate the specific training you received---------------------

6. What are the facilities available for the acquisition of ICT literacy skills in the library?
   (you may tick more than one)
   i) Digital camera
   ii) Scanner
   iii) Internet
   iv) e-mail
   v) Computers
   vi) Printers
   vii) Video Projector
   viii) Mobile phones
   ix) Audio tapes
   x) DVD
   xi) Others please specify-----------------------------------------------
7. Rate your level of ICT literacy skills using the scale below.

<table>
<thead>
<tr>
<th>Level of ICT literacy skills</th>
<th>Tick appropriately (√)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td></td>
</tr>
<tr>
<td>ii</td>
<td></td>
</tr>
<tr>
<td>iii</td>
<td></td>
</tr>
<tr>
<td>iv</td>
<td></td>
</tr>
<tr>
<td>v</td>
<td></td>
</tr>
</tbody>
</table>

C) **Types of E-resources Most Frequently Used in the Library**

8. Which of the following e-resources do you most frequently use in the library? (You may tick more than one)

   i) E-books
   ii) E-Journals
   iii) E-thesis/Dissertation
   iv) OPAC
   v) E-references
   vi) Others, please specify--->
9. To what extent are these e-resources in number 7 useful to you? (Tick 1)

<table>
<thead>
<tr>
<th>Level of usefulness of e-resources</th>
<th>Tick appropriately (√)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Excellent</td>
<td></td>
</tr>
<tr>
<td>ii) Very useful</td>
<td></td>
</tr>
<tr>
<td>iii) Useful</td>
<td></td>
</tr>
<tr>
<td>iv) Fair</td>
<td></td>
</tr>
<tr>
<td>v) Poor</td>
<td></td>
</tr>
</tbody>
</table>

10. How frequently do you visit the library to use the e-resources? (Tick appropriately)

<table>
<thead>
<tr>
<th>Frequency of Use of E-resources by students</th>
<th>Tick (√) or indicate appropriately</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Twice a year</td>
<td></td>
</tr>
<tr>
<td>ii) Monthly</td>
<td></td>
</tr>
<tr>
<td>iii) Weekly</td>
<td></td>
</tr>
<tr>
<td>iv) Daily</td>
<td></td>
</tr>
<tr>
<td>v) Hours in a day</td>
<td></td>
</tr>
<tr>
<td>vi) Others, please specify</td>
<td></td>
</tr>
</tbody>
</table>
11. What specific skills do you possess to enable you make use of e-resources? (You may tick more than one)

<table>
<thead>
<tr>
<th>Skills Possessed by Students in the Use of E-resources</th>
<th>Tick (√) or indicate appropriately</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) General computer operations</td>
<td></td>
</tr>
<tr>
<td>ii) Internet applications</td>
<td></td>
</tr>
<tr>
<td>iii) Database management systems</td>
<td></td>
</tr>
<tr>
<td>iv) Electronic library tools e.g. CDROM, OPAC, Subject Gateways</td>
<td></td>
</tr>
<tr>
<td>v) Computer system/application software e.g. MS Windows XP, Linux, MS Office, etc.</td>
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<tr>
<td>vi) Others, please specify</td>
<td></td>
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</tbody>
</table>

D) Strategies Employed to Enhance ICT Literacy Skills

<table>
<thead>
<tr>
<th>Strategies Employed</th>
<th>Tick or indicate appropriately</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>Continuous sensitization and training</td>
</tr>
<tr>
<td>ii</td>
<td>Workshops and seminars</td>
</tr>
<tr>
<td>iii</td>
<td>Employment of system librarian</td>
</tr>
<tr>
<td>iv</td>
<td>Increase the number of computers</td>
</tr>
<tr>
<td>v</td>
<td>Use of UPS</td>
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<tr>
<td>vi</td>
<td>Others, specify</td>
</tr>
</tbody>
</table>
E) Challenges in the Utilization of E-resources

12. Which of the following challenges are encountered by fourth year undergraduate students in the utilization of e-resources? (You may tick more than one)

<table>
<thead>
<tr>
<th>i)</th>
<th>Financial problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>ii)</td>
<td>Poor ICT Infrastructure</td>
</tr>
<tr>
<td>iii)</td>
<td>Poor internet connection</td>
</tr>
<tr>
<td>iv)</td>
<td>Technophobia</td>
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<td>v)</td>
<td>Lack of search skills</td>
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<tr>
<td>vi)</td>
<td>Unreliable Internet Service Providers/telecommunication connectivity problems.</td>
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<td>vii)</td>
<td>Inadequate computers for the number of students on campus.</td>
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<tr>
<td>viii)</td>
<td>Others, please specify</td>
</tr>
</tbody>
</table>

13. What suggestions would you offer that would enhance ICT literacy skills among the users?

Thank you for your participation
Appendix C: Interview Schedule for Chief Librarian and other Library Staff

Lucy Wanene Mugera,
Kenyatta University, Department of Library & Information Science,
Email: wanenel@yahoo.com.
Mobile no. 0725 315 365.

Dear Respondents,

My name is Lucy Wanene Mugera, I am a postgraduate student at Kenyatta University undertaking a Master degree in library and information and I am carrying out a study on “Effectiveness of ICT literacy skills on utilization of e-resources at Karatina university library” Kenya. All responses will be treated with high level of confidentially and will not be traceable to you. Your honest contribution in facilitating the same will highly be appreciated.

1. What does ICT policy entails?
2. What ICT facilities have you put in place in your digital library and are they enough to cater for all fourth year undergraduate students?
3. What types of e-resources are most frequently used by fourth year undergraduate regular students at Karatina University library?
4. What efforts is the library management making to minimize these challenges?
5. What is the source of funds for the subscription of the e-resources in your digital library?
6. What challenges are encountered in the utilization of e-resources by the undergraduate students at Karatina University library?
7. What strategies has the library management employed for the enhancement of ICT literacy skills at Karatina University library?
8. What future plans do you have as a library manager in enhancing ICT literacy skills among the users?

Thank you for your participation
Appendix D: Time Schedule

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</thead>
<tbody>
<tr>
<td>Writing of concept paper</td>
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<tr>
<td>Defending the concept paper</td>
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<tr>
<td>Proposal writing</td>
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<tr>
<td>Defending the proposal</td>
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<td>Data collection</td>
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<tr>
<td>Data analysis and presentation</td>
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<tr>
<td>Report writing and submission</td>
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</tbody>
</table>

**Key**

1 Box represent 1 month

Selection of topic, writing and presenting of concept paper  - Month

Defending the concept paper                     - 2 months

Proposal writing                                - 1 month

Defending the proposal                          - 2 months

Data analysis and data presentation            - 2 month

Report writing and submission                  - 1 month

**Total**                                      = 10 months
## Appendix E: Financial Budget

<table>
<thead>
<tr>
<th>Item/activity</th>
<th>Quantity</th>
<th>Unit cost (Ksh)</th>
<th>Total cost (Ksh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationeries</td>
<td></td>
<td>@1080/=</td>
<td>1,080/=</td>
</tr>
<tr>
<td>Typesetting of questionnaires and interview schedules</td>
<td>68</td>
<td>@ 30/=</td>
<td>2,040/=</td>
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<tr>
<td>Internet service and usage</td>
<td></td>
<td></td>
<td>2,000/=</td>
</tr>
<tr>
<td>Typesetting of the research proposal</td>
<td>4</td>
<td>@ 2,000/=</td>
<td>8,000/=</td>
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<tr>
<td>Printing and Binding the reports</td>
<td>3</td>
<td>@ 5,000/=</td>
<td>15,000/=</td>
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<tr>
<td>Payment of assistants</td>
<td>2</td>
<td>@ 2,000/=</td>
<td>4,000/=</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td></td>
<td></td>
<td>4,000/=</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td></td>
<td></td>
<td><strong>36,120/=</strong></td>
</tr>
</tbody>
</table>

**Budget Justification**

Two reams of foolscaps were essential to write down the research study. Stationery to include pens, pencil, rubber and geometrical set. Typesetting and printing of 64 questionnaires and 4 interview schedule was issued to the study subjects for data collection. Typesetting, printing and binding of the final research reports copies was done. Transport to Dedan Kimathi University for pilot study and KU for guidance by the supervisor from the place of work. Other miscellaneous activities like topping up airtime to access the web from the phone.
Appendix F: NACOSTI Research Authorization

Ref No: NACOSTI/P/18/33413/25450

Date: 4th October, 2018

Lucy Wanene Mugera
Kenyatta University
P.O. Box 43844-00100
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “Effectiveness of Information Communication Technology literacy skills in utilization of E-Resources by students at Karatina University Library, Nyeri County, Kenya” I am pleased to inform you that you have been authorized to undertake research in Nyeri County for the period ending 4th October, 2019.

You are advised to report to the County Commissioner and the County Director of Education, Nyeri County before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a copy of the final research report to the Commission within one year of completion. The soft copy of the same should be submitted through the Online Research Information System.

BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:
The County Commissioner
Nyeri County.
The County Director of Education
Nyeri County.
Appendix G: NACOSTI Permit

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licences is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.

CONDITIONS

1. The License is valid for the proposed research, location and specified period.
2. The Licensee and any rights thereunder are non-transferable.
3. The Licensee shall inform the County Governor before commencement of the research.
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
5. The Licensee does not give authority to transfer research materials.
6. NACOSTI may monitor and evaluate the licensed research project.
7. The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.

National Commission for Science, Technology and Innovation
P.O. Box 38623 - 00100, Nairobi, Kenya
TEL: 020 409 7925, 0713 795787, 0735 494245
Email: dg@nacosti.go.ke, registry@nacosti.go.ke
Website: www.nacosti.go.ke