

**DEMOGRAPHIC AND INSTITUTIONAL FACTORS
INFLUENCING UTILISATION OF ONLINE LIBRARY
SERVICES BY DISTANCE LEARNERS IN THE
UNIVERSITY OF NAIROBI, KENYA**

BY

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**A Thesis Submitted in Fulfilment of the Requirement for the Award of
the Degree of Doctor of Philosophy in Distance Education of the
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DECLARATION

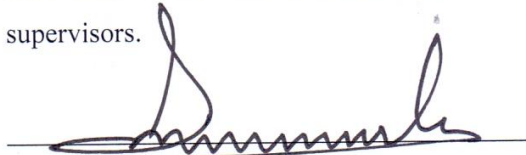
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DEDICATION

This Thesis is dedicated to my wife Caroline Anyango Ochieng' and all my beloved children hoping that it will inspire them to climb the academic ladder to the last rung. To my late grandmother Achuodho Nyanyengo, late wife Emily Adoyo Ochieng and late father Philip Nyaimbo, who passed away in 1994, 2012 and 2013 respectively.

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TABLE OF CONTENT

	PAGE
DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT.....	iv
TABLE OF CONTENT.....	v
LIST OF TABLES	xiii
LIST OF FIGURES	xix
LIST OF ABBREVIATIONS AND ACRONYMS	xx
ABSTRACT.....	xxi
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background of the study	1
1.2 Statement of the problem	8
1.3 Purpose of the study.....	9
1.4 Objectives of the study.....	10
1.5 Research questions.....	10
1.6 Research hypotheses	11
1.7 Significance of the study.....	12
1.8 Limitations of the study	13
1.9 Delimitations of the study.....	13
1.10 Basic Assumptions of the study.....	14
1.11 Definition of significant terms used in the study	14
1.12 Organisation of the study	16

CHAPTER TWO: LITERATURE REVIEW	18
2.1 Introduction.....	18
2.2 Overview of distance learning in Kenya.....	18
2.3 Utilisation of online library services by distance learners	23
2.4 Demographic factors influencing utilisation of online library services: empirical literature.....	27
2.4.1 Learners’ gender and utilisation of online library services	27
2.4.2 Learners’ age and utilisation of online library services	31
2.4.3 Learners’ computer literacy and utilisation of online library services	34
2.4.4 Learners’ awareness of availability of online library services and utilisation of online library services	38
2.4.5 Learners’ programme of study and utilisation of online library services.....	40
2.5 Institutional factors influencing utilisation of online library services: empirical literature	41
2.5.1 Internet connectivity and utilisation of online library services.....	41
2.5.2 Adequacy of computers and utilisation of online library services.....	43
2.5.3 Consistency of power supply and utilisation of online library services	44
2.6 Aspects of ICT Policy that Influence Utilisation of Online Library Services	44
2.7 Theoretical framework.....	46
2.8 Conceptual Framework.....	49
2.9 Summary of the literature	51

CHAPTER THREE: RESEARCH METHODOLOGY	57
3.1 Introduction.....	57
3.2 Research philosophy	57
3.3 Research design	58
3.4 Target population	59
3.5 Sample size and sample selection	60
3.5.1 Sample size	60
3.5.2 Sample selection	62
3.6 Research instruments	64
3.6.1 Questionnaires for learners.....	64
3.6.2 Questionnaire for university librarians.....	64
3.6.3 In-depth interview schedule for university librarians.....	65
3.7 Pretesting of data collection instruments	65
3.8 Validity of data collection instruments.....	66
3.9 Reliability of data collection instruments	67
3.10 Data collection procedures.....	69
3.11 Data processing and analysis techniques	70
3.11.1 Quantitative data processing and analysis.....	70
3.11.2. Analytical models.....	72
3.11.3 Assumptions of multiple linear regression.....	74
3.12 Ethical considerations	75
3.13 Operationalisation of Variables	76
3.14 Summary of the hypothesis testing plan	78

CHAPTER FOUR: DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSIONS	79
4.1 Introduction.....	79
4.2 Questionnaire return rate.....	80
4.3 Background information of the respondents.....	81
4.4 Learners’ Gender and Utilisation of Online Library Services	84
4.4.1 Learners’ gender and utilisation of online digital repository.....	85
4.4.2 Learners’ gender and utilisation of online newspapers.....	86
4.4.3 Learners’ gender and utilisation of online public access catalogue.....	86
4.4.4 Learners’ gender and utilisation of online electronic books.....	87
4.4.5. Learners’ gender and utilisation of online electronic journal	88
4.4.6 Learners’ gender and utilisation of online electronic database.....	89
4.4.7Learners’ gender and utilisation of online research papers	90
4.4.8 Mean scores on learners’ gender and utilisation of online library services....	91
4.4.9 Variation in utilisation of online library services between male and female learners.....	96
4.5 Learners’ age and utilisation of online library services	97
4.5.1 Learners’ age and utilisation of online digital repository	98
4.5.2 Learners’ age and utilisation of online newspapers.....	99
4.5.3 Learners’ age and utilisation of online public access catalogue	100
4.5.4 Learners’ age and utilisation of online electronic books	101
4.5.5 Learners’ age and utilisation of electronic-journals.....	101
4.5.6 Learners’ age and utilisation of online database.....	102

4.5.7 Learners' age and utilisation of online research papers	103
4.5.8 Mean score on learners' age and utilisation of online library services	104
4.5.9 Variation in utilisation of online library services learners based on age	107
4.6 Learners' computer literacy and utilisation of online library services	109
4.6.1 Learners' computer literacy and utilisation of online digital repository.....	110
4.6.2 Learners' computer literacy and utilisation of online newspapers	111
4.6.3 Learners' computer literacy and utilisation of online public access catalogue	112
4.6.4 Learners' computer literacy and utilisation of online electronic books.....	113
4.6.5. Learners' computer literacy and utilisation of online electronic journals	114
4.6.6 Learners' computer literacy and utilisation of online database	115
4.6.7 Learners' computer literacy and utilisation of online research papers	116
4.6.8 Mean scores on learners' computer literacy and utilisation of online library services.....	117
4.6.9 Variation in utilisation of online library services and learners' computer literacy.....	120
4.7 Learners' awareness and utilisation of online library services	122
4.7.1 University library creating awareness of availability online library services	122
4.7.2. University library providing online library orientation	123
4.7.3 University library providing online library induction.....	124
4.7.4 University library providing online library instruction.....	125
4.7.5 Learners' ability to visit the Internet regularly following awareness	126

4.7.6 Learners' awareness and utilisation of online digital repository	127
4.7.7 Learners' awareness and utilisation of online newspapers	128
4.7.8 Learners' awareness and utilisation of online public access catalogue	129
4.7.9 Learners' awareness and utilisation of online electronic books	130
4.7.10 Learners' awareness and utilisation of electronic database	131
4.7.11 Learners' awareness and utilisation of electronic journals	132
4.7.12 Learners' awareness and utilisation of online research papers	133
4.7.13 Mean scores on learners' awareness and utilisation of online library services	134
4.8 Learners' programme of study and utilisation of online library services	138
4.8.1 Learners' programme of study and utilisation of online digital repository	138
4.8.2 Learners' programme of study and utilisation of online newspapers	139
4.8.3 Learners' programme of study and utilisation of online public access catalogue	140
4.8.4 Learners' programme of study and utilisation of electronic books	141
4.8.5 Learners' programme of study and utilisation of online electronic journals ..	142
4.8.6 Learners' programme of study and utilisation of electronic database	143
4.8.7 Learners' programme of study & utilisation of online research papers.....	144
4.8.8 Mean scores on learners' programme of study and utilisation of online library services	145
4.8.9 Variation in utilisation of online library services and learner's programme of study	149

4.9 Utilisation of online library services at the University of Nairobi.....	150
4.9.1 Learners’ utilisation of online digital repository	151
4.9.2 Learners’ utilisation of online newspapers.....	152
4.9.3 Learners’ utilisation of online public access catalogue.....	153
4.9.4 Learners’ utilisation of online electronic books electronic books.....	154
4.9.5 Learners’ utilisation of online electronic journals.....	154
4.9.6 Learners utilisation of online electronic database	155
4.9.7 Learners’ utilisation of online research papers.....	156
4.9.8 Mean scores on learners’ utilisation of online library services	157
4.10 Institutional factors influencing utilisation of online library services	159
4.10.1 Internet connectivity and utilisation of online library services	160
4.10.2 Adequacy of computers and utilisation of online library services	170
4.10.3 Reliability of power supply and Utilisation of online library services.....	181

CHAPTER FIVE: SUMMARY OF THE FINDINGS, CONCLUSION AND

RECOMMENDATIONS..... 192

5.1 Introduction.....	192
5.2 Summary of the Findings.....	192
5.2.1 Learners’ gender and utilisation of online library services.....	193
5.2.2 Learners’ age and utilisation of online library services	194
5.2.3 Learners’ computer literacy and utilisation of online library services	194
5.2.4 Learners’ awareness and utilisation of online library services	195
5.2.5 Learners’ programme of study and utilisation of online library services	195

5.2.6 Internet connectivity and utilisation of online library services.....	196
5.2.7 Adequacy of computers and utilisation of online library services.....	196
5.2.8 Reliability of power supply and utilisation of online library services	197
5.3 Conclusion	198
5.4 Recommendations.....	200
5.5 Contribution to the Body of Knowledge.....	202
5.6 Suggestions for further research	207
REFERENCES.....	208
APPENDICES.....	218
Appendix I: Letter of Introduction to Respondents	218
Appendix II: Questionnaire for Learners	219
Appendix III: Questionnaire for University Librarians	227
Appendix IV: Interview Schedule for University Librarians	228
Appendix V: Letter of Clearance from the University	230
Appendix VI: Authorisation Letter.....	231
Appendix VII: Research Permit.....	232
Appendix VIII: Table for Determining Sample Size.....	233

LIST OF TABLES

Table 2.1: Matrix table for empirical literature	54
Table 3.1 Population of third year learners (April intake 2013/2014) and librarians.....	59
Table 3.2: Sample size of third year learners (April intake 2013/2014) and librarians	63
Table 3.3: Inter-item reliability test	68
Table 3.4: Summary of objectives, hypothesis, measurement scales, analytical model and techniques of analysis	72
Table 3.5: Operationalisation of variables	76
Table 3.6: Summary of the hypothesis testing analysis.....	78
Table 4.1: Response rate from the categories of respondents by percentage	80
Table 4.2: Respondents' distribution by demographic attribute.....	81
Table 4.3: Learners' gender and utilisation of online digital repository.....	85
Table 4.4: Learners' gender and utilisation of online newspapers	86
Table 4.5: Learners' gender and utilisation of online public access catalogue	87
Table 4.6: Learners' gender and utilisation of online electronic books.....	88
Table 4.7: Learners' gender and utilisation of online electronic journals	89
Table 4.8: Learners' gender and utilisation of online electronic database	90
Table 4.9: Learners' gender and utilisation of online research papers	91
Table 4.10: Learners' gender and utilisation of online library services	92
Table 4.11: Model summary of regression analysis	93
Table 4.12: Analysis of Variance.....	94
Table 4.13: KMO and Bartlett's Test	95

Table 4.14: Total variables explained.....	95
Table 4.15: Component matrix	96
Table 4.16: Cross-tabulation of utilisation of online library services and gender	97
Table 4.17: Learners' age and utilisation of digital repository	98
Table 4.18: Learners' age and utilisation of online newspapers.....	99
Table 4.19: Learners' age and utilisation of online public access catalogue.....	100
Table 4.20: Learners' age and utilisation of online electronic books	101
Table 4.21: Learners' age and utilisation of online electronic journals.....	102
Table 4.22: Learners' age and utilisation of online database.....	103
Table 4.23: Learners' age and utilisation of online research papers.....	104
Table 4.24: Learners' age and utilisation of online library services.....	105
Table 4.25: Regression analysis on learners' age and utilisation of online library services.....	106
Table 4.26: Analysis of Variance.....	107
Table 4.27: Cross-tabulation of utilisation of online library services and age	108
Table 4.28: Learners' computer literacy and utilisation of online digital repository	110
Table 4.29: Learners' computer literacy and utilisation of online newspapers	111
Table 4.30: Computer literacy and utilisation of online public access catalogue.....	112
Table 4.31: Learners' computer literacy and utilisation of online electronic books	113
Table 4.32: Learners' computer literacy and utilisation of online electronic journals.....	114
Table 4.33: Learners' computer literacy and utilisation of online database	115

Table 4.34: Learners’ computer literacy and utilisation of online research papers	116
Table 4.35: Mean scores on learners’ computer literacy and utilisation of online library services	117
Table 4.36: Regression analysis on learners’ computer literacy and utilisation of online library services	119
Table 4.37: Analysis of Variance.....	120
Table 4.38: Cross-tabulation of utilisation of online library services and computer literacy.....	121
Table 4.39: Learners’ awareness and availability of online library services	123
Table 4.40: Learners’ awareness and provision of online library orientation	124
Table 4.41: Learners’ awareness and provision of online library induction.....	125
Table 4.42: Learners’ awareness and provision of online library instruction.....	126
Table 4.43: Learners’ awareness and regular visit to the internet for online library services	127
Table 4.44: Learners’ awareness and utilisation of online digital repository	128
Table 4.45: Learners’ awareness and utilisation on online newspapers	129
Table 4.46: Learners’ awareness and utilisation of online public access catalogue	130
Table 4.47: Learners’ awareness and utilisation of online electronic books	131
Table 4.48: Learners’ awareness and utilisation of electronic database	132
Table 4.49: Learners’ awareness and utilisation of online electronic journals.....	133
Table 4.50: Learners’ awareness and utilisation of online research papers.....	134
Table 4.51: Learners’ awareness and utilisation of online library services	135

Table 4.52: Regression analysis results on learners’ awareness about availability of online library services and utilisation of such	137
Table 4.53: Analysis of Variance.....	138
Table 4.54: Learners’ programme of study and utilisation of online digital repository	139
Table 4.55: Learners’ programme of study and utilisation of online newspapers.....	140
Table 4.56: Learners’ programme of study and utilisation of online public access catalogue	141
Table 4.57: Learners’ programme of study and utilisation of online electronic books.....	142
Table 4.58: Learners programme of study and utilisation of online electronic journals.....	143
Table 4.59: Learners programme of study and utilisation of online electronic database.....	144
Table 4.60: Learners’ programme of study and utilisation of online research papers	145
Table 4.61: Learners’ programme of study and utilisation of online library services.....	146
Table 4.62: Regression analysis on learners’ programme of study and utilisation of online library services.....	147
Table 4.63: Analysis of Variance.....	148
Table 4.64: Cross-tabulation of utilisation of online library services and programme of study	150

Table 4.65: Extent to which learners’ utilised online digital repository.....	151
Table 4.66: Extent to which learners’ utilised online newspapers.....	152
Table 4.67: Extent to which learners’ utilised online public access catalogue.....	153
Table 4.68: Extent to which learners’ utilised electronic books.....	154
Table 4.69: Extent to which learners’ utilised online electronic journals.....	155
Table 4.70: Extent to which learners’ utilised online database	156
Table 4.71: Extent to which learners’ utilised online research papers	157
Table 4.72: Mean scores on learners’ utilisation of online library services	158
Table 4.73: Institutional attributes	159
Table 4.74: Internet connectivity and utilisation of digital repository.....	161
Table 4.75: Internet connectivity and utilisation of online newspapers	162
Table 4.76: Internet connectivity and utilisation of online public access catalogue	163
Table 4.77: Internet connectivity and utilisation of online electronic books.....	164
Table 4.78: Internet connectivity and utilisation of online electronic journals	165
Table 4.79: Internet connectivity and utilisation of online database	166
Table 4.80: Internet connectivity and utilisation of online research papers	167
Table 4.81: Internet connectivity and utilisation of online library services	168
Table 4.82: Regression analysis on Internet connectivity and utilisation of online library services	169
Table 4.83: Analysis of Variance.....	170
Table 4.84: Adequacy of computers and utilisation of online digital repository.....	171
Table 4.85: Adequacy of computers and utilisation of online newspapers	172
Table 4.86: Adequacy of computers and utilisation of online public access catalogue	173

Table 4.87: Adequacy of computers and utilisation of online electronic books.....	174
Table 4.88: Adequacy of computers and utilisation of online electronic journals	175
Table 4.89: Adequacy of computers and utilisation of online database	176
Table 4.90: Adequacy of computers and utilisation of online research papers	177
Table 4.91: Mean scores on adequacy of computers and utilisation of online library services	178
Table 4.92: Regression analysis on adequacy of computers and utilisation of online library services	179
Table 4.93: Analysis of Variance.....	180
Table 4.95: Reliability of power supply and utilisation of online newspapers.....	183
Table 4.96: Reliability of power supply and utilisation of online public access catalogue	184
Table 4.97: Reliability of power supply and utilisation of online electronic books	185
Table 4.99: Reliability of power supply and utilisation of online electronic database.....	187
Table 4.100: Reliability of power supply and utilisation of online research papers	188
Table 4.101: Reliability of power supply and utilisation of online library services.....	189
Table 4.102: Model summary of regression analysis	190
Table 4.103: Analysis of Variance.....	191
Table 5.1: Summary of the contributions to the body of knowledge.....	205

LIST OF FIGURES

Figure 2.1: Technology acceptance model	47
Figure 2.2 Demographic, institutional factors and utilisation of online library services	50

LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA	:	Analysis of Variance
B.Ed (Arts)	:	Bachelor of Education Arts
B.Ed (Science):	:	Bachelor of Education Science
CAI	:	Computer Assisted Instruction
CD – ROM	:	Computer Mediated Communication
CEES	:	College of Education and External Studies
EOU	:	Ease of Use
ICT	:	Information communication Technology
KAEA:	:	Kenya Adult Educator Association
MOE	:	Ministry of Education
NCST	:	The National Council of Science and Technology
ODeL	:	Open, Distance and E- Learning
SODL	:	School of Open and Distance Learning
OLEs	:	Online Learning Environment
OPAC	:	Online Public Access Catalogue
OPU	:	Open University
PU	:	Perceived Usefulness
SPSS	:	Statistical Package for Social Sciences
TAM	:	Technology Acceptance Model
UNESCO	:	United Nations Educational Scientific and Cultural Organisation
UNISA	:	University of South Africa

ABSTRACT

The purpose of this study was to determine the influence of demographic and institutional factors on utilisation of online library services by distance learners of the University of Nairobi. Specifically, the study aimed at achieving eight objectives: viz. examine the influence of learners' gender on utilisation of online library services; determine the influence of learners' age on utilisation of online library services; assess the extent to which learners' computer literacy influences utilisation of online library services; establish the influence of learners' awareness of availability of online library services on utilisation of online library services; assess the influence of learners' programme of study on utilisation of online library services. The study was anchored on the positivist research paradigm. Descriptive survey and correlation research designs were adopted for this study. Data were collected using self-administered questionnaires and interview schedules. The target population consisted of 1671 learners in the School of Open and Distance Learning and 14 librarians found in the University of Nairobi namely Kikuyu Campus, Chiromo Campus and the main library Campus (The Jomo Kenyatta Memorial Library). The sample size was 312 respondents. A pre-test study was conducted using 31 learners and 1 librarian. This constituted 10% of the study sample. The researcher tested for the inter-item reliability of the instruments using Cronbach's Alpha and results ranged from 52.5%-95.8% for learners' questionnaires while that of librarians recorded 69.8%. Data analysis were done using frequency counts, the mean and standard deviation while hypothesis was tested using multiple linear regression analysis; one way analysis of variance at 0.05 level of significance. The key finding indicated a significant relationship between learners' gender and utilisation of online library services ($r = 0.345$, $R^2 = 0.119$, $n=259$, $p<0.05$). Factor analysis using KMO test of validity gave a figure of 0.806 meaning the data was highly valid since the threshold is normally 0.5. Only one component factor explained 60% of the total variance implying that there was only one principle component extracted which was digital repository at 0.849. The study further revealed a significant positive linear correlation between age and utilisation of online library services ($r = 0.366$, $R^2 = 0.134$, $n=259$, $p<0.05$). The ANOVA test gave F-statistics of 2.294 meaning 22.94% of the model fits linear line therefore, has been explained thus the model fits interpretation. The finding indicated no significant relationship between computer literacy and utilisation of online library services at ($r = 0.234$, $R^2 = 0.055$, $n=259$, $p<0.05$). The analysis obtained an F statistic of 0.854 meaning 85.4% of the model fits a linear distribution; hence, has been explained; thus, therefore, model fits interpretation. The study concludes that demographic and institutional factors influence utilisation of online library services. However, one factor, learners' computer literacy had no influence on utilisation of online library services. The study recommends that all distance learners irrespective of their gender and age should be enlightened to use online library services provided by the University of Nairobi. In order to create awareness, there is need to engage distance learners in activities that give practice and require them to demonstrate their competence in evaluating the quality of information they use. The outcome of this study may act as basis for policy formulation for both the University of Nairobi and the government of Kenya regarding Distance Learning Programmes. Further research may be carried out to ensure that these demographic and institutional factors are tested in other study samples found in other public universities in Kenya.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Distance learning refers to formal learning provided to learners away from the University Campus. The teacher and the learner are separated physically but rely mostly on electronic communication and independent study (Naidu, 2006). It is a programme well suited for those learners who out of family, financial or other engagements are unable to enrol for full-time programmes in the existing conventional institutions (Garrison & Anderson, 2003; Shephard, 2008). distance learning is further conceived as a form of adult learning where the clientele may consist of those who failed to attend the formal education system or those who were unable to complete their schooling and those who would wish to continue with their education to higher levels (Oladeji, 2000; Shephard, 2008).

As noted by Naidu (2006), the main objective of Distance Learning is to help narrow the gap in accessing higher education. Maore and Kearsley (2008) note that distance learners are adults between the ages of 25 and 50 years. The programme is packaged to suit adult learners as daily work schedules and engagements in our complex society has made people willing to further their education look for job security. The interactive nature of distance learning promotes experimentation of new techniques and modern ways of sharing information as contained in UNESCO's strategic objectives in distance learning (UNESCO, 2005). Communication between the student and the institution is made possible through the use of interactive and non-interactive media (Bolt, Kerr & Wachope, 2011). It is imperative, therefore, for nations to continue providing quality education to their citizens so as to compete favourably in the global job market and at the same time meeting the demands of the growing socio-cultural world exchanges of the 21st Century (World Bank, 2011).

Distance learning has gained popularity in the recent times among universities in the world. This is due to the fact that universities are able to control the number of learners enrolling for the regular programmes (Farahani, 2003). Effective implementation of distance learning programme calls for utilisation of library resources and services, audio-visual media and application of information communication technology (Naidu, 2006). These resources and services are important because they can be used to communicate to learners in distance locations and at the same time enhancing effective coordination of sessions with groups or individual learners. Similarly, learners have the opportunity of getting information from print media and online library services while out of session (Naidu, 2006). This is to ensure that distant learners are adequately equipped with the right course content and examination techniques. Distance learners are called upon to make maximum utilisation of study centres to enable them read and search for information online (Sacchanand, 2002).

The library is thus the focal point of any centre of learning because it facilitates reading, inquiry and independent study by providing relevant support services and resources for teaching and learning (Candela, Athanasopoulos, Castelli, El Raheb, Innocenti, Ioannidis & Katifori, 2011). The library usually contains information services in different forms such as print media, electronic media and the Internet hence these services are important in supporting distance learning programmes. Most researchers in distance learning point out that digital library is an important component of distance learning programmes (Caspers, Fritts & Gover, 2001).

Ganiyu (2013) observes that University learners patronise their university libraries to search and retrieve relevant and up-to-date information in electronic or online format for effective teaching, learning and research purposes. The study further describes university library patrons as; undergraduate learners, postgraduate learners, researchers, information professionals, staff and other users from outside the university who intend to use the university library. Distance learners are expected to read further beyond class instructions to collect and retrieve information for class work, assignments, seminars term papers, dissertations, theses and projects and this information could be retrieved from online library resources (Ganiyu, 2013).

Online library services have emerged as an important component of research process for distance learners (Owusu-Ansah & Bubuama, 2015). This is because once the learners have conducted basic research such as consulting lecturers or checking at references in their reading lists they turn to online literature to initiate their research process. Notably, online library resources and e-resources have become areas of interest in higher education. As a result of this development, university libraries worldwide have embraced regular application of Internet resources, search engines and use of e-mail services as part of their normal communication process (Kindilchie & Sammarine, 2008; Owusu-Ansah & Bubuama, 2015).

The use of online database is usually faster than searching for the information in the print format more so when looking for the information in the archives. Online library services are more direct especially when one wishes to apply combinations of words to search for several files at ago, a task that can be achieved more easily than when using printed materials (Candela, et al., 2011). Online resources can also be downloaded, printed and

search outcomes saved for future reference and at the same time flexible and can be updated more often than printed tools. Distance learners have the opportunity of accessing online library services from their distant locations away from the university library through the dial-up access (Dadzie, 2005; Candela, et al., 2011; Owusu-Ansah & Bubuama, 2015).

The other advantages of employing online library resources and services consist of; regular accessibility to online resources, the users have got the opportunity of operating from any location, availability of information in one place, numerous resources can be provided and finally, it creates room for easy access to information (Candela, et al., 2011; Owusu-Ansah & Bubuama, 2015). Learners' usage of online library services is informed by the fact that these services enhance the quality of the research work by enabling them to take less time in doing research while taking more time in the writing of their research papers. An online library service also increases learner's ability to obtain more services, a diversity of services, and more current and up-to-date services (Mwatela, 2013).

The advent of online technology has made it possible for universities to come up with different ways of re-structuring their collections and information services in order to embrace the new developments. In responding to the new developments, university libraries have adopted the use of online information services, Information and Communication Technology (ICT) to meet the various demands of library users. Distance learners in spite of their demographic characteristics such as age, gender and religion are encouraged to explore the use of online library resources and services in order to supplement their academic activities (Islam, 2011; Ganiyu, 2013; Nkamnebe, Udem, & Nkamnebe, 2014; Owusu-Ansah & Bubuama, 2015).

Globally, people are increasingly facing higher competition than ever before. Different from any other times in human history, this global competition is intensively knowledge based. ICT in education has made significant progress in China over the last two decades in higher education process and is highly applied in distance based education by the executing agencies, targeting learners and goals to be achieved. The ability of computer technologies to change university teaching and learning is becoming an acceptable norm by education technologists (Finger, 2007; Candela, et al., 2011).

The application of ICT in education is becoming a major contemplation as developing countries concentrate on improving the quality of education. In Africa, for example, Aiona (2008) conducted a study in four main institutions offering distance learning programmes namely, the Open University of Tanzania (OUT), University of Nairobi (UoN), University of South Africa (UNISA) as well as the University of Botswana (UoB). The purpose of the study was to find out the availability of library and information support services for distance learners in those institutions. The findings revealed that there were no library support services in the said universities except for UNISA, which had embraced the most current information technology in providing services to distance learners; thus, library collection could be readily accessed through the Internet (Aiona, 2008).

A little earlier, Kavulya (2004) examined library services provision for distance learning among selected universities in Kenya, including Kenyatta University (KU), Africa Virtual University (AVU) as well as the United States International University – Africa (USIU-A), all based in Nairobi, Kenya. The findings revealed that, the learning as well as information services available in the institutions' libraries were inadequate and limited; thus, could not be accessed easily by distance learners. However, at AVU, the use of

modern technology had taken root since both the catalogue and digital library were available in the Internet to all learners and other library users. Notably, AVU provided digital library in the form of e-journals-books and above all, online archives. On its part, USIU-A, had also made available its 6,000 electronic journals with full text on the Internet to its users (Kavulya, 2004).

Demographics and institutional factors usually offer important clues as to what factors promote distance learners' utilisation of online library services. For example, Islam (2011) conducted research on effects of demographic factors on e-learning effectiveness in Malaysian institutions of higher learning and found that learners' gender and level of education are key elements of e-learning programmes in education. The findings further revealed that learners with broad educational backgrounds had wider knowledge on application of technology and its merits in realising excellent academic achievement because this category of learners are equipped with the latest technological innovations and are up to date with computer usage and applications. Similarly, learners ought to be more computer literate in order to enhance exploration of the Internet and update their level of understanding in information through e-learning (Islam, 2011).

Similarly, Okiki and Asina (2011) assessed factors influencing use of electronic information sources among postgraduate learners in six Nigerian universities, including University of Ibadan, University of Lagos, Onabisi Onabanjo University, Ogun State; Federal University of Technology, Akure University of Agriculture and Lagos State University, the findings showed a positive correlation between utilisation of electronic information and the key concepts, which included learners' background characteristics and institutional factors (Okiki & Asina, 2011).

Various studies have examined the influence of institutional factors on the utilisation of online library and information sources among learners in institutions of higher learning, including distance learners. For instance, Alisona, Kiyngib and Baziraake (2012) reported a significant correlation between utilisation of medical e-resources and poor Internet connectivity; while Owusu-Ansah & Bubuama (2015) identified slow access to Internet facilities as a key institutional factor constraining utilisation of online library services by distance learners at the University of Ghana. Other institutional factors influencing utilisation of online library services include inadequate number of functional computers in relation to the number of learners (Alisona, et al., 2012); as well as inadequacy of ICT infrastructural facilities included shortage of computers, lack of affordable online access by learners, as well as absence of in-depth ICT skills and information searching skills among library staff (Watts & Ibegbulam, 2006). The utilisation of online information sources is also affected by frequent power outages, inadequate assistance by library staff, lack of user support systems, as well as lack of subscriptions to some databases (Molefi, 2008; Alisona, et al., 2012).

In Kenya, the ICT Sector Policy Guidelines notes that “inadequate implementation of ICT policies, regulatory intensions to support rapid development, deployment of ICT infrastructure, limited support for research and inadequate support to ICT support are some of the key challenges facing ICT in Kenya” (Republic of Kenya, 2013). Still in Kenya, a study conducted by Githinji (2014) on factors influencing University of Nairobi Master of Education degree learners’ access and utilisation of ICT facilities, reported a low utilisation of scholarly electronic publications among postgraduate learners, particularly due to inadequate awareness about the availability of e-resources.

Despite enormous efforts made by various institutions to place information and communication as a key component of university teaching and learning, it emerges that both learners and faculty members are unable to make use of online resources and services. While this is usually attributed to diversity of operational deficits on the part of learners, faculty and universities, Githinji (2014) underscores the need for more research aimed at unearthing underlying factors that contribute to this kind scenario in Kenyan institutions of higher learning. It was in this context that the current study was an attempt to critically analyse the influence of demographic and institutional factors on utilisation of online library services by learners enrolled in the distance learning programme of the University of Nairobi.

1.2 Statement of the problem

Distance learners just like on-campus learners are entitled to information in all formats other than paper or print media (Nyambogo, Ongondo and Ongus, 2004). The study further reiterates that despite this position, some distance learners lack exposure to computers while others possess poor attitude towards Information Communication Technology. The records and statistics available at the University of Nairobi library reference section at the time of conducting this study indicated that, only about 22% of distance learners had visited the online library sites while majority of them 78% relied on print based materials in the other library section (JKML,2015). This could probably explain complaints raised by lecturers, that during presentation of their term papers and assignments, majority of distance learners do not use electronic resources to support their academic work despite the fact that the University of Nairobi library subscribe to a number of these services (Githinji, 2014).

The University of Nairobi established an infrastructural ICT Centre in March 2002 which was tasked with responsibility of offering quality and cost effective Communication Technology that meet the changing learning, teaching, research and management requirements of the University. Currently, the registration of courses and selection of degrees, journals and books as well as abstracts from the University are all online (Lumbano, 2004, Githinji, 2014). Despite this positive move, the University is faced with serious challenges that ranges from ; lack of online courses, some basic facilities like computers are lacking in the Extra-Mural centres and still, some of the staff and learners who are supposed to use to use ICT and online library services have limited knowledge of accessing these facilities and services.

This implies that about the 3,406 learners who were enrolled in the School of Open and Distance Learning during the April Intake for the 2013/2014 academic year were disadvantaged in accessing ICT facilities and online library services provided by the University thus hampering their effective utilisation of these services for learning purposes (Mwatela, 2013). Demographic and Institutional factors are often critical in giving clues as to what factors constitute to learners failure to embrace the use of ICT infrastructure and online library services (Mwatela, 2013, Githinji, 2014). It is in this context that this study set out to investigate the influence of demographic and institutional factors on utilisation of online library services at the University of Nairobi.

1.3 Purpose of the study

The purpose of the study was to determine the influence of demographic and institutional factors on the utilisation of online library services by distance learners at the University of Nairobi.

1.4 Objectives of the study

The specific objectives of the study were to: -

- i. Examine the influence of learners' gender on utilisation of online library services.
- ii. Determine the influence of learners' age on utilisation of online library services.
- iii. Assess the extent to which learners' computer level literacy influence utilisation of online library services.
- iv. Establish the influence of learners' awareness of availability of online library services on utilisation of online library services.
- v. Assess the influence of learners' programme of study on utilisation of online library services.
- vi. Determine the influence of Internet connectivity on utilisation of online library services.
- vii. Investigate the influence of adequacy of computers on utilisation of online library services.
- viii. Examine the influence of reliability of power supply on utilisation of online library services.

1.5 Research questions

The study sought to answer the following research questions: -

- i. How does learners' gender influence utilisation of online library services?
- ii. How does learners' age influence utilisation of online library services?
- iii. To what extent does learners' computer literacy level influence utilisation of online library services?

- iv. How does learners' awareness of availability of online library services influence utilisation of online library services?
- v. To what extent does learners programme of study influence utilisation of the online library services?
- vi. How does Internet connectivity influence utilisation of online library services?
- vii. How does adequacy of computers influence utilisation of online library services?
- viii. To what extent does reliability of power supply influence utilisation of online library services?

1.6 Research hypotheses

The study tested the following null hypotheses:

1. **H₀**: There is no significant relationship between learners' gender and utilisation of online library services at the University of Nairobi.
2. **H₀**: There is no significant relationship between learners' age and utilisation of online library services at the University of Nairobi.
3. **H₀**: There is no significant relationship between learners' computer literacy level and utilisation of online library services at the University of Nairobi.
4. **H₀**: There is no significant relationship between learners' awareness of availability of online library services and utilisation of online library services at the University of Nairobi.
5. **H₀**: There is no significant relationship between learners' programme of study and utilisation of online library services at the University of Nairobi.
6. **H₀**: There is no significant relationship between Internet connectivity and utilisation of online library services.

7. **H₀:** There is no significant relationship between adequacy of computers and utilisation of online library services.
8. **H₀:** There is no significant relationship between reliability of power supply and utilisation of online library services.

1.7 Significance of the study

The study may be significant in the following ways: First, the outcome of the study may bring to light the prevailing challenges in the utilisation of library and information services for the distance learners who gain admission to public universities in Kenya. Second, it is hoped that the findings may re-awaken interest on usage of information services to this important group of learners by pointing out areas that require attention.

Third, it is expected that the study may benefit researchers and scholars within the University as it is aimed at supporting University programmes and research for national development. The main objective of adoption of e-resources is to facilitate access to international information via Internet for dissemination of both local and international research output. Fourth, the findings of the study may benefit the ICT department in the library of University of Nairobi to understand factors that influence effective utilisation of online library services by distance learners.

Fifth, the results of the study is intended to act as a basis for coming up with University wide policies for designing, revising and implementing online library programmes with an aim of promoting distance learning opportunities in Kenya. Lastly, the outcome from the study is also expected to aid guide the formulation of the national information literacy policies.

1.8 Limitations of the study

Best and Khan (2004) define limitations as “conditions beyond the jurisdiction of the researcher that may place boundaries on the conclusions of the study and their application to other situations”. Even though efforts were made to validate the instruments, it was not possible to control the attitudes of the respondents which may have influenced the legitimacy of their responses. This was because the respondents would be tempted to give socially conventional answers to please the researcher. In order to eliminate this limitation, the researcher ensured that appropriate explanation was given to the respondents so that the limitation of attitude towards responding to questions was reduced. Confidentiality was guaranteed to the respondents. This was expected to improve respondents’ cooperation and response rate.

1.9 Delimitations of the study

Delimitations refer to the scope or the boundaries of the study (Mugenda & Mugenda, 2003). This study was conducted at the University of Nairobi’s School of Open and Distance Learning, Kikuyu Campus .University of Nairobi was chosen because compared to other public universities in Kenya, it has a well-established Distance Learning programme therefore could provide requisite information to the researcher. Kikuyu Campus was chosen because distance learning programme begun at Kikuyu Campus thus suited the study. Those students who were in their third year of study were picked as respondents owing to the length of time they taken in the programme thus could give relevant information. Librarians served as respondents because of their central role of providing online library services to distance learners. Student demographic and institutional factors were considered because they often offer clues as to what factors constitute to student failure to use ICT and online library services.

1.10 Basic Assumptions of the study

In the study, the following assumptions were made: First, that the University of Nairobi offers online library services in the libraries. Second, that Distance Learners research and finally, that the respondents would provide accurate information regarding the issues raised.

1.11 Definition of significant terms used in the study

Awareness of Availability of Online Library Services: As used in the study refers learners' knowledge concerning the existence or availability of online library services at the University of Nairobi Library System. This was measured by finding out whether learners were aware or not aware of existence of specific online library services offered by the University of Nairobi such as online digital repository, online newspapers, OPAC, electronic books, electronic journals, electronic database and online research papers.

Computer Literacy: Refers to a practical knowledge, Power and ability of using computers to get information. As used in this study refer to learners' ability to use computer skills to access online Library services offered by The University of Nairobi Library. This variable is measured through examining computer literacy levels such as above average, average and below average.

Demographic Factors: This refers to selected characteristics of a population that provides vital statistics of that population. As used in the study denotes learners' gender, learners' age, learners' computer literacy level, learners' awareness of availability of online library services and learners 'programme of study.

Distance Learners: This refers to learners that are taking their studies away from the University campus. As used in this study they refer to those learners that were enrolled in the department of Open and Distance Learning Programme in The University of Nairobi during April intake for 2013/2014 Academic year (BED Arts and BED Science).

E-journals: refers to scholarly journals or intellectual magazines that can be accessed via electronic transmission. They provide materials for academic, research and study.

E-learning: refers to electronic learning or use of internet access services where learners exchange information worldwide in a computer aided learner centre which enhance creativity and allows learners to develop innate critical thinking.

Information Communication Technology (ICT): This is an umbrella term that includes any communication device or application, encompassing radio, Television, Cellular phones, computers and network hardware and software and satellite systems.

Institutional Factors: These are characteristics of an organisation that operate as support systems of a given organisation. As used in this study refers to selected factors such as internet connectivity of ICT infrastructural system, adequacy of computers and reliability of power supply.

Internet Connectivity: ability of an individual or organization to connect to internet using computer terminals, computers and other devices so as to access services. As used in this study refers to ability of The University of Nairobi to put up internet infrastructure that allows learners to connect to the internet in order to access online library services. This ability was measured using three levels such as above average, average and below average.

Online Library Services: as used in this study refers to online digital repository, online newspapers, Open Public Access Catalogue (OPAC), electronic books. Electronic journals, online database and online research papers.

Programme of Study: Refers to the discipline that learners undertake in the university. As used in the study refers to the two programmes of B.Ed. (Arts) and B.Ed. (Science)

Utilisation of Online Library Services: In this study, utilisation of online library services refers to the degree to which distance learners are able to make use online library services to successfully conduct their studies at the university. The services consist of online digital repository, online newspapers, OPAC, electronic books, electronic journals, online database and online research papers.

1.12 Organisation of the study

The study has been organised in five chapters. Chapter one consists of background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, basic assumptions, significance of the study, limitations of the study, delimitations of the study, definition of significant terms used in the study and organisation of the study.

Chapter two focuses on review of related literature. The chapter consists of the following sections: An overview of distance learning in Kenya, distance learning at the University of Nairobi, utilisation of online library services, influence of learners' gender on utilisation of online library services, influence of learners' age on utilisation of online library services, influence of learners' computer literacy on utilisation of online library services, influence

of learners' awareness of availability of online library services on utilisation of online library services and influence of learners' programme of study on utilisation of online library services. The literature review also covered institutional factors influencing utilisation of online library services, including Internet connectivity, adequacy of computers and reliability of power supply. This chapter finally presents theoretical framework, conceptual framework and summary of literature review.

Chapter three describes the research methodology. This consist of the research philosophy, research design, target population, sample size and sampling procedures, research instruments, validity of instruments, reliability of instruments, data collection procedures and data analysis techniques and analytical models used in analysis. Chapter four consists of introduction, questionnaire return rate, distribution of learners by gender, age and programme of study. Learners' gender and utilisation of online library services, learners' age and utilisation of online library services, learners' computer literacy and utilisation of online library services, learners' awareness of availability and utilisation of online library services and learners' programme of study and utilisation of online library services and learners' utilisation of online library services. Also presented in this chapter is a section on institutional factors influencing utilisation of online library services. Chapter five consists of summary of the study, conclusions, recommendations and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews empirical, theoretical and policy literature related to the study. The section is divided into; introduction, overview of distance learning in Kenya, distance learning at the University of Nairobi, utilisation of online library services by distance learners, learners' gender and utilisation of online library services, as well as learners' age and utilisation of online library services. The chapter also covers, learners' computer literacy and utilisation of online library services, learners' awareness of availability of online library services and utilisation of such services, learners' programme of study and utilisation of online library services, utilisation of online library services by distance learners, as well as Government Policy on ICT. The chapter also explores theoretical framework upon which findings have been contextualised. From the theoretical framework, a conceptual framework was derived to show hypothesised relationship between independent and the dependent concepts. Finally, the chapter presents a summary of the related literature and identifies knowledge gaps to be filled by the study.

2.2 Overview of distance learning in Kenya

Distance learning is not a new phenomenon in Kenyan institutions of higher learning. For example in private universities, it is mainly the British correspondence colleges that have been offering programmes in distance learning for many years. In public universities, the University of Nairobi through the College of Education and External Studies (formerly known as the College of Adult and Distance Learning) has been offering distance learning since 1967. From that time, about five public universities, three private ones and five institutions have been involved in the provision of education, through distance learning model (Odumbe, 2004, Nyerere 2012)

In Kenya, the pressure for distance learning has been necessitated by rapid increase in the number of applicants who meet the minimum university entry requirement but cannot be absorbed in public universities due to limited space and staff. The scenario is compounded by over expanding secondary schools enrolment and the demand for better qualified manpower (Kamau & Odumbe, 1995, Nyerere 2012). The large number of universities and institutions reflect the growing interest and concern that Kenya has in ensuring that outreach programmes are available to the many qualified Kenyans who cannot be reached by the conventional mode of delivery. Odumbe (2004) observes that institutions ventures into distance learning even when some of them are not prepared due to a variety of reasons. Those reasons comprise of: the realisation that there are people who cannot be reached by the current mode of study as a result of distance, bed capacity, time and cost, profit motive, response to specific needs such as teachers training, in service workers and to provide alternative mode of learning.

The universities and institutions offer programmes that are similar to those on campus. These programmes are information technology; art-based, business and science using a variety of media such as print-based, audio-cassette, radio, computers and satellite mediated and heavy face-to-face tutorial sessions. However, the distance learning institutions in Kenya have faced numerous problems among them being, few professionals, lack of policy on capacity building and more specifically, inadequate access to online library services by distance learners. In the event that distance learners cannot access online library services, the situation becomes complicated since the present provision of distance learning may lead to poor quality programmes (Nzuki, 2012).

At the University of Nairobi, the origin of distance learning is traceable to the first department of Extra-Mural Studies of the then Makerere University in Uganda in 1953. The department was manned by a resident tutor based in Nairobi, Kenya (Juma, 2002; UoN, 2007). In 1963, the mandate of running the Extra-Mural Studies was given to the University College of Nairobi. During the same year, another College known as the College of Social Sciences which had been operating as a centre of adult learning based in Kikuyu Campus was made part of the University College of Nairobi. The centre was later merged with the Extra-Mural Department to form the Institute of Adult Studies operating under the chairmanship of one director. The residential centre was later renamed “Adult Studies Centre” (Syagga, 2001, Nyerere et al., 2012).

A correspondence course unit was formed in 1967 to operate as an arm of the Institute following the recommendations of the Inspection and Visitation Committee which formed the six colleges of the University of Nairobi. In September, 1985 the institute was upgraded to college status after the recommendations of the University Council hence it was called the College of Adult and Distance Education with three divisions namely: Institute of Extra-Mural Studies, School of Distance Studies and the Institute of Adult Studies. A new faculty known as the Faculty of External Studies was formed in 1965 following the recommendation of Kenya Education Commission to offer off campus degree to distance learners (Syagga, 2001, Agalo, 2008). The report was accepted and adopted by the senate as well as the Government of Kenya during the 1985/1986 financial year; thus, money was voted for its implementation. The faculty was legally transformed into the University following its acceptance by the University council in September 1985 (British Council, 1992, Agalo, 2008).

Many working parties were charged with the task of finding ways and means of establishing a faculty which would serve as a service department within the University of Nairobi to offer distance learning degrees but without success (British Council, 1992, Agalo, 2008). In 1976, a feasibility study was carried out whose recommendations suggested that such a degree programme could be established under the then Institute of Adult Studies. However, due to the high financial implications, the report was simply received and no action was taken. From the interest expressed for such a programme and inability of the University of Nairobi internal departments to take all those who met the University requirements, the senate set up a task force committee in 1983 to look into the possibilities of setting up an external degree programme. The committee submitted its report in August 1983 to the senate recommending the establishment of the faculty of external Degree Studies (renamed Faculty of External Studies). The report was embraced by both the senate and the Government of Kenya and in 1985/1986 financial year, money was voted for its implementation. The faculty legalised the establishment in the University of Nairobi having accepted the new statutes governing it by the University Council in September 1985 (British Council, 1992, Nyerere et al.,2012).

The faculty comprises of three departments namely, Educational Studies, Extra-Mural Studies and Distance Studies. The faculty is headed by dean while the departments are headed by chairmen. The faculty was later renamed the School of Continuing and Distance Education (SCDE) following the recommendation of the senate on the rationalisation and downsizing of University Programmes in 2003. In order to assist distance learners realise their objective in learning, the University provides a variety of support services both in print and online format. In a nutshell, in order to realise the core mandate of the University,

the library need to play an important role in ensuring that there was access to selected portion of worlds intellectual record and also enhancing proper and planned acquisition of information literacy at the same time providing user friendly information services. The library thus has repository and archival function for storing university publications. It also has the responsibility of creating a conducive environment so as to provide its services for extended period of time (British Council, 1992; Juma, 2002; UoN, 2007).

An Information Communication Technology (ICT) affects all sectors of society. Internet originally designed for communication or research is a regular tool for scientific information and interaction within and between Universities (Henderik, Hoff & Hardy, 1996). ICT systems are characterised by their ability to be used synchronously and asynchronously, on-line and off-line and by being able to mix several media into multimedia environment. This means that ICT systems are able to facilitate the interaction between teaching staff and their students (collaborative learning) as never before. Moreover they can differentiate learners with regards to learning contents and methods of instruction; last but not least, ICT systems provide world wide access to information online in terms of learning resources and services or programmes.

In an attempt to initiate and extend e-learning and other technology based Open Distance Learning (ODL) opportunities, the University of Nairobi established an Open Distance and e-Learning Centre at Kikuyu Campus. There was also an ICT centre located in Chiromo Campus to provide learning activities at the University of Nairobi. Amongst these activities are interactive self-learning materials that are available on the e-learning platform. It is a multimedia portal that allows learners to register to course and access course materials

(Nzuki, 2012). Despite effort made by the University to provide online library services to its distance learners, access to these services has become a serious challenge to this category learners (Mwatela, 2013, Tarus et al., 2015). This study investigated the influence of demographic and institutional factors on utilisation of online library services at the University of Nairobi.

2.3 Utilisation of online library services by distance learners

The primary objective of a library or information centre is to serve the interest of its clients (Elsenberg, 2008). Effective realisation of this goal calls for involving learners in library instruction training. This is also known as bibliographic instructions. Studies on user education revealed that librarian orientation and bibliographic instruction have been the major activities of user education that are under taken in academic libraries (Chacha, 1990).

Library instruction is a course on information retrieval which is characterised by greater probability of high learners' motivation by helping learners gain realistic expectation of library resources and emphasising that the library staffs are available and willing to help (Loftin, Long & Rouge, 1983, Mannan, 2009). Similarly, as a result of library instruction, librarians are equipped with the knowledge of identifying the source of information they come across. This is made possible the method known as "point of use" while at the same time helping college learners acquire necessary skills for searching and retrieving information in various forms, identifying information within the library and isolating between primary and secondary sources of information (Moughan, 2001, Deshmukh, 2005). This method serves in saving library staff time and is the most effective method of instruction for users in groups. An effective library instruction programme should result in

learners gaining skills to isolate, locate and enhance effective use of available library resources and services. Such abilities lead to proper utilisation of library and information resources with the least efforts by the individual users while at the same time providing room for creativity and innovativeness in information searching (Moughan, 2001).

In cases of journal articles student of adequate skills should be able to identify databases appropriate for their fields of study, formulate a search strategy, select needed items and use them to develop their knowledge base. Library instruction therefore, helps counter student embarrassment, diffidence and unwillingness to ask for help (Chacha, 1990, Odera & Mayeku, 2011). Course or curriculum integrated library instruction provides learners with the opportunity to familiarise with information services and tools in their respective programmes of study, train in their effective use and prepare them to conduct a search for information resource in any field of inquiry. Such programmes have proved useful in providing learners with an opportunity to familiarise with terminology of their study domain through employment of their course domain as example while helping student to form a sound foundation to develop information literacy skills necessary for independent, self-driven learning while preparing them for lifelong learning (Chacha, 1990, Tarus et al., 2015).

The library is tasked with the responsibility of improving quality of student performance, maintaining and raising the standards of education in higher institutions of learning at the same time facilitating research initiatives. The degree of awareness and availability of learning materials has been pointed out as one of the factors that promote quality human development for professionals, scientists and managerial personnel. In the event that

Universities are unable to provide adequate library and information services, the educational outcome will be interfered with hence lowering the social economic growth of the country (British Council, 1992, E-readiness survey of Kenyan Universities, 2013).

Several scholars have conducted studies on role of information technology on the library management. For example, Bruckland (2001), conducted a survey entitled “Re-defining library B services” with Berkeley Education Library Literature, the results showed that for the last of twenty five years, there has been enormous investment in information technology among University libraries. This stems from the fact that for libraries to function well as required in the face of expansion of stock and variety of media there was need for up to date technological equipment (Bruckland, 2001, Mulwa et al., 2013).

Bruckland (2001) further posit that, the primary principle behind the adoption of information technology is the desire for efficiency and rationalisation in distribution and management of library materials and that paper library had serious limitations that automated and electronic libraries became a matter of necessity. For instance, paper library is a strictly localised medium that require the presence of the library material and the user all in one place at the same time, it is also disadvantageous because only one person can use a single paper document at a time, secondly, paper as a medium is rather inflexible since no reformatting can be done and finally collections on paper are bulky and creates storage problems (Bruckland, 2001, Mulwa et al., 2013)

In a similar study by Rosenblatt (2001) on information technology investment in research libraries, the results indicated that the first stage of automation contained cataloguing and circulation and was aimed at bringing down the cost and time taken in to operate the

system. Automation of activities has greatly increased the data processing in libraries across the world. It has eliminated activities that were time-consuming routine activities and facilitated the collection of useful statistics thus transforming user studies and services. Rosenblatt (2001) further reports that, the use of electronic processing systems has enabled libraries to recognize their work and make them rationalised through the use of detailed statistics thereby being able to conduct user studies and expand services and that through useful reports and more accurate information base more reasonable strategic and operational decision-making can be made possible in distance learning”. This study hence provided an opportunity through which such knowledge can be tapped and used for effective utilisation of online library services in distance learning (Rosenblatt, 2001, Tarus et al., 2015).

In a study by Roes (2001) on digital libraries and education, trends and opportunities in London, the findings reiterate that “the creation of digital libraries is dependent on the libraries’ ability to access the growing digitally published information through digital technology. The greatest advantage of this is that digital libraries are available on 24-hour basis from anywhere in the world, offering flexible arrangement for learners and scholars and even though still in infancy, the creation of digital libraries is gaining momentum since in the area of electronic books; efforts have been made to transform books in print into digital form. The development of new information technologies such as the world-wide web has led to increased access to scholarly communication and the end result of this endeavour is the quick transmission and publication of electronic journals instead of relying on print journals. Electronic journals are more important because unlike those in print format, they have the advantages of speedy delivery, availability, unlimited by time or geographical location and searching facilities” (Roes, 2001, Mulwa, 2013).

In a similar study by Kavulya (2004) on libraries and their practices among Public Universities in Kenya, the outcome of the study indicated that electronic information can out rightly be transferable thus eliminating the main obstacle to resource distribution is the cost involved and lack of efficiency in coordinating library services. Tarus et al.,(2015) observes that, the shift to electronic journals also removes the requirement for space while at the same time facilitating the production and publications of materials for which print material is inadequate. Instructing distance learners on library use therefore, calls for improvements in delivery techniques such as application of videos, web-based tools and video conferencing. It also advocates for working close with IT persons in order to provide necessary advice and prepare documents for electronic tools and transforming the same to suit the unique needs of distance learners while at the same time restricting access to such information.(Kavulya, 2004, Tarus et al.,2015). This study aimed at examining influence of demographic and institutional factors on utilisation of online library services at the University of Nairobi.

2.4 Demographic factors influencing utilisation of online library services: empirical literature

2.4.1 Learners' gender and utilisation of online library services

The issue of gender as a variable in technology usage has been researched on by researchers and scholars in pre-university, university and work environment. The findings indicate differences in male and female usage and attitudes towards technology application. The gender gap seems to be narrowing, but remains persistent overtime even though the profile appears to be changing. From educational policy perspectives, although the gap seems to be less of issues but male and female gender have demonstrated differences in utilisation of educational technology leading to conclusion that there was little or no gender gap in terms of actual access to information technology (Godfrey, 2011).

Inoue (2000) carried out a study on university learners' preference for learning by Computer Assisted Instructions (CAI). The results of ANOVA indicated that the main global effect of gender was not significant, whereas the main effect of academic status was significant. The study further observed significant difference between undergraduate females and graduate males, supporting the assumption that computer experience has stronger effect than do gender differences on attitudes towards use of computers in learning. Bimber (2000) investigated the gender gap on utilisation of the Internet by postgraduate learners at Fuzhou University in Peoples Republic of China, the results indicated a wider variation in gender gap in utilisation of the web. The results further pointed out that women are likely to be less users of the Internet. This has been attributed to various gendered technology that give preference to male values; content that is inclined to men, sex differences in cognition and/or communication, and socio-economic differences.

In a study by Odell, Korgen, Schumacher and Delucchi (2000) on online applications used by male and female of Whiteland College in London, the results indicated that the most pronounced gender differences was found in web use. For example, male learners in the college preferred using the Internet for purposes of attaining recreational features such as game playing, gambling, visiting adult-only sites, accessing news groups and discussion forums, staying abreast of news development and seeking information for personal use than female counterparts who were more interested in visiting the Internet to reach out to friend and family members.

Ford, Miller and Moss, (2001) carried out a study on the role of individual differences in the Internet searching an empirical studies in America, the results indicated that the female gender faced difficulties in searching for information online, feeling incompetent and uncomfortable while applying the Internet thus they use the Internet less frequently than male gender. In a similar study by Oyeniyi (2013) on gender differences in information retrieval skill and use of electronic resources among information professionals in South west Nigeria, the results indicated that qualities and behaviour of men and women is manifested in their cultural and social construction of their personality.

A study by Rahman, Mahmud and Jamaludin (2013) on age, gender and race differences in the use of digital library among Malaysian postgraduate learners in Malaysia further revealed that men use information and communication technology slightly more than women who are characterised with rare usage and non-use of Online Public Access Catalogue (OPAC). The study showed that there were few female respondents who could apply the use of digital library as revealed by mean score distribution between male and female respondents. The male gender frequently used digital library services when compared with the female gender.

Enock and Socker (2006) conducted a similar study on age, gender, ethnicity and the digital divides among university learners in an Open University where gender appeared as a significant factor in post-secondary learning. In another study conducted in Australia by Crystal (2008) on effects of personal characteristics on learner's online learning readiness, the findings indicated significance mean difference in learning preferences. For example, the analysis of the hypothesis indicated obtained a computed $F_{(1, 302)}$ statistic of 8.580, with a p -value of <0.05 , upon which the null hypothesis was rejected and the alternative hypothesis was accepted, stating that 'learning preferences are significantly different across gender'.

Taylor and Hastings (2011) carried out a study in joint special operations in university of Florida whose purpose was to find out factors influencing virtual patron satisfaction with online library resources and services. From the findings of the study, it was evident that there was a significant relationship between the female gender and satisfaction with online library resources and services. On the other hand, a study by Davis and Wong (2007) on conceptualisation and measuring the optimal experience of e-learning environment revealed that there was no gender difference in mastering e-learning experiences.

Godfrey (2011) further reiterates that men and women use the Internet differently. This was revealed by their frequency of use, duration and content covered when accessing the Internet. In another study by Zhou and Xu (2007) on gender factor in technology adoption learning environments between 1986 and 2006 in Chicago, USA, the findings revealed that gender gap persisted. This finding supports a previous work by Koohang (2004) on learners' perception towards use of digital library, which identified gender as a significant factor in digital library utilisation. For example, the male gender registered higher positive perceptions towards use of digital library.

In a study conducted by Ganiyu (2013) on influence of demographic factors on use of online library resources by undergraduate learners in two private Nigerian university libraries, the results reported that, there was no significant relationship between gender and utilisation of online library resources and services ($r = 0.44$; $p > 0.05$). A study by Okiki and Asina (2011) investigated factors that influence the use of online information resources among postgraduate and undergraduate learners in six Universities in the South West Nigeria, namely; University of Ibadan, University of Lagos, Olabisi Onabanjo University, Ogun State; Federal University of Technology, Akure; University of Agriculture Abeokuta

and Lagos State University. The outcome of the study indicated that the male gender tended to browse the Internet for enjoyment while the female gender only accessed the Internet for work related functions.

The studies reviewed seem to show that male and females tend to respond to online technology differently. For instance, while some of the foregoing studies tend to show significant differences others do not. Furthermore none of the studies has been conducted in Kenya on the issue of online library utilisation in relation to gender. Therefore, there was need to investigate these issues further to confirm whether there was any relationship between distance learners' gender and utilisation of online library services.

2.4.2 Learners' age and utilisation of online library services

In a study carried out by Koohang (2004) on learners' perception towards use of digital library in weekly web-based distance learning assignment portion of a hybrid program, the findings indicated that age is not a significant factor but there was a positive correlation between knowledge of the Internet and gender. In another study conducted by Koohang (2003) on learner's perception towards the web- based distance learning activities where special attention was given to age, gender and experience with the interne as independent variables versus perception towards the web-based distance learning as the dependent variable. The results showed a positive relationship between age and learners' perception towards web-based distance learning since all age categories supported the view that the web-based distance learning activities promoted learning.

In a study by Tayler and Hastings (2011) on factors influencing virtual patrons' satisfaction with library services, the results reported a significant relationship between the age group learners and their satisfaction with online resources. For example, learners in the age group of 17-20 years were significantly ($p < 0.05$) highly satisfied with the available online resource and services. This was closely followed by learners in the age group 26-40 years and older groups. In another study conducted by Ganiyu (2013) on influence of demographic factors on use of online library resources by undergraduate learners in two private universities in Nigeria, the results recorded a stronger positive correlation between age and utilisation of online library services by the university undergraduate learners.

Bar-Ilan, Peritz and Wolman (2003) conducted research on use of electronic database and electronic journals accessed through the web by academic staff in Israel. The outcome of the study registered significant relationship between the age of student and use of electronic journals. For instance, it emerged from the findings that student and staff members in their youthful ages were able to use electronic journals more often than their counterparts who were elderly. On the contrary in another research on the medical teaching and research staff at the University of Tennessee, reported that age was a significant factor towards learners' perceptions on whether to read articles on paper or in electronic or online format (Bush, David & Tenopir, 2003). These results however, contradict the findings of other studies. For example, in a similar study by Jamali, Nicholas and Huntington (2005) on the relationship between age and use of online journals among the astronomical scientist, the revelation that emerged from the study was that there was a positive correlation between age and utilisation of electronic journals. The results further showed that the mature and elderly researchers had a stronger gesture of embracing electronic journals for the purpose of acquiring higher status in academic field.

An evaluation and interpretation of recent studies using the University of Tennessee, Knoxville as an example, the findings indicated a stronger relationship between the younger users and adoption of digital resources than the older users. The results showed that younger users were more willing to embrace the use of electronic resources than older users as they relied more on electronic resources and at the same time rated themselves as experts in using these resources (Bush et al., 2003). Okiki & Asina (2011) examined use of electronic information sources by postgraduate learners in Nigeria. The outcome of the study revealed that there was a positive correlation between age and use of computers and online library services as younger generations tended to use computers more often than older adults who rarely used computers in decision making. For instance, they only made few corrections and had to take time before arriving at their decisions than younger adults.

Mungania (2003) carried a study on seven e-learning barriers facing employees in University of Louisville where the results asserts that there was a stronger relationship between e-learning and age of employees. For example, the middle-aged people formed 80% of the respondents (45 years and below) of e-learning users. This implied that the majority of e-learning users were middle aged people who were below 45 years. In the foregoing research literature review; it is evident that the findings show conflicting results. For instance, while some of the studies reveal that age has significant influence on online library accessibility, others indicate there was no significant difference. Besides, none of the studies has addressed the issue of age in relation to use of online library service in distance learning. Therefore, there was need to investigate this issue further in order to find out the relationship between learners' age and utilisation of online library services by distance learners at the University of Nairobi.

2.4.3 Learners' computer literacy and utilisation of online library services

A computer is electronic equipment designed for storage, organisation and searching for information, working out mathematical problems and also controlling other machines (Merriam-Webster Collegiate Dictionary, 2003). Using the computer calls for training people to acquire computer. Computer-based global information system comprise of many networks that are interconnected. Each network may link up to tens, hundreds, or even thousands of computers thus providing the sharing of information from one computer to another. It also connects computer resources such as powerful supercomputers in order to access information. In this regard, learners need to undergo training to enable them acquire the necessary skills and knowledge about computer operations (Ackermann, 1996, Kashorda & Waema,2014).

Researchers in library science have recommended the possible benefits of computer literacy on accessing and retrieving information online. For example, computer self-efficacy has been cited as one of the qualities that increase one's ability to use computers. This ability is grounded in Social Cognitive Theory that puts it as a predictor to utilisation of ICT. The theory posits that, "people with higher levels of confidence in using computers in general are more likely to find the digital library easy to use. University authorities; therefore, have been encouraged to organise training programmes on different computer software to enhance familiarity with computing technologies among library users" (Compeau Higgins & Huff, 1999,Oyoo & Kalewa, 2014).

In a study by Tayler and Hastings (2011) on factors influencing virtual patron satisfaction with online library resources and services in Florida, the findings revealed that online users were more satisfied in performing computer related tasks. For example, persons with wide computer knowledge were able to perform several computer related tasks and at the same time were more willing to be involved in the utilisation of online library services. The findings were in agreement with other related studies on computer experience and use of digital information systems. For instance, in a study by Koohang (2004) on learners' perception towards use of the digital library in weekly web-based distance learning in Britain, the results indicated that there was a positive correlation between computer experience and student satisfaction with online library services.

In a similar study by Koohang and Ondracek (2005) on users view about the usability of digital libraries in Britain, the findings indicated that computer experience enhanced effective utilisation of online library services. Conversely, the results are in contrast to Blackman (2003) who carried out a study on perceptions and attitudes regarding library services available to learners enrolled in online degree programmes. The findings indicated that there was no significant difference between computer experience and learners satisfaction with digital library. In a similar study by Metzger, Flanagin and Zwarun (2003) on college student web-use, user perception of information credibility and verification behaviour, the results revealed that there was heavy reliance on the web by college learners for both general and academic information and there were higher chances that this would increase with time. The report further stated that college learners tend to believe information from the Internet than do people from a more general adult population (Mbugua, 2013).

Sheard and Lynch (2003) conducted a study on accommodating learner diversity in web-based learning environment; the findings points out that different learners respond in different ways to online library utilisation depending on their previous experience or knowledge in computer. The result further reiterates that there was no single format that can meet the diverse needs of all learners. This explains as to why there are constant challenges facing online learning. Therefore, cases of learners' familiarity with the learning environment and the need to improve their skills and confidence in Internet applications and information technology are common phenomena.

Canon and Grant (2000) conducted a study on utilisation of an interactive website to educate about cultural diversity and societal oppression, the results of the study strongly indicated that there was a positive relationship between using a web forum and learners learning. For instance, the use of the web can encourage dialogue among learners as well as between learners and their lecturers thus supporting learning activities in a safe environment. This calls for designing the technology infrastructures for institutions of higher learning in order to provide quality education for learners and faculty members (Nyerere, 2009).

Demb, Erickson and Hawkins (2004) in a study on learners' reaction to campus-made laptops computer initiative in London, reported that "laptop computer was an essential part of college learning for learners for typing papers, accessing the Internet, presentations, storing information and searching for references leading to significant differences in learners' study habit as well as their academic and social lives.

E- readiness survey of Kenyan Universities (2013) pointed out that although all university are connected to the national fibre backbone network Universities are not investing sufficiently in their internal campus backbone and wireless network infrastructure that will make it easy for students to use their laptop, computers and smartphones to help learners with classroom assignments, e-mail messages and individual researches or projects for the course. The above study also indicated that learners' perception of the success of faculty in integrating the laptop computer to their academic success is tightly correlated with their perception of the success of the faculty in integrating the structure of classroom activities (E- readiness Survey, 2013)

In another study by Sam, Othman and Nordin (2005) on computer self-efficiency, computer anxiety and attitudes towards the Internet among undergraduates in Animas, the findings revealed that higher education demands improved academic resources and services not just for professional growth and development but also for preparation for real life experience in the actual work environment where they will be required to apply such knowledge. In another study by Ojo and Akande (2005) on learners' access, usage and awareness of electronic information resources at University College Hospital of Ibadan Nigeria, the results of the study indicated that lack of information retrieval skills among undergraduate medical learners hampered their use of resources in the Internet; thus, making level of usage of resources very low.

While several studies have been done on influence of information literacy on utilisation of online library services, this area has not been adequately studied in Kenya. It was therefore, this gap that this study intended to fill.

2.4.4 Learners' awareness of availability of online library services and utilisation of online library services

Studies done by different scholars have shown that information availability alone cannot promote accessibility and utilisation of any form of information. This call for investment in marketing in order create awareness about the existing resources and services so as to attract users. For example, in a study by Tiefel (1995) on library use in Ogun State University in Nigeria, the findings reported low usage of library due to lack of awareness on the part of users.

Ozoemelem (2009) also conducted a research on use of electronic resources by postgraduate learners of the Department of Library and Information Science of Delta State University in Nigeria. The results of this study indicated that it is important to provide information to library users because this knowledge may help them understand and come to reality with the existing library resources at the same time boosting their morale towards searching for such services. The findings further point out that through such awareness, library users are updated on more comprehensive and scholarly articles that are on the web. Knowledge of search domain is one of the internal control factors that may positively affect perceived ease of use of digital libraries. The outcome of research on information retrieval systems indicates that the domain knowledge can support more efficient search by helping users to identify and isolate relevant information from irrelevant resources thus facilitating learning of search principles and formulating more accurate queries (Meadow, Wang, Yuan & Yuan, 1995, Mwatela, 2013). Users need to familiarise themselves with the subject domain they are looking for in order to enhance their search activities. The findings are in agreement with the recommendations of library science researchers that emphasise that this provides customised interfaces to different individuals (Archer, Head & Yuan, 1996).

Mwatela (2013) carried out a study on factors influencing utilisation of library services by learners of Mombasa Campus, University of Nairobi, Kenya. The results showed that awareness is gained through library orientation and its objective is to introduce the student to the library in terms of the physical plant, policies and procedures as well as resources and services. Library orientation and instruction is needed by the university learners to enable them find their way intelligently through the information maze. Further, library orientation thus refers to the act of introducing the student and faculty to the library, its collections, important areas and resources, basic elements of using library and the services provided by the librarian. By highlighting the special features of the library to new learners, the librarians are able to create curiosity which later on serves as a motivation to use the library.

Mwatela (2013) further posit that library orientation is a programme is a warm welcome to the new learners, to offset fears of going to the library and exposing their ignorance by asking for direction and assistance. It aims at letting new learners know that the library consist of people, books and to show them that people working in the library are not too busy to help them. The programme is designed to demonstrate that people working in the library are approachable and friendly. In a similar study by Ojo and Akande (2005) on learners access, usage and awareness of electronic information resources in Nigeria, the findings revealed that, during orientation, the new learners are introduced to a few titles of reference sources and indexes for the purpose of awakening them to the wealth of resources beyond what they knew in the high school and other institutions. In simple terms such orientation is expected to motivate a desire for further assistance in using the library.

Orientation provides learners with the opportunity to learn about many varied resources available for their use. Library orientation creates awareness to library users of the variety of library and information resources available through the library, for instance; it is during library orientation that the new learners are informed of the online electronic resources that can be accessed through the library and information system of an institution.

Gadd, Hunt, Newbold and Stubbings (2001) in a study on reviewing library induction practices at Loughborough University, the results indicated that induction sessions aims at emphasising the role of the library in supporting student learning at the campus by making student develop a familiarity with library and information resources and services available. From the previous studies, it appears that inadequate research has been done in relation to online library awareness among distance learners in Kenyan public universities more so at the University of Nairobi hence the need to conduct this study to establish influence of online library awareness on distance learners use of online library services.

2.4.5 Learners' programme of study and utilisation of online library services

A study conducted by Crystal (2008), which focused on effects of personal characteristics on learner online readiness, found that, the programme in which learners are enrolled for example, Master of Business Administration (MBA), and Master of Science in International Business (MSI), might play a role in learners usage of online library services. From the foregoing literature review it is evident that very little if no study has been done on this area, more so in Kenya; hence, the call for this study to assess the influence of learners' programme of the study on utilisation of online library services at the University of Nairobi.

2.5 Institutional factors influencing utilisation of online library services: empirical literature

The concept of institutional factors is broad and may be addressed from the financial, human resource, support mechanisms as well as physical facilities and ICT infrastructural prisms. Notably, utilisation of online library services by learners can be influenced by all the four broad categories of factors. This study examined the influence of ICT infrastructural facilities and support systems factors on the access and utilisation of online library services by distance learners at the University of Nairobi.

2.5.1 Internet connectivity and utilisation of online library services

Various studies have established the relationship between utilisation of online library services and multiple aspects of Internet connectivity. For instance, in Uganda, Alisona, Kiyigib and Baziraake (2012) examined factors affecting utilisation of medical e-resources in Ugandan public universities offering medical education. Among other findings, the study reported a significant correlation between utilisation of medical e-resources and poor Internet connectivity. Notably though, library users had no control over how many Internet access points the libraries could have. Ideally, they should be as many as the number of users but this was not the case in the institutions involved in the study. With limited bandwidth and lack of Internet in some offices, it became difficult for learners to readily access Internet, leading to poor usage of the resources. The influence of slow access to the Internet facilities was also reported by the study conducted by Owusu-Ansah & Bubuama (2015). The authors pointed out that bandwidth limitations of the internet constrained access to relevant online resources by distance learners.

Watts and Ibeghulam (2006) conducted a study on barriers to the use of online or electronic library resources available at the Medical Library College of Medicine, University of Nigeria at Nsukka. Among other findings, the study revealed that utilisation of online library services was constrained by inadequate ICT infrastructural facilities, including low internet connectivity and high cost of Internet access, through cybercafés. On the same note, Ondari-Okemwa (2004) conducted a study on impediments to promoting access to global knowledge in Sub-Saharan Africa in Nigeria. Among other findings, the study identified prohibitive cost accessing Internet through cybercafé as a key factor preventing utilisation of online information resources in developing countries.

Still in relation to Internet access, Alisona, et al. (2012) noted that utilisation of medical e-resources by learners was also affected by long and complicated access passwords for databases such as HINARI and SAGE. Consequently, learners who forgot passwords were less likely to utilise databases. The application of complicated passwords frustrated medical e-resource users. In her study which examined access and utilisation of digital information services at the University of Nairobi library, Okongo (2014) found a significant relationship between Internet connectivity and utilisation of digital information resources and services in the library. Even though 42 (66.7%) respondents indicated that Internet connectivity in the University Library was reliable, about one-fifth (19.0%) believed that Internet connectivity was unreliable.

A study conducted by Dilek-Kayaoglu (2008) identified low bandwidth as one of the factors constraining utilisation of e-resources. According to Shukla and Mishra (2011), majority of research scholars have singled out low Internet connectivity and low connectivity speed as the major infrastructural problems in accessing e-resources by

university learners in developing countries. Similar findings were mentioned by Madhusudhan (2010). In the latter study, respondents noted that it took too long to view or download pages and they found it difficult to get relevant information. Delay in downloads and inaccessibility of some websites were also identified by Obuh (2009) in a study that was conducted in Nigeria.

2.5.2 Adequacy of computers and utilisation of online library services

Alisona, et al., (2012) further reported a significant correlation between utilisation of medical e-resources with the number of computers. Notably, in all the three institutions involved in the study, inadequacy of computers was a universal challenge and constraint to utilisation of medical e-resources. To illustrate the point, the authors noted that during the academic year 2009/10, Makerere University College of Health Sciences admitted 800 graduate students but the computer laboratory had only 16 computers. Even though the library provided wireless Internet connection, very few learners had personal laptops. Hence, limited numbers of computers available for use, especially by students has an influence on usage of the e-resources. Notable, inadequacy of computers caused congestion at information search points, which in turn, resulted to delayed completion of academic assignments. In their study, Watts and Ibeghulam (2006) reported that utilisation of online library services by learners was influenced by inadequacy of ICT infrastructural facilities, including computers. Chimah and Nwokocha (2013) also found that utilisation of electronic information resources by postgraduate library users in Southeast Nigerian federal universities was constrained by inadequacy of computers and Internet facilities in their libraries.

2.5.3 Consistency of power supply and utilisation of online library services

In their study, Alisona, et al. (2012) identified frequency power outages as a key factor influencing utilisation of medical e-resources in Ugandan universities. Notably, none of the three institutions involved in the study had alternative sources of power to fall back to in events of power outage. Ingutia-Oyieke and Dick (2010) also identified incessant power outages on campus as one of the infrastructural issues affecting utilisation of e-resource at the University of Eastern Africa Baraton. Power outages affected the LAN Internet connectivity, causing frequent system break down and damaging computers in the library. The challenge of frequent power outage was also singled out by Chimah and Nwokocha (2013) as a key barrier to access of e-resources.

2.6 Aspects of ICT Policy that Influence Utilisation of Online Library Services

Githinji (2014) reiterates that “...the main objective of a national ICT policy is to set out aims, principles and strategies for delivering pertinent services. The Government of Malaysia has identified three areas of policy formulation to support effective implementation of ICT and education. The first policy is that of providing ICT to all learners; thus, making ICT an enabler in bridging digital gap in the school sector. The second policy advocates for the role and function of ICT in education. For instance, using ICT in teaching and learning, as well as ensuring that its inclusion either as part of a main subject or as a subject on its own in the school curriculum. The third policy emphasises using ICT to increase productivity, efficiency and effectiveness of the management system”.

Furthermore, Githinji (2014) continue to argue that “...the Malaysian Government through the Ministry of Education is committed to utilising the following multi-prong strategies to ensure that the objectives of ICT in education are achieved: preparation of sufficient and up-to-date tested ICT infrastructure and equipment to all educational institutions, roll-out of ICT curriculum and assessment and emphasises the integration of ICT in teaching and learning, upgrading of ICT knowledge and skills in learners and teachers, increased use of ICT in educational management, and upgrading of the maintenance and management of ICT equipment in all educational institutions in Malaysia. In the near future, every student will have access to a 4G network in school through IBestariNet which serve as virtual learning platform that can be used by teachers, learners and parents to share learning resources, run interactive lessons and communicate virtually”.

In Kenya, the Ministry of Education’s policy points out that the “...the primary aim of the ICT policy is to enhance sustainable economic growth and development. The policy also advocates for poverty eradication through productive and effective technologies; and aims at pursuing progress, towards full socio-economic inclusion of citizens through universal access. Further, the policy looks to stimulate investment in the ICT sector while at the same time encouraging the spirit of innovation through research and development” (Ministry of Education, 2006). On the same vein, Kandiri (2012) asserts that the government must be one of the most important ICT promoters and consumers through e-government, education, science and technology systems, public health, social plans and economic plans. Different stakeholders and in particular the private sector then make inputs into the policy process and affect its outcomes. These include regulatory authorities, broadcasters, telecommunication operators, private network operators, service providers, content providers, software developers, vendors, education providers and end users”.

The National ICT Strategy for education, in response to the policy statement, outlines strategic pillars aimed at implementation of ICT framework as “digital equipment connectivity and network infrastructure; technical support; harnessing emerging technologies; digital content development; integration of ICT in education; training, including professional development; research and development; partnership and resource mobilisation; legal and regulatory framework; and monitoring and evaluation” (Ministry of Education, 2006). The strategy is based on the vision that ‘ICT is a universal tool in education and training’.

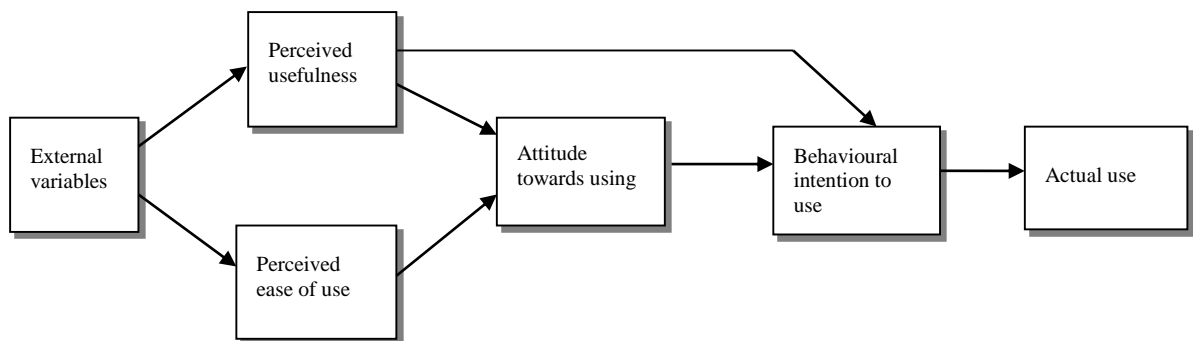
The overall objective of the plan is to ensure that systematic efforts are made towards strengthening adoption and use of ICT in the education sector with appropriate attention given to education development priorities as outlined in the Economic Recovery Strategy for the Wealth and Employment Creation 2003–2007, Sessional Paper No. 1 of 2005 entitled “A Policy Framework for Education, Training and Research” and the United Nations Millennium Development Goals (MDGs). In addition, the Ministry of Education developed the Kenya Education Sector Support Programme (KESSP) in 2005 that featured ICT as one of the priority areas with the aim of mainstreaming ICTs into the teaching and learning process.

2.7 Theoretical framework

Over the past century, social scientists have advanced various theoretical frameworks and models to explain technology acceptance behaviour among various groups in society. These theories and models provide details of technology acceptance process, as well as key personal factors influencing preparedness to use technological innovations. One of the

models identified by the literature review was Technology Acceptance Model (TAM), which was formulated by Davis (1986). TAM is an intention-based model that was specifically tailored for modeling user acceptance of technology. It is capable of explaining user behaviour patterns towards technology across various populations, while at the same time being both parsimonious and theoretically justified (Davis, Bagozzi & Warshaw, 1989). Figure 2.1 shows the linkage of TAM's key concepts.

Figure 2.1: Technology Acceptance Model



Source: Davis et al. (1989)

TAM was developed from the constructs of the Theory of Reasoned Action, which posits that a person's performance of a specified behaviour is determined by his or her behavioural intention to perform that behaviour; in turn, behavioural intention is jointly determined by the person's attitude and subjective norm concerning the behaviour in question. The model specifies causal linkages between two key sets of constructs: one, perceived usefulness and perceived ease of use; and two, user's attitude, behavioural intentions and actual technology usage behaviour.

Perceived usefulness is the user's subjective probability that using a specific application system is likely to increase his or her desired performance outcomes, either in an organisational context or in personal engagements (Davis et al., 1989; Mathieson, 1991; Venkatesh, 1999). User belief in the usefulness of a system may be affected by the power of the technology or the degree to which it improves productivity. Davis et al. (1989) examined undergraduates' Internet usage and distance learning in Hong Kong and found skills in the use of the Internet positively correlated with perceived usefulness, perceived enjoyment, general learning, distance learning and constructive learning. Acceptance of technology (the virtual resources or the Internet) is achieved based on satisfaction resulting from perceived ease of use and usefulness. Again, acceptance of an information system results when a user finds a system useful and easy to use to the extent that it offers significant performance gains (Davis et al., 1989).

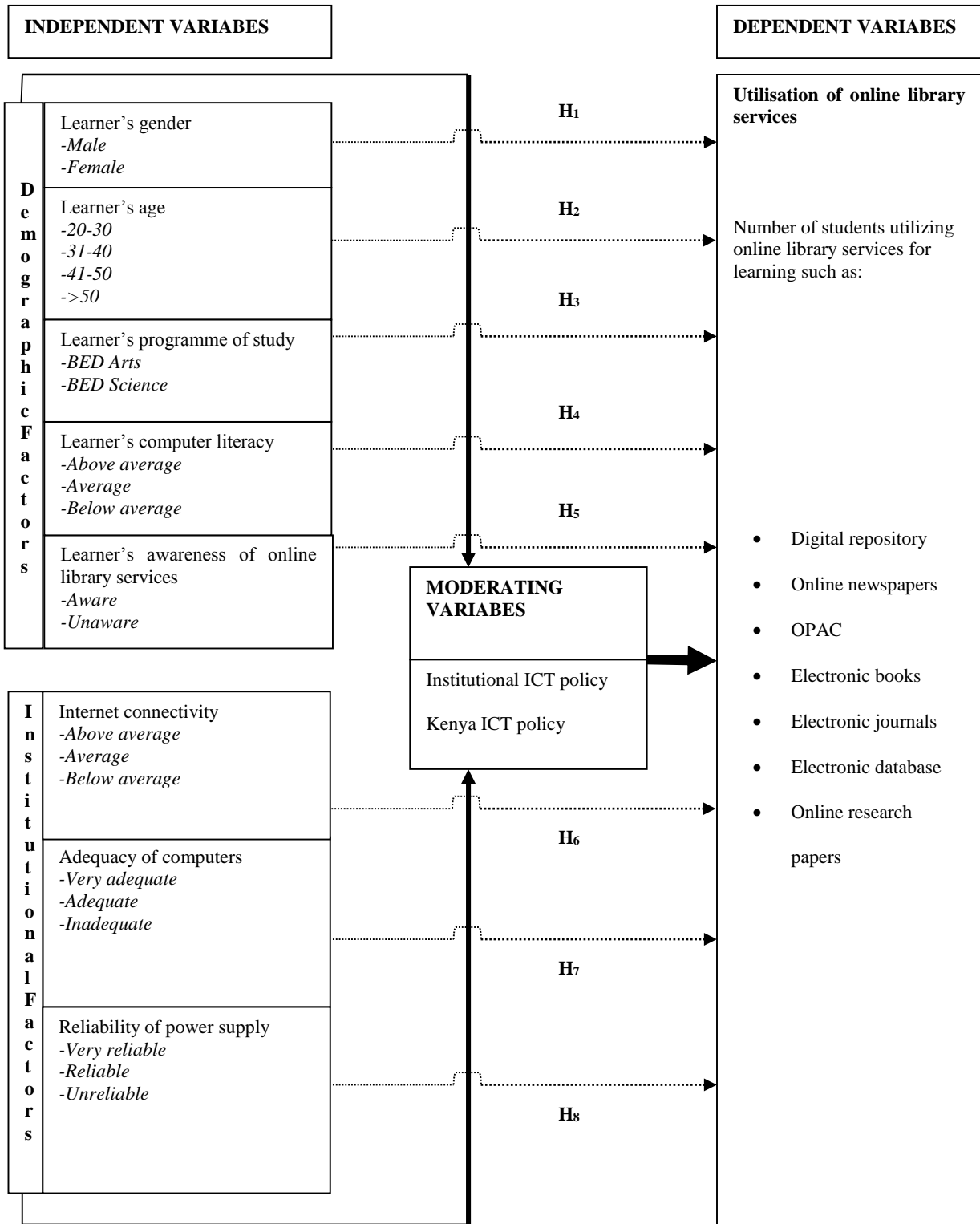
On the other hand, perceived ease of use refers to the degree to which users expect the targeted technological innovation to be free of effort regarding its transfer and utilisation. This measure reflects the potential difficulty for the adopting individual to utilise the new technology, especially if he/she is required to learn to use the new technology (Moon & Kim, 2001). Davis et al. (1989) notes that "user acceptance is higher when a system is perceived to be easier to use than another. As users perceive a system to have more relevant information to their task, the more likely they are able to evaluate a system as effective and easy to use. Park, Roman Lee and Chung (2009) observes that perceived usefulness in user adoption of a computer information systems influenced by perceived ease of use which translates into both attitude towards and intention to use a particular system".

Both perceived usefulness and perceived ease of use predict attitude toward using a new technological innovation. Perceived usefulness may also affect behavioural intention directly. An innovation that is easy to implement can reduce the time and effort required for its adoption. Moreover, user's attitude influences an individual's behavioural intentions, which in turn, influences the actual use of an innovation. TAM provides a framework for determining influence of demographic and institutional factors on learners' utilisation of online library services in distance learning. In this study, utilisation equates to meeting the needs of distant student in accessing online library services and resources. The model is relevant to this study because it predicts concealed behaviours, motivation and intentions of learners towards the use of online library services. Therefore, when applying TAM, it is predicted that learners who are more satisfied with online library services have accepted the information system.

2.8 Conceptual Framework

Mugenda and Mugenda (2003) define conceptual framework as "...hypothesised model classifying variables under investigation and their relationships". From the reviewed empirical, policy and theoretical literature, the researcher developed the following conceptual framework to show the hypothesised relationship between key concepts of the study. In this regard, Figure 2.2 shows diagrammatic relationships between demographic and institutional factors and utilisation of online library services

Figure 2.2: Demographic, institutional factors and utilisation of online library services



The conceptual framework shows that independent variables consisted of demographic factors such as learners' gender, age, computer literacy, awareness of availability of online library services and programme of study, while institutional factors included learners' perceptions regarding various ICT facilities and systems at the University library, including reliability of internet connectivity, adequacy of computers, reliability of power supply, as well as usefulness of library user support system. The dependent variable is the utilisation of online library services. In this case, the conceptual framework for this study sought to sketch a roadmap of causality from student factors and institutional factors through change of attitude to actual adoption and utilisation of online library services.

The outcome includes the number of learners accessing and utilising online library services to support their learning. It's in this context that the demographic and institutional factors, if well considered, should result in optimum utilisation of online library services by distance learners. The moderating variables can indirectly influence utilisation of online library services. The National ICT Policy 2014, The National ICT Master Plan 2013/2014-2017/2018, and availability of ICT policy at the University are examples of the moderating variables which may indirectly influence the magnitude of utilisation of online library services by distance learners.

2.9 Summary of the literature

This section provides a summary of the studies reviewed and gaps identified in the literature. This summary has been arranged based on the objectives of the study. Gender as a variable in technology use has been studied in pre-university, university and work environments. From the studies reviewed it appears that the findings show differences and variations in male and female use and attitudes to technology use. Studies by Godfrey

(2011), Zhou and Xu (2007), Koohang (2004), Enock and Socker (2006), Crystal (2008) and Tayler and Hastings (2011) confirms that there was a significant relationship between gender and utilisation of online library services. On the other hand studies by Inoue (2000), Ganiyu (2013), Okiki & Asina (2011), Bimber (2000), Odell et al. (2000) and Ford et al. (2001) testify to the fact that there was no significant relationship between gender and utilisation of online library service. The studies reviewed seem to show that male and females tend to respond to online technology differently. For instance, while some of the foregoing studies tend to show significant differences others do not. Besides, none of the studies has addressed the issue of online library utilisation in relation to gender. Furthermore most of these studies have been done outside Kenya hence there was need to investigate this issue further to find out if there was any significant relationship between distance learners' gender and utilisation of online library services at the University of Nairobi..

Studies done on age also indicate conflicting results. While some studies confirm the allegation that there was a significant relationship between age and utilisation of online library services others do not. For example studies by Tayler and Hastings (2011), Bar-Ilan et al., (2003) Jamali et al., (2005), Okiki and Asina (2011) and Mungania (2003) agree with the fact that there was a significant relationship between age and utilisation of online library services. None the less other studies by Koohang (2004), Koohang (2003) and Bush et al. (2003) indicate that there was no significant relationship between age and utilisation of online library services. In the foregoing research literature review, it is evident that the findings show conflicting results. First, none of the studies has addressed the issue of age in relation to use of online library service in Distance learning. Secondly, none of these studies has been done in Kenya thus the gaps that this study intended to address.

Studies on influence of computer literacy show conflicting results. While other studies tend to support the argument that computer literacy affect utilisation of online library services others do not. For example Tayler and Hastings (2011), Koohang (2004), Koohang and Ondracek (2005), as well as Ojo and Akande (2005) confirm that different learners experience and react to online use in different ways depending on their previous and that no one format is going to meet the needs of all learners. On the other hand Blackman (2003) indicate that there was no significant relationship between computer literacy and utilisation of online library services. While several studies have been done on influence of information literacy on utilisation of online library services, this area has not been adequately studied in Kenya. It was therefore, imperative to examine influence of computer literacy on distance learners' utilisation of online library services at the University of Nairobi

The various studies done on awareness, for instance Mwatela (2013), Ojo and Akande (2005), and Gadd, Hunt, Newbold and Stubbings, (2001), reveals that awareness is gained through library orientation, induction and instruction with the objective of introducing the student to the physical plant of the library, its policies and procedures as well as its resources. Library orientation and instruction is needed by the university learners to enable them find their way intelligently through the information maze. Further, library orientation is meant to introduce the student and faculty to the library collection on essential areas and resources, basic elements of using library and the services provided by the librarian. It is therefore, evident from the above studies that inadequate research has been done in relation to online library awareness among distance learners in Kenyan public universities more so at the University of Nairobi hence the need to conduct this study. Similarly, studies done on influence learners' programme of study indicate that there was a positive relationship between learners' programme of study and utilisation of online library services. However, it appears that very little research has been done in this area more so in Kenya hence the call for the present study.

Table 2.1: Matrix table for empirical literature

Variables	Authors(year)	Title of study	Findings	Knowledge gaps
Learners' gender	Godfrey (2011)	Online technology issues in communication teaching	There was a significant relationship between gender and utilisation of education technology.	Study was done in west indies therefore, has not been done in Kenya The study did not address the issues of online library use among distance learners.
	Crystal (2008)	Effects of personal characteristic on learners online readiness	There was a significant mean difference of learning preference across gender	The study was done in Australia therefore, has not been done in Kenya
	Tylor and Hastings (2011)	Factors influencing virtual patron satisfaction with online library resources and services.	There was a significant relationship between gender and satisfaction with online library resources and services.	The study was done in west Florida therefore, has not been done in Kenya
	Koohang (2004)	Student perceptions towards use of digital library in weekly based distance learning.	There was a significant relationship between gender and utilisation of online digital library.	The study was done in Britain therefore, has not been done in Kenya.
	Bimber (2000)	Measuring the gender gap in the Internet	There was a significant relationship between gender and use of Internet.	The study was conducted in china therefore, has not been done in Kenya
	Ganiyu (2013)	Influence of demographic factors on use of online library resources by undergraduate learners in two private universities in Nigerian university libraries.	There was no significant relationship between gender and use of online library resources.	The study was done in Nigeria therefore, has not been done in Kenya. The study was done among private universities while this study targeted one public university in Kenya.(University of Nairobi)
	Okiki and Asina (2011)	Factors that influence the use of online information resources among post graduate and undergraduate learners	There was a significant relationship between gender and use of online information among post graduate and undergraduate learners	The study was conducted in Nigeria therefore, has not been done in Kenya. The study targeted both post graduate and undergraduate student but the present study targeted only undergraduate student in the distance learning programme of the university of Nairobi

	Ford et al. (2001)	The role of individual difference in Internet searching	There was a significant relationship between gender and use of Internet.	This study was done in America therefore, has not been done in Kenya
Learners' age	Okiki and Asina (2011)	Factors that influence the use of online information resources among post graduate and undergraduate learners	There was a positive co relation between age and use of online information	The study was conducted in Nigeria therefore, has not been done in Kenya The study targeted post graduate learners while the present study targeted undergraduate in the distance learning programme of the university of Nairobi
	Bar-Ilan et al. (2003)	Use of electronic data base and electronic journals by academic staff.	There was a significant relationship between age and use of electronic data base and electronic journals	The study was conducted among academic staff while present study targeted distant learners. The study was done in Israel therefore, has not been done in Kenya.
	Jamali et al., (2005)	The use and users of scholarly E-journals	There was no significant relationship between age and use of E journals.	The study targeted medics and research staff while the present study targeted distance learners The study was done in university of Tennessee while the present study was done at the University of Nairobi Kenya.
	Mungania (2003)	Seven E learning barriers facing employees.	There was a significant relationship between age and use of E-learning	The study was done in Lous Ville university therefore, has not been done in Kenya.
	Koohang (2003)	Learners perceptions toward the use of web based distance learning	Age was an insignificant factor in learner's use of web based distant learning.	The study was done in USA therefore, has not been done in Kenya.
	Koohang (2004)	Student perceptions towards use of digital library in weekly based distance learning.	There was no significant relationship between age and use of digital library	The study did not address the issue of age in relation to use of online library services. The study was done in USA therefore, has not been done in Kenya.
Learners' computer literacy	Koohang and Ondracek (2005)	Users view about the usability of digital libraries	Computer experience enhanced effective utilisation of online library services.	The study was carried out in Britain therefore, has not been done in Kenya.
	Ojo and Akande (2005)	Student access, usage and awareness of electronic information at university college hospital of Ibadan Nigeria	Lack of information retrieval skills among under graduate medical learners hampered their exploitation of electronic resources thus making level of usage of resource very low	The study was done in Nigeria therefore, has not been done in Kenya. The study was done among medical student but the present study focused on distance learners in the Arts and science based programmes.
	Taylor and Hastings (2011)	Factors influencing virtual patron satisfaction with	Computer experience with several computer related task correlated	The study was conducted in Britain therefore, has not been done in Kenya

	Black man (2003)	online library resources and services. Perception and attitudes regarding library services available to learners enrolled in online degree programs	positively with learners' satisfaction with online library services. There was no significant difference for computer experience and student satisfactions with digital library.	The study focused on student perceptions and attitude regarding library services while the present study focused on demographic and institutional factors influencing utilisation of online library services
Learners' awareness	Mwatela (2013)	Factors influencing utilisation of library services and resources. The case study of university of Nairobi	Library orientation and instruction is needed by the university student to enable them find their way through the information maze.	Even though this study was conducted in Kenya more so at the University of Nairobi, it did not focus on influence of demographic and institutional factors on utilisation of online library services. The study focused on post graduate student in Mombasa campus. The present study focused on undergraduate student taking their BED Arts and BED Science through distance learning program based in kikuyu campus.
	Ojo and Akande (2005)	Student access, usage and awareness of electronic information at university college hospital of Ibadan Nigeria	During orientation new student are introduced to a few title of reference sources and index for the purpose of wakening them to the wealth of resources in the library.	The study was conducted in Nigeria therefore, has not been done in Kenya.
	Gadd et al. (2001)	Reviewing library induction at Loughborough university	Induction session aims at emphasising the role of the library in supporting student learning at the campus.	The study was done at Loughborough University while the present study focused on university of Nairobi, Kenya.
Learners' programme of a study	Crystal (2008)	Effects of personal characteristic on learners online readiness	There was a significant relationship between student programme of study and utilisation of online library services.	The study was done in Australia therefore, has not been done in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides a detailed description of how the requisite data were obtained, processed, analysed and interpreted to fulfil the research objectives. The methodology elements considered herein consist of the research philosophy, research design, target population, sample selection and sample size, research instruments, the validity of instruments, reliability of the instruments, data collection procedures, data analysis techniques, ethical considerations and operational definition of the variables

3.2 Research philosophy

The research paradigm employed in this study is the positivist approach. Positivism emerged as a paradigm in the 19th Century with Auguste Comte's rejection of metaphysics and assertion that only scientific knowledge can reveal the truth about reality. The positivist paradigm asserts that real events can be observed empirically and explained with logical analysis. The criterion for evaluating the validity of the scientific theory is whether our knowledge claims theory based predictions or is consistent with the information we are able to obtain using our senses. The Positivist school of thought adopted David Hume's theory of nature of reality who believed that reality consist of atomistic and independent events (Hume, 1993). The theory further posits that through philosophical and logical reasoning researchers can secure non-existing links between events that occur simultaneously. Nzuki (2012) reiterates that, positivist approach find out about facts or causes of social events with little or no regard to the subjective state of the individual.

Further, Mugenda and Mugenda (2003) assert that the positivist school of thought holds the view that there exists a single tangible reality, which can be fragmented into different components that are distinct observable parts of concepts that can be inferred from behaviour.

3.3 Research design

The study adopted descriptive survey design. Orodho (2003) defines descriptive survey as a method of collecting information by interviewing or administering questionnaire to sample of individuals. It can be used when collecting information about people's attitudes, opinions, habits or any of the variety of education or social issues (Orodho & Kombo, 2002). The researcher found descriptive survey design appropriate for this study because it allowed for generalisations from a sample to a population so that inferences could be made about some characteristics, attitudes or behaviours of the population (Kombo & Tromp, 2006). This study employed the descriptive survey to establish perceptions, attitudes and knowledge about demographic and institutional factors influencing utilisation of online library services by distance learners at the University of Nairobi. The study also tested hypothesis using correlational design.

The correlational design enabled the investigator to determine the relationship between the independent variables (demographic and institutional) and the dependent variable (utilisation of online library resources). The design was considered appropriate for the study because the purpose of the study was to determine causal relationship between two sets of variables (independent and dependent) as well as the influence of a third set (moderating variables) on the causal relationship. The design was appropriate because the study tested null hypotheses to determine whether they held true to reality or not.

3.4 Target population

The study targeted learners enrolled for Bachelor of Education Arts (B.Ed Arts) and Bachelor of Education Science (B.Ed Science), in the School of Open and Distance Learning (ODL) of the University of Nairobi. Learners who were in their third year of study during the April intake of 2013/2014 academic year were selected for the study. This group level was chosen owing to the length of time they had taken at the University thus would provide the relevant and necessary information required by the researcher. Records from the two programmes indicated that B.Ed Arts had a total of 1,578 learners out of which 848 were males and 730 were females. The programme of B.Ed Science had 93 learners, which included 58 males and 35 females.

Apart from the main focus on learners, the study also targeted university librarians holding administrative positions. The University of Nairobi library system comprises of the main library, named Jomo Kenyatta Memorial Library, which is situated at the main campus and 11 branch libraries serving different faculties, institutes and schools. The main library is under the chief University Librarian, assisted by two Deputy Librarians, while branch libraries are headed by senior librarians. The study therefore, targeted all the fourteen (14) library administrators. Based on this, the target population consisted of 1,671 learners and 14 librarians, which summed up to 1,685 participants.

Table 3.1 Population of third year learners (April intake 2013/2014) and librarians

Category	Male	Female	Total
B.Ed (Arts)	848	730	1578
B.Ed (Science)	58	35	93
Librarians	09	05	14
Total	915	770	1685

Source: SODL (2014)

3.5 Sample size and sample selection

This section describes sample size and sampling procedure that was used in conducting the study. Subjecting the entire population of interest to investigations can be costly in terms of financial resources and time; hence, a sample is a sub-set of the population that can be studied at reasonable cost and used to predict population parameters (Mugenda & Mugenda, 2003). Samples should be representative of the population as much as possible, because a small sample is likely to under-estimate population attributes, particularly due to the effect of sampling error.

3.5.1 Sample size

Kelinger (1986) states that sampling is taking any portion of a target population or universe as a representative of that population or universe. The sample size for this study was determined by using the following formula, which was developed and advanced by Krejcie and Morgan (1970), as cited in Isaac and Michael (1981).

$$S = \frac{\chi^2 NP (1 - P)}{d^2 (N - 1) + \chi^2 P (1-P)}, \text{ in which}$$

S = required sample size

N = population

P = population proportion that for table construction has been assumed to be 0.50, as this magnitude yields the maximum possible sample size required.

d = the degree of accuracy as reflected by the amount of error that can be tolerated in the fluctuation of a sample proportion about the population proportion. ρ -the value of d being 0.05 in the calculation for entries in the table, a quantity equal to $\pm 1.96\sigma$

χ^2 = table value of chi square for one degree of freedom relative to the desired level of confidence, which was 3.841 for the 0.95 confidence level represented by entries in the table in Appendix III

Inserting the required information into the formula gives: -

Sample size for learners

$$N = 1685$$

$$P = 0.50$$

$$D = 0.05$$

$$\chi^2 = 3.841$$

Substituting the above values

$$= \frac{3.841 \times 1685 \times 0.50 (1 - 0.50)}{0.05^2 (1685 - 1) + 3.841 \times 0.50 (1 - 0.50)}$$

$$= \frac{6472.085 \times 0.50 (0.5)}{0.05^2 (1684) + 3.841 \times 0.5 (0.5)}$$

$$= \frac{1618.0212}{0.0025 (1684) + 3.841 \times 0.25}$$

$$= \frac{1618.0212}{4.21 + 0.96025}$$

$$= \frac{1618.0212}{5.17025}$$

$$= 312.94834$$

$$= \mathbf{312 \text{ learners}}$$

To confirm the above results formula by Mugenda and Mugenda (2003) was used.

$$nf = \frac{n}{1 + \frac{(n)}{N}}$$

Where:-

nf = Desired sample size when the population is less than 10,000

n = Desired sample size when the population is more than 10,000 and the recommended sample size then is 384

N = Population

Therefore, the sample size for the population of 1000 learners needed for this study is denoted by nf and was calculated as follows;

$$\begin{aligned} nf &= \frac{n}{1 + \frac{(n)}{N}} \\ &= \frac{384}{1 + \frac{(384)}{1685}} \\ &= \frac{384}{1 + 0.2278931} \\ &= \frac{384}{1.2278931} \\ &= \underline{312.73083} \\ &= \mathbf{312 \text{ learners}} \end{aligned}$$

3.5.2 Sample selection

After determining the required sample size of 312 learners, the researcher applied three sampling techniques to select the sample, including stratified, purposive, and simple random sampling techniques. According to Kombo and Tromp (2006), stratified sampling technique refers to dividing a population into homogenous sub groups and then taking a

simple random sample in each sub-group. The sample is selected in such way as to ensure that certain characteristics in the sub groups in the population are represented in the sample, in proportion to their number in the population. In this regard the sample was sub- divided into two categories of student respondents' namely: B.Ed Arts and B.Ed Science (See Table 3.1).

Simple random sampling from infinite population technique on the other hand is a technique of sampling which gives each possible sample combination an equal probability of being picked up and each item in the entire population has an equal chance of being included in the sample (Kothari, 2004). In applying this approach, the researcher used pieces of papers written “Yes” for the number of learners required for the study sample and “No” for the remaining portion. These papers were thoroughly mixed and shuffled in a container for learners to pick to ensure that each learner had an equal chance of being selected.

Purposive sampling technique is a non-probability technique which allows a researcher to use cases that have the required information with respect to the objectives of the study (Mugenda & Mugenda, 1999). In this regard the researcher selected third year learners from the ODL and University of Nairobi librarians to elicit the requisite information.

Table 3.2: Sample size of third year learners (April intake 2013/2014) and librarians

Category	Male	Female	Total
B.Ed Arts	121	103	224
B.Ed Science	47	27	74
Librarians	09	05	14
Total	177	135	312

Source: ODL (2014)

3.6 Research instruments

The researcher used two set of questionnaires to collect data from the respondents. One set of questionnaire was developed for learners while another set of questionnaire was developed for librarians. The researcher gave preference to use of questionnaire because it eliminates bias on the side of the researcher and the respondents while the interview schedule was used to corroborate responses received from questionnaires (Kombo & Tromp, 2006).

3.6.1 Questionnaires for learners

Learners' questionnaire was divided into eight sections A, B, C, D, E, F, G and H. Section A collected data on learners demographics, including gender, age, and programme of study. Section B collected information on learners' gender and utilisation of online library services. Section C collected data on learners' age and utilisation of online library services while Section D gathered information on Learners' computer literacy and utilisation of online library services. Sections E gathered information on learners' awareness and utilisation of online library services. Section F gathered information on influence of learners' programme of study and utilisation of online library services, Section G collected information on learners' utilisation of online library services, while Section H sourced information on institutional factors.

3.6.2 Questionnaire for university librarians

The researcher used a questionnaire for librarians to collect information related to learners' utilisation of online library services. The purpose of using librarian's questionnaire was to confirm the reliability of the responses provided by learners. The questionnaires for the librarians were meant to gather information relating to demographic and institutional factors influencing utilisation of online library services at the University of Nairobi.

3.6.3 In-depth interview schedule for university librarians

In-depth interview was not an alternative to the questionnaire but was used for the purpose of creating rapport with the respondents in order to corroborate the reliability of the responses made in the questionnaires. In-depth interview also gave opportunities for soliciting more details through probing than questionnaires. Interview schedule consisted of unstructured items. Interviews with librarians was done alongside the data collection process.

3.7 Pretesting of data collection instruments

To ensure effectiveness of the research instruments a thorough pre-test was carried out at Kikuyu Campus, University of Nairobi. The instrument was pre-tested on thirty two (32) respondents, which included thirty one (31) learners and one (1) librarian, which represented circa 10 percent of the sample size as recommended by Mugenda and Mugenda (2003). The learners and librarians involved in pre-testing were excluded from the main data collection. The researcher used stratified random sampling technique to pick twenty two (22) learners from B.Ed Arts and nine (9) learners from B.Ed Science. One (1) librarian was involved in pre-testing the questionnaire for librarians. Through the pre-test, ambiguities in questions were addressed before the actual study. The researcher used expert's knowledge to refine the instruments before administering the instrument for the second time. Irrelevant items in the questionnaires were discarded or reworded to elicit the required responses. The data collected during the pre-test were prepared, analysed and interpreted. Based on the outcome, the instruments were revised in readiness for data collection.

3.8 Validity of data collection instruments

According to Best and Kahn (2006), validity is the degree to which an instrument measures what it purport to measure. Instrument validity; therefore, refers to the capacity and ability of an instrument to measure what the researcher designed it to measure. In this regard the researcher applied four types of validity in this study namely; content validity, criterion validity, construct validity and face validity.

According to Amin (2004), content validity refers to the degree to which the test items actually measure or are specifically related to the traits for which the test was designed and is to be used. It also deals with how adequately the test samples the universe of knowledge and skills that a student is expected to master. The instruments for this study were presented to two experts selected from the School of Open and Distance Learning. They were required to assess the relevancy of the content to the central research questions and give suggestions on how the researcher would improve on the validity of the instruments.

Criterion validity refers to the extent to which scores on measuring instruments are related to independent external variables believed to measure directly the behaviour of characteristics in question. The instrument has to be relevant, reliable and free from bias for it to be criterion valid (Best and Khan 2006) .Criterion validity was thus realised through expert judgement. Igwe (2005) defines construct validity as the degree to which the instrument measures the hypothesized construct the researcher claims the instrument measures. The instruments for this study were validated using scrutiny of the research specialist in the school of Open and Distance Learning, followed by a pre-test of the instrument.

Face validity, according to Kalai (2009) refers to subjective judgement that the test appear to cover the relevant content. It also refers to subjective judgement of assessors about what the instrument appears to be measuring on the face value. The researcher applied expert judgement to arrive at the face value of the instruments. Finally, in order to determine the validity of the whole document, a Kaiser Meyer Olkin (KMO) formula test of validity was applied. A KMO test of validity provided a figure of 0.806. This implied that the sampled data was highly valid since the threshold is normally 0.5. The researcher applied expert knowledge in selecting essential questions to be included in the interview schedule.

3.9 Reliability of data collection instruments

Reliability refers to the degree of consistency of an instrument or whether it can be relied upon to produce the same results when used by someone else or the degree of accuracy in the measurements an instrument provides. It ensures that an instrument generates similar data when used by independent researchers (Amin 2004 and Best & Khan,2006).This removes possible errors and every instrument therefore should be pre-tested before it is formally administered. The researcher therefore used stability aspect of reliability of the instrument. The consistency of the instruments in measuring what they intended to measure was established by using the test- re-test reliability co-efficient, whether the two sets of data obtained from the two groups of respondents obtained at different times during the piloting of the questionnaires was correlated using Pearson's product moment correlation method. The instrument was administered once to a pilot group of respondents and the result of the items were divided into two groups (halves) where the odd numbered items formed one group and the even numbered items forms another group. The correlations between these groups of scores were computed using Pearson's product moment correlation (....) method.

The reliability of the full instrument was obtained using Cronbach's Alpha coefficient. This refers to a measure of internal consistency of set items in a group. It is thus considered to be a measure of skilled reliability of an instrument. Cronbach's Alpha Coefficient was used to measure inter-item reliability of the questionnaires. Each item of the questionnaire, measuring the same characteristics was treated as a mini instrument on its own. The questionnaire for learners was divided into seven sections and inter-item reliability was done for each section of the questionnaire. The result is shown in Table 3.3.

Table 3.3: Inter-item reliability test

Questionnaire section	Cronbach's Alpha	Percentage	F	No. of items
B	0.523	52.3	35.609	7
C	0.749	74.9	15.809	7
D	0.865	86.5	1.080	7
E	0.958	95.8	2.960	7
F	0.923	92.3	17.923	7
G	0.938	93.8	8.836	7
H	0.830	83.0	16.568	7

The results from Table 3.2 shows that Cronbach's Alpha for section B of the instrument was 0.523 (52.3 %) with an F-value of 35.609 out of the seven (7) items. In section C of the instrument Cronbach's Alpha was 0.749 (74.9%) while the F value was 15.809 out of the seven (7) items. Section D of the instrument recorded a Cronbach's Alpha of 0.865 (86.5 %) while the F value was 1.080 out of the seven (7) items. Section E of the instruments registered a Cronbach's Alpha of 0.958 (95.8 %) and an F value of 2.960 for the seven (7) items. Section F of the instrument indicated that the Cronbach's Alpha was

0.923 (92.3%) while F value was 17.923 for the seven (7) items. Section G of the instruments recorded a Cronbach's Alpha of 0.938 (93.8%) while the F value was 8.836 out of the seven items. Finally section H of the instruments recorded Cronbach's Alpha of 0.830 (83.0%) and F value of 16.568 out of the seven (7) items.

The general impression of the above results is that the inter-item reliability was over 50 percent for all the sections for the entire learners' questionnaire instrument. Similarly, inter-item reliability test was inducted for the questionnaire for the librarians. The result indicated a Cronbach's Alpha of 0.698 (69.8%) while the F-value was 16.915 out of the (7) items. This result is significant and generally acceptable as recommended by (Borg & Gall, 2005). Reliability or the consistency of response, may be realised by re-framing the question for the second time to ensure that a question is slightly different from the first one (Best & Khan, 2006). In order to enhance the reliability of the responses made by the respondents, the researcher restated the questions at a later time in the course of the interview to ensure consistency of the responses.

3.10 Data collection procedures

Authority to conduct research was obtained from National Commission for Science, Technology and Innovation (NACOSTI) before setting out for data collection. The researcher also reported to the Director of Open, Distance and eLearning (ODEL) Campus for clearance. The researcher obtained permission from the Dean, ODL to conduct research. Simple random sampling was used to gather information from respondents. In this regard, the researcher used pieces of papers written "Yes" for the number of learners required for the study sample and "No" for the remaining portion. These papers were thoroughly mixed and shuffled in a container for learners to pick to ensure that each learner had an equal chance of being selected.

The research questionnaires were personally administered to learners and librarians. Direct contacts with respondents provided the researcher with an opportunity to interact and instruct the respondents on how to complete the questionnaires and assure them of the confidentiality of their responses. Personal involvement was an important factor in motivating the participants to respond more readily than if the questionnaires had been mailed to them.

3.11 Data processing and analysis techniques

Data analysis refers to examining what has been collected in a survey or experiment and making deductions and inferences. It involves uncovering underlying structures, extracting important variables, detecting any anomalies and testing any underlying assumptions. It also involves scrutinising the required information and making inferences (Kombo & Tromp, 2006). The study applied quantitative approach to process, analyse and interpret the data.

3.11.1 Quantitative data processing and analysis

Quantitative data processing and analysis began with editing in the field to minimize errors. This was followed by coding the closed ended data, entry clearing, transformation, analysis and interpretation (Nachmias & Nachmias, 1996). The Statistical Package for Social Sciences (SPSS) version 20.0 was applied to run descriptive analysis to produce frequency distributions and percentages, means and Standard deviations. While tables were produced using Ms Excel. Hypothesis testing was done using multiple linear regression analysis, Analysis of Variance (ANOVA) and factor analysis. In this study multiple linear regression was used to establish the relationship between the independent and dependent variables. The model that was used for testing multiple linear regression was:

$$Y = a + ab$$

In the study multiple linear regression was used to test hypotheses 1, 2, 3, 4, 5, 6, 7, and 8. The purpose was to find out if there was any significant relationship between the independent variables such as learners' gender, learners' age, learners' computer literacy, learners' awareness of availability of online library services and learners' programme of study, internet connectivity, adequacy of computers and reliability of power supply on dependent variable -utilisation of online library services. Similarly, ANOVA was performed to test how the regression model statistically significantly predicts the outcome variable. A factor analysis was done to provide further explanation concerning the influence of independent variables on dependent variable.

The model adopted in testing the null hypothesis was $Y_1 = \beta_0 + \beta_1 + \beta_2 \dots + \beta_8 + \epsilon$ where Y is dependent variable, in this case, -utilisation of online library services; while $\beta_0, \beta_1, \beta_2 \dots \beta_8$ are the independent variables. β is the Beta coefficient while ϵ is error term. The hypothesis was rejected at 0.05 error margin. When the ρ -value was less than specified α of 0.05, then the null hypothesis was rejected and accepted where the ρ -value was 0.05 or larger (Sanders, 1990). Table 3.4 shows a summary of objectives, hypotheses, measurement scales, analytical model and techniques of analysis.

3.11.2. Analytical models

This section displays the summary of analytical model applied in this study. The result are contained in Table 3.4

Table 3.4: Summary of objectives, hypothesis, measurement scales, analytical model and techniques of analysis

Objective	Hypothesis	Measurement scale	Analytical Model	Techniques of analysis
Examine influence of learners' gender on utilisation of online library services at the University of Nairobi.	H ₀ 1: There was no significant relationship between learners' gender and utilisation of online library services at the University of Nairobi.	Ratio	$Y_1 = \beta_0 + \beta_{51} + \beta_{52} \dots + \beta_{59} + \varepsilon$	Linear regression Analysis, ANOVA, Factor Analysis
Determine influence of learners' age on utilisation of online library services at the University of Nairobi.	H ₀ 2: There was no significant relationship between learners' age and utilisation of online library services at the University of Nairobi.	Ratio	$Y_1 = \beta_0 + \beta_{41} + \beta_{42} \dots + \beta_{49} + \varepsilon$	Linear regression Analysis, ANOVA,
Assess the extent to which learners' computer literacy influences their utilisation of online library services at the University of Nairobi.	H ₀ 3: There was no significant relationship between learners' computer literacy and utilisation of online library services at the University of Nairobi	Ratio	$Y_1 = \beta_0 + \beta_{31} + \beta_{32} \dots + \beta_{39} + \varepsilon$	Linear regression Analysis, ANOVA,
Establish influence of learners awareness of availability of online library services on utilisation of online library services at the University of Nairobi	H ₀ 4: There was no significant relationship between learners' awareness of availability of online library services and utilisation of online library services at the University of Nairobi.	Ratio	$Y_1 = \beta_0 + \beta_1 + \beta_2 \dots + \beta_8 + \varepsilon$	Linear regression Analysis, ANOVA,
Assess the influence of learners programme of study on utilisation of online library services at the University of Nairobi	H ₀ 5: There was no significant relationship between learners' programme of study and utilisation of online library services at the University of Nairobi.	Ratio	$Y_1 = \beta_0 + \beta_{61} + \beta_{62} \dots + \beta_{69} + \varepsilon$	Linear regression Analysis, ANOVA,

Determine the influence of Internet connectivity on utilisation of online library services.	H ₀ 6: There is no significant relationship between Internet connectivity and utilisation of online library services.	Ratio	$Y_1 = \beta_0 + \beta_1 + \beta_2 \dots + \beta_9 + \varepsilon$	Linear regression Analysis, ANOVA,
Examine the influence of adequacy of computers on utilisation of online library services.	H ₀ 7: There is no significant relationship between adequacy of computers and utilisation of online library services.	Ratio	$Y_1 = \beta_0 + \beta_1 + \beta_2 \dots + \beta_9 + \varepsilon$	Linear regression Analysis, ANOVA,
Determine the influence of reliability of power supply on utilisation of online library services.	H ₀ 8: There is no significant relationship between reliability of power supply and utilisation of online library services.	Ratio	$Y_1 = \beta_0 + \beta_1 + \beta_2 \dots + \beta_9 + \varepsilon$	Linear regression Analysis, ANOVA,

3.11.3 Assumptions of multiple linear regression

Linear regression “is used when the researcher wants to predict the value of a variable based on a value of another variable (Bryman & Cramer, 1998). The variable that the researcher wants to predict is called the dependent variable (sometimes the outcome variable). The variable the researcher is using to predict other variables value is called the independent variable (the predictor variable)” (Bryman & Cramer, 1998; Morgan, Leech, Gloeckner, & Barrett, 2007). In order to carry out linear regression correctly certain requirements had to be met. One requirement was that the dependent variable must be measured on the interval or ratio scale rather than discrete category in this study. The test also assumes that scores are obtained using random sample from a population. This assumption was met in this study by selecting the subjects by random sampling as described earlier in this chapter (Bryman & Cramer, 1998; Morgan et al., 2007).

Another assumption is that observations that make up the data must be independent of one another. No observation of measurement should be influenced by any other observation or measurement. This assumption was also met in the study by collecting information issued to individual learners and librarians who filled and returned the questionnaire individually by hand delivery or online. The test also assumed the population from where the sample is taken is normally distributed and that the variables obtained have a normal distribution. However, in many researchers in social sciences, this assumption is usually violated (Bryman & Cramer, 1998; Morgan et al., 2007). Fortunately with sample sizes exceeding 30, the violation of this assumption does not cause any major problem (Pallant, 2005). In this study analysis of the distribution of different variables did not show normality in all cases, but this was compensated by the sample size.

Another assumption was the need for linearity. Linearity simply means the model fits the regression line. A test for linearity was carried out to ensure that the values fit the model on a linear direction so as to ensure there were no outliers. F value was 35.609 meaning that the data fitted the model well for inferences (Bryman & Cramer, 1998; Morgan et al., 2007). Autocorrelation is an assumption that, data or findings may not be valid because some items have similar variances or are auto correlated. This assumption was met by conducting a test for autocorrelations where the significance or ρ -value was 0.00. This ρ -value implies that 100 percent of the items were autocorrelated. Collinearity is an assumption that multiple sets of values are double correlated and this may result to wrong interpretation. A collinearity test was carried out and VIF value for all variables was above one implying that the collinearity tolerance was very high (Bryman & Cramer, 1998; Morgan et al., 2007). Operational definitions of the variables used in the study.

3.12 Ethical considerations

First, questionnaires were personally administered to the respondents with information to the respondents that filling in the questionnaire instrument was voluntary and that the purpose of the study was purely to identify ways of improving online library utilisation in distance learning. Second, respondents were assured of utmost confidentiality of the information and that its purpose was for the study only. Confidentiality was assured through the use of captive audience to enhance direct contact with the respondents. An opening note was addressed to all the respondents to confirm this commitment.

3.13 Operationalisation of Variables

This section provides summary of the operational definition variables used in the study. The information described here consist of objectives, variables, indicators, measurements, scales of measurement, research approach, tools of data collection and data analysis techniques. Table 3.5 shows the details.

Table 3.5: Operationalisation of variables

Objectives	Independent Variables	Indicators	Measurements	Scales of measurements	Research approach	Tools of data collection	Data analysis techniques
Examine influence of learners' gender on utilisation of online library services at the University of Nairobi	Learners' Gender	Level of influence on utilisation of online library services	Learners' gender versus level of influence on utilisation of online lib. services	Ratio	Quantitative Qualitative	-Closed ended questionnaires -- Interview Schedule	-Linear regression analysis -ANOVA test -Factor analysis -KMO test
Determine influence of learners' age on utilisation of online library services at the university of Nairobi.	Learners' Age	Level of influence on utilisation of online library services	Learners' age versus level of influence on utilisation of online lib. services	Ratio	Quantitative Qualitative	-Closed ended questionnaires Interview Schedule	- Linear regression analysis -ANOVA test
Assess the extent to which learners' computer literacy influences utilisation of online library services by at the University of Nairobi.	Learners' Computer literacy	-Level of influence on utilisation of online library services	Learners' computer literacy versus level of influence on utilisation of online lib. services	Ratio	Quantitative Qualitative	-Closed ended Questionnaires Interview Schedule	-Linear regression analysis -ANOVA test
Establish influence of learners' awareness of availability on utilisation of online library services at the University of Nairobi	Learners' Awareness of availability of online lib. services:	Level of influence on utilisation of online library services	Learners' awareness versus utilisation of online lib. services	Ratio	Quantitative Qualitative	-Closed ended Questionnaires Interview Schedule	-Linear regression analysis -ANOVA test
Asses the influence of learners' programme of study on	Learners'	Level of influence on	Learners' programme of study	Ratio	Quantitative Qualitative	-Closed ended questionnaires	-Linear regression analysis

utilisation of online library services at the University of Nairobi.	Programme of Study:	utilisation of online library .services	versus utilisation of online lib. services				Interview Schedule	-ANOVA test
Determine the influence of Internet connectivity on utilisation of online library services.	Internet connectivity	Level of influence on utilisation of online library .services	Internet connectivity versus utilisation of online library services	Ratio	Quantitative Qualitative	-Closed ended questionnaires Interview Schedule		-Linear regression analysis -ANOVA test
Examine the influence of adequacy of computers on utilisation of online library services.	Adequacy of computers	Level of influence on utilisation of online library .services	Adequacy of computers versus utilisation of online library services	Ratio	Quantitative Qualitative	-Closed ended questionnaires Interview Schedule		-Linear regression analysis -ANOVA test
Determine the influence of reliability of power supply on utilisation of online library services.	Reliability of power supply	Level of influence on utilisation of online library .services	Reliability of power supply versus utilisation of online library services	Ratio	Quantitative Qualitative	-Closed ended questionnaires Interview Schedule		-Linear regression analysis -ANOVA test
	Dependent variable	<ul style="list-style-type: none"> • Online digital repository • Online news papers • Online public access • Electronic Books • Electronic Journals • Online Database • Online Research Papers 	All Independent Variables Versus utilisations of online library services	Ratio	Quantitative Qualitative	Close ended questionnaires Interview schedule	Linear regression analysis ANOVA test	

3.14 Summary of the hypothesis testing plan

This section displays a summary of hypothesis tested analysis. The details include objectives hypothesis an analysis used in the study.

Table 3.6 contains the result.

Table 3.6: Summary of the hypothesis testing analysis

Objective	Hypothesis	Analysis technique
Examine influence of learners' gender on utilisation of online library services at the University of Nairobi	H₀₁: There was no significant relationship between learners' gender and utilisation of online library services at the University of Nairobi.	-Linear regression analysis -ANOVA test -Factor analysis -KMO test
Determine influence of learners' age on utilisation of online library services at the university of Nairobi.	H₀₂: There was no significant relationship between Learners' age and utilisation of online library services at the University of Nairobi.	- Linear regression analysis -ANOVA test
Assess the extent to which learners' computer literacy influences utilisation of online library services by at the University of Nairobi	H₀₃: There was no significant relationship between learners' computer literacy and utilisation of online library services at the University of Nairobi	-Linear regression analysis -ANOVA test
Establish influence of learners' awareness of availability on utilisation of online library services at the University of Nairobi	H₀₄: There was no significant relationship between learners' awareness of availability and utilisation online library services at the University of Nairobi.	-Linear regression analysis -ANOVA test
Asses the influence of learners' programme of study on utilisation of online library services at the University of Nairobi.	H₀₅: There was no significant relationship between learners' programme of study and utilisation of online library services at the University of Nairobi.	-Linear regression analysis -ANOVA test
Determine the influence of Internet connectivity on utilisation of online library services.	H₀₆: There is no significant relationship between Internet connectivity and utilisation of online library services.	-Linear regression analysis -ANOVA test
Examine the influence of adequacy of computers on utilisation of online library services.	H₀₇: There is no significant relationship between adequacy of computers and utilisation of online library services.	-Linear regression analysis -ANOVA test
Determine the influence of reliability of power supply on utilisation of online library services.	H₀₈: There is no significant relationship between reliability of power supply and utilisation of online library services.	-Linear regression analysis -ANOVA test

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSIONS

4.1 Introduction

This chapter presents the study findings which have been analysed based on thematic and sub-thematic areas as per the study objectives. These consist of questionnaires return rate, background information of respondents, Influence of demographic factors on utilisation of online library services such as; learners' gender and utilisation of online library services, learners' age and utilisation of online library services, learners' computer literacy and utilisation of online library services, learners' awareness of availability of online library services and utilisation of online library services and learners' programme of study and utilisation of line library services. The institutional factors consist of interconnectivity and utilisation of online library services, adequacy of computers and utilisation of online library services and finally, reliability of power and utilisation of online library services.

The data collected from the field was scored and the results were entered into a computer excel sheet. After the data was entered into a computer excel sheet, descriptive analysis was done through application of statistical package for social sciences (SPSS) version 20.0. The analysis generated descriptive statistics that consist of frequency distributions and percentages, means and standard deviations and further cross tabulations tables; multiple linear regression analysis, ANOVA and Factor analysis were conducted. Multiple linear regression analysis was carried out to establish the relationship between the independent and dependent variables. ANOVA was performed to test how the regression model statistically significantly predicts the outcome variable. Finally, factor analysis was done to provide further explanation concerning the influence of independent variables on dependent variable.

4.2 Questionnaire return rate

Questionnaires return rate is the number of questionnaires filled correctly and returned expressed as a percentage of those distributed (Kothari, 2004). Records available at the School of Open and Distance Learning (ODL) records' office for April intake 2013/2014 academic year indicated that by the commencement of data collection; there were 1,671 third year learners in the School of ODL. This constituted the sampling frame from which respondents in the study were selected. The sampling design generated a total of 298 student respondents and 14 librarian respondents (as shown in Table 4.1). Out of initial sample of three hundred and twelve (312) questionnaires distributed, only two hundred and seventy (270) questionnaires were filled correctly and returned. The remaining forty two (42) questionnaires were incomplete therefore discarded during the actual data analysis. The results are displayed in Table 4.1.

Table 4.1: Response rate from the categories of respondents by percentage

Category of respondent	Distributed	Returned	%
B.Ed Arts	224	203	65
B.Ed Science	74	56	18
Librarians	14	11	04
Total	312	270	87

Table 4.1 shows that a total of two hundred and twenty four (224) questionnaires were distributed to B. Ed (Arts) respondents and only two hundred and three (203) were filled correctly and returned constituting 65percent. Similarly, seventy four (74) questionnaires were distributed to respondents in the B. Ed (Science) and out of this number 56 (18%) were filled correctly and returned. Questionnaires distributed to librarian's respondents were 14 in number. However, only 11 (04%) were filled correctly and returned. All the 11 librarian respondents were interviewed. The total number of questionnaires distributed to respondents and returned were, two hundred and seventy (270) constituting 87 percent. This response rate was treated as good as recommended by Monkey (2009) who said that 80-85 percent was good for face to face in Social Sciences.

4.3 Background information of the respondents

One of the concerns of this study was to determine influence of demographic and institutional factors on utilisation of online library services at the University of Nairobi. It was therefore appropriate to gather information in respect of the aforesaid factors. The preceding section contains background information of the respondents such as gender, age, programme of study, computer literacy and awareness of online library services availability. The results are summarised in Table 4.2.

Table 4.2: Respondents' distribution by demographic attribute

Demographic attributes	Frequency (f)		Percentage %	Cumulative percent	
Gender					
Male	193		74.5	74.5	
Female	66		25.5	100.0	
Total	259		100.00		
Age	Male	Female	Total	Percentage	Cumulative percentage
<30	6	4	10	3.7	3.7
30-39	54	38	92	35.4	39.1
40-49	77	42	119	46.0	85.1
50+	23	15	38	14.9	100.0
Total	160	99	259	100.0	
Programme of study					
B.Ed Arts	141	62	203	78.4	78.4
B.Ed Science	40	16	56	21.6	100.0
Total	181	78	259	100.0	
Computer literacy					
Above average	62	32	94	36.3	36.3
Average	76	40	116	44.8	81.1
Below average	30	19	49	18.9	100.0
Total	168	91	259	100.0	
Awareness of online library services					
Aware	143	100	243	93.8	93.8
Unaware	11	05	16	6.2	100.0
Total	154	105	259	100.0	

The results presented in Table 4.2 show that the majority of respondents, 193 (74.5%) were male, while only 66 (25.5%) were female. This implies that males were almost thrice as many as females in the distance learning programme at the University of Nairobi during the time of the study. This finding confirms the results of an earlier study by Bowa (2008) on influence of learner support services on academic performance in the External Degree Programme of the University of Nairobi that agrees with the fact that there was higher enrolment of males than females in the post primary institutions in Kenya.

The results further confirms the findings by Otigo (2006) who carried out a study on the determinants of learners enrolment in the External Degree Programme of the University of Nairobi and found out that female enrolment stood at 45 percent while that of male was at 55 percent. With regard to age of distance learners, majority 119 (46.0%) were in the age bracket of (40-49) years. Out of this number seventy seven (77) were male while forty two (42) were female. This was followed by 92 (35.4%) out of which fifty four (54) were male while thirty eight (38) were female. Similarly, 38 (14.9%) fell in the age bracket of (50+), out of this number 23 were male while 15 were female. The least percentage was registered by 10 (3.7%) which belonged to the age bracket of <30 from which 6 were male while 4 were female.

The implication of this finding is that, majority 119 (46.0%) of distance learners enrolled in the programme by the time of this study were mature adults falling between the age bracket 40-49 years. The results of this study are in agreement with the outcome of an earlier study by Bowa (2008) who conducted a study on influence of learner support services on academic performance of learners in the External Degree Programme of the university of Nairobi that showed that learners in the tertiary level tend to be older than their counterparts in the conventional systems after taking a break into other engagements before resuming their studies.

Concerning learners programme of study the results in Table 4.2 further shows that a majority 203 (78.4%) were enrolled in the programme of B.E.D (Arts). Out of this number, one hundred and forty one (141) were male while sixty two (62) were female. From the programme of B.E.D (Science), only 56 (21.6%) were enrolled in the programme out of which 40 were male while 16 were female. The implication of this finding is that the programme of B.E.D (Arts) had attracted many learners than B.E.D (Science).

Regarding learners' computer literacy, which was based on self-assessment, the results in Table 4.2 show that of the 259 respondents, 116 (44.8%) rated their literacy skills as average. Out of this number sixty two (62) were male while thirty two (32) were female. Similarly, 94 (36.3%) felt that their literacy level was above average out of which seventy six (76) were male while forty (40) were female. At the same time 49 (18.9%) indicated that their literacy level was below average out of which thirty (30) were male while nineteen (19) were female. The implication the finding is that majority of the male gender rated their computer literacy as above average as compared to their female counterparts. The findings confirms the findings of an earlier study by Rahman .et.,(2013) on age, gender, and race differences in the use of digital library among Malaysian postgraduate students, that revealed that men use information and communication slightly more than women who are characterized with rare usage and no use of OPAC. The level of computer literacy is a key factor that is likely to determine the level at which individuals engage Information and Communication Technology (ICT) facilities in their work and studies.

As regards awareness of online library services availability at the University of Nairobi, the results in Table 4.2 show that most learners, 243 (93.8%) were aware that such services were available . Out of this number, one hundred and forty three (143) were male while only one hundred (100) were female. Further, only 16 (6.2%) indicated that they were unaware out of which, thirty (30) were male while nineteen (19) were female. Again, utilisation of ICT facilities in studies or in a work environment first begins with awareness. Logically, learners can only seek services of which they are aware, in terms of availability, accessibility and affordability.

4.4 Learners' Gender and Utilisation of Online Library Services

Objective one of this study was to determine influence of learners' gender on utilisation of online library services at the University of Nairobi. Respondents were asked to indicate to what extent learners' gender influence utilisation of online library services at the University of Nairobi. In carrying out this investigation, the 7 items in the instrument that covered utilisation of online library scores were scored on a five rating scale. Likert scale rating method was applied to establish learners' responses towards perception statements. Each statement in the attitude scale was followed by five responses which were; a very great extent, a great extent, not sure, less extent and not at all. Respondents were expected to express their attitude towards each of the items in the various subtitles by taking only one response. The scores ranged from possible minimum of 07 to a possible maximum of 35 indicating the lowest and highest usage of online library services.

4.4.1 Learners' gender and utilisation of online digital repository

The study sought to investigate influence of learners' gender on utilisation of online digital repository. In order to carry out this investigation, respondents were asked to indicate the extent to which learners' gender influenced utilisation of online digital repository. The results are contained in Table 4.3.

Table 4.3: Learners' gender and utilisation of online digital repository

Gender determines use of online digital repository	Frequency (f)	Percentage %	Cumulative percent
Not at all	178	68.9	68.9
Less extent	24	9.3	78.3
Not sure	26	9.9	88.2
Great extent	27	10.6	98.8
Very great extent	04	1.2	100.0
Total	259	100.0	
Mean	1.70		

As shown in Table 4.3, it is evident to confirm that majority 202 (78.3%) respondents did not agree with the opinion that learners' gender influenced utilisation of online digital repository. However, another 26 (9.9%) respondents indicated they were not sure. On the contrary, only 31 (11.8%) respondents confirmed their support for the opinion. The general impression one can derive from the results is that learners' gender had less influence on utilisation of online digital repository. The implication of these findings is that distance learners are greatly disadvantaged in their attempt to access online digital repository which is a requirement during their studies. The mean score obtained was 1.70.

4.4.2 Learners' gender and utilisation of online newspapers

The study was interested in establishing the influence of learners' gender on utilisation of online newspaper. In order to accomplish this investigation, respondents were asked to indicate the extent to which learners' gender influenced utilisation of online newspapers. The results are shown in Table 4.4.

Table 4.4: Learners' gender and utilisation of online newspapers

Gender determines use of online newspapers	Frequency (f)	Percentage %	Cumulative percent
Not at all	240	92.5	92.5
Less extent	2	0.6	93.5
Not sure	11	4.3	97.5
Great extent	2	0.6	98.1
Very great extent	4	1.9	100.0
Total	259	100.0	
Mean	1.18		

The results from Table 4.4 show that majority 242 (93.1%) respondents denied the claims that learners' gender influenced utilisation of online newspapers while 11 (4.3%) respondents said they were not sure. On the contrary, only 6 (2.5%) respondents confirmed their support for the opinion that learners' gender influenced utilisation of online newspapers. The impression one can derive from this finding is that learners' gender had less influence on utilisation of online newspapers at the University of Nairobi. The mean score was calculated at 1.18.

4.4.3 Learners' gender and utilisation of online public access catalogue

The study was interested in establishing influence of learners' gender on utilisation of Online Public Access Catalogue (OPAC). In order to accomplish this investigation, respondents were asked to indicate the extent to which learners' gender influenced utilisation of OPAC. The results are shown in Table 4.5.

Table 4.5: Learners' gender and utilisation of online public access catalogue

Gender determines use of online public access catalogue	Frequency (f)	Percentage %	Cumulative percent
Not at all	182	70.2	70.2
Less extent	24	9.3	79.5
Not sure	37	14.3	93.8
Great extent	5	1.9	95.7
Very great extent	11	4.3	100.0
Total	259	100.0	
Mean	1.61		

The results from Table 4.5 shows that majority 206 (79.5%) respondents did not agree with the opinion that learners' gender influenced utilisation of OPAC. Another 37 (14.3%) respondents indicated that they were not sure. On the other hand only 16 (6.2%) respondents indicated their support for the opinion that learners' gender influenced utilisation of OPAC. The impression one can derive from these results is that learners' gender had less influence on utilisation of OPAC. The mean score was calculated to be 1.61.

4.4.4 Learners' gender and utilisation of online electronic books

The study investigated influence of learners' gender on utilisation of online electronic books. In carrying out this investigation, respondents were asked to indicate the extent to which learners' gender influenced utilisation of online electronic books. The results are shown in Table 4.6.

Table 4.6: Learners' gender and utilisation of online electronic books

Gender determines use online electronic books	Frequency (f)	Percentage %	Cumulative percent
Not at all	185	71.4	71.4
Less extent	18	6.8	78.3
Not sure	44	16.8	95.0
Great extent	5	1.9	96.9
Very great extent	7	3.1	100.0
Total	259	100.0	
Mean	1.58		

From Table 4.6 the findings indicate that majority of 203 (78.3%) respondents denied the claim that learners' gender influenced utilisation of online electronic books whiles another 44 (16.8%) respondents said they were not sure. On the contrary, only 12 (5.0%) respondents supported the view that learners' gender influenced utilisation of online electronic books. The implication of this result is that learners' gender had less influence on utilisation of online electronic books. The mean was found to be 1.58.

4.4.5. Learners' gender and utilisation of online electronic journal

The study sought to investigate influence of student gender on utilisation of online electronic journals. In order to realise this objective, respondents were asked to indicate the extent to which learners' gender influenced utilisation of online electronic journals. The results are shown in Table 4.7.

Table 4.7: Learners' gender and utilisation of online electronic journals

Gender determines use of online electronic journals	Frequency (f)	Percentage %	Cumulative percent
Not at all	236	91.3	91.3
Less extent	5	1.9	93.2
Not sure	11	4.3	97.5
Great extent	2	0.6	98.1
Very great extent	5	1.9	100.0
Total	259	100.0	
Mean	1.20		

As shown in Table 4.7 Majority of the respondents 236 (91.3%) scored in the not at all level while only 5 (1.9%) scored in the less extent level. Another 11 (4.3%) respondents were not sure. On the contrary, only 2(0.6%) and 5(1.9%) respondents scored in the great extent and very great extent, respectively. The impression that one can derive from these results is that most of the respondents 241 (93.2%) did not support the opinion that learners' gender influenced utilisation of online electronic journal while only 7 (2.5%) respondents were in agreement with the statement. The implication of these results is that learners' gender had less influence on utilisation of online electronic journals. The mean score arrived at was 1.20.

4.4.6 Learners' gender and utilisation of online electronic database

The study sought to establish influence of learners' gender on utilisation of online electronic database. In carrying out this investigation, respondents were asked to indicate the extent to which learners' gender influenced utilisation of online electronic database. The results are shown in Table 4.8.

Table 4.8: Learners' gender and utilisation of online electronic database

Gender determines use of online database	Frequency (f)	Percentage %	Cumulative percent
Not at all	190	73.3	73.3
Less extent	15	5.6	78.9
Not sure	32	12.4	91.3
Great extent	15	5.6	96.9
Very great extent	7	3.1	100.0
Total	259	100.0	
Mean	1.60		

The results from Table 4.8 shows that majority 205 (78.9%) the respondents disagreed with the opinion that learners' gender influenced utilisation of online electronic database. However, 32 (12.4%) respondents indicated they were not sure. Similarly, another 22 (8.7%) respondents supported the opinion that learners' gender influenced utilisation of online electronic database. The impression that emerges from the findings is that learners' gender had less influence on utilisation of online electronic database. The mean score was calculated at 1.60

4.4.7Learners' gender and utilisation of online research papers

The study sought to investigate the influence of learners' gender on utilisation of online research papers. In order to accomplish this task, respondents were asked to indicate the extent to which learners' gender influenced utilisation of online research papers. The results are displayed in Table 4.9.

Table 4.9: Learners' gender and utilisation of online research papers

Gender determines use of online research papers	Frequency (f)	Percentage %	Cumulative percent
Not at all	199	77.0	77.0
Less extent	6	2.5	79.5
Not sure	31	11.8	91.3
Great extent	5	1.9	100.0
Very great extent	18	6.8	
Total	259	100.0	
Mean	1.60		

From Table 4.9 it is possible to conclude that majority 205 (79.5%) respondents declined to support the argument that learners' gender influenced utilisation of online research papers. At the same time 31 (11.8%) respondents said they were not sure. Similarly, 23(8.7%) respondents said learners' gender influenced utilisation of online research papers. The impression one can derive from these findings is that there was less influence of learners' gender on utilisation of online research papers. The mean score was 1.60.

4.4.8 Mean scores on learners' gender and utilisation of online library services

The study sought to establish mean scores on influence learners' gender on utilisation of online library services at the University of Nairobi. In order to accomplish this task, scores of means on the 7 online library services were computed and compared. Similarly, mean of means was also calculated to act as basis of making decision on whether the mean scores were high or low. It was assumed that any online library service that scored a mean above the mean of means was rated high while any online service that scored a mean below the mean of means was equally rated low. The results are summarised in Table 4.10.

Table 4.10: Learners' gender and utilisation of online library services

Online library services	Mean	Std Dev.
Online digital repository	1.70	0.180
Online Newspapers	1.18	0.320
Online Public Access	1.28	0.220
Catalogue (OPAC)	1.68	0.110
Online electronic books	1.58	0.080
Online electronic journals	1.30	0.300
Online electronic database	1.60	0.100
Online research papers	1.60	0.200
Total Mean	10.64	
Base Mean	1.50	

As shown in Table 4.10, the results reveal that online digital repository scored the highest mean of 1.70 followed by OPAC at 1.68. Online research papers and online database registered a mean of 1.60 each. Similarly, online electronic books scored a mean of 1.58 while online electronic journals recorded a mean of 1.30. The least mean score was recorded by online newspapers at 1.18. Going by the mean of means which was 1.50 online library services that scored means above the mean of means were online digital repository, OPAC, electronic database, online research papers and online electronic books. However, online electronic journals and online newspapers registered means below the mean of means hence have been rated as low.

The impression that one can derive from this finding is that learners' gender highly influenced utilisation of online digital repository among the distance learners of the University of Nairobi. This finding agrees with the interview findings, for example when asked whether student gender influenced utilisation of online library services, one of the librarians from Kikuyu campus responded by saying;

“Generally male love the computer or the machine for itself and like to spend long hours tinkering and game playing on computers, whereas female are far more likely to reject emotional identification with the computer or the machines a second self and instead think of it as dispassionate and instrumental terms as just tool”

Another Librarian from main campus library however, responded by saying;

“Male learners have significantly higher positive perception towards the use of online library and learners who have more prior experience with the Internet have significantly higher perceptions towards the use of online library”

The relationship between gender and utilisation of online library (as measured by mean score on online library services) was investigated using multiple linear regression analysis.

The null hypothesis was formulated as follows:

1. H₀ There was no significance relationship between learners’ gender and utilisation on online library services at the University of Nairobi.

The results are shown in the preceding tables.

Table 4.11: Model summary of regression analysis

Model	r	R ²	Adjusted R ²	Std. Err. of estimate	Change statistics				
					R ² change	F change	df1	df2	Sig. of change
1	0.345	0.119	0.59	0.419	0.119	1.998	10	1.E2	0.037

The findings in the Table 4.11 shows that the coefficient of correlation is $r = 0.345$ indicating a positive relationship between variables. Similarly, R^2 which is the coefficient of the determination $R^2 = 0.119$ implying a positive linear correlation. The significance

of change also referred to as the p -value is 0.037. This value is pegged on the study putting the limit at 0.5 or 95% degree of confidence interval. Since p -value 0.037 is less than 0.05 ($p > 0.05$) we therefore, reject the null hypothesis and accept the alternative hypothesis that there was a significant relationship between learners' gender and utilisation of online library services. This finding supports the findings of an earlier study by Odell (2000) on online applications used by male and female of Whiteland College in London that indicated pronounced gender differences in web use. For example male students in the college preferred using the internet for recreation features than female counterparts who were more interested in visiting the internet to reach out to friends and family members. The study carried out ANOVA to test how the regression model statistically significantly predicts the outcome variable (the significance of the relationship between the dependent and independent variable). The results are shown in Table 4.12.

Table 4.12: Analysis of Variance

Model	Sum of square	df	Mean square	F	sig
Regression	3.501	10	0.350	1.998	0.037
Residual	25.933	151	0.175		
Total	29.434	259			

The ANOVA Table 4.12 indicates that F statistic is 1.998 which means that 19.98 percent of the model fits the linear line and therefore, has been explained by the independent variable. This implies that this model fits interpretation. A factor analysis was further conducted to provide further explanation on the influence of learners' gender on utilisation of online library services. From the analysis, Kaiser Meyer test of validity (KMO) provided the following results in Table 4.13.

Table 4.13: KMO and Bartlett's Test

Kaiser- Meyer–Olkin Measure of Sampling Adequacy	0.806
Bartlett's Test of Sphericity Approximate chi-square	1358.338
Df	45
Sig	0.000

A KMO test of validity provides a figure of 0.806. This implies that the sampled data was highly valid since the threshold is normally 0.5. Using the principle component analysis the following values were extracted as shown in Table 4.14.

Table 4.14: Total variables explained

Component	Initial Eigen values			Extraction sums of squared loadings		
	Total	% of variation	Cum %	Total	% of Variation	Cum %
	6.097	60.974	60.974	6.097	60.974	60.974
	0.953	9.530	70.505			
	0.723	7.229	77.733			
	0.581	5.805	89.971			
	0.305	3.063	96.587			
	0.215	2.148	98.734			
	0.067	0.669	99.403			
	0.060	0.597	100.00			

Table 4.14 provides the variables explained and extracted using the principle component analysis. From the table it is evident that the first component explained 60 percent of the total variance implying that there was only one principal component extracted. The study further extracted a component matrix using Varimax rotation. Table 4.15 contains the results.

Table 4.15: Component matrix

Factor	Component
Electronic-journals	0.805
Online digital repository	0.849
Electronic books	0.843
Online public accesses catalogue (OPAC)	0.791
Online research papers	0.846
Electronic databases	0.508
Online newspapers	0.782

From Table 4.15 it is possible to conclude that only one commonest component was extracted which is digital repository (0.849). This implies that out of the 7 online library services, online digital repository stood out as the most important factor that was influenced by learners gender.

4.4.9 Variation in utilisation of online library services between male and female learners

The results presented in Table 4.16 show that of the 259 respondents, 115 (44.4%) utilised online library services to a great extent, while 63 (24.3%) used it to a very great extent. Contrastingly, 48 (18.5%) used it to a less extent, while 29 (11.2%) never used it at all. Among male learners, 97 (50.3%) respondents utilised online library services to a great extent, while 52 (26.9%) respondents used it to a very great extent. Contrastingly, 24 (12.4%) used it to a less extent, while 17 (8.8%) never used it at all. Among female learners, 24 (36.4%) utilised online library services to a less extent, while 18 (27.3%) utilised it to a great extent. Cumulatively, up to 149 (77.2%) male learners compared to 29 (43.9%) female learners reported above average utilisation of online library services. Based on this, the analysis obtained a computed $F_{(4,1)}$ statistic of 21.880, with a p -value of 0.004, which suggests up to 99% chance that male and female learners varied significantly regarding utilisation of online library services.

Table 4.16: Cross-tabulation of utilisation of online library services and gender

Aggregate perception on utilisation of online library services	Male		Female		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Very great extent	52	26.9	11	16.7	63	24.3
Great extent	97	50.3	18	27.3	115	44.4
Not sure	3	1.6	1	1.5	4	1.5
Less extent	24	12.4	24	36.4	48	18.5
Not at all	17	8.8	12	18.2	29	11.2
Total	193	100.0	66	100.0	259	100.0

Further analysis indicated that male learners had about 8 times the odds of utilising online library services as their female colleagues (p -value = 0.042, β = 2.105, odds ratio = 8.207, 95% C.I. = 6.426-10.465). The results suggest up to 95% chance that male learners had a better chance of utilising online library services more than their female colleagues. The results suggest that female learners may be in need of more user support to improve their utilisation of such library services. These results suggest that male learners were more likely to accept online library services than their female colleagues. Generally, male learners have demonstrated ready acceptance of new technological innovations than female learners. These findings are similar to those reported by Bimber (2000), who investigated the gender gap on utilisation of the Internet by postgraduate learners at Fuzhou University in Peoples Republic of China. The study reported that male learners were more confident and had a greater usage of computers compared to their female counterparts.

4.5 Learners' age and utilisation of online library services

Objective two of this study was to determine influence of learners' age on utilisation of online library services at the University of Nairobi. To accomplish this investigation, respondents were asked to indicate the extent to which learners' age influenced utilisation

of online library services. In carrying out this investigation, the 7 items in the instrument that contained statements of online library service scores were scored on a five rating scale which included, to a very great extent, to a great extent, not sure, less extent and not at all. Respondents were expected to express their attitude towards each of the items in the various subtitles by selecting only one response. The scores ranged in a continuum from 7 to 35 indicating the lowest and the highest usage of online library services.

4.5.1 Learners' age and utilisation of online digital repository

The study sought to establish the influence of learners' age on utilisation of online digital repository. In carrying out this investigation, respondents were required to indicate the extent to which learners' age influenced utilisation of online digital repository. The results are shown in Table 4.17.

Table 4.17: Learners' age and utilisation of digital repository

Age determines use of online digital repository	Frequency (f)	Percentage %	Cumulative percent
Not at all	180	69.6	
Less extent	16	6.2	76.8
Not sure	8	3.1	78.9
Great extent	32	12.4	91.3
Very great extent	23	8.7	100.0
Total	259	100.0	
Mean	2.32		

As shown in the Table 4.17, majority of the respondents 180 (69.6%) and 16 (6.2%) did not agree with the statement that learners' age influenced utilisation of online digital repository. This is followed by 32 (12.4%) who acknowledged that learners' age influenced utilisation of digital repository great extent while by 23 (8.7%) respondents indicated that

age influence utilisation of online digital repository to a very great extent. The implication of this result is that learners' age has little influence on utilisation of online digital repository. The mean score obtained was 2.32.

4.5.2 Learners' age and utilisation of online newspapers

The study intended to establish influence of learners' age on utilisation of online newspapers. In order to accomplish this investigation, respondents were also asked to indicate the extent to which learners' age influenced utilisation of online newspapers. The results are contained in Table 4.18.

Table 4.18: Learners' age and utilisation of online newspapers

Age determines use of online newspapers	Frequency (f)	Percentage %	Cumulative percent
Not at all	178	68.9	68.9
Less extent	23	8.7	77.6
Not sure	5	1.9	79.5
Great extent	39	14.9	94.4
Very great extent	14	5.6	100.0
Total	259	100.0	
Mean	1.80		

Table 4.18 shows that majority 178 (68.7%) respondents did not agree with the statement that learners' age influenced utilisation of online newspapers by scoring in for not at all. This was followed by 23 (8.7%) who scored in the less extent level while 39 (14.9%) held the contrary view that learners' age influenced utilisation of online newspapers by scoring in the great extent level. Only 14 (5.6%) scored for very great extent while about 5 (1.9%) were not sure. The implication of this result is that learners' age had less influence on utilisation of online newspapers. The mean score calculated was 1.80.

4.5.3 Learners' age and utilisation of online public access catalogue

The study sought to investigate the influence of learners' age on utilisation of OPAC. In carrying out this investigation, respondents were asked to indicate the extent to which learners' age influenced utilisation of OPAC. The results are summarised in Table 4.19.

Table 4.19: Learners' age and utilisation of online public access catalogue

Age determines use of online public access catalogue	Frequency (f)	Percentage %	Cumulative percent
Not at all	61	23.6	23.6
Less extent	29	11.2	34.8
Not sure	82	31.7	66.5
Great extent	37	14.3	80.7
Very great extent	50	19.3	100.0
Total	259	100.0	
Mean	3.33		

As shown in Table 4.19, up to 61 (23.6%) and 29 (11.2%) respondents scored for not at all and less extent level respectively. Similarly, another 82 (31.7%) indicated they were not sure. However, a bigger number 37 (14.3%) and 50 (19.3%) agreed with the opinion that learners' age influenced utilisation of OPAC. The implication of this result is that utilisation of OPAC is greatly influenced by learners' age. For example, almost an equal number 87 (33.6%) respondents were in agreement that learners' age influenced utilisation of online public access catalogue compared to 90 (34.8%) respondents who were of the contrary opinion.

4.5.4 Learners' age and utilisation of online electronic books

The study was interested in establishing influence of learners' age on utilisation of online electronic books. In order to achieve this investigation, respondents were asked to indicate the extent to which learners' age influenced utilisation of online e-Books. The results are shown in the table 4.20.

Table 4.20: Learners' age and utilisation of online electronic books

Age determines use of electronic books	Frequency (f)	Percentage %	Cumulative percent
Not at all	116	44.7	44.7
Less extent	31	11.8	56.5
Not sure	44	16.8	73.3
Great extent	27	10.6	83.9
Nearly great extent	41	16.1	100.0
Total	259	100.0	
Mean	2.41		

The results in Table 4.20 shows that majority of the respondents 147 (56.5%) did not agree with view that learners' age influenced utilisation of online electronic books while 44 (16.8%) were not sure. However, 78 (26.7%) were of the contrary opinion that learners' age influenced utilisation of online electronic books services. The impression of this result is that learners' age has little influence on utilisation of online electronic books. The mean score was calculated at 2.41.

4.5.5 Learners' age and utilisation of electronic-journals

The study was also interested in investigating the influence of learners' age on utilisation of electronic journals. In order to realise this objective, respondents were asked to indicate the extent to which learners' age influenced utilisation of online electronic journals. The results are displayed in Table 4.21.

Table 4.21: Learners' age and utilisation of online electronic journals

Age determines use of electronic journals	Frequency (f)	Percentage %	Cumulative percent
Not at all	124	47.8	47.8
Less extent	19	7.5	55.3
Not sure	40	15.5	70.8
Great extent	34	13.0	83.9
Very great extent	42	16.1	100.0
Total	259	100.0	
Mean	2.42		

The results from Table 4.21 shows that 124 (47.8%) respondents scored for not at all level, 19 (7.5%) respondents scored for less extent while 40 (15.5%) respondents indicated that they were not sure. On the contrary 34 (13.0%) and 42 (16.1%) respondents indicated great extent and very great extent, respectively. The implication of this result is that majority of the respondents 143 (55.3%) did not support the view that learners' age influenced utilisation of online electronic journals while only 76 (29.1%) respondents agreed with statement that learners' age influenced utilisation online electronic journals. The implication of this finding is that, learners' age had less influence on utilisation of online electronic journals. The mean score computed was 2.42

4.5.6 Learners' age and utilisation of online database

The study was concerned with establishing the influence Learners' age on utilisation of online database. To accomplish this investigation, respondents were required to indicate the extent to which learners' age influenced utilisation of online database. The results are contained in Table 4.22.

Table 4.22: Learners' age and utilisation of online database

Age determines use of online database	Frequency (f)	Percentage %	Cumulative percent
Not at all	142	54.7	54.7
Less extent	19	7.5	62.1
Not sure	32	12.4	74.5
Great extent	26	9.9	84.5
Very great extent	40	15.5	100.0
Total	259	100.0	
Mean	2.24		

As shown in Table 4.22, up to 142 (54.7%) and 19 (7.5%) respondents scored for not at all and less extent, respectively. Another 32 (12.4%) respondents said they were not sure. However, 26 (9.9%) and 40 (15.5%) respondents scored for great extent and very great extent, respectively. The general impression of this result is that majority of the respondents 161 (62.2%) did not agree with the statement that Learners' age influenced utilisation of online database while only 66 (25.4%) supported the opinion. The implication of this result is that learners' age has little influence on utilisation of online database. The mean score registered was 2.24.

4.5.7 Learners' age and utilisation of online research papers

The study was interested in establishing influence of learners' age on utilisation of online research papers. In order to accomplish this investigation, respondents were asked to indicate the extent to which learners' age influenced utilisation of online research papers. The results are shown in Table 4.23.

Table 4.23: Learners’ age and utilisation of online research papers

Age determines use of online research papers	Frequency (f)	Percentage %	Cumulative percent
Not at all	142	54.7	54.7
Less extent	10	3.7	58.4
Not sure	10	3.7	62.1
Great extent	23	8.7	70.8
Very great extent	74	29.2	100.0
Total	259	100.0	
Mean	2.53		

On the basis of the data shown in Table 4.23, it emerges that majority 142 (54.7%) respondents scored in the Not at all level. It is also evident in the table that 10 (3.7%) scored in the less extent category while 10 (3.7%) respondents were not sure. However, the results also reveal that a substantial number 74 (29.2%) and 23 (8.7%) scored in a very great extent and great extent, respectively. The data gives the impression that there was a high number of learners 152 (58.4%) who did not support the view that learners’ age influenced utilisation of online research newspapers while only 97 (37.9%) respondents supported the opinion that learners’ influenced utilisation of online research papers. The implication of this result is that learners’ age had less influence on utilisation of online research papers. The mean score recorded was 2.53.

4.5.8 Mean score on learners’ age and utilisation of online library services

The study further established mean scores on influence of learners’ age on utilisation of online library services. In order to accomplish this task, scores of means of different online library services were computed and compared. The mean of means was also calculated to act as a basis for making any conclusion. It was therefore, assumed that any online library service that obtained a mean above the mean of means was rated high. Equally, any online library service that scored a mean score below the mean of means was rated low. The results are shown in Table 4.24,

Table 4.24: Learners' age and utilisation of online library services

Online library services	Mean	Std. Dev.
Online digital repository	1.85	0.470
Online newspapers	1.80	0.520
Online research papers	2,53	0.210
Online public access	3,33	1.010
Online electronic books	2.41	0.090
Online electronic journals	2.42	0.100
Online electronic database	2.24	0.080
Total Mean	16.58	
Base Mean	2.34	

The results from Table 4.24 show that OPAC registered the highest mean of 3.33, followed by access to online research papers at 2.53 while access to online electronic journals and online e-Books recorded means of 2.42 and 2.41 respectively. Online digital repository had a mean of 1.85 followed by online newspapers at 1.80. Going by the mean of means, which was 2.34, it can be concluded that the services that were highly influenced by learners' age were online public access catalogue (3.33) online research papers (2.53), online electronic journals (2.42) and online e-Books at (2.42). On the other hand online electronic database (2.24), online digital repository (1.85), online newspapers (1, 80) had low influence from learners' age. The findings further reveal that the most factor that was highly influenced by learners' age was online public access catalogue at 3.33. This finding is in agreement with the findings from the interview schedule. For example, when asked to comment on the influence of student age on utilisation of online library services, one of the librarians from Chiromo library commented as follows;

“Demographics such as age may be a primary factor that influence whether the student use technology. Those learners who are in their middle ages can either be allies or stubborn opponents as their institution adjust to competitive pressure, revised programmes, to meet the needs of diverse student and integrate new educational technologies”

The relationship between learners’ age and utilisation of online library services (as measured by mean score) was investigated using multiple linear regression analysis. The null hypothesis stated as follows;

2. H₀: There was no significant relationship between learners’ age and utilisation of online library services at the University of Nairobi

The results are contained in Table 4.25

Table 4.25: Regression analysis on learners’ age and utilisation of online library services

Model	R	R ²	Ads R ²	Std error of estimate	R ² Change	F change	df1	df2	Sig change
1	0.306	0.134	0.076	0.732	0.134	2.294E0	10	1.E2	0.016

The results have shown in Table 4.25 shows that the coefficient of correlation $r = 0.306$ indicating a positive relationship between variables. R^2 is the coefficient of determination which is $R^2 = 0.134$ implying that there was a positive linear correlation. The significance of change also referred to as the ρ -value is $\rho = 0.016$. This value is pegged on the study putting the limit of 0.5 or 95 percent degree of the confidence interval. Since ρ -value $0.016 < 0.05$, we therefore, reject the null hypothesis and accept the alternative that there was a significance relationship between learners’ age and utilisation of online library

services at the University of Nairobi. The findings are in agreement with the librarians' perceptions towards influence of learners' characteristics such as age and gender on utilisation of online library services that registered a higher mean of 3.73. The findings also support the outcome of another study by Tayler & Hasting (2011) who conducted a study on virtual patrons' satisfactions with library services, the results reported a significant relationship amongst the age group of students and their satisfaction with online resources. For example student in the age group of 17-20 years were (<0.05) highly satisfied with the available resources and services. Further investigation was conducted using ANOVA to test how regression model statistically significantly predicts the outcome variable (the significance of the relationship between the dependent and independent variable). The results are shown in Table 4.26.

Table 4.26: Analysis of Variance

Model	Sum of square	Df	Mean square	F	sig
Regression	12.287	10	1.229	2.294	0.016
Residual	79.272	148			
Total	91.560				

The ANOVA Table 4.26 indicate that F statistic is 2.294 meaning that 22.94 percent of the model fits the linear line and therefore, has been explained by the independent variables hence this model fits interpretation.

4.5.9 Variation in utilisation of online library services learners based on age

As indicated in Table 4.27, of the 259 respondents 93 (35.9%) utilised online library services to a great extent, while 58 (22.4%) used the services to a very great extent. The results further show that 55 (21.2%) utilised online library services to a less extent, while

34 (13.1%) never used it at all. Cumulatively, the results show that up to 151 (58.3%) learners indicated above average utilisation of online library services. Across the age groups, the results show that among learners aged below 30 years (<30), 6 (60.0%) utilised online library services to a very great extent, while 3 (30.0%) utilised the services to a great extent. Among learners aged 50 years and above (50+), up to 11 (28.9%) never utilised online library services at all, while 9 (23.7%) utilised the services to a less extent. Based on this, the ANOVA computation obtained a computed F (4,3) statistic of 18.994, with a p -value of 0.009, which suggests up to 99% chance that utilisation of online library services varied significantly among learners of various age groups. Notably, a higher proportion of younger learners reported above average utilisation of the services, while among older learners a higher proportion reported below average utilisation of online library services.

Table 4.27: Cross-tabulation of utilisation of online library services and age

Aggregate perception on utilisation of online library services	<30		30-39		40-49		50+		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Very great extent	6	60.0	27	29.3	24	20.2	1	2.6	58	22.4
Great extent	3	30.0	45	48.9	35	29.4	10	26.3	93	35.9
Not sure	0	0.0	3	3.3	9	7.6	7	18.4	19	7.3
Less extent	1	10.0	14	15.2	31	26.1	9	23.7	55	21.2
Not at all	0	0.0	3	3.3	20	16.8	11	28.9	34	13.1
Total	10	100.0	92	100.0	119	100.0	38	100.0	259	100.0

Again, further analysis indicated that learners aged below 30 years were about 3 times the odds of utilising online library services as those aged 50 years and above (p -value = 0.038, β = 1.208, odds ratio = 3.347, 95% C.I. = 2.244-4.992). Furthermore, learners aged 30-39 years were also about thrice as likely to utilise online library services as their colleagues aged 50 years and above (p -value = 0.044, β = 1.069, odds ratio = 2.912, 95% C.I. = 1.702-4.983). In each case, the results show up to 95% chance that younger learners had better

chances of utilising online library services than their older colleagues. In this regard, utilisation of online library services reduced with age. Generally, the results suggest that younger learners are likely to be more willing to learn and accept new technological aspects of online library services than their older colleagues, who may perceive new technology-based ideas as a threat to their survival in an ICT environment. Similar findings on age and the level of e-resource use were reported by Ganiyu (2013), who assessed demographic factors on use of online library resources by undergraduate learners in two private universities in Nigeria. The study found that younger learners were more receptive to new technologies than their older counterparts.

4.6 Learners' computer literacy and utilisation of online library services

Objective three of this study was to assess the extent to which learners' computer literacy influenced utilisation of online library services at the University of Nairobi. In order to accomplish this task, respondents were asked to indicate the extent to which learners' computer literacy influenced utilisation of online library services at the institution. In carrying out this investigation, the 7 items in the instrument that contained statements about computer literacy were scored on a five level rating scale which were; to a very great extent, to a great extent, not sure, less extent and not at all. Respondents were expected to express their attitude towards each of the items in the various subtitles by selecting only one response. The scores ranged from a continuum from 7 to 35 indicating the lowest and the highest usage of online library service respectively. The results are presented in the preceding sections.

4.6.1 Learners' computer literacy and utilisation of online digital repository

The study sought to investigate the influence learners' computer literacy on utilisation of online digital repository. In order to accomplish this task, respondents were asked to indicate the extent to which learners' computer literacy influenced utilisation of online digital repository. The results are displayed in Table 4.28

Table 4.28: Learners' computer literacy and utilisation of online digital repository

Computer literacy influence my usage digital repository	Frequency (f)	Percentage %	Cumulative percent
Not at all	68	26.1	26.1
Less extent	77	29.8	55.9
Not sure	72	28.0	83.9
Great extent	21	8.1	91.9
Very great extent	21	8.1	100.0
Total	259	100.0	
Mean	2.42		

The data in Table 4.28 indicates that 68 (26.1%) and 77 (29.8%) respondents scored in for not at all and less extent, respectively. This was followed by 72 (28.0%) respondents who were not sure. Similarly, only 21 (8.1%) respondents scored for great extent while 21 (8.1%) respondents scored in the very great extent. A closer look at the analysis further reveals that majority of the respondents 145 (55.9%) did not support the opinion that learners' computer literacy influenced utilisation of online digital repository. The implication of this result is that learners' computer literacy had less influence on utilisation of online digital repository. It may also imply that majority of the learners do not possess computer knowledge; hence, they cannot access online digital repository.

4.6.2 Learners' computer literacy and utilisation of online newspapers

The study also intended to investigate influence of learners' computer literacy on utilisation of online newspapers. In carrying out this investigation, respondents were asked to indicate the extent to which learners' computer literacy influenced utilisation of online newspapers.

The data generated is presented in Table 4.29.

Table 4.29: Learners' computer literacy and utilisation of online newspapers

Computer literacy influence my usage online newspapers	Frequency (f)	Percentage %	Cumulative percent
Not at all	53	20.5	20.5
Less extent	84	32.3	52.8
Not sure	69	26.7	79.5
Great extent	34	13.0	92.5
Very great extent	19	7.5	100.0
Total	259	100.0	
Mean	2.54		

As shown in Table 4.29 the results indicated that 53 (20.5%) respondents scored for not at all while 84 (32.3%) respondents scored for less extent. Another 69 (26.7%) respondents said they were not sure. Similarly, 34 (13.0%) and 19 (7.5%) respondents indicated great extent and very great extent, respectively. A clear observation of the results reveals that majority 137 (52.8%) respondents were against the view that learners' computer literacy influenced utilisation of online newspapers. The implication of this finding is that there less influence of learners' age on utilisation of online newspapers. The mean score worked out was 2.54.

4.6.3 Learners' computer literacy and utilisation of online public access catalogue

The study sought to investigate the influence of learners' computer literacy on utilisation of OPAC. In responding to this investigation, respondents were asked to indicate the extent to which learners' computer literacy influenced utilisation of OPAC. The results are shown in Table 4.30

Table 4.30: Computer literacy and utilisation of online public access catalogue

As a result of computer literacy am able to use online public access catalogue	Frequency (f)	Percentage %	Cumulative percent
Not at all	71	27.3	27.3
Less extent	40	15.5	42.9
Not sure	48	18.6	61.5
Great extent	44	16.8	78.3
Very great extent	56	21.7	100.0
Total	259	100.0	
Mean	2.90		

As shown in Table 4.30, the results indicates that 71 (27.3%) and 40 (15.5%) respondents did not support the opinion that learners' computer literacy influenced utilisation of OPAC. However, 44 (16.8%) and 56 (21.7%) were in the agreement that learners' computer literacy influence utilisation of OPAC while 48 (18.6%) respondents were not sure. The implication of this finding is that there was little difference between those who are against the opinion and those who are supporting the allegation. The implication of this result seems to suggest that learners' computer literacy supports utilisation of OPAC. This outcome can be attributed to the fact that this service is free of charge and open for access to many library users.

4.6.4 Learners' computer literacy and utilisation of online electronic books

The study also explored the influence of learners' computer literacy on utilisation of online electronic books. In order to accomplish this task, respondents were asked to indicate the extent to which learners' computer literacy influenced utilisation of online electronic books. The results are summarised in Table 4.31.

Table 4.31: Learners' computer literacy and utilisation of online electronic books

As a result of computer literacy able to use online electronic books	Frequency (f)	Percentage %	Cumulative percent
Not at all	61	23.6	23.6
Less extent	79	30.4	50.0
Not sure	55	21.1	75.2
Great extent	22	10.6	85.7
Very great extent	37	14.3	100.0
Total	259	100.0	
Mean	2.61		

On the basis of data shown in Table 4.31, it emerges that 61 (23.6%) and 79 (30.4%) respondents scored in the Not at all and less extent level respectively. The information in Table 4.31 also reveal that 22 (10.6%) and 37 (14.3%) respondents scored in the great extent and very great extent, respectively while 55(21.1%) said they were not sure. The data gives the impression that majority 140 (54%) respondents did not support the view that learners' computer literacy influence utilisation of online electronic books compared to only, 59 (24.9%) respondents supporting the opinion. The implication of this finding is that there was less influence of learners' computer literacy on utilisation of online electronic books among the distance learning standards at the University of Nairobi.

4.6.5. Learners' computer literacy and utilisation of online electronic journals

The study was interested in establishing influence of learners' computer literacy on utilisation of online electronic journals. In carrying out this investigation, respondents were asked to indicate the extent to which learners' computer literacy influenced utilisation of online electronic journals. The results are shown in Table 4.32.

Table 4.32: Learners' computer literacy and utilisation of online electronic journals

As a result of computer literacy am able to use online electronic journals	Frequency (f)	Percentage %	Cumulative percent
Not at all	71	27.3	27.3
Less extent	56	21.7	49.1
Not sure	64	24.8	73.9
Great extent	31	11.8	85.7
Very great extent	37	14.3	100.0
Total	259	100.0	
Mean	2.63		

According to the results obtained in Table 4.32, 71 (27.3%) and 56 (21.7%) respondents scored in the not at all and less extent levels. However, another 64 (24.8%) respondents stated that they were not sure. Similarly, 31 (11.8%) and 37 (14.3%) respondents indicated great extent and very great extent, respectively. The impression of this result is that majority 127 (49%) respondents did not agree with the opinion that learners' computer literacy influenced utilisation of online electronic journals while only 68 (26.1%) supported the view. The implication of this result is that there was less influence of student computer literacy on utilisation of online electronic journals. The mean score computed was 2.63

4.6.6 Learners' computer literacy and utilisation of online database

The study also investigated the influence of learners' computer literacy on utilisation of online database. In order to achieve this goal, respondents were required to indicate the extent to which learners' computer literacy influenced utilisation of online database. The results are shown in Table 4.33.

Table 4.33: Learners' computer literacy and utilisation of online database

As a result of computer literacy am able to use online electronic database	Frequency (f)	Percentage %	Cumulative percent
Not at all	69	26.7	26.7
Less extent	66	25.5	52.2
Not sure	68	22.4	74.5
Great extent	31	11.8	86.3
Very great extent	25	13.7	100.0
Total	259	100.0	
Mean	2.53		

The data in Table 4.33 reveals that, majority 69 (26.7%) and 66 (25.5%) respondents scored in the level of not at all and less extent, respectively. Likewise another 31 (11.8%) and 25 (13.7%) respondents scored in the great extent and very great extent levels, respectively. However, 68 (22.4%) said they were not sure. This gives the impression that there was less influence of learners' computer literacy on utilisation of online database. The mean score was calculated at 2.53.

4.6.7 Learners' computer literacy and utilisation of online research papers

The study sought to investigate the influence of learners' computer literacy on utilisation of online research papers. In order to realise this investigation, respondents were asked to indicate the extent to which learners' computer literacy influenced utilisation of online research papers. The results are shown in Table 4.34

Table 4.34: Learners' computer literacy and utilisation of online research papers

As a result of computer literacy am able to use online research papers	Frequency (f)	Percentage %	Cumulative percent
Not at all	79	30.4	30.4
Less extent	48	18.6	49.1
Not sure	73	28.0	77.0
Great extent	18	6.8	83.9
Very great extent	41	16.1	100.0
Total	259	100.0	
Mean	2.47		

Data shown in Table 4.34 shows that, 79 (30.4%) and 48 (18.6%) respondents scored for not at all and less extent levels respectively. Likewise another 73 (28.7%) respondents indicated that they were not sure. However, 18 (6.8%) and 41 (16%) respondents scored in the great extent that very great extent, respectively. The results further reveal that majority 127 (49%) respondents did not support the view that learners' computer literacy influenced utilisation of online research papers while only 59 (22.9%) respondents supported the opinion. The implication of this finding is that learners' computer literacy had less influence on utilisation of online research papers. The mean score was computed at 2.47.

4.6.8 Mean scores on learners' computer literacy and utilisation of online library services

The study further investigated mean scores on influence of learners' computer literacy on utilisation of online library services. In carrying out this investigation, scores of means on different online library services were computed and compared. Further, mean of means was also calculated to act as a basis for making any meaningful conclusions. Any online library service that scored above the mean of means was considered high while those that scored below the mean of means were treated as low. The results are summarised in Table 4.35.

Table 4.35: Mean scores on learners' computer literacy and utilisation of online library services

Level library source	Mean	Std. dev.
Online digital repository	2.42	1.210
Online newspapers	2.54	1.460
Online public access (OPAC)	2.90	1.381
Electronic books	2.61	1.416
Electronic journals	2.63	1.449
Online database	2.53	1.4721
Online Research Papers	2.47	1.519
Total Mean	18.1	
Base Mean	2.59	

The results of data analysis from Table 4.35 shows that OPAC scored the highest mean of 2.90, followed by, online electronic journals and online electronic books at a mean of 2.63 and 2.61 respectively. On the other hand, online newspapers recorded a mean of 2.54 followed by online database at a mean of 2.53 while online research papers and online digital repository registered means of 2.47 and 2.42 respectively. Comparing the mean scores with the mean of means which was 2.59, it was possible to conclude that online

public access catalogue (2.90), and online electronic journals (2.63) were highly influenced by learners' computer literacy. Similarly, other services that fell below the mean of means such as online electronic books (2.54), online database (2.53), online research papers (2.47) and online digital repository (2.42) were lowly influenced by learners' computer literacy. It is also evident to conclude that OPAC is the service that recorded the highest influence from learners' computer literacy. This finding concurs with the interview finding, for example, one librarian from Chiromo library revealed;

“Computer is increasingly becoming the major note book, textbook, dictionary and storage facility for information for learners in quality institution of higher learning and noted that universities that fails to utilise the benefits of digital aged computer assisted learning, web connectivity and networked learning, cannot offer quality education and pointed out that distance learners lacked information competencies required for effective utilisation of online library services offered by the University of Nairobi.”

The relationship between learners' computer literacy and utilisation of online library services (as measured by mean score) was also investigated using multiple linear regression analysis. The null hypothesis stated as follows:

3. H₀ There is no significant relationship between learners' computer literacy and utilisation of online library services at the University of Nairobi.

The results are summarised in Table 4.36

Table 4.36: Regression analysis on learners' computer literacy and utilisation of online library services

Model	r	R ²	Adj. R ²	Std error of estimate	R square change	F change	df1	df2	Sig. change
1	0.234	0.055	-0.009	1.222	0.055	0.854	10	12	0.578

The results displayed in Table 4.36, indicate that the coefficient correlation $r = 0.234$ is a weaker positive relationship between independent and dependent variable. The R^2 is the coefficient of the determination which is $R^2 = 0.055$ implying that there was a small positive linear correlation. The significance of change also referred to as p -value is $p=0.578$. The value is pegged on the study limit at 0.5 or 95 percent degree of confidence interval. Since p -value $0.578 > 0.05$, the null hypothesis was accepted and conclusion made that there was no significant relationship between learners' computer literacy and utilisation of online library services at the University of Nairobi. This outcome however, contradicts perceptions as expressed by the librarians who had indicated a stronger relationship between learners' computer literacy and use of online library services with a mean score of 4.09.

The findings further contradicts the results of an earlier study by Tayler and Hastings (2011) who conducted a study on factors influencing virtual patrons satisfaction with online library resources and services in Florida, which alluded to the fact that computer experience with several computer related task correlated positively with learners satisfaction with the library online services. Further investigation was done using ANOVA to test how the regression model statistically significantly predicts the outcome variable (the significant relationship between the dependent and independent variable). Table 4.37 presents the results.

Table 4.37: Analysis of Variance

Model	Sum of square	df	Mean square	f	sig
Regression	12.755	10	1.275	0.854	0.578
Residual	220.981	148	1.493		
Total	233.736	158			

The ANOVA table 4.37 shows that F value statistics is 0.854 meaning 85.4 percent of model fits the linear line hence has been explained thus the model fits interpretation.

4.6.9 Variation in utilisation of online library services and learners' computer literacy

In relation to learners' computer literacy, the results in Table 4.38 show that of the 259 respondents 101 (39.0%) utilised online library services to a great extent, while 70 (27.0%) did so to a very great extent. Those who utilised online library services to a less extent were 42 (16.2%), while 19 (7.3%) never used it at all. Cumulative results show that up to 171 (66.0%) learners reported above average utilisation of online library services, in relation to computer literacy. Again, based on the level of computer literacy, among learners who rated their literacy level as above average, 43 (45.7%), utilised online library services to a great extent, 31 (33.0%) indicated a very great extent, while 10 (10.6%) utilised online library services to a less extent. Among learners who rated their computer literacy level as below average, the results show that 11 (22.4%) utilised online library services to a great extent, 8 (16.3%) utilised the services to a very great extent, 15 (30.6%) indicated less extent, while 9 (18.4%) never used the services at all. Cumulatively, 74 (78.7%) learners with above average computer literacy against 19 (38.8%) learners with below average literacy level reported above average utilisation of online library services. Based on this,

the analysis obtained a computed F (4,2) statistic of 25.338, with a ρ -value of 0.003, which suggests up to 99% chance that there was significant variation among learners with above average, average and below average computer literacy levels, regarding utilisation of online library services.

Table 4.38: Cross-tabulation of utilisation of online library services and computer literacy

Aggregate perception on utilisation of online library services	Above average		Average		Below average		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Very great extent	31	33.0	31	26.7	8	16.3	70	27.0
Great extent	43	45.7	47	40.5	11	22.4	101	39.0
Not sure	9	9.6	12	10.3	6	12.2	27	10.4
Less extent	10	10.6	17	14.7	15	30.6	42	16.2
Not at all	1	1.1	9	7.8	9	18.4	19	7.3
Total	94	100.0	116	100.0	49	100.0	259	100.0

The analysis further revealed that learners with above average computer literacy level had about 5.8 times the odds of utilising online library services as their colleagues with below average computer literacy levels (ρ -value = 0.009, β = 1.773, odds ratio = 5.888, 95% C.I. = 4.682-7.406). Those who rated their literacy level as average were about 4.3 times as likely to utilise online library services as their colleagues with below average literacy level (ρ -value = 0.010, β = 1.457, odds ratio = 4.293, 95% C.I. = 3.289-5.604). In both cases, the variation in the odds of utilising online library services was statistically significant at 99% and 95% confidence levels, respectively. The results suggest that computer literacy level was a key factor influencing utilisation of online library services at the University of Nairobi. The higher the computer literacy level, the higher the odds of learners utilising online library services. These findings are similar to those reported by Koohang (2004), as well as Koohang and Ondracek (2005), whose analysis yielded a positive correlation between computer experience and student satisfaction with online library services. However, the results of this study are inconsistent with those reported by Blackman (2003).

4.7 Learners' awareness and utilisation of online library services

Objective four of this study was to establish influence of learners' awareness of availability of online library services on utilisation of online library services at the University of Nairobi. In order to carry out this investigation, the questionnaire was divided into two parts. In part one of this objective, respondents were asked to indicate to what extent they agreed or disagreed with statements related to their state of awareness regarding provision of online library services. The second part of the questionnaire was meant to establish the influence of learners' awareness of availability on utilisation of online library services. In carrying out the investigation, the 5 items in part one of the instrument that contained statements of awareness were scored on a five rating scale which were; to a very great extent, to a great extent, not sure, less extent and not at all. Respondents were expected to express their attitude towards each of the items in the various subtitles by selecting only one response. The scores ranged from a continuum of 5 to 25, indicating lowest and highest respectively. Similarly, in part two of the question, the 7 items of the instrument were scored on a five rating scale, which were, to a very great extent, a great extent, not sure, a less extent and not at all. Respondents were expected to express their attitude towards each of the items in the various subtitles by selected only one response. The scores ranged from a continuum of 7 to 35 indicating lowest and highest respectively. The results are presented in the preceding sections.

4.7.1 University library creating awareness of availability online library services

The study sought to investigate whether the University of Nairobi library was creating awareness about the existence of online library services. In order to realise this goal, respondents were asked to indicate the extent to which they agreed or disagreed with the statement of awareness regarding whether the University library was creating awareness about availability of online library services. The results are shown in Table 4.39.

Table 4.39: Learners' awareness and availability of online library services

Am aware the university library is creating awareness about availability of online library services	Frequency (f)	Percentage %	Cumulative percent
Not at all	105	40.4	40.4
Less extent	31	11.8	52.2
Not sure	31	11.8	64.0
Great extent	52	19.9	83.9
Very great extent	40	16.1	100.0
Total	259	100.0	
Mean	2.58		

The data in Table 4.39, shows that 105 (40.4%) and 31 (11.8%) scored in not at all and less extent, respectively. Another 31 (11.8%) respondents indicated that they were not sure. Similarly, 52 (19.9%) and 40 (16.1%) respondents scored in great extent and very great extent, respectively. A close look at the information in Table 4.38 reveal that majority 136 (52.2%) respondents indicated that the university library was not creating awareness regarding availability of online library services. However, only 92 (36.0%) respondents confirmed the view that university library was creating awareness regarding existence of online library services. The implication of this finding is that many learners are not aware of existence of online library services therefore, cannot access them regularly. The mean score was found to be 2.58.

4.7.2. University library providing online library orientation

The study was interested in establishing whether the university library was providing online orientation. In order to accomplish this investigation, respondents were asked to indicate the extent to which they agreed or disagreed with the statement that the University library was providing online library orientation. The results are shown in Table 4.40.

Table 4.40: Learners' awareness and provision of online library orientation

Am aware the university library is providing online library orientation	Frequency (f)	Percentage %	Cumulative percent
Not at all	108	41.6	41.6
Less extent	45	17.4	59.0
Not sure	22	8.7	67.7
Great extent	42	16.1	89.9
Very great extent	42	16.1	100.0
Total	259	100.0	
Mean	2.48		

As shown in Table 4.40, the results indicate that majority 108 (41.6%) and 45 (17.4%) respondents did not agree with the view that university library is providing online library orientation. Only 42 (16.1%) and 42 (16.1%) respondents scored in the great extent and very great extent, respectively. This implies that only minority, 84 (32.2%) respondents supported the opinion. Failure to provide online library orientation was a clear indication of lack of knowledge about availability of online library services hence limited use of online library services among the distance learners at the University of Nairobi. The mean score was calculated to be 2.48.

4.7.3 University library providing online library induction

The study sought to find out whether the university library was providing online library induction. In trying to accomplish this investigation, the respondents were asked to indicate the extent to which they agreed or disagreed with the statement that University library was providing online library induction to its distance learners. The results are shown in Table 4.41.

Table 4.41: Learners' awareness and provision of online library induction

Am aware the university library is providing online library induction	Frequency (f)	Percentage %	Cumulative percent
Not at all	130	50.3	50.3
Less extent	6	2.5	52.8
Not sure	47	18.0	70.8
Great extent	52	19.9	90.7
Very great extent	24	9.3	100.0
Total	259	100.0	
Mean	2.39		

The results from Table 4.41 shows that, 130 (50.3%) and 6 (2.5) of the respondents scored in the not at all and less extent, respectively. Another 47 (18.0%) indicated they were not sure. On the other hand, 52 (19.9%) and 24 (9.3%) respondents scored in for great extent and a very great extent, respectively. This gives an impression that majority 136 (52.5%) respondents, did not support the view that university library was providing online induction. Only 76 (29.2%) respondents said the University library was providing awareness through online induction to its distance learners. The implication of this finding is that failure to provide online library induction was an impediment to learners' utilisation of online library services.

4.7.4 University library providing online library instruction

The study was interested in establishing whether the University of Nairobi library was providing online library instruction to distance learners. In order to accomplish this investigation, respondents were asked indicate the extent to which they agreed or disagreed with the statement that University library was providing online library instruction. The results are shown in Table 4.42.

Table 4.42: Learners' awareness and provision of online library instruction

Am aware the university is providing online library instructions	Frequency (f)	Percentage %	Cumulative percent
Not at all	137	52.8	52.8
Less extent	14	5.6	58.4
Not sure	48	18.6	77.0
Great extent	32	12.4	89.4
Very great extent	28	10.6	100.0
Total	259	100.0	
Mean	2.24		

As shown in Table 4.42, the results indicate that 137 (52.8%) and 14 (5.6%) respondents scored in the not at all and less extent levels, respectively; while 48 (18.6%) said they were not sure. Likewise 32 (12.4%) and 28 (10.6%) scored in a great extent and very great extent levels, respectively. The results further reveal that majority 151 (58.4%) respondents testified that university library was not providing online library instruction. Similarly, only 60 (23.0%) respondents supported the view that university library was providing online library instruction to distance learners. The implication of this finding is that, failure to provide online library instruction by the University of Nairobi was an impediment to effective utilisation of online library services the mean was computed at 2.24.

4.7.5 Learners' ability to visit the Internet regularly following awareness

The study was interested in establishing whether learners were able to visit the Internet for online library services as a result of awareness. In order to accomplish this investigation, respondents were asked to indicate the extent to which they agreed or disagreed with the statement that they were able to visit the Internet regularly as a result of awareness. The results are shown in Table 4.43.

Table 4.43: Learners' awareness and regular visit to the internet for online library services

As a result of awareness am able to visit the Internet regularly	Frequency (f)	Percentage %	Cumulative percent
Not at all	37	14.3	14.3
Less extent	52	19.9	34.2
Not sure	6	2.5	36.7
Great extent	63	24.2	60.9
Very great extent	101	39.1	100.0
Total	259	100.0	
Mean	3.54		

The findings in Table 4.43 shows that 37 (14.3%) and 22 (19.9%) respondents did not support the opinion that as a result of awareness, learners were able to access the Internet for online library services. However, majority 164 (63.3%) respondents supported the view that awareness enables learners to access Internet for online library services at the University of Nairobi. The implication of this result is that the distance learners were able to visit the Internet regularly to access online library services because the University was creating awareness about existence and use of Internet in accessing online library services. The mean score was calculated at 3.54.

4.7.6 Learners' awareness and utilisation of online digital repository

The study was interested in establishing the influence of learners' awareness of availability of online library services on utilisation of online digital repository. In carrying out this investigation, respondents were asked to indicate the extent to which their level of awareness influenced utilisation of online digital repository. The results are shown in Table 4.44.

Table 4.44: Learners' awareness and utilisation of online digital repository

Awareness enhances utilisation of digital repository	Frequency (f)	Percentage %	Cumulative percent
Not at all	74	28.6	28.6
Less extent	16	6.2	34.8
Not sure	42	16.1	50.9
Great extent	98	37.9	96.3
Very great extent	29	3.7	100.0
Total	259	100.0	
Mean	2.97		

The results from Table 4.44 shows that, 74 (28.6%) and 16 (6.2) of the respondents registered for not at all and less extent, respectively. On the other hand 42 (16.1%) respondents said they were not sure. Similarly, 98 (37.9%) and 29 (3.7%) respondents scored in the great extent and very great extent levels, respectively. The impression that emerges from the finding is that majority 127 (41.6%) respondents supported the opinion that learners' level of awareness influenced utilisation of online digital repository while only 90 (34.8%) respondents disagreed with the statement. The mean was calculated at 2.97.

4.7.7 Learners' awareness and utilisation of online newspapers

The study sought to establish the influence of learners' awareness of availability of online library services on utilisation of online newspapers. In order to carry out this investigation, respondents were asked to indicate the extent to which learners' awareness influenced utilisation of online newspapers. The results are summarised in Table 4.45

Table 4.45: Learners' awareness and utilisation on online newspapers

Awareness enhances utilisation of online newspapers	Frequency (f)	Percentage %	Cumulative percent
Not at all	61	23.6	23.6
Less extent	24	9.3	32.9
Not sure	130	50.3	83.2
Great extent	15	5.6	88.8
Very great extent	29	11.2	100.0
Total	259	100.0	
Mean	2.72		

As shown in Table 4.45, the results indicate that 61 (23.6%) and 24 (9.3%) respondents scored in the not at all and less extent levels. On the other hand, only 15 (5.6%) and 29 (11.2%) respondents indicated their support for the statement that learners' awareness influence utilisation of online newspapers. The findings further reveal that majority of the respondents 130 (50.3%) said they were not sure, meaning they were not aware of availability of online newspapers. This is a clear indication that there was lack of awareness concerning availability of online newspapers. The implication of this finding is that, there was less influence of learners' awareness on utilisation of online newspapers. The mean score was calculated at 2.72.

4.7.8 Learners' awareness and utilisation of online public access catalogue

The study was interested in establishing influence of learners' awareness of availability of online library services on utilisation of OPAC. In order to accomplish this investigation, respondents were asked to indicate the extent to which learners' awareness influenced utilisation of online public access catalogue. The results are shown in Table 4.46.

Table 4.46: Learners' awareness and utilisation of online public access catalogue

Awareness enhances utilisation of online public access catalogue	Frequency (f)	Percentage %	Cumulative percent
Not at all	66	26.1	26.1
Less extent	15	5.6	31.7
Not sure	32	12.4	44.1
Great extent	106	41.0	85.1
Very great extent	40	14.9	100.0
Total	259	100.0	
Mean	3.15		

The results in Table 4.46, shows that 66 (26.1%) and 15 (5.6%) scored in the not at all and less extent levels respectively. Another 32 (12.4%) indicated that they were not sure. On the other hand, 106 (41.0%) and 40 (14.9%) scored in the great extent and very great extent levels respectively. The implication of this finding is that majority 146 (55.9%) respondents supported the opinion that learners' awareness influenced utilisation of online public access catalogue. The mean score was calculated at 3.15.

4.7.9 Learners' awareness and utilisation of online electronic books

The study intended to establish the influence of awareness on utilisation of online electronic books. In order to accomplish this task, respondents were asked to indicate the extent to which learners' awareness influenced utilisation of online electronic books. The results are shown in Table 4.47.

Table 4.47: Learners' awareness and utilisation of online electronic books

Awareness enhances utilisation of online electronic books	Frequency (f)	Percentage %	Cumulative percent
Not at all	53	20.5	20.5
Less extent	21	8.1	28.6
Not sure	125	48.4	77.0
Great extent	21	8.1	85.1
Very great extent	39	14.9	100.0
Total	259	100.0	
Mean	2.90		

The findings in Table 4.47 shows that 53 (20.5%) and 21 (8.1%) respondents scored in the not at all and less extent levels respectively. Another majority 125 (48.4%) indicated they were not sure. Similarly, 21 (8.1%) and 39 (14.9%) scored in the great extent and very great extent levels respectively. The impression of this result is that 74 (28.6%) of the respondent did not support the view that learners awareness influence utilisation of online library services. At the same time 70 (23.0%) of the respondent supported the opinion. However, it also emerges from the findings that majority of the respondent 125 (48.4%) were not aware of the existence of online electronic books. This lack of awareness was an impediment to learners' utilisation of online electronic books. The mean was calculated at 2.90.

4.7.10 Learners' awareness and utilisation of electronic database

The study set out to investigate influence of learners' awareness on utilisation of electronic database. In trying to accomplish this investigation, respondents were asked to indicate the extent to which learners' awareness influenced utilisation of online database. The results are contained in Table 4.48.

Table 4.48: Learners' awareness and utilisation of electronic database

Awareness enhances utilisation of online electronic journals	Frequency (f)	Percentage %	Cumulative percent
Not at all	142	54.7	54.7
Less extent	26	9.9	64.6
Not sure	27	10.6	75.2
Great extent	24	9.3	84.5
Very great extent	40	15.5	100.0
Total	259	100.0	
Mean	2.20		

The result from Table 4.48 shows that, 142 (54.7% of the respondents scored in the not at all level while 26 (9.9%) scored in the less extent category. Another 27 (10.6%) respondents indicated they were not sure. Likewise, 24 (.3%) and 40 (15.5%) respondents scored in the great extent and very great extent levels respectively. The impression of the result is that majority of the respondents 168 (64.6) indicated that learners level of awareness does not influence utilisation of electronic database. However, only 64(24.8%) respondents supported the Opinion. The mean score was found to be 2.20.

4.7.11 Learners' awareness and utilisation of electronic journals

The study was interested in establishing influence of learners' awareness on utilisation of online electronics journals. In order to carry out this investigation, respondents were asked to indicate the extent to which learners' awareness influenced utilisation of electronic journals. The results were contained in Table 4.49.

Table 4.49: Learners' awareness and utilisation of online electronic journals

Awareness enhance utilisation of online database	Frequency (f)	Percentage %	Cumulative percent
Not at all	55	21.1	21.1
Less extent	24	9.3	30.4
Not sure	109	42.2	72.7
Great extent	32	12.4	85.1
Very great extent	39	14.9	100.0
Total	259	100.0	
Mean	2.91		

The results shows in Table 4.49 reveal that, 55 (21.1%) the respondents scored in the not at all level while only 24 (9.3%) respondents said to a less extent. Another 109 (42.2%) respondents indicated that they were not sure. Similarly, 32 (12.4%) and 39 (14.9%) respondents stated great extent and very great extent, respectively. A close look of the data further reveals that majority 109 (42.2%) respondents said they were not sure whether learners' awareness influenced utilisation of online electronic journals thus an impediment to their effective utilisation these services. The mean was calculated at 2.91.

4.7.12 Learners' awareness and utilisation of online research papers

The study further investigated the influence of learners' awareness on utilisation of online research papers. In an attempt to execute this investigation, respondents were asked to indicate the extent to which learners' awareness influenced utilisation of online research papers. The results are shown in Table 4.50.

Table 4.50: Learners' awareness and utilisation of online research papers

Awareness enhances utilisation of online research papers	Frequency (f)	Percentage %	Cumulative percent
Not at all	68	26.1	26.1
Less extent	23	8.7	34.8
Not sure	129	49.1	83.9
Great extent	18	6.8	90.7
Very great extent	21	9.3	100.0
Total	259	100.0	
Mean	2.62		

As shown in Table 4.50, the findings reveals that 68 (26.1%) of the respondent indicated not at all while 23 (8.7%) respondents said to a less extent. However, a majority 129 (49.1%) respondents confirmed that they were not sure. Likewise another 18 (6.8%) and 21 (9.3%) respondents supported the opinion that awareness influenced utilisation of online research papers. The impression that one can derive from this finding is that majority of the respondents, 129 (49.1%) were not sure whether learners' awareness influenced their utilisation of online research papers. The implication of this result of this result is that many learners were not aware of the existence of online research papers hence an impediment to their effective utilisation of online research papers during their studies.

4.7.13 Mean scores on learners' awareness and utilisation of online library services

The study further investigated mean scores on influence of learners' awareness of availability of online library services on utilisation of online library services. In order to accomplish this task, scores of means on different online library services were computed and compared. Further the average mean of means was calculated to act as a basis for making any meaningful conclusions. It was therefore, argued that any online library service

that scored a mean above the average mean of means was rated high while any online library service that scored a mean below the mean of means was regarded as low. The results are shown in Table 4.51

Table 4.51: Learners' awareness and utilisation of online library services

Level library source	Mean	Std. Dev.
Online digital repository	2.97	0.270
Online newspapers	2.72	0.020
Online public access (OPAC)	3.15	0.450
Electronic books	2.90	0.200
Electronic journals	2.91	0.210
Online database	2.20	0.500
Online research papers	2.63	0.070
Total Mean	19.48	
Base mean	2.78	

The results of data analysis from Table 4.51 show that online public access scored the highest mean of 3.15. This was closely followed by online digital repository and online electronic journals at means of 2.97 and 2.91 respectively. On the other hand, online electronic books scored a mean of 2.90 followed by online newspapers with a mean of 2.72. Other scores were registered by online research papers 2.63 and online database 2.20. The impression that one can derive from these results is that those services that scored above the mean of means which was 2.78 were highly influenced by learners' awareness of availability of online library services. These services consist of OPAC, online digital repository, electronic books and electronic journals. On the other hand, those online library services that scored means below the mean of means 2.78 were regarded as having low influence of learners' awareness. The online services that recorded low means included

online research papers, online newspapers and online database. The implication of this finding is that learners' awareness influenced utilisation of online library services as revealed by the services that registered mean scores above the mean of means which was 2.78. This findings support, the finding from interview schedule. For example when asked to express their opinion regarding whether the University had created awareness concerning availability of online library services to distance learners, one of the librarians from Main campus library had this to say;

“Awareness is gained through library orientation and induction. The main objective of awareness is to introduce the student to the physical plant of the library, its policies and procedures as well as its resources and services; however, for no apparent reasons, the orientation and induction programmes are dying out due to laxity and lack of seriousness more so from librarians. Further, learners do not use the online library because they don't know the website exist, therefore, there was need for the University to improve its orientation about the library website because simply providing online resources and services without proper induction is in sufficient”

The relationship between learners' awareness of availability and utilisation of online library services (measured by mean scores) was investigated using multiple linear regression analysis. The null hypothesis stated as follows;

4. H₀ There was no significant relationship between learners' awareness of availability and utilisation of online library services at the University of Nairobi.

The results are shown in Table 4.52

Table 4.52: Regression analysis results on learners' awareness about availability of online library services and utilisation of such

Model	r	R ²	Adj.R ²	Std.err of estimate	R square charge	F change	df1	df2	Sig. change
1	0.375	0.141	0.083	1.485	0.141	2.423	101	E20	0.011

The results from Table 4.52 shows that the coefficient correlation was, $r = 0.375$ implying that there was a positive relationship between independent and dependent variables. The R^2 is the coefficient of the determination which is $R^2 = 0.141$, meaning that there was a positive linear correlation. The significance of change also referred to as P value is $\rho=0.011$. This value is pegged on the study putting the limit at 0.05 or 95 percent degree of confidence interval. Since $\rho=0.011$ is less than 0,05 ($p < 0.05$), we therefore, reject the null hypothesis and accept the alternative which states that there was a significant relationship between learners awareness of the availability of online library services and utilisation of online library services at the University of Nairobi.

The findings from the learners' respondents are also in agreement with the librarian's perceptions that the university is creating awareness concerning availability of online library services to distance learners at a mean of 0.796. The results further concurs with the findings of an earlier study by Ojo and Akande (2005) who carried out a study on learners access, usage and awareness of the electronic information resources in Nigeria which revealed that library orientation creates awareness of variety of library and information resources which intern lead to effective utilisation of online library services. Further investigation was done using ANOVA to test how the regression model statistically significantly predicts the outcome variable (the significant relationship between the dependent and independent variable). Table 4.53 presents the results.

Table 4.53: Analysis of Variance

Model	Sum of square	df	Mean square	f	Sig.
Regression	53.460	10	5.346	2.423	0.011
Residual	326.515	148	2.206		
Total	379.975	158			

The ANOVA results presented in Table 4.53 indicate that F statistic is 2.423 which meant that 24.23% of the model fits the linear line and therefore, has been explained by the independent variables. This implies that the model fits interpretation.

4.8 Learners' programme of study and utilisation of online library services

Objective five of this study was to assess the influence of learners' programme of study on utilisation of online library services at the University of Nairobi. In order to accomplish this task, respondents were asked to indicate the extent to which learners' programme of study influenced utilisation of online library services. In carrying out this investigation, the 7 items in the learners' questionnaire were scored on a five level rating scale which were, to a very great extent, to a great extent, not sure, less extent and not at all. Respondents were expected to express their attitude towards each of the items in various subtitles by selecting only one response. The scores ranged in a continuum from 7 to 35, indicating the lowest and the highest usage of online library services. The results are presented in the preceding sections.

4.8.1 Learners' programme of study and utilisation of online digital repository

The study sought to investigate influence of learners' programme of study on utilisation of online digital repository. In order to achieve this objective, respondents were asked to indicate the extent to which learners' programme of study influenced utilisation of online digital repository. The results are summarised in Table 4.54.

Table 4.54: Learners' programme of study and utilisation of online digital repository

Programme of study support utilisation of digital repository	Frequency (f)	Percentage %	Cumulative percent
Not at all	48	18.6	18.6
Less extent	60	21.6	39.8
Not sure	17	6.8	46.6
Great extent	42	16.1	62.7
Very great extent	92	37.3	100.0
Total	259	100.0	
Mean	3.27		

The results from Table 4.54 shows that 48 (18.6%) respondents scored in the not at all level while another 60 (21.6%) scored in the less extent category. However, 17 (6.8%) respondents said they were not sure. Similarly, 42 (16.1%) and 92 (37.3%) respondents indicated great extent and very great extent, respectively. A close observation of the results further reveals that majority 134 (53.4%) respondents supported the opinion that learners programme of study influenced utilisation of online digital repository whereas only 108 (39.7%) respondents denied this claim. The implication of this finding is that learners' programme of study influence utilisation of online digital repository to a great extent. The mean score computed was 3.27

4.8.2 Learners' programme of study and utilisation of online newspapers

The study further investigated the influence of learners' programme of study on utilisation of online newspapers. In carrying out this investigation, respondents were asked to indicate the extent to which learners' programme of study influenced utilisation of online newspapers. The results are summarised in Table 4.55.

Table 4.55: Learners' programme of study and utilisation of online newspapers

Programme of study supports utilisation of online newspapers	Frequency (f)	Percentage %	Cumulative percent
Not at all	68	26.1	26.1
Less extent	16	6.2	32.3
Not sure	23	8.7	41.0
Great extent	45	17.4	58.4
Very great extent	107	41.6	100.0
Total	259	100.0	
Mean	2.72		

From Table 4.55, the results indicate that 68 (26.1%) respondents scored in the not at all level while 16 (6.2%) respondents indicated less extent whereas 23 (8.7%) respondents revealed they were not sure. Likewise 45 (17.4%) and 107 (41.6%) respondents scored in the great extent and very great extent, respectively. The findings further reveals that majority 152 (59.0%) respondents supported the view that learners' programme of study influenced utilisation online newspapers. The implication of this finding is that learners' programme of study influenced utilisation of online newspapers to a great extent.

4.8.3 Learners' programme of study and utilisation of online public access catalogue

The study sought to establish influence of learners' programme of study on utilisation of OPAC. In order to accomplish this investigation, respondents were asked to indicate the extent to which learners' programme of study influenced utilisation of OPAC. The results are shown in Table 4.56.

Table 4.56: Learners' programme of study and utilisation of online public access catalogue

Programme of study supports utilisation of public access catalogue	Frequency (f)	Percentage %	Cumulative percent
Not at all	61	23.6	23.6
Less extent	24	9.3	32.9
Not sure	23	8.7	41.6
Great extent	44	16.8	58.4
Very great extent	127	41.6	100.0
Total	161	100.0	
Mean	3.82		

Table 4.56 Shows that 61 (23.6%) and 24 (9.3%) respondents indicated not at all and less extent, respectively. On the other hand 27 (16.8%) and 67 (41.6%) the respondents scored in the great extent and very great extent levels. The findings further reveal that majority of the respondents, 171 (58.4%) supported the opinion that learners programme of study influenced utilisation of OPAC while another 85 (32.9%) respondents denied that claim. The implication of this result is that, learners' programme of study has a great influence on utilisation of OPAC. The mean score was calculated at 3.82.

4.8.4 Learners' programme of study and utilisation of electronic books

The study was also interested in establishing the influence of learners' programme of study on utilisation of electronic books. In carrying on this investigation, respondents were asked to indicate the extent to which learners' programme of study influenced utilisation of online electronic books. The results are contained in Table 4.57.

Table 4.57: Learners’ programme of study and utilisation of online electronic books

Programme of study supports utilisation of electronic books	Frequency (f)	Percentage %	Cumulative percent
Not at all	47	18.0	18.0
Less extent	42	16.1	34.2
Not sure	48	18.6	52.8
Great extent	92	35.4	88.2
Very great extent	30	11.8	100.0
Total	259	100.0	
Mean	3.06		

The results from Table 4.57 shows that 47 (18.0%) and 42 (16.0%) respondents scored in the not at all and less extent, respectively. The findings further reveal that 48 (18.6%) indicated that they were not sure. Likewise another 92 (35.4%) respondents scored in the great extent while only 30 (11.8%) respondents responded by saying to a very great extent. The general interpretation that one can derive from these results is that majority 112 (47.3%) respondents supported the opinion that learners programme of study influenced utilisation of online electronic books. The implication of this finding is that learners’ programme of study has great influence on utilisation of online electronic books. The mean score computed was 3.06.

4.8.5 Learners’ programme of study and utilisation of online electronic journals

The study also investigated the influence of learners’ programme of study on utilisation electronic journals. In meeting this task, respondents were asked to indicate the extent to which learners’ programme of study influenced utilisation of online electronic journals. The results are shown in Table 4.58.

Table 4.58: Learners programme of study and utilisation of online electronic journals

Programme of study supports utilisation of electronic journals	Frequency (f)	Percentage %	Cumulative percent
Not at all	48	18.6	18.6
Less extent	32	12.4	31.1
Not sure	108	41.6	72.7
Great extent	34	13.0	85.7
Very great extent	37	14.3	100.0
Total	259	100.0	
Mean	2.92		

The results from Table 4.58 indicate that 48 (18.6%) respondents scored in the not at all level while 32 (12.4%) the respondents scored in the less extent level. On the other hand 108 (41.6%) respondents said they were not sure. On the contrary, 34 (13.0%) respondents said great extent while 37 (11.0%) responded by saying to a very great extent. The findings further reveal that majority 108 (41.6%) respondents indicated they were not sure meaning they were not aware. The impression one can derive from this result is that majority 80 (31.0%) of the respondents did not support the view that learners programme of study influenced utilisation of online electronic journals compared to only 71 (27.3%) respondents who supported the opinion. The mean score calculated was 2.92.

4.8.6 Learners' programme of study and utilisation of electronic database

This study was interested in establishing influence of learners' programme of study on utilisation of online electronic database. In order to carry out this investigation, respondents were asked to indicate the extent to which learners' programme of study influenced utilisation of online electronic database. The results are shown in Table 4.59.

Table 4.59: Learners programme of study and utilisation of online electronic database

Programme of study supports utilisation of online database	Frequency (f)	Percentage %	Cumulative percent
Not at all	60	23.0	23.0
Less extent	26	9.9	32.0
Not sure	97	37.3	70.3
Great extent	39	14.9	85.1
Very great extent	37	14.9	100.0
Total	259	100.0	
Mean	2.89		

As shown in Table 4.59, majority of the respondents 86 (32.9%) did not agree with the statement that learners programme of study influenced utilisation of online electronic database. On the other hand 76 (29.8%) respondents agreed with the statement while another 97 (37.3%) respondents said they were not sure. The general impression one can derive from the findings is that learners' programme of study had less influence on utilisation of online electronic database. The mean score was computed at 2.89.

4.8.7 Learners' programme of study & utilisation of online research papers

The study sought to establish the influence of learners' programme of study on utilisation of online research papers. In order to accomplish this investigation, respondents were asked to indicate the extent to which learners' programme of study influenced utilisation of online research papers. The results are shown in Table 4.60.

Table 4.60: Learners' programme of study and utilisation of online research papers

Programme of study supports utilisation of online research papers	Frequency (f)	Percentage %	Cumulative percent
Not at all	60	23.0	23.0
Less extent	66	25.5	48.4
Not sure	53	20.5	68.9
Great extent	31	11.8	80.7
Very great extent	49	19.3	100.0
Total	259	100.0	
Mean	2.78		

The results in Table 4.60 shows that majority of the respondents 126 (48.5%) respondents objected to the view that learners programme of study influenced utilisation of online research papers while 53 (20.5%) said they were not sure. Similarly, minority of the respondents 80 (31.1%) respondents indicated that learners programme of study influenced utilisation of online research papers. The impression that one can derive from the results is that learners' programme of study had less influence on utilisation of online research papers.

4.8.8 Mean scores on learners' programme of study and utilisation of online library services

The study also investigated mean scores on influence of learners' programme of study on utilisation of online library services at the University of Nairobi. In order to accomplish this investigation, scores of means on the 7 online library services were computed and compared. Similarly, mean of means was also calculated to act as a basis of making conclusion. The researcher assumed that any online library service that scored a mean above the mean of means (3.07) was considered high influence, while any that scored a mean below the mean of means (3.07) was regarded as of low influence. The results are shown in Table 4.61

Table 4.61: Learners' programme of study and utilisation of online library services

Level library source	Mean	Std. Dev.
Online digital repository	3.27	1.653
Online newspapers	2.72	1.680
Online public access (OPAC)	3.82	3.552
Electronic books	3.06	1.272
Electronic journals	2.92	1.193
Online database	2.89	1.290
Online research papers	2.78	1.443
Total Mean	21.46	
Base Mean	3.07	

From the information presented in Table 4.61, it is evident that Online Public Access Catalogue (OPAC) registered the highest mean of 3.82, followed by online digital repository at 3.27 and electronic books at 3.06. Similarly, electronic journals had a mean of 2.92 while online database scored a mean of 2.89. Online research papers recorded a mean of 2.78. The general picture that emerges from Table 4.61 is that online library services that recorded high means when compared to mean of means (3.07) consists of online public access catalogue (3.82) and online digital repository (3.27) while online electronic books had a mean of (3.06) and online electronic journals (2.92). The other online services that registered low means when compared to mean of means included online newspapers (2.72) and online research papers (2.78). The implication of this result is that utilisation of OPAC is highly influenced by learners' programme of study. This finding is in agreement with the finding from the interview schedule, for example when asked to give their opinion on whether student programme of study influenced utilisation of online library services, one of the librarians from Chiromo library had this to say;

The programmes in which the learners are enrolled might play a role, for example learners in science related courses take most of their studies online and are familiar with the technology. On the other hand learners enrolled in art based courses might do better in traditionally based on instruction”

The relationship between learners’ programme of study and utilisation of online library services was further investigated using the linear regression analysis. The null hypothesis stated as follows;

5. H₀ There was no significant relationship between learners’ programme of study and utilisation of the online library services at the University of Nairobi.

The results are shown in the Table 4.62

Table 4.62: Regression analysis on learners’ programme of study and utilisation of online library services

Model	r	R ²	Adj.R ²	Std.err. of Estimate	R ² Change	F change	df1	df2	Sig change
1	0.567	0.322	0.276	1.105	0.322	7.027	10	148	0.00

The results from Table 4.62 indicate that the coefficient correlation $r = 0.567$ which means there was a positive relationship between independent and dependent variables. R^2 is the coefficient of determination which is $R^2 = 0.322$ which implies that there was a positive linear correlation. The significance of change also referred to as p - value is $p < 0.000$. This value is pegged on the study putting the limit at 0.5 or 95 percent degree of interval. Since p value ($p < 0.05$), we therefore, reject the null hypothesis and accept the alternative which states that there was a significant relationship between learners’ programme of study and utilisation of online library services at the University of Nairobi. The findings supports the

findings of an earlier study by Crystal (2008) who conducted a study on effects of personal characteristics on learners' readiness in Australia. The results of the study revealed that the programme which the learners are enrolled in might play a role in their usage of the online library services.

The findings of the present study further confirms the results of an earlier study by Ganiyu (2013) who conducted a study on influence of demographic factors on use of online library resources by the undergraduate learners in Nigeria that indicated a strong relationship between the learners' programme of study and utilisation of online library resources. Further analysis was done using ANOVA to test how the regression model statistically significantly predicts the outcome variable (the significant relationship between the dependent and independent variable). Table 4.63 shows the results.

Table 4.63: Analysis of Variance

Model	Sum of square	Df	Mean square	f	sig
Regression	85.748	10	8.575	7.027	0.000
Residual	180.592	249	1.220		
Total	266.340	259			

Table 4.63 shows that the F statistic is 7.027 which means that 70.27 percent of the model fits the linear line and; therefore, has been explained by the independent variables. This implied that the model fits interpretation.

4.8.9 Variation in utilisation of online library services and learner's programme of study

The results presented in Table 4.64 show that of the 259 learner respondents 105 (40.5%) utilised online library services to a great extent, while 71 (27.4%) used the services to a very great extent. The results further show that 50 (19.3%) utilised online library services to a less extent, while 21 (8.1%) never used it at all. Cumulatively, the results show that up to 176 (68.0%) learners reported above average utilisation of online library services. Based on the programme of study, the results show that among learners B.Ed Arts learners 84 (41.4%), utilised online library services to a great extent, 57 (28.1%) indicated a very great extent, 37 (18.2%) stated to a less extent, while 16 (7.9%) never utilised online library services at all.

Among B.Ed Science learners, the results show that 21 (37.5%) utilised online library services to a great extent, 14 (25.0%) utilised the services to a very great extent, 13 (23.2%) indicated less extent, while 5 (8.9%) never used the services at all. Cumulatively, 141 (69.5%) B.Ed Arts learners and 35 (62.5%) B.Ed Science learners reported above average utilisation of online library services. Based on this, the analysis obtained a computed F (4.1) statistic of 4.047, with a p -value of 0.113, which suggests that there was no significant variation among B.Ed Arts and B.Ed Science learners regarding utilisation of online library services.

Table 4.64: Cross-tabulation of utilisation of online library services and programme of study

Aggregate perception on utilisation of online library services	B.Ed Arts		B.Ed Science		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Very great extent	57	28.1	14	25.0	71	27.4
Great extent	84	41.4	21	37.5	105	40.5
Not sure	9	4.4	3	5.4	12	4.6
Less extent	37	18.2	13	23.2	50	19.3
Not at all	16	7.9	5	8.9	21	8.1
Total	203	100.0	56	100.0	259	100.0

Further analysis indicated that B.Ed Arts learners had about 1.2 times the odds of utilising online library services as their colleagues in the B.Ed Science programme (ρ -value = 0.117, β = 0.046, odds ratio = 1.152, 95% C.I. = 0.089-2.174). The results suggest that there was no significant difference in the odds of utilising online library services between B.ED Arts and B.ED Science learners. Generally, the results suggest that learners in both programmes were equally motivated to utilise online library services. These findings are inconsistent with those reported by Crystal (2008). Whereas this study reports lack of significant variation in utilisation of online library services between B.ED Arts and B.ED Science learners, Crystal (2008) found that Master of Business Administration (MBA) learners, and Master of Science in International Business (MSI) learners were likely to vary in the extent of online library service utilisation.

4.9 Utilisation of online library services at the University of Nairobi

Utilisation of online library services was the main dependent variable that this study set out to establish its outcome. The purpose of this investigation was to find out the extent to which distance learners used online library services. In order to carry out this investigation, the 7 items in the instrument that contained online library services were scored on a five

level rating scale. Likert summated method was used to establish learners' responses towards perception statements. Each statement in the attitude scale was followed by five responses which comprised of; to every great extent, to a great extent, not sure, less extent and not at all. Respondents were therefore, required to express their attitude towards each of the items in the various scale titles by taking only one response. The scores ranged from possible minimum of 7 to a possible maximum of 35 (7-35) indicating the lowest and highest utilisation of online library services.

4.9.1 Learners' utilisation of online digital repository

The study sought to examine the extent to which learners' utilised online digital repository. In order to accomplish this investigation, respondents were asked to indicate the extent to which they used online digital repository. The results are shown in Table 4.65.

Table 4.65: Extent to which learners' utilised online digital repository

Extent of utilising online digital repository	Frequency (f)	Percentage %	Cumulative percent
Not at all	84	32.3	32.3
Less extent	53	20.5	52.8
Not sure	42	16.1	68.9
Great extent	40	15.5	84.5
Very great extent	40	15.5	100.0
Total	259	100.0	
Mean	2.61		

As shown in Table 4.65, the results indicate that 84 (32.3%) respondents stated that they don't use online digital repository while 53 (20.5%) said to a less extent. However, 42 (16.1%) said they were not sure. On the other hand 40 (15.5%) confirmed they used it great extent while another 40 (15.5%) indicated to a very large extent. The results further reveal that majority 137 (52.8%) respondents did not agree with the opinion that they used online digital repository. Similarly, only 80 (31.0%) confirmed that they used online digital repository. The implication of this finding is that, there was low usage of online digital repository among the distance learners of the University of Nairobi. The mean score was computed at 2.61

4.9.2 Learners' utilisation of online newspapers

The study was also interested in establishing the extent of learners' utilisation of online newspapers. In carrying out this investigation respondents were required to indicate the extent to which they used online newspapers. The results are summarised in Table 4.66.

Table 4.66: Extent to which learners' utilised online newspapers

Extent of utilising online newspapers	Frequency (f)	Percentage %	Cumulative percent
Not at all	90	34.8	34.8
Less extent	66	25.5	60.3
Not sure	23	8.7	69.0
Great extent	45	17.4	86.4
Very great extent	35	13.6	100.0
Total	259	100.0	
Mean	2.49		

From the results in Table 4.66, it is possible to conclude that majority 156 (60.3%) respondents did not agree with the opinion that they used online newspapers. Likewise, 23 (8.7%) respondents said they were not sure while 80 (39.4%) respondents confirmed their usage of online newspapers. The implication of this finding is that there was low usage of online newspapers among the distance learners at the University of Nairobi. The mean was calculated at 2.49.

4.9.3 Learners' utilisation of online public access catalogue

The study also investigated the extent to which learners used online public access catalogue. In order to realise this objective, respondents were asked to indicate the extent to which they have used online public access catalogue during their studies. The results are summarised in Table 4.67.

Table 4.67: Extent to which learners' utilised online public access catalogue

Extent of utilising online public access catalogue	Frequency (f)	Percentage %	Cumulative percent
Not at all	89	34.2	34.2
Less extent	68	26.1	60.2
Not sure	27	10.6	70.8
Great extent	47	18.0	88.8
Very great extent	28	11.2	100.0
Total	259	100.0	
Mean	2.45		

The analysis in Table 4.67 shows that majority, 157 (60.2%) respondents did not agree with the view that they used online public access catalogue in their studies. On the other hand 75 (29.2%) respondents supported the opinion while 27 (10.6%) said they were not sure. The impression one can derive from this findings is that there was low usage of online public access catalogue among distance learners. The mean score was 2.45

4.9.4 Learners' utilisation of online electronic books

The study intended to establish learners' utilisation of online electronic books. In an attempt to accomplish this task, respondents were requested to indicate the extent to which they used online electronic database. The results are shown in Table 4.68.

Table 4.68: Extent to which learners' utilised electronic books

Extent of utilising online electronic books	Frequency (f)	Percentage %	Cumulative percent
Not at all	101	39.1	39.1
Less extent	60	25.0	62.1
Not sure	40	15.5	77.6
Great extent	34	13.0	90.7
Very great extent	24	9.3	100.0
Total	259	100.0	
Mean	2.30		

The information in Table 4.68 reveals that majority 161 (62.1%) of respondents objected to the claim that they used online electronic books. On the contrary 58 (22.3%) respondents supported the opinion that they have used online electronic books during their studies. However, 40 (15.5%) responded by saying they are not sure. The impression one can derive from these results is that there was low usage of electronic books among the distance learners at the University of Nairobi. The mean score was calculated at 2.30.

4.9.5 Learners' utilisation of online electronic journals

The study also sought to investigate learners' utilisation of online electronic journals. To accomplish this investigation, the respondents were asked to indicate the extent to which they used online electronic journals during their studies. The results are shown in Table 4.69.

Table 4.69: Extent to which learners' utilised online electronic journals

Extent of utilising online electronic journals	Frequency (f)	Percentage %	Cumulative percent
Not at all	87	33.5	33.5
Less extent	58	22.4	55.9
Not sure	40	15.5	71.4
Great extent	42	16.1	87.6
Very great extent	32	12.4	100.0
Total	259	100.0	
Mean	2.51		

On the basis of data shown in Table 4.69, it emerges that majority 145 (55.9%) respondents did not support the opinion that they used online electronic journal for their studies. on the other hand, only 74 (31.6%) respondents supported the view that they used online electronic journals for their studies. It is possible to conclude that there was less usage of electronic-journals among the distance learners at the University of Nairobi. The mean was calculated to be 2.51.

4.9.6 Learners utilisation of online electronic database

The study investigated learners' utilisation of online electronic database. In order to carry out this investigation, respondents were asked to indicate the extent to which they have used online database during their studies. The results are shown in Table 4.68.

Table 4.70: Extent to which learners' utilised online database

Extent of utilising online database	Frequency (f)	Percentage %	Cumulative percent
Not at all	81	31.1	31.1
Less extent	60	23.0	54.0
Not sure	35	13.7	67.7
Great extent	58	22.4	90.1
Very great extent	25	9.9	100.0
Total	259	100.0	
Mean	2.56		

Data in Table 4.70 shows that 81 (31.1%) respondents scored in the not at all level while 60 (23.0) scored in the less extent level. It is also evident to indicate that 35 (13.7%) respondents confirmed they were not sure. On the contrary, 58 (22.4%) and 25 (9.9%) respondents scored in the great extent and very great extent categories respectively. From these observations it can be concluded that there was a low usage of online database as indicated by 83 (32.3%) respondents who confirmed their utilisation of online database during their studies compared to the majority 141 (54.1%) respondents who did not agree with the statement. The mean score computed was 2.56.

4.9.7 Learners' utilisation of online research papers

The study set to investigate learners' utilisation of online research papers. In order to accomplish this task, respondents were required to indicate the extent to which they used online research papers during their studies. The results are presented in Table 4.71.

Table 4.71: Extent to which learners' utilised online research papers

Extent of utilising online research papers	Frequency (f)	Percentage %	Cumulative percent
Not at all	95	36.6	36.6
Less extent	64	24.8	61.5
Not sure	31	11.8	73.3
Great extent	32	12.4	85.7
Very great extent	37	14.3	100.0
Total	259	100.0	
Mean	2.43		

As shown in Table 4.71, data collected indicated that 95 (36.6%) and 64 (24.8%) of the respondents scored in the not at all and less extent categories respectively. However, 31 (11.8%) said they were not sure. On the other hand, 32 (12.4%) and 37 (14.3) of the respondents scored in the great extent and very great extent categories respectively. Further observation from the data reveals that majority 159 (61.5%) respondents were against the view that they have used online research papers during their studies. The impression that one can derive from this findings is that there was low usage of online research papers among the distance learners at the University of Nairobi. The mean score arrived at was 2.43.

4.9.8 Mean scores on learners' utilisation of online library services

The study sought to investigate learners mean scores on utilisation of online library services at the University of Nairobi. In order to accomplish this investigation, scores of means of the 7 items of online library services were computed and compared. Likewise, mean of means was also calculated to act as basis of making decision on whether utilisation was high or low. The researcher assumed that any online library service that scored a mean above the mean of means was rated high while any online library service that scored a mean below the mean of means was rated low. The results are shown in Table 4.72.

Table 4.72: Mean scores on learners' utilisation of online library services

Online Library Services	Mean	Std. Deviation
Online digital repository	2.61	0.170
Online newspapers	2.49	0.050
OPAC	2.45	0.010
Online electronic book	2.30	0.040
electron journals	2.51	0.070
Online database	2.56	0.010
Online research papers	2.43	0.010
Total Mean	17.35	
Base Mean	2.45	

From Table 4.72, it is evident to conclude that the online digital repository registered the highest mean score of 2.61. This was closely followed by online database with a mean of 2.56 and electronic journals recording a mean of 2.51. Online newspapers registered a mean of 2.49 while online public access catalogue recorded a mean of 2.45. Online research papers had a mean of 2.43 followed by electronic books which recorded a mean of 2.30. Given that the mean of means was 2.45, those online library services that scored high above the mean of means were; online digital repository (2.61), online database (2.56), electronic journals (2.51) and online newspapers (2.49). On the other hand, online public access catalogue (2.45), online research papers (2.45), and online electronic books (2.30) performed below the mean of means therefore, were rated as of low influence to learners' utilisation of online library services.

The implication of this finding is that, online digital repository was the most online library service that was used by distance learners at the institution. This outcome could be attributed to the fact that online digital repository is a free service that does not attract any fee penalty thus can easily be accessed by all online library users and more specifically distance learners at the University of Nairobi.

4.10 Institutional factors influencing utilisation of online library services

Institutional factors included various attributes of the libraries that either facilitated or impeded utilisation of online services. This study focused on three such aspects, included internet connectivity, adequacy of computers and reliability of power supply. Table 4.73 shows the descriptive distribution of responses based on the institutional factors covered by the study.

Table 4.73: Institutional attributes

Institutional attributes	Frequency (f)	Percentage %	Cumulative percent
Internet connectivity			
Above average	124	47.9	47.9
Average	89	34.4	82.2
Below average	46	17.8	100.0
Total	259	100.0	
Adequacy of computers			
Very adequate	63	24.3	24.3
Adequate	105	40.5	64.9
Inadequate	91	35.1	100.0
Total	259	100.0	
Reliability of power supply			
Very reliable	69	26.6	26.6
Reliable	88	34.0	60.6
Unreliable	102	39.4	100.0
Total	259	100.0	

The results in Table 4.73 shows that of the 259 respondents, 124 (47.9%) rated Internet connectivity as above average, 89 (34.4%) said it was average, while 46 (17.8%) felt that Internet connectivity at the institution was below average. Regarding adequacy of computers, the results show that 105 (40.5%) learners were of the view that computers were adequate at the university library, 63 (24.3%) felt that it was very adequate, while 91

(35.1%) believed that computers were inadequate. Lastly, of the 259 learners, 102 (39.4%) felt that power supply at the library was unreliable, 88 (34.0%) said power supply was reliable, while 69 (26.6%) were of the view that power supply at the library was very reliable. These attributes are key indicators of the University's capacity to provide and sustain online library services. Learners are more likely to utilise services that are consistently available, accessible and easy to search and extract relevant information. Details of bivariate and multivariate analyses are provided in the following sub-sections.

4.10.1 Internet connectivity and utilisation of online library services

Respondents were asked to indicate the extent to which Internet connectivity influenced utilisation of online library services. The 7 items containing statements regarding online library service scores were scored on a five-point rating scale which included, not at all, less extent, not sure, great extent and very great extent. Respondents were asked to indicate their views on the utilisation of the 7 online library services, based on the domains of the rating scale. Details are presented in the following sub-sections.

4.10.1.1 Internet connectivity and utilisation of online digital repository

The sixth objective of the study was to determine the influence of Internet connectivity on utilisation of online library services at the University of Nairobi. In this regard, respondents were required to indicate their views regarding the extent to which Internet connectivity influenced utilisation of online digital repository. The results are shown in Table 4.74.

Table 4.74: Internet connectivity and utilisation of digital repository

Internet connectivity determines use of online digital repository	Frequency (f)	Percentage %	Cumulative percent
Not at all	176	68.0	68.0
Less extent	17	6.6	74.5
Not sure	9	3.5	78.0
great extent	33	12.7	90.7
To a very great extent	24	9.3	100.0
Total	259	100.0	
Mean	2.34		

The results in Table 4.74 show that most respondents 176 (68.0%) and 17 (6.6%) did not agree with the statement that Internet connectivity influenced utilisation of online digital repository. This is followed by 33 (12.7%) who acknowledged that Internet connectivity influenced utilisation of digital repository to a great extent while by 24 (9.3%) respondents indicated that Internet connectivity influence utilisation of online digital repository to a very great extent. The implication of this result is that Internet connectivity has little influence on utilisation of online digital repository. The mean score obtained was 2.34.

4.10.1.2 Internet connectivity and utilisation of online newspapers

The study examined the influence of Internet connectivity on utilisation of online newspapers. In this regard, respondents were also asked to indicate the extent to which Internet connectivity influenced utilisation of online newspapers. The results are contained in Table 4.75.

Table 4.75: Internet connectivity and utilisation of online newspapers

Internet connectivity determines use of online newspapers	Frequency (f)	Percentage %	Cumulative percent
Not at all	175	67.6	67.6
Less extent	25	9.7	77.2
Not sure	7	2.7	79.9
great extent	40	15.4	95.4
Very great Extent	12	4.6	100.0
Total	259	100.0	
Mean	1.92		

The results in Table 4.75 show majority 175 (67.6%) respondents did not agree with the statement that Internet connectivity influenced utilisation of online newspapers by scoring in for not at all. This was followed by 25 (9.7%) who scored in the less extent level while 40 (15.4%) held the contrary view that Internet connectivity influenced utilisation of online newspapers by scoring in the great extent level. Notably, 12 (4.6%) indicated that utilisation of online newspapers was very great extent while about 7 (2.7%) were not sure. The implication of this result is that Internet connectivity had less influence on utilisation of online newspapers. The mean score calculated was 1.92.

4.10.1.3 Internet connectivity and utilisation of online public access catalogue

The study sought to investigate the influence of Internet connectivity on utilisation of OPAC. Thus, respondents were asked to indicate the extent to which Internet connectivity influenced utilisation of OPAC. The results are summarised in Table 4.76.

Table 4.76: Internet connectivity and utilisation of online public access catalogue

Internet connectivity determines use of online public access catalogue	Frequency (f)	Percentage %	Cumulative percent
Not at all	62	23.9	23.9
Less extent	28	10.8	34.7
Not sure	81	31.3	66.0
great extent	36	13.9	79.9
To a very great extent	52	20.1	100.0
Total	259	100.0	
Mean	3.14		

The results presented in Table 4.76, show that 62 (23.9%) and 28 (10.8%) respondents scored for not at all and less extent level respectively. Contrastingly, up to 36 (13.9%) and 52 (20.1%) agreed with the opinion that Internet connectivity influenced utilisation of OPAC. Notably, about one-third, 82 (31.7%) were not sure. The results imply that utilisation of OPAC was greatly influenced by Internet connectivity. Cumulatively results show that up to 88 (34.0%) respondents were in agreement that Internet connectivity influenced utilisation of OPAC; compared to 90 (34.8%) respondents who were of the contrary opinion.

4.10.1.4 Internet connectivity and utilisation of online electronic books

The study focused on establishing the influence of Internet connectivity on utilisation of online electronic books. In order to achieve this investigation, respondents were asked to indicate the extent to which Internet connectivity influenced utilisation of online electronic books. The results are shown in the Table 4.77.

Table 4.77: Internet connectivity and utilisation of online electronic books

Internet connectivity determines use of electronic books	Frequency (f)	Percentage %	Cumulative percent
Not at all	114	44.0	44.0
Less extent	32	12.4	56.4
Not sure	42	16.2	72.6
Great extent	29	11.2	83.8
Nearly great extent	42	16.2	100.0
Total	259	100.0	
Mean	2.50		

Cumulative results in Table 4.77 show that majority of the respondents 146 (56.4%) did not agree with view that Internet connectivity influenced utilisation of online electronic books while 42 (16.2%) were not sure. However, 71 (27.4%) were of the contrary opinion that Internet connectivity influenced utilisation of online electronic books services. The results imply that Internet connectivity had little influence on utilisation of online electronic books. The mean score was calculated at 2.50.

4.10.1.5 Internet connectivity and utilisation of electronic-journals

The study investigated the influence of Internet connectivity on utilisation of electronic journals. In this regard, respondents were requested to indicate their views regarding the extent to which Internet connectivity influenced utilisation of online electronic journals. The results are displayed in Table 4.78.

Table 4.78: Internet connectivity and utilisation of online electronic journals

Internet connectivity determines use of electronic journals	Frequency (f)	Percentage %	Cumulative percent
Not at all	125	48.3	48.3
Less extent	17	6.6	54.8
Not sure	37	14.3	69.1
great extent	36	13.9	83.0
Very great extent	44	17.0	100.0
Total	259	100.0	
Mean	2.39		

The results from Table 4.78 shows that 125 (48.3%) respondents scored for not at all level, 17 (6.6%) respondents scored for less extent while 37 (14.3%) respondents indicated that they were not sure. Contrastingly, 36 (13.9%) and 44 (17.0%) respondents indicated great extent and very great extent, respectively. Cumulative results show that most respondents, 142 (54.8%) did not support the view that Internet connectivity influenced utilisation of online electronic journals, while only 80 (30.9%) agreed with statement that Internet connectivity influenced utilisation online electronic journals. The implication of this finding is that, Internet connectivity had less influence on utilisation of online electronic journals. The mean score computed was 2.39

4.10.1.6 Internet connectivity and utilisation of online database

The study was concerned with establishing the influence Internet connectivity on utilisation of online database. Consequently, respondents were required to indicate the extent to which Internet connectivity influenced utilisation of online database. The results are contained in Table 4.79.

Table 4.79: Internet connectivity and utilisation of online database

Internet connectivity determines use of online database	Frequency (f)	Percentage %	Cumulative percent
Not at all	144	55.6	55.6
Less extent	18	6.9	62.5
Not sure	29	11.2	73.7
To a great extent	26	10.0	83.8
Very great extent	42	16.2	100.0
Total	259	100.0	
Mean	2.30		

Table 4.79 shows that 144 (55.6%) and 18 (6.9%) respondents scored for not at all and less extent, respectively. Another 29 (11.2%) respondents said they were not sure. However, 26 (10.0%) and 42 (16.2%) respondents scored for great extent and very great extent, respectively. Cumulatively, up to 162 (62.5%) did not agree with the statement that Internet connectivity influenced utilisation of online database while only 68 (26.3%) supported the opinion. The implication of this result is that Internet connectivity has little influence on utilisation of online database. The mean score registered was 2.30.

4.10.1.7 Internet connectivity and utilisation of online research papers

The study sought to determine the influence of Internet connectivity on utilisation of online research papers. To achieve this, respondents were asked to indicate the extent to which Internet connectivity influenced utilisation of online research papers. The results are shown in Table 4.80.

Table 4.80: Internet connectivity and utilisation of online research papers

Internet connectivity determines use of online research papers	Frequency (f)	Percentage %	Cumulative percent
Not at all	139	53.7	53.7
Less extent	13	5.0	58.7
Not sure	10	3.9	62.5
great extent	22	8.5	71.0
To a very great extent	75	29.0	100.0
Total	259	100.0	
Mean	2.48		

As indicated in Table 4.80, most respondent, 139 (53.7%) scored in the not at all level, 13 (5.0%) scored in the less extent category while 10 (3.7%) respondents were not sure. On the other side of the scale, 75 (29.0%) and 22 (8.5%) respondents scored in a very great extent and great extent, respectively. Cumulative results further show that up to 152 (58.7%) did not support the view that Internet connectivity influenced utilisation of online research newspapers while 97 (37.5%) respondents supported the test statement, which suggest that Internet connectivity influenced utilisation of online research papers. The results imply that Internet connectivity had less influence on utilisation of online research papers. The mean score recorded was 2.48.

4.10.1.8 Mean score on Internet connectivity and utilisation of online library services

The study further established mean scores on influence of Internet connectivity on utilisation of online library services. This was accomplished by computing and comparing scores of means of different online library services. The mean of means was also calculated to provide a basis for making conclusions. In this regard, the investigator assumed that any online library service that obtained a mean above the mean of means was rated high. Equally, any service that scored a mean that was lower than the mean of means was rated low. Table 4.81 presents the results.

Table 4.81: Internet connectivity and utilisation of online library services

Online library services	Mean	Std. Dev.
Online digital repository	2.34	0.481
Online newspapers	1.92	0.530
Online research papers	2.48	0.223
Online public access (OPAC)	3.14	0.125
Online electronic books	2.50	0.104
Online electronic journals	2.39	0.114
Online electronic database	2.30	0.093
Total Mean	17.07	
Base Mean	2.44	

The results from Table 4.81 show that OPAC registered the highest mean of 3.14, followed by online electronic books recorded a mean of 2.50, online research papers with 2.48 and online electronic journals with 2.39. At the bottom of mean scores, were online digital repository had a mean of 2.34, followed by online database at 2.30 and online newspapers at 1.92. Based on the means or means, which was 2.44, that investigator concluded that Internet connectivity highly influenced the following services: online public access catalogue (3.14), online electronic books (2.50), and online research papers (2.48). On the other hand, Internet connectivity had a low influence on online electronic journals (2.39), online digital repository (2.34), electronic database (2.30), and online newspapers (1.92). The findings further reveal that the most factor that was highly influenced by Internet connectivity was online public access catalogue at 3.14. This finding is in agreement with the findings from the interview schedule. For example, when asked to comment on the influence of student Internet connectivity on utilisation of online library services, one of the librarians from Kikuyu campus commented as follows;

“Internet connectivity is a crucial factor that often influences utilisation of library service by all library users. Key aspects of Internet connectivity that matter here are bandwidth strength, consistency and search strength”

The relationship between Internet connectivity and utilisation of online library services (as measured by mean score) was investigated using multiple linear regression analysis. The null hypothesis stated as follows;

6. Ho: There is no significant relationship between Internet connectivity and utilisation of online library services at the University of Nairobi.

The results are contained in Table 4.82

Table 4.82: Regression analysis on Internet connectivity and utilisation of online library services

Model	r	R ²	Ads R ²	Std error of estimate	R ² Change	F change	df1	df2	Sig change
1	0.309	0.137	0.079	0.735	0.137	2.297	10	12	0.019

As indicated in Table 4.82, the coefficient of correlation $r = 0.309$, which suggests a positive relationship between variables; $R^2 = 0.137$, which implies a positive linear correlation. The significance of change also referred to as the ρ -value is $\rho = 0.019$. This value is pegged on the study putting the limit of 0.5 or 95 percent degree of the confidence interval. Since ρ -value $0.019 < 0.05$, the investigator rejected the null hypothesis and accepted the alternative that there was a significance relationship between Internet connectivity and utilisation of online library services at the University of Nairobi. The findings are in agreement with the librarians’ perceptions regarding the influence of Internet connectivity on utilisation of online library. The findings also support the outcome of other studies conducted by Alisona et al. (2012), as well as Owusu-Ansah & Bubuama

(2015) who reported a significant correlation between utilisation of medical e-resources and poor Internet connectivity, which was attributed to limited bandwidth, which constrained access to relevant online resources by distance learners. Delay in downloads and inaccessibility of some websites were also identified by Obuh (2009) in a study that was conducted in Nigeria.

Further investigation was conducted using ANOVA to test how regression model statistically significantly predicts the outcome variable (the significance of the relationship between the dependent and independent variable). The results are shown in Table 4.83.

Table 4.83: Analysis of Variance

Model	Sum of square	Df	Mean square	F	sig
Regression	12.290	10	1.232	2.387	0.019
Residual	79.275	148			
Total	91.563				

The ANOVA Table 4.83 indicate that F statistic is 2.387 meaning that 23.87 percent of the model fits the linear line and therefore, has been explained by the independent variables hence this model fits interpretation.

4.10.2 Adequacy of computers and utilisation of online library services

The seventh objective of the study focused on determining the extent to which adequacy of computers influenced utilisation of online library services at the University of Nairobi. In this regard, respondents were requested to indicate their perceptions regarding the extent to which adequacy of computers influenced utilisation of online library services at the institution. Again, the 7 test statements about adequacy of computers, which are contained

in the data collection instrument, were scored on a five level rating scale, including; not at all, less extent, not sure, great extent and to a very great extent. In view of this, respondents were obligated to express their perceptions regarding each of the items by selecting only one response. The scores ranged in a continuum from 7 to 35 indicating the lowest and the highest usage of online library service respectively. The results are presented in the following sub-sections.

4.10.2.1 Adequacy of computers and utilisation of online digital repository

The study aimed at determining the influence adequacy of computers on utilisation of online digital repository. This was accomplished by asking respondents to indicate their perceptions regarding the extent to which the adequacy computers at the library influenced utilisation of online digital repository. The results are displayed in Table 4.84.

Table 4.84: Adequacy of computers and utilisation of online digital repository

Adequacy of computers influence my usage digital repository	Frequency (f)	Percentage %	Cumulative percent
Not at all	70	27.0	27.0
Less extent	73	28.2	55.2
Not sure	66	25.5	80.7
great extent	27	10.4	91.1
Very great extent	23	8.9	100.0
Total	259	100.0	
Mean	2.46		

The data in Table 4.84 indicate that 70 (27.0%) and 73 (28.2%) respondents scored in for not at all and less extent, respectively. This was followed by 66 (25.5%) respondents who were not sure. Contrastingly, 23 (8.9%) respondents scored for the very great extent, while

27 (10.4%) respondents scored in the great extent. Cumulative results further show that most respondents, 143 (55.2%) did not support the statement, which implies that that adequacy of computers had less influence on utilisation of online digital repository. The analysis obtained a mean score of 2.46

4.10.2.2 Adequacy of computers and utilisation of online newspapers

The study examined perceptions on adequacy of computers in relation to utilisation of online newspapers. This was achieved by requesting respondents to indicate their views regarding the extent to which adequacy of computers in the library influenced utilisation of online newspapers. The resultant data is presented in Table 4.85.

Table 4.85: Adequacy of computers and utilisation of online newspapers

Adequacy of computers influence my usage online newspapers	Frequency (f)	Percentage %	Cumulative percent
Not at all	50	19.3	19.3
Less extent	85	32.8	52.1
Not sure	67	25.9	78.0
Great extent	36	13.9	91.9
Very great extent	21	8.1	100.0
Total	259	100.0	
Mean	2.74		

The results presented in Table 4.85 show that 50 (19.3%) respondents scored for not at all; 85 (32.8%) respondents scored for less extent, while those who were not sure were 67 (25.9%) respondents. On the other side of the scale, 36 (13.9%) and 21 (8.1%) respondents score for a great extent and very great extent, respectively. Cumulatively, the results further show that a majority, 135 (52.1%), of the respondents were against the view that adequacy

of computers influenced utilisation of online newspapers. The results imply that the influence of perceived adequacy of computers on utilisation of online newspapers was less. The analysis obtained a mean score of 2.74.

4.10.2.3 Adequacy of computers and utilisation of online public access catalogue

The study investigated the influence of perceived adequacy of computers on utilisation of OPAC. In response to this investigation, respondents were asked to indicate the extent to which adequacy of computers in the library influenced utilisation of OPAC. Table 4.86 presents the results.

Table 4.86: Adequacy of computers and utilisation of online public access catalogue

As a result of adequacy of computers am able to use online public access catalogue	Frequency (f)	Percentage %	Cumulative percent
Not at all	69	26.6	26.6
A Less extent	42	16.2	42.9
Not sure	46	17.8	60.6
A great extent	44	17.0	77.6
Very great extent	58	22.4	100.0
Total	259		
Mean	2.86	100.0	

As shown in Table 4.86, the results indicates that 69 (26.6%) and 42 (16.2%) respondents did not support the view that adequacy of computers influenced utilisation of OPAC. Contrastingly, 44 (17.0%) and 58 (22.4%) affirmed the view; while 46 (17.8%) were not sure. The results suggest that there was a marginal variation between those who upheld and those who opposed the view adequacy of computers influenced utilisation of OPAC. Consequently, perceived adequacy of computers influenced utilisation of OPAC.

4.10.2.4 Adequacy of computers and utilisation of online electronic books

The study further explored the influence of perceived adequacy of computers on utilisation of online electronic books. In order to accomplish this task, respondents were asked to indicate the extent to which adequacy of computers influenced utilisation of online electronic books. The results are summarised in Table 4.87.

Table 4.87: Adequacy of computers and utilisation of online electronic books

As a result of adequacy of computers able to use online electronic books	Frequency (f)	Percentage %	Cumulative percent
Not at all	57	22.0	22.0
Less extent	88	34.0	56.0
Not sure	50	19.3	75.3
Great extent	26	10.0	85.3
Very great extent	38	14.7	100.0
Total	259	100.0	
Mean	2.57		

The results in Table 4.87 show that 57 (22.0%) and 88 (34.0%) respondents scored in the not at all and less extent level, respectively; while 26 (10.0%) and 38 (14.7%) respondents scored in the great extent and very great extent, respectively. Those who were not sure were 50 (19.3%). Besides, cumulative results show that most respondents, 145 (56.0%) respondents did not support the view that adequacy of computers influenced utilisation of online electronic books, as compared to 64 (24.7%) respondents who expressed contrary views. The implication of this finding is that there was less influence of adequacy of computers on utilisation of online electronic books among the distance learning standards at the institution.

4.10.2.5 Adequacy of computers and utilisation of online electronic journals

The study focused on establishing the influence of perceived adequacy of computers on utilisation of online electronic journals. In this regard, respondents were requested to indicate their views regarding the extent to which adequacy of computers influenced utilisation of online electronic journals. The results are presented in Table 4.88.

Table 4.88: Adequacy of computers and utilisation of online electronic journals

As a result of adequacy of computers am able to use online electronic journals	Frequency (f)	Percentage %	Cumulative percent
Not at all	68	26.3	26.3
Less extent	60	23.2	49.4
Not sure	58	22.4	71.8
Great extent	34	13.1	84.9
Very great extent	39	15.1	100.0
Total	259	100.0	
Mean	2.66		

The results presented in Table 4.88 show that 68 (26.3%) and 60 (23.2%) respondents scored in the not at all and less extent levels, respectively. Contrastingly, 34 (13.1%) and 39 (15.1%) respondents scored for a great extent and very great extent, respectively; while 58 (22.4%) respondents were not sure. Again, cumulative results about one-half of the respondents, 128 (49.4%), failed to agree with the view that adequacy of computers influenced utilisation of online electronic journals. Contrastingly, up 73 (28.2%) respondents affirmed the view. This implies that the influence of perceived adequacy of computers on utilisation of online electronic journals was marginal. The analysis obtained a mean score of 2.66.

4.10.2.6 Adequacy of computers and utilisation of online database

The study further examined the influence of perceived adequacy of computers on utilisation of online database. This was accomplished by requesting respondents to indicate their views regarding the extent to which adequacy of computers influenced utilisation of online database; the results of which are presented in Table 4.89.

Table 4.89: Adequacy of computers and utilisation of online database

As a result of adequacy of computers am able to use online electronic database	Frequency (f)	Percentage %	Cumulative percent
Not at all	72	27.8	27.8
Less extent	62	23.9	51.7
Not sure	65	25.1	76.8
Great extent	37	14.3	91.1
Very great extent	23	8.9	100.0
Total	259	100.0	
Mean	2.49		

Table 4.89 shows that 72 (27.8%) and 62 (23.9%) respondents scored in the level of not at all and less extent, respectively. On the other side of the scale, 37 (14.3%) and 23 (8.9%) respondents scored in the great extent and very great extent levels, respectively; while 65 (25.1%) said they were not sure. Cumulatively, the results show that about one-half of the respondents, 134 (51.7%), failed to affirm the statement; which in turn, suggests that the influence of perceived adequacy of computers on the utilisation of online database was marginal. The analysis yielded a mean score of 2.49.

4.10.2.7 Adequacy of computers and utilisation of online research papers

The study sought to investigate the influence of perceived adequacy of computers on utilisation of online research papers. In this regard, respondents were requested to indicate their views regarding the extent to which adequacy of computers influenced utilisation of online research papers. The results are presented in Table 4.90

Table 4.90: Adequacy of computers and utilisation of online research papers

As a result of adequacy of computers am able to use online research papers	Frequency (f)	Percentage %	Cumulative percent
Not at all	82	31.7	31.7
Less extent	46	17.8	49.4
Not sure	67	25.9	75.3
Great extent	25	9.7	84.9
Very great extent	39	15.1	100.0
Total	259	100.0	
Mean	2.51		

The results presented in Table 4.90 shows that, 82 (31.7%) and 46 (17.8%) respondents scored for not at all and less extent levels, respectively. Contrastingly, 25 (9.7%) and 39 (15.1%) respondents scored in the great extent and very great extent, respectively; while 67 (25.9%) respondents indicated that they were not sure. Based on this, cumulative results show that about one-half of respondents, 128 (49.4%), did not support the view that adequacy of computers influenced utilisation of online research papers; while 64 (24.7%) respondents supported the view. The results imply that adequacy of computers had less influence on utilisation of online research papers. Besides, the analysis obtained computed mean of 2.51.

4.10.2.8 Mean scores on adequacy of computers and utilisation of online library services

Further analysis focused on mean scores associated with the influence of perceived adequacy of computers on utilisation of online library services. In this regard, scores of means on different online library services were computed and compared. Besides, the mean of means was also calculated to provide the basis for making meaningful conclusions. Any online library service that scored above the mean of means was considered high while those that scored below the mean of means were treated as low. Table 4.91 summarises the results.

Table 4.91: Mean scores on adequacy of computers and utilisation of online library services

Level library source	Mean	Std. dev.
Online digital repository	2.46	1.214
Online newspapers	2.74	1.461
Online public access (OPAC)	2.86	1.382
Electronic books	2.57	1.419
Electronic journals	2.66	1.453
Online database	2.49	1.476
Online research papers	2.51	1.521
Total Mean	18.29	
Base Mean	2.61	

Table 4.91 shows that OPAC scored the highest mean of 2.86, followed by, online newspapers at 2.74, as well as online electronic journals and online electronic books at a mean of 2.66 and 2.57, respectively. On the other hand, online database scored a mean of 2.49, while online database and digital repository registered means of 2.49 and 2.46, respectively. Comparing the mean scores with the mean of means which was 2.61, it was

possible to conclude that OPAC (2.86), online electronic newspapers (2.74) and online electronic journals (2.66) were highly influenced by adequacy of computers. The services whose mean score fell below that mean of means included online electronic books (2.57), online research papers (2.51), online database (2.49), and online digital repository (2.46). It is also evident to conclude that OPAC is the service that recorded the highest influence from adequacy of computers.

The relationship between perceived adequacy of computers and utilisation of online library services (as measured by mean score) was also analysed using multiple linear regression analysis. The null hypothesis stated as follows:

8. H₀ There was no significant relationship between perceived adequacy of computers and utilisation of online library services at the University of Nairobi.

The results are summarised in Table 4.92

Table 4.92: Regression analysis on adequacy of computers and utilisation of online library services

Model	r	R ²	Adj. R ²	Std error of estimate	R square change	F change	df1	df2	Sig. change
1	0.237	0.258	0.246	1.225	0.258	1.357	10	12	0.033

The results in Table 4.92 show that the analysis obtained a coefficient correlation $r = 0.237$, which is a weaker positive relationship between independent and dependent variable. Besides, the R^2 is the coefficient of the determination, which is $R^2 = 0.258$ implying that there was a small positive linear correlation. The significance of change also referred to as ρ -value is $\rho=0.033$. The value is pegged on the study limit at 0.5 or 95 percent degree of

confidence interval. Since ρ -value $0.033 < 0.05$, the null hypothesis was rejected and conclusion made that there was a significant relationship between adequacy of computers and utilisation of online library services at the University of Nairobi. This outcome agrees with perceptions expressed by the librarians who also indicated a strong relationship between adequacy of computers and use of online library services.

The results of this study further confirms those reported by Alisona, et al., (2012), who established a significant correlation between utilisation of medical e-resources with the number of computers at the Makerere University College of Health Sciences. The results of this study also match with those reported by Chimah and Nwokocha (2013) in their study which focused on Southeast Nigerian federal universities. The authors reported that utilisation of online information among postgraduate students was constrained by inadequacy of computers and Internet facilities in their libraries.

The analysis also involved computation of variance using ANOVA technique, with a view to testing how the regression model statistically significantly predicts the outcome variable (the significant relationship between the dependent and independent variable). The ANOVA results are presented in Table 4.93.

Table 4.93: Analysis of Variance

Model	Sum of square	df	Mean square	f	sig
Regression	12.758	10	1.278	2.857	0.033
Residual	220.984	148	1.496		
Total	233.739	158			

The results in Table 4.93 show that the analysis obtained a computed F statistic of is 2.857, meaning 28.57 percent of model fits the linear line; hence, has been explained; thus the model fits interpretation.

4.10.3 Reliability of power supply and Utilisation of online library services

The eight objective of this study focused on determining influence of perceived reliability of power supply on utilisation of online library services at the University of Nairobi. To achieve this, respondents were requested to indicate their perceptions regarding the extent to which perceived reliability of power supply influenced utilisation of online library services at the institution. In this regard, 7 test statements, which are contained in the data collection instrument, were scored on a five-point rating scale. Each statement in the attitude scale was followed by five responses including: not at all, less extent, not sure, a great extent and a very great extent. Respondents were expected to express their perceptions regarding each of the items by choosing only one response, the best suited their views. The scores ranged from possible minimum of 7 to a possible maximum of 35 indicating the lowest and highest usage of online library services.

4.10.3.1 Reliability of power supply and utilisation of online digital repository

The study sought to investigate influence of reliability of power supply on utilisation of online digital repository. This was achieved by requesting respondents to indicate their views regarding the extent to which perceived reliability of power supply influenced utilisation of online digital repository. The results are presented in Table 4.94.

Table 4.94: Reliability of power supply and utilisation of online digital repository

Reliability of power supply determines use of online digital repository	Frequency (f)	Percentage %	Cumulative percent
Not at all	173	66.8	66.8
Less extent	29	11.2	78.0
Not sure	18	6.9	84.9
Great extent	33	12.7	97.7
Very great extent	6	2.3	100.0
Total	259	100.0	
Mean	1.64		

The results which are summarised in Table 4.94 show that 173 (66.8%) and 29 (11.2%) respondents did not agree with the test statement saying that reliability of power supply influenced utilisation of online digital repository. Contrastingly, 33 (12.7%) respondents and another 6 (2.3%) respondents affirmed the test statement; while 18 (6.9%) indicated they were not sure. The results suggest that reliability of power supply had less influence on utilisation of online digital repository, which implies that distance learners were greatly disadvantaged by unreliable power supply, as far as utilisation of online digital repository was concerned. The analysis obtained a computed mean of 1.64.

4.10.3.2 Reliability of power supply and utilisation of online newspapers

The study sought to establish the influence of perceived reliability of power supply on utilisation of online newspapers. In order to accomplish this investigation, respondents were requested to indicate the extent to which reliability of power supply influenced utilisation of online newspapers; the results of which are presented in Table 4.95.

Table 4.95: Reliability of power supply and utilisation of online newspapers

Reliability of power supply determines use of online newspapers	Frequency (f)	Percentage %	Cumulative percent
Not at all	231	89.2	89.2
Less extent	12	4.6	93.8
Not sure	8	3.1	96.9
Great extent	4	1.5	98.5
Very great extent	4	1.5	100.0
Total	259	100.0	
Mean	1.11		

The results from Table 4.95 show that most respondents, 231 (89.2%) scored not at all, 12 (4.6%) scored to a less extent; while 8 (3.1%) said they were not sure. On the other side of the scale, 4 (1.5%) respondents and another 4 (1.5%) affirmed that reliability of power supply influenced utilisation of online newspapers. The impression one can derive from this finding is that reliability of power supply had less influence on utilisation of online newspapers. Based on this, the analysis yielded a computed mean of 1.11.

4.10.3.3 Reliability of power supply and utilisation of online public access catalogue

The study further examined the influence of perceived reliability of power supply on utilisation of OPAC. This was accomplished by asking respondents to indicate their views regarding the extent to which reliability of power supply influenced utilisation of OPAC. The results are summarised in Table 4.96.

Table 4.96: Reliability of power supply and utilisation of online public access catalogue

Reliability of power supply determines use of online public access catalogue	Frequency (f)	Percentage %	Cumulative percent
Not at all	176	68.0	68.0
Less extent	27	10.4	78.4
Not sure	34	13.1	91.5
Great extent	8	3.1	94.6
Very great extent	14	5.4	100.0
Total	259	100.0	
Mean	1.58		

The results presented in Table 4.96 show that most respondents, 176 (68.0%), scored not at all, 27 (10.4%) indicated less extent, while 34 (13.1%) were not sure. Those who affirmed that reliability of power supply influenced utilisation of OPAC were 22 (8.5%), including 8 (3.1%) who scored great extent and 14 (5.4%) who indicated very great extent. The results suggest reliability of power supply had less influence on utilisation of OPAC. The mean score was calculated to be 1.58.

4.10.3.4 Reliability of power supply and utilisation of online electronic books

The study investigated influence of perceived reliability of power supply on utilisation of online electronic books. In this regard, respondents were requested to indicate their views regarding the extent to which perceived reliability of power supply influenced utilisation of online electronic books; which yielded the results presented in Table 4.97.

Table 4.97: Reliability of power supply and utilisation of online electronic books

Reliability of power supply determines use online electronic books	Frequency (f)	Percentage %	Cumulative percent
Not at all	187	72.2	72.2
Less extent	14	5.4	77.6
Not sure	38	14.7	92.3
Great extent	12	4.6	96.9
Very great extent	8	3.1	100.0
Total	259	100.0	
Mean	1.47		

Table 4.97 show that the cumulative majority of respondents, 201 (77.6%), denied the assertion that reliability of power supply influenced utilisation of online electronic books; while another 38 (14.7%) said they were not sure. Contrastingly, 20 (7.7%) respondents supported the view that reliability of power supply influenced utilisation of online electronic books. The implication of this result is that reliability of power supply had less influence on utilisation of online electronic books. The analysis obtained a computed mean of 1.47.

4.10.3.5 Reliability of power supply and utilisation of online electronic journal

This study examined the influence of perceived reliability of power supply on utilisation of online electronic journals. In this regard, respondents were requested to indicate their thoughts regarding the extent to which reliability of power supply influenced utilisation of online electronic journals. Table 4.98 presents the results.

Table 4.98: Reliability of power supply and utilisation of online electronic journals

Reliability of power supply determines use of online electronic journals	Frequency (f)	Percentage %	Cumulative percent
Not at all	225	86.9	86.9
Less extent	11	4.2	91.1
Not sure	6	2.3	93.4
Great extent	7	2.7	96.1
Very great extent	10	3.9	100.0
Total	259	100.0	
Mean	1.09		

The results presented in Table 4.98 show that the cumulative majority of respondents, 236 (91.1%) negated the test statement saying that reliability of power supply influenced utilisation of online electronic journals; while 6 (2.3%) were not sure. On the other side of the scale, a cumulative minority, 17 (6.6%) affirmed that reliability of power supply influenced utilisation of online electronic journals. The implication of these results is that reliability of power supply had less influence on utilisation of online electronic journals. The analysis yielded a mean score of 1.09.

4.10.3.6 Reliability of power supply & utilisation of online electronic database

The study sought to establish the influence of perceived reliability of power supply on utilisation of online electronic database. To achieve this, respondents were asked to indicate their perceptions regarding the extent to which reliability of power supply influenced utilisation of online electronic database. The results are presented in Table 4.99.

Table 4.99: Reliability of power supply and utilisation of online electronic database

Reliability of power supply determines use of online database	Frequency (f)	Percentage %	Cumulative percent
Not at all	194	74.9	74.9
Less extent	12	4.6	79.5
Not sure	28	10.8	90.3
Great extent	17	6.6	96.9
Very great extent	8	3.1	100.0
Total	259	100.0	
Mean	1.61		

The results presented in Table 4.99 show that a cumulative majority of respondents, 206 (79.5%) indicated disagreement with the assertion linking reliability of power supply and utilisation of online electronic database. However, 32 (12.4%) respondents indicated they were not sure. Contrastingly, accumulative minority of respondents, 25 (9.7%), supported the test statement saying that reliability of power supply influenced utilisation of online electronic database. The results imply that reliability of power supply had less influence on utilisation of online electronic database. Based on this, the analysis obtained a calculated mean of 1.61

4.10.3.7 Reliability of power supply and utilisation of online research papers

The study investigated the influence of perceived reliability of power supply on utilisation of online research papers. In order to accomplish this task, the investigator requested respondents to indicate their views regarding the extent to which reliability of power supply influenced utilisation of online research papers. Table 4.100 presents the results.

Table 4.100: Reliability of power supply and utilisation of online research papers

Reliability of power supply determines use of online research papers	Frequency (f)	Percentage %	Cumulative percent
Not at all	206	79.5	79.5
Less extent	9	3.5	83.0
Not sure	18	6.9	90.0
Great extent	11	4.2	94.2
Very great extent	15	5.8	100.0
Total	259	100.0	
Mean	1.59		

As indicated in Table 4.100, a cumulative majority of respondents, 215 (83.0%) failed to affirm the assertion stating that reliability of power supply influenced utilisation of online research papers. Notably though, 18 (6.9%) respondents said they were not sure. On the other side of the scale, cumulative minority respondents, 26 (10.0%), affirmed that reliability of power supply influenced utilisation of online research papers. The results suggest that there was less influence of reliability of power supply on utilisation of online research papers. The mean score was 1.59.

4.10.3.8 Mean scores on reliability of power supply and utilisation of online library services

The analysis involved establishing mean scores associated with the influence of perceived reliability of power supply on utilisation of online library services at the institution. This was achieved by computing and comparing mean scores for each of the 7 online library services. The analysis also involved computing the mean of means, which was designated the benchmark for making decision on whether the mean scores were high or low. It was

assumed that any online library service that scored a mean above the mean of means was rated high while any online service that scored a mean below the mean of means was equally rated low. The results are summarised in Table 4.101.

Table 4.101: Reliability of power supply and utilisation of online library services

Online library services	Mean	Std Dev.
Online digital repository	1.64	0.183
Online newspapers	1.11	0.322
Catalogue (OPAC)	1.58	0.117
Online electronic books	1.47	0.081
Online electronic journals	1.09	0.300
Online electronic database	1.61	0.105
Online research papers	1.59	0.214
Total Mean	10.09	
Base Mean	1.44	

The results in Table 4.101 show that online digital respiratory scored the highest mean of 1.64, followed by online electronic database at 1.61, online research papers at 1.59, and OPAC at 1.58. At the bottom of the ranking list are online electronic books at 1.47, followed by online newspapers at 1.11 and online electronic journals at 1.09. Based on the mean of means, which average at 1.44, online library services that scored means above the mean of means included online digital repository, online electronic database, online research papers, OPAC, and online electronic books. However, online newspapers and online electronic journals registered means below the mean of means; hence, were rated as low. These results imply that reliability of power supply highly influenced utilisation of online digital repository among distance learners of the University of Nairobi.

This confirms the findings reported by Ingutia-Oyieke and Dick (2010) also identified incessant power outages on campus as one of the infrastructural issues affecting utilisation of e-resource at the University of Eastern Africa Baraton. Power outages affected the LAN Internet connectivity, causing frequent system break down and damaging computers in the library. The challenge of frequent power outage was also singled out by Chimah and Nwokocha (2013) as a key barrier to access of e-resources.

The relationship between reliability of power supply and utilisation of online library (as measured by mean score on online library services) was analysed using multiple linear regression analysis. The null hypothesis was formulated as follows:

8. H₀ There was no significance relationship between perceived reliability of power supply and utilisation on online library services at the University of Nairobi.

The results are shown in the preceding tables.

Table 4.102: Model summary of regression analysis

Model	r	R ²	Adjusted R ²	Std. Err. of estimate	Change Statistics				
					R ² Change	F	df1	df2	Sig. of change
1	0.348	0.122	0.593	0.422	0.122	2.001	10	100	0.040

The results presented in Table 4.102 show that the coefficient of correlation is $r = 0.348$ indicating a positive relationship between variables. Similarly, R² which is the coefficient of the determination $R^2 = 0.122$ implying a positive linear correlation. The significance of change also referred to as the ρ -value is 0.040. This value is pegged on the study putting

the limit at 0.5 or 95% degree of confidence interval. Since ρ -value 0.040 is less than 0.05 ($\rho > 0.05$), reject the null hypothesis for being untrue and accept the alternative hypothesis that there was a significant relationship between reliability of power supply and utilisation of online library services. The analysis also involved computation of variance using ANOVA in order to test how the regression model statistically significantly predicted the outcome variable (the significance of the relationship between the dependent and independent variable). The results are shown in Table 4.103.

Table 4.103: Analysis of Variance

Model	Sum of square	df	Mean square	F	sig
Regression	3.504	10	0.353	2.001	0.040
Residual	25.936	151	0.178		
Total	29.437	259			

As indicated in Table 4.103, the analysis obtained a computed F statistic of 2.001 which means that 20.01 percent of the model fits the linear line and therefore, has been explained by the independent variable. This implies that this model fits interpretation

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the study, conclusions and recommendations for improvement on utilisation of online library services by distance learners at the University of Nairobi. The chapter also includes contributions to the body of knowledge and suggestions for further research.

5.2 Summary of the Findings

The purpose of this study was to determine the influence of demographic and institutional factors on the utilisation of online library services by distance learners at the University of Nairobi. Chapter one defines distance learning and describes its key features in terms of advantages to people in full time employment and other productive social obligation such as raising children; as well as distance learning trends across the globe. The chapter also explains the importance of online library services within the context of distance learning. It further highlights experiences of distance learners in various countries and institutions of higher learning within Kenya, with regards to utilisation of online library services. Chapter two explores empirical, theoretical and policy literature regarding utilisation of online library services. In this regard, the chapter explores the historical development of distance learning in Kenya, which narrows down to the experience of University of Nairobi. The chapter explores empirical literature linking demographic and institutional factors with utilisation of online library services among distance learners in various countries.

The study was anchored on Technology Acceptance Model (TAM), which is an intention-based model that was specifically tailored to explain user behaviour patterns towards technology across various populations, while at the same time being both parsimonious and theoretically justified. Chapter three describes the descriptive survey and correlational designs, which were applied to guide the research process. The chapter also shows that primary data were obtained from 259 distance learners, and 11 librarians; the latter were engaged in key informant interviews. Chapter four presents findings of the study, which has been organised in accordance with objectives of the study as indicated in the following sub-sections.

5.2.1 Learners' gender and utilisation of online library services

The results from the descriptive statistics showed that learners' gender influenced utilisation of online library services. For example, online digital repository recorded the highest mean of 1.70 while the lowest mean score was registered by online newspapers at 1.18. There was a significant relationship between learners' gender and utilisation of online library services. ($r = 0.345$, $R^2 = 0.119$, $n = 259$, $\rho < 0.05$). The results implied that there was a significant positive correlation between the independent and the dependent variables. A factor analysis using KMO Test showed a figure of 0.806. This implied that the sampled data was highly valid since the threshold is normally 0.5. Only one component factor explained 60 percent of the total variance implying that there was only one principle component extracted which was online digital repository at 0.849.

5.2.2 Learners' age and utilisation of online library services

The results from the descriptive statistic showed that learners' age influenced utilisation of online library services. For example, Online Public Access Catalogue (OPAC) registered the highest mean of 3.33 while the least mean was recorded by online newspapers at 1.80. The study also found a significant positive linear correlation between learners' age and utilisation of online library services meaning there was a significant relationship between the independent variable and dependent variable ($r = 0.366$, $R^2 = 0.134$, $n = 259$, $p < 0.05$). The ANOVA test indicated F statistic of 2.294 implying that 22.9 percent of the model fits the linear line and therefore, had been explained by the independent variable thus this model fits interpretation.

5.2.3 Learners' computer literacy and utilisation of online library services

The results from the descriptive statics showed that learners' computer literacy had less influence on utilisation of online library services. However, the highest mean score was registered by online public access at 2.90 while lowest mean score was recorded by online digital repository at 2.42. The findings further indicate that most online library services registered low means ranging from 2.90-2.42 meaning that computer literacy had less influence on learners' utilisation of online library services. The study also found no significant relationship between the independent and dependent variables ($r = 0.234$, $R^2 = 0.055$, $n = 259$, $p > 0.05$). The findings implied that there was no significant relationship between independent and dependent variables. The ANOVA test indicated F statistic of 0.854 meaning 85.4 percent of the model fits the linear line and therefore, had been explained thus the model fits interpretation.

5.2.4 Learners' awareness and utilisation of online library services

The results from descriptive statistics of this study showed that lack of awareness was an impediment factor towards learners' use of online library services. For example, the results indicated that even though the University had online library services, very little was being done to provide knowledge and skills to enable distance learners access online library services. The study also found a significant relationship between learners awareness of availability of online library services and utilisation of online library services ($r = 0.375$, $R^2 = 0.141$, $n = 259$, $\rho < 0.05$). The ANOVA tests indicated F statistic of 2.423 meaning 24.23 percent of the model fits linear line and therefore, had been explained by the independent variables thus the model fits interpretation.

5.2.5 Learners' programme of study and utilisation of online library services

The findings from descriptive statistics from this study indicated that learners' programme of study influenced utilisation of online library services. The highest mean was recorded by online public access catalogue at 3.82 while the lowest mean was recorded by online newspapers at 2.72. There was a significant relationship between learners programme of study and utilisation of online library services at the University of Nairobi ($r = 0.567$, $R^2 = 0.322$, $n = 259$, $\rho < 0.05$). The ANOVA test showed F statistic of 7.027 meaning that 70.27 percent of the model fits linear line and therefore, had been explained by the independent variable hence the model fits interpretation.

5.2.6 Internet connectivity and utilisation of online library services

The results of this study suggest that Internet connectivity influenced utilisation of online library services. Based on the means or means, which was 2.44, Internet connectivity highly influenced utilisation of online public access catalogue (3.14), online electronic books (2.50), and online research papers (2.48). It also exerted influence on utilisation of online electronic journals (2.39), online digital repository (2.34), electronic database (2.30), as well as online newspapers (1.92). Furthermore, the study found a significant positive relationship between Internet connectivity and utilisation of online library services ($r = 0.309$, $R^2 = 0.137$, $n = 259$, $\rho < 0.05$). Based on this, the null hypothesis, stating that there is no significant relationship between Internet connectivity and utilisation of online library services at the University of Nairobi, was rejected for being untrue. In addition, the ANOVA test obtained an F statistic of 2.387 meaning that 23.87 percent of the model fits linear line and therefore, had been explained by the independent variable hence the model fits interpretation.

5.2.7 Adequacy of computers and utilisation of online library services

The study found out that adequacy of computers influenced utilisation of online library services. Based on the mean of means which was 2.61, the study found that utilisation of online public access catalogue (2.86), online electronic newspapers (2.74) and online electronic journals (2.66) were highly influenced by adequacy of computers. However, a low influence was noted in the utilisation of online electronic books (2.57), online research papers (2.51), online database (2.49), and online digital repository (2.46). The study also found a weak positive relationship between adequacy of computers and utilisation of online library services ($r = 0.237$, $R^2 = 0.258$, $n = 259$, $\rho > 0.05$), upon which the null hypothesis,

stating that there was no significant relationship between perceived adequacy of computers and utilisation of online library services at the University of Nairobi, was rejected for inconsistency with empirical evidence. This implies that the relationship between adequacy of computers and utilisation of online library services was significant. More still, the ANOVA test obtained an F statistic of 2.857, meaning 28.57 percent of model fits the linear line; hence, has been explained; thus the model fits interpretation.

5.2.8 Reliability of power supply and utilisation of online library services

The findings of this study show that reliability of power supply influenced utilisation of online library services. Based on the mean of means, which average at 1.44, the variable exerted a high influence on utilisation of online digital repository (1.64), online electronic database (1.61), online research papers (1.59), online public access catalogue (1.58), and online electronic books (1.47). The variable also exerted a low influence on utilisation of online newspapers (1.11) and online electronic journals (1.09). These results imply that reliability of power supply highly influenced utilisation of online digital repository among distance learners of the University of Nairobi. The study also a positive relationship between reliability of power supply and utilisation of online library services ($r = 0.348$, $R^2 = 0.122$, $n = 259$, $p < 0.05$), upon which the null hypothesis, stating there was no significance relationship between perceived reliability of power supply and utilisation on online library services at the University of Nairobi, was rejected for being inconsistent with empirical evidence. In addition, the ANOVA test obtained an F statistic of 2.001, which means that 20.01 percent of the model fits the linear line and therefore, has been explained by the independent variable. This implies that this model fits interpretation.

5.3 Conclusion

There are various conclusions that can be made from the results of this study. The conclusion presented in this section is based on the research objectives and hypothesis. The conclusions are started as follows:-

From objective one of the study, it was concluded that there was a significant relationship between learners' gender and utilisation of online library services at the University of Nairobi. This implied that learners' gender has a considerable influence on the utilisation of online library services in distance learning. From objective two of the study, it was concluded that there was a significant relationship between learners' age and utilisation of online library services. This implied that learners' age determined the utilisation of online library services.

From objective three of this study it was concluded that there was no significant relationship between learners' computer literacy and utilisation of online library services. This result showed that learners' computer literacy did not have a significant influence on their use of online library services. From objective four of the study, it was concluded that learners' awareness of availability of the online library services have a considerable influence on their use of online library services. This implied that awareness of availability of online library services influences learners' use of online library services. From objective five of the study, it was concluded that there was a significant influence of learners' programme of study on utilisation of online library services. This implies that the programme a student is enrolled in positively influenced their use of online library services.

Based on objective six, internet connectivity has a positive influence on the utilisation of online library services by distance learners. As pointed out by Caspers, Fritts and Gover (2001), digital library services are crucial for the success of distance learning programmes. On their part, digital libraries fulfil their purpose by depending heavily on the Internet. Consequently, the functionality of digital libraries and distance learning programmes depends on the availability and stability of the Internet. Frequent disappointment in accessing the Internet is likely to reinforce user apprehensiveness, which in turn, may discourage learners from developing their skills in searching for requisite information to update their notes or support their research activities. For distance learners to optimally utilise online library services at the University of Nairobi, a powerful and reliable Internet connectivity is indispensable.

From the seventh objective, the study found out that adequacy of computers significantly relates with utilisation of online library services. Notably, adequacy of functional computers makes utilisation of digital library services easier, less stressful and timesaving. Access to computers in digital libraries is a key factor that determines utilisation of services by distance learners, according to the study conducted by Chimah and Nwokocha (2013). Where computers are adequate learners get ample time to practice and improve their computing, as well as information searching skills, which in turn, helps them overcome fears, anxiety and negative attitudes associated with digital library services. In view of this, ensuring that each learner is able to access a functional computer at the library remains one of the most important undertakings for any institution of higher learning committed to improving utilisation of online library services.

Lastly, the study showed that utilisation of online library services significantly related with reliability of power supply at the library. As a matter of logic, providing internet of sufficient bandwidth and availing adequate computers, may not necessarily improve utilisation of online library services unless power supply is improved. Incessant power outages as reported by Ingutia-Oyieke and Dick (2010) do not only damage Internet infrastructure and computers, but also and more importantly, discourages distance learners from utilising online library services.

5.4 Recommendations

Considering the study findings and conclusions, the following recommendations were made:

Online library service is a key factor in obtaining relevant information in Distance learning, therefore, all distance learners irrespective of their gender should be encouraged to use online library services provided by the University.

Although learners have varying abilities and experience related to finding and using online services and resources, librarians should be providing instructions throughout the semester to learners at all levels and ages targeting learners who are not familiar with the university online library services.

In order to create awareness, there is need to engage distance learners in activities that give them practice and require them to demonstrate their competence in evaluating the quality of the information they use. Digital literacy should not be assumed because a generation has grown up using the Internet and online technology. In addition stakeholders of the

University library should regularly solicit student opinion on the ease of use and usefulness of the online library's resources and services. Determining student satisfaction is one of the pillars of quality e- learning effectiveness.

It is imperative that the Government of Kenya and University of Nairobi administration make adequate provision for different types of electronic information resources and services for use at the regional centres such as OPAC, online newspapers, online research papers, e-book, e-journal, electronic data base and internet facility. All these can effectively be used in literacy for all through Distance learning.

The University administration should come up with a distance learning policy that ensures all programmes offering distance learning have online learning as a component of their curriculum,. This will enable all learners enrolled in these programmes acquire the necessary skills for accessing the online library services provided by the university.

The university of Nairobi administration should come up with measures of improving user education through online library orientation, induction and instruction. This will enhance effective utilisation of online library services by learners enrolled in the distance learning programme.

Improve Internet bandwidth to improve the speed of information access by distance learners. This requires technical backup support to ensure stability and maintain search power. This should encourage and motivate learners to utilise online services.

Provide adequate functional computers at the digital library to reduce congestion, and for the convenience of learners. This should involve a proper maintenance programme and replacement of obsolete and non-functional equipment.

Ensure a reliable power supply for the library, which should entail procuring necessary power back-up equipment, including standby generators for satellite campuses.

Universities and other higher institutions should ensure a reliable power supply for their library(ries) and necessary power backup systems.

The distance learners should be trained in use of online resources at higher educational level.

5.5 Contribution to the Body of Knowledge

The study has a number of contributions made to the body of knowledge. The finding revealed relationship between independent and dependent variable. The summary of the contribution of to the body of knowledge is outlined in proceeding sections. Objective one of this study was to examine the influence of student gender influences that used online library services. There was a significant positive correlation between gender and utilisation of online library services. No such studies have been done at the University of Nairobi hence the gap that this study filled.

Objective two of this study was to determine influence of learners' age on utilisation of online library services. The outcome of the study showed that age influenced utilisation of online library services. For example online public access was highly used by distance learners. No such studies have been carried out in Kenya more so at the University of Nairobi.

Objective three of this study was to assess the extent to which student computer literacy influence utilisation of online library services .The results indicated that learners’ computer literacy does not influence their use of online library services. This implied that access to online library services was not dependent upon learners’ computer literacy. This could be attributed to the fact that there are other devices that can support access to online library services such as Smart phones, Wi-Fi and Local Area Network. Even though several studies related to influence of computer literacy on ICT utilisation have been done worldwide, for example Tayler & Hasting (2011) in Florida, USA, Koohang & Ondracek (2005) in Britain and Ojoo and Akande (2005) in Nigeria, none of such studies have been done in Kenya.

Objective four of this study was to establish influence of student awareness of availability Online library services on utilisation of online library services. The outcome of this objective was that there was a significant positive correlation between learners’ level of awareness and utilisation of online library services. Even though a similar study was conducted by Mwatela (2013) on factors influencing utilisation of Library services by students of Mombasa campus of University of Nairobi, this study focused on general library use targeting students based in Mombasa campus, the present study targeted distance learners based in Kikuyu campus and the focus was on online library services hence the gap that was filled by this study.

Objective five of this study was to assess influence of learners’ programme of study on utilisation of online library services. The result revealed that learners’ programme of study influenced their use of online library services. No such studies have been conducted in Kenya with specific reference to the University of Nairobi hence the gap that was bridged by this study.

Objective six of the study was to determine the influence of Internet connectivity on utilisation of online library services. Online library services thrive on the power and reliability of the Internet. The connection between Internet connectivity and utilisation of digital resources is documented by studies conducted in Uganda and Nigeria, among others. This study brings to the fore the importance of institutional factors such Internet connectivity to sustainable utilisation of online library services within the context of distance learning at the University of Nairobi.

Objective seven of the study was to investigate the influence of adequacy of computers on utilisation of online library services. Adequacy of computers is an important aspect of institutional factors that influence utilisation of online library services. Even though studies conducted in Uganda, Nigeria and Ghana have underscored the important role of the number of computers vis-à-vis student population; no such findings have been documented within the context of distance learning and digital library services at the University of Nairobi.

Objective eight of the study was to examine the influence of reliability of power supply on utilisation of online library services. Computers and Internet connectivity are powered electricity. At the University of Nairobi, no study has determined statistical connection between reliability of power supply and utilisation of online library services by digital learners. This is a key contribution of the present study. Table 5.1 displays a summary of the contribution to the body of knowledge

Table 5.1: Summary of the contributions to the body of knowledge

Objective	Contribution to knowledge
1. Examine the influence of learners' gender on the utilisation of online library services.	Learners' Gender influences utilisation of online library services. There was a significant relationship between learners' gender and utilisation of online library services at the University of Nairobi.
2. Determine the influence of learners' gender on utilisation of online library services.	Learners' computer literacy age influences utilisation of online library services. There was a significant positive correlation between learners' age and utilisation of online library services.
3. Assess the extent to which learners' computer Literacy influences utilisation of online library services.	Learners' computer literacy does not influence their use of online library services at the University of Nairobi.
4. Establish the influence of learners' awareness of availability of online library services on utilisation of online library services.	Learners' awareness of availability of online library service influences their use of online library services at the University of Nairobi.
5. Asses the influence of learners' programme of study on utilisation of online library services.	Learners' programme of study influences utilisation of online library services at the University of Nairobi
6. Determine the influence of Internet connectivity on utilisation of online library services.	Online library services thrive on the power and reliability of the Internet. The connection between Internet connectivity and utilisation of digital resources is documented by studies conducted in

Objective	Contribution to knowledge
	Uganda and Nigeria, among others. This study brings to the fore the importance of institutional factors such Internet connectivity to sustainable utilisation of online library services within the context of distance learning at the University of Nairobi.
7. Investigate the influence of adequacy of computers on utilisation of online library services.	Adequacy of computers is an important aspect of institutional factors that influence utilisation of online library services. Even though studies conducted in Uganda, Nigeria and Ghana have underscored the important role of the number of computers vis-à-vis student population; no such findings have been documented within the context of distance learning and digital library services at the University of Nairobi.
8. Examine the influence of reliability of power supply on utilisation of online library services.	Computers and Internet connectivity are powered electricity. At the University of Nairobi, no study has determined statistical connection between reliability of power supply and utilisation of online library services by digital learners. This is a key contribution of the present study.

5.6 Suggestions for further research

- i. An experimental study on online library utilization levels for learners who study by face to face should be conducted.
- ii. Similar studies on “Influence of Demographic and Institutional Factors on utilisation of online Library services should be conducted in other distance learning programmes at the University of Nairobi and other universities in Kenya and beyond.
- iii. It is therefore suggested that a study should be conducted to find out the “causes of learners” failure to use online library services provided by the University of Nairobi.

REFERENCES

- Ackerman, E. (1996). Tools for reaching: the worldwide web and web browser. Retrieved from w.w.w.mwc.edu/falalad/w.w.w.teaching-html on 2/7/2014.
- Agalo, J. (2008). Changing role of higher education learner: Reasons for establishment of ODL at Moi University. Directorate of Open and Distance learning Moi University, Eldoret, Kenya.
- Aiona L.O. (2008). Library and information services support for distance education programme in Africa universities. *Proposals for the Future Development*, Ilorin, and University of Ilorin, 41, 1-11.
- Alison, K.A., Kiyingi, G.W., & Baziraake, B.B. (2012). Factors affecting utilization of electronic health information resources in universities in Uganda. *Annals of Library and Information Studies*, 59, 90-96.
- Archer, N.P., Head, M.M. & Yuan, Y. (1996). Patterns in information search for decision making: the effects of information abstraction. *International Journal of Human and Computer Studies*, 45, 599-616.
- Bar-Ilan, J., Peritz, B. C. & Wolman, Y. (2003). A survey of the use of electronic databases and electronic journals accessed through the web by the academic staff of Israeli universities. *Journal of Academic Librarianship*, 29, 346-36.
- Best, J.W. & Khan, G.V (2006). *Research in education* (10th ed). New Delhi: Prentice Hall of India.
- Bimber, B. (2000). Measuring the gender gap on the Internet. *Social Science Quarterly*, 81 (3), 868-876.
- Blackman, R. F. (2003). A study of the perceptions and attitudes regarding library services available to students enrolled in online degree programme (Unpublished doctoral dissertation). Available from ProQuest dissertation Database (UM I No. 3126987.)
- Bolt, S., Kerr, R. & Wachope, V. (2011). Using video analysis software to create innovate teacher professional development. Paper presented to the scientific meeting of international conference of information communication Technologies in Education, Rhodes.
- Borg, R. W. & Gall, M.D. (2005). *Applying educational research in appresion guide*, 5th ed. Boston New York: Pearson.
- Bowa, (2008). Influence of learner support services on academic performance in the external degree programme of the University of Nairobi. Unpublished Doctoral Thesis submitted to the University of Nairobi.

- British Council (1992). Proceedings of the conference on textbook provision and library development in Africa. Manchester: British Council.
- Bruckland, M. (2001). *Redefining Library Services*. Berkeley Education Library Literature.
- Bush, A.K., David. W. & Tenopir, C. (2004) medical faculty use of Print and Electronic Journals: Charges over time and comparison with scientist “Journal of medical library Association 92, pp.233-241.
- Bryman, A. & Cramer, D. (1998). *Quantitative data analysis with SPSS for windows: A guide for social scientists*. London. Routledge.
- Candela, L., Athanasopoulos, G., Castelli, D., El Raheb, K., Innocenti, P., Ioannidis, Y., Katifori, A., Nika, A., Vullo, G., & Ross, S. (2011). *Coordination action on digital library interoperability, best practices and modelling foundation*. Brussels: European Union.
- Cannon, V.S. & D., N, R Grant, D. (2000). Using an interactive website to educate about cultural diversity and societal oppression. *Journal of Social Work Education*, 36(3), 463-479.
- Caspers, J. Fritts, J., & Gover. H. (2001). Beyond the rhetoric: A study of the "impact of the ACRL Guidelines for Distance Learning Library Services on selected distance learning programs in higher education. *Journal of Library Administration* 31 (3-4): 127-48. *Computers* (New York: Oxford Unit Press, 1993). Pp. 91-100.
- Chacha, R. N. (1993). *Analysing user problem in academic libraries*. Thesis (M.A.)- Loughborough University of Technology.
- Chimah, J.M. & Nwokocha, U. (2013). Empirical study of motivation; challenges and strategies in the use of electronic information resources by postgraduate library user in Southeast Nigeria Federal Universities. *International Journal of Library and Information*. Retrieved from <http://www.academicsjournals.org/article/1394517616> in June 2014.
- Cohen, L & Marion, L. (1992). *Research methods in education*, Third edit, London Routledge.
- Compeau, D., Higgins, C.A. & Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A longitudinal study. *MIS Quarterly*, 145-158.
- Crystal, (2008). *Effects of personal characteristics on learners online learning readiness*. Australia: Edith Cowan University.

- Dadzie, P. S. (2005). Electronic Resources: access and usage at Ashensi University college, campus-wide information Systems 22.5. Available at <http://www.emeraldinsight.com>
- Davis, F. D. (1986). A Technology Acceptance Model for Empirically Testing New End-User Information Systems: Theory and Results, in MIT Sloan School of Management. Cambridge, MA: MIT Sloan School of Management.
- Davis, F. D., Bagozzi, R. P. & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models, *Management Science*, 35(1), 982-1003.
- Davis, R. & Wong, D. (2007) Conceptualising and Measuring the Optimal Experience of the eLearning Environment, *Decision Sciences Journal of Innovative Education*, 5(1), 97.
- Demb, A., Erickson, D., & Hawkins-Wilding, S. (2004). The laptop computer alternative:
- Deshmukh, A.(2005). Quality enhanced educational services: A need for introspection “Paper presented at the ICDE international conference 19-23 November, New Delhi.”
- Dilek-Kayaoglu, H. (2008). Use of electronic journals by faculty at Istanbul University, Turkey: The results of a survey. *The Journal of Academic Librarianship*, 34(3), 239-247.
- Elsenberg, M.B. (2008). Information literacy: Essentials skills for information age. *Journal of Library and Informational Technology* 28 (2), 26-35.
- E-Readiness survey of Kenyan Universities (2013) report.(2013). Nairobi: Kenya Education Network.
- Farahani, G.O. (2003). Existence and Importance of Online Interaction. A PhD Dissertation submitted to the Faculty of the Virginia Polytechnic Institute and State University, Virginia, USA.
- Finger, D.T. (2007). Engagement with electronic portfolios: Challenges from the students’ perspectives, *Canadian Journal of Learning and Technology*, 31(3)..
- Ford, N., Miller, D. & Moss, N. (2001). The role of individual differences in Internet searching: An empirical study. *Journal of the American Society for Information Science and Technology*, 52(12), 1049-1066.
- Gadd, E., Hunt, M., Newbold, C. & Stubbings, R. (2001). In *With the new: Reviewing library induction practices at Loughborough University*. *New Library World*, 102 (1166/1167), 247-254

- Ganiyu, O. Q. (2013). Influence of demographic factors on use of online library resources by Undergraduate students in two private Nigerian University Libraries. *Library Philosophy and Practice (e-journal)*. Paper 976.
- Garrison, D. & Anderson, T. (2003). *ELearning in the 21st Century*. London: Routledge Falmer.
- Githinji, R. M. (2014). Factors influencing University of Nairobi degree students' access and utilisation of information communication and technology facilities. Unpublished M. Ed Thesis submitted to the University of Nairobi.
- Godfrey, A. S. (2011). *Online Technology issues in communications Teaching, West Indies, St. Augustine, Trinidad and Tobago 1,(2)*.
- Henderik, P., Hoff, F. & Hardy, D.(1996). *European virtual university in context*. Britain
- Hume, D. (1993). *An enquiry concerning human understanding (2nd ed)*. Indianapolis, IN; Hackett.
- Ingutia-Oyieke L. & Dick A.L. (2010). A comparative analysis of the use of electronic resources by under graduate students at two Kenyan universities. Retrieved from <http://repository.up.ac.za/bristream/handle/2263/1619/ingutiaoyiekecomparative%282010%29pdf?sequence=1> in June 2014.
- Inoue, Y. (2000). The university student's preference for learning by computer-assisted instruction. *Journal of Educational Technology Systems*, 28(3), 277-285.
- Isaac, S. & Michael, W. B. (1981). *Handbook in research and evaluation*. San Diego: EdITS Publishers.
- Islam, M.A. (2011). Effects of demographics factors on e-learning effectiveness in a higher learning institution in Malaysia. *International Educational Studies*, 4 (1), 4-7.
- Jamali, H.R., Nicholas, D. & Huntington, P. (2005). The use and users of scholarly e-journals: A review of log analysis studies. *Aslib Proceedings*, 57: 554-571.
- Jomo Kenyatta Memorial Library (2015). *Details of Request for online Library Services by Distance learners at the University of Nairobi Library*: Nairobi Kenya: University of Nairobi.
- Juma, M. (2002). The impact of implication of open courseware for higher education in developing countries: The case of African Virtual University-AVU. Retrieved from http://www.wcet.info/UNESCO/juma_kenya.pdf in April 5, 2015.

- Kamau, J.W. & Odumbe, J.O. (1995). *Students' Handbook*. Nairobi: College of Education and External Studies.
- Kandiri, M. (2012). *A survey on ICT Access and use in Kenya secondary schools*. Nairobi: Summit Strategies Ltd.
- Kavulya, J.M. (2004). Challenges in the provision of library services for distance Education: A case study of selected universities in Kenya. *African Journal of Library Archive and Information Science* 14(1), 15-28.
- Kerlinger, F.N. (1986). *Foundations of behavioural research*. New York: Holt, Richart & Winston.
- Kindilchie, A.I. & Sammarine, I.F. (2008). Interaction and impact of electronic resource on Qatar University Faculty. *Libri*,58, 281-293.
- Kombo, D.K. & Tromp, A. (2006). *Proposal and thesis writing*. Makuyu: Don Bosco Printing Press.
- Koohang, A. & Ondracek, J. (2005). Users view about the usability of digital libraries *British Journal of Educational Technology*, 36, 407-423. Retrieved from :<http://www.wilconweb.com> on 4/7/2014.
- Koohang, A. (2003). Learners perception towards the web based distance learning activities/assignment portions of under graduate, Hybrid instructional model, USA, *journal of Information Technology Education*, Vol 2.
- Koohang, A. (2004). Students' perceptions toward the use of the digital library in weekly web-based distance learning assignments portion of a hybrid program. *British Journal of Educational Technology*, 35,617-626.
- Kothari, C.R. (2004). *Research Methodology. Methods and Techniques (2nd)*. Dellu Inelig New Age International (P) Limited.
- Krejcie, R.V. & Morgan, D.W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607-610.
- Loftin, J.E., Long, E.K & Rouge, B. (1983). Library orientation and library instruction for medical students. *Bulletin of Medical Library Association*, 71(2), 207-2009.
- Madhusudhan, M. (2010). RFID technology implementation in two libraries in New Delhi. *Program*, 44(2), 149-157.
- Mannan, A.(2009). *Quality assurance in Open and Distance Learning: An evolutionary approach*, University of Papua New Guinea Open Collage.

- Maore, M.G. & Kearsley, G. (2008). Distance education: A systems view (2nd ed.) Belmont, C.A: Wards worth Publishing Company
- Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behaviour. *Information Systems Research*, 2(3), 173-191.
- Maughan, P.D. (2001). Assessing information literacy among undergraduates: A discussion of the literature and the University of California-Berkeley assessment experience. *College and Research Libraries*, 62(1), 71-85.
- Mayeku, B. & Odera, F.(2011). Policy guidelines and challenges in quality assurance in Distance Learning in Kenya Public Universities. *International journal of Information and Communication Technology*, 1(8).
- Mbugua,J.(2013).”Determinants of Educational Managers’ support for Distance Mode of Delivery: A case of Western Region Kenya.” Paper presented at Open and Distance Learning Conference, College of Education and External Studies, University of Nairobi.
- Meadow, C.T., Wang, J., Yuan, W.J. & Yuan, W.A. (1995). Study of user performance and attitudes with information retrieval interfaces. *Journal of the American Society for information Science*, 46 (7), 490-505.
- Merriam Webster Collegiate Dictionary (15th ed.) (2003). Springfield, M.A: Merriam Webster.
- Metzgera, M.J., Flanagan, A.J. & Zwarunb, L. (2003). College student web use, perceptions of information credibility, and verification behaviour. *Computers and Education* 41, 271–290.
- Ministry of Education (2006). National information and communication technology: Strategy for education and training. Nairobi: Government Printer.
- Molefi, F. (2008). Context: A paper presented at the Distance Education Workshop for Setswana Part Time Writers, DNFE.
- Moon, J. & Kim, Y. (2001). Extending the TAM for a world wide web context. *Information and Management*, 38(4), 217-231.
- Morgan, G. A., Leech, N. L., Gloeckner, G. W., & Barrett, K.C. (2011). *IBM SPSS for introductory statistics: Use and interpretation* (4th ed). New York: Routledge.
- Mugenda, O.M. & Mugenda, A.G. (1999). *Research methods: Quantitative and qualitative approaches*. Nairobi: Acts Press.

- Mugenda, O.M. & Mugenda, A.G. (2003). Research methods: Quantitative and qualitative approaches. Nairobi: Act Press.
- Mulwa,S,Kyalo,D.N.,Omondi, B. & Mboroki,G.(2013). “Influence of connectivity on readiness to adopt e-Learning in Public Secondary Schools in Kitui County.” Paper presented at the Open and Distance Learning Conference, College of Education and External Studies, University of Nairobi.
- Mungania, P. (2003). The seven e-learning barriers facing employees. Journal of University Teaching & Learning Practice, 2(1) 34-45.
- Mwatela, (2013). Factors influencing utilisation of library services and resources. The case study of the University of Nairobi. Unpublished Masters Thesis.
- Nachmias, C.F. & Nachmias, D. 1996). Research methods in social sciences 9th edit. New York, St. Martin’s Press
- Naidu, S. (2006). ELearning: a guidebook of principles, procedures and practices. New Delhi: Commonwealth Educational Media Center for Asia.
- Nkamnebe, E.C., Udem, O.K. & Nkamnebe, C.B. (2014). Evaluation of the use of university library resources and services by the students of Paul University, Awka, Anambra State, Nigeria. Library Philosophy and Practice (e-journal). 1147. Retrieved from <http://digitalcommons.unl.edu/libphilprac/1147> in November 2017.
- Nyamboga.M.Ongondo.M.& Ongus.R.(2014). Experiences in the use of internet at Egerton University Library: Njoro Kenya:Egerton University
- Nyerere, J.K.A; Gravenir, F.Q. & Mse.,G.S.(2009). Open, Distance and e-Learning in Kenya. International Review of Research in ODL, 13 (3): 185-205.
- Nyerere. J.K.A.(2012).Delivery of Distance Learning in Higher Education: A case of Kenyatta University, Kenya and the University of Padua, Italy. West Africa Journal for ODL, 2(1): 33-56
- Nzuki, P.K. (2012). The relationship between perceived quality dimensions and growth in distance education: The case of external review program at the University of Nairobi, Kenya (Unpublished Doctoral Thesis)
- Obuh A.O. (2009). Use of electronic resources by postgraduate students of the Department of Library and Information Science of Delta State University, Abraka, Nigeria Library Philosophy and Practice. Retrieved from <http://webpages.uldato.edu/-mbolin./obuh-alex.htm> in June 2014.
- Odell, P.M., Korgen, K.O., Schumacher, P., Delucchi, M. (2000). Internet use among female and male college students. Cyber Psychology and Behaviour, 3(5), 855-862.

- Odumbe, J.O. (2004). Overview of the provision of distance learning in Kenya. Unpublished workshop paper, presented in Nakuru on 15th May, 2004.
- Ojo, R.A & Akande. S.O. (2005). Students access, usage and awareness of electronic information resources at University College, Hospital University of Ibadan, Nigeria. *Lagos Journal of Library and Information Science*, 11.4 (2),151-165.
- Okiki, O.C. & Asina, S.M. (2011). Use of Electronic information sources by postgraduate students in Nigeria: Influencing factors. *Library Philosophy and Practice*. 4-6..
- Okongo, A.N. (2014). Access and utilization of digital information services in academic libraries: the case of University of Nairobi. Unpublished Masters Thesis submitted to Department of Library and Information Science, University of Nairobi.
- Oladeji, S.O. (2000). An evaluative study of the Center for External Studies, University of Ibadan, Nigeria 1988-1998. Unpublished M. Ed Thesis submitted to the University of Ibadan.
- Ondari-Okemwa, E. (2004). Impediments to promoting access to global knowledge in Sub-Saharan Africa. *Library Management*, 25 (8/9), 361-375.
- Orodho, A.J. (2003), *Essentials of educational and social sciences research methods*. Nairobi: Masola Publishers.
- Orodho, A. J. & Kombo, D. K. (2002). *Research Methods*. Nairobi: Kenyatta University, Institute of Open Learning.
- Otigo, D.O. (2006) Determinants of the students' enrolment in the external degree programme of the University of Nairobi. Unpublished Masters Thesis submitted to the University of Nairobi.
- Owusu-Ansah, S. & Bubuama, C.K.A. (2015). Accessing academic library services by distance learners. *Library Philosophy and Practice* (e-journal). 1347. Retrieved from <http://digitalcommons.unl.edu/libphilprac/1347> in November 2017.
- Oyeniya, A. S. (2013). Gender difference in information retrieval skills and use electronic resources among information professions in South West Nigeria. *International Journal of Library and Information services*,5(7),2008-2011.
- Ozoemelem, O.A. (2009). Use of electronic resources by postgraduate. Students of the Department of library and information science. Abraka, Nigeria: Delta State University.
- Pallant, J. (2005). *SPSS survival guide: A step by step guide to data analysis using SPSS for windows*, 3rd ed. New York: Open University Press.

- Park, N., Roman, R., Lee, S., & Chung, J.E. (2009). User acceptance of digital library. System in developing countries: An Application of the Technology Acceptance Model. *International Journal of Information Management*, 29, 196-209. doi: 10.16/5. Ijinformgt:2008.07.001.
- Rahman, A.A, Mahmud, Z. & Jamaludin, A. (2013) Age, gender and race differences in the usage of digital library among Malaysian postgraduate students. *Recent Researchers in Education*, 137-140.
- Republic of Kenya (2013). The information and communication technology sector (amendment) policy guidance. Nairobi: Government Printers.
- Roes, H. (2001). Digital libraries and education. In the Republic of Kenya (2013).The information and communication technology sector (amendment) policy guidance. Nairobi: Government Printers.
- Rosenblatt, S. (2001). Information technology investment in research libraries. London: Roes Publishers.
- Sacchanand, C. (2002). Information literacy instruction to distance students in higher education: Librarians' key role.68th IFLA Council and General Conference August 18-24, 2002. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.105.537&rep=rep1&type=pdf>.
- Sam, H.K. Othman. A.E. & Nordin, Z.S. (2005). Computer self-efficacy, computer anxiety and attitudes toward the Internet: A study among undergraduates in Unimas. *Educational Technology and Society*, 8 (4), 205-219
- Sanders, J.D. (1990). Educational research: quantities, qualitative and mixed approaches. Boston, M.A: Allyn and Bacon.
- School of Continuing and Distance Education (SCDE). (2014). Unpublished enrolment data for distance learning programme, University of Nairobi.
- Sheard, J., & Lynch, J. (2003). Accommodating learner diversity in web-based learning environments: Imperatives for future developments. *International Journal of Computer Processing of Oriental Languages*, 16(4), 243-260.
- Shephard, M. (2008). Use of online teacher education in remote, indigenous areas central, *American Journal of Indigenous Education*, 1(2), 54-70.
- Shukla, P. & Mishra, R. (2011). Use of e-resources by research scholars of institute of technology. Banaras Hindu University, India. *International Referred Research Journal*, 2(2) 184-194.

- Syagga, P. (2001). A report on distance learning at the University of Nairobi. Senate sub-committee on Faculty of External Studies, University of Nairobi.
- Tarus, K.J., Gichoya, D. & Muumbo, A. (2015). Challenges of Implementation e-Learning in Kenya: The Case of Kenyan Public Universities. Vol.16, No.1(2015). IRRODL
- Taylor, K. & Hastings, N.B. (2011), Factors influencing virtual patrons satisfaction with online library resources and services, Florida. The Journal of Education Online, 21..
- Tiefel, V. M. (1995). Library user education: Examining its past, projecting its future, library trends and fall.
- UNESCO (2005). Perspectives on distance education: Lifelong learning & distance higher education. Paris: Commonwealth of Learning / UNESCO Publishing.
- University of Nairobi (2007). School of Continuing and Distance Education, University of Nairobi. Retrieved from <http://www.uonbi.ac.ke/schoolofcontinuinganddistanceeducation> in June 16, 2015.
- Venkatesh, V. (1999). Creation of favourable user perceptions: exploring the role of intrinsic motivation. Management Information Systems Quarterly, 23(2) 239-60.
- Watts, C. & Ibegbulam, I. (2006). Access to electronic healthcare information resources in developing countries: Experiences from the medical library, College of Medicine University of Nigeria. IFLA Journal 32 (54): Retrieved May 15, 2013 from <http://ifl.sagepub.com/content/32/1/54.full.pdf+html>.
- World Bank (2011). Tertiary education. Retrieved from: <http://www.worldbank.org/education/tertair>; <http://go.worldbank.org/HBEGAOG2PO>.
- Zhou, G., & Xu, J. (2007). Adoption of educational technology: How does gender matter? International Journal of Teaching and Learning in Higher Education, 19, 140-153.

APPENDICES

Appendix I: Letter of Introduction to Respondents

Peter Ochieng Gor
University of Nairobi
School of Continuing and Distance Education
P.O. Box 30197-00100,
Nairobi
22nd May 2013

To whom it may concern

Dear Sir/Madam;

RE: DEMOGRAPHIC AND INSTITUTIONAL FACTORS INFLUENCING UTILISATION OF ONLINE LIBRARY SERVICES BY DISTANCE LEARNERS IN THE UNIVERSITY OF NAIROBI, KENYA

I am a Doctor of Philosophy (PhD) candidate in the Department of Extra-Mural Studies, School of Continuing and Distance Education, University of Nairobi. As part of the requirement for the award of the degree, am expected to undertake a research study on an identified contemporary topic. I am asking for your participation in a study that examines *Factors influencing utilisation of online library services by distance learners: the case of University of Nairobi, Kenya*.

The attached questionnaires will take about twenty minutes to complete. Kindly answer all the questions as completely as possible. The research result will be used for academic purposes of only and will be treated with at most confidentiality. Only summary result will be made public. No one except the institution will have access to this record.

Should you require the summary, kindly indicate at the end of the questionnaire. Your cooperation will be appreciated.

Yours sincerely



Peter Ochieng Gor
Doctoral Candidate

Email: gor5peter@gmail.com

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Appendix II: Questionnaire for Learners

Note: Please complete each of the sections in this questionnaire as instructed. **DO NOT** write your name or that of your institution on the questionnaire as the information that you provide is confidential.

SECTION A: BACKGROUND INFORMATION

Please tick (✓) or write your responses in the spaces provided as appropriate

1. What is your gender?

- Male
- Female

2. What is your age bracket in years

- <30 years
- 30-39 years
- 40-49 years
- 50 years+

3. Indicate your programme of study

- B.Ed Arts
- B.Ed Science

4. How would you rate your level of computer literacy?

- Above average
- Average
- Below average

5. Are you aware of the availability of online library services at the University of Nairobi?

- Aware
- Not aware

SECTION B: LEARNERS’ GENDER AND UTILISATION OF ONLINE LIBRARY SERVICES

Please indicate to what extent you agree or disagree with the following statements concerning influence of learners’ gender on utilisation of online library services

KEY: Very great extent = 5, Great extent = 4, Not sure = 3, Less extent = 2, Not at all =

1

Statement	Very great extent	Great extent	Not sure	Less extent	Not at all
Gender determines use of online digital repository					
Gender determines use of online newspapers					
Gender determines use of online public access catalogue					
Gender determines use online electronic books					
Gender determines use of online electronic journals					
Gender determines use of online database					
Gender determines use of online research papers					

SECTION C: LEARNERS’ AGE AND UTILISATION OF ONLINE LIBRARY SERVICES

Kindly place a tick (√) to indicate the extent to which you agree or disagree with the following statements concerning influence of learners’ age on utilisation of online library services

KEY: Very great extent = 5, Great extent = 4, Not sure = 3, Less extent = 2, Not at all = 1

Statements	Very great extent	Great extent	Not sure	Less extent	Not at all
Age determines use of online digital repository					
Age determines use of online newspapers					
Age determines use of online public access catalogue					
Age determines use of electronic books					
Age determines use of electronic journals					
Age determines use of online database					
Age determines use of online research papers					

SECTION D: STUDENT COMPUTER LITERACY AND UTILISATION OF ONLINE LIBRARY SERVICES

Please indicate to what extent you agree or disagree with the following statements concerning influence of student computer literacy on utilisation of online library services

KEY: Very great extent = **5**, Great extent = **4**, Not sure = **3**, Less extent = **2**, Not at all = **1**

Statements	Very great extent	Great extent	Not sure	Less extent	Not at all
Computer literacy influence my usage digital repository					
Computer literacy influence my usage online newspapers					
As a result of computer literacy am able to use online public access catalogue					
As a result of computer literacy able to use online electronic books					
As a result of computer literacy am able to use online electronic journals					
As a result of computer literacy am able to use online electronic database					
As a result of computer literacy am able to use online research papers					

SECTION E: LEARNERS' AWARENESS AND UTILISATION OF ONLINE LIBRARY SERVICES

Part One: please indicate to what extent you agree or disagree with the following statements concerning student awareness of online library services.

KEY: Very great extent = **5**, Great extent = **4**, Not sure = **3**, Less extent = **2**, Not at all = **1**

Statements	Very great extent	Great extent	Not sure	Less extent	Not at all
Am aware the university library is creating awareness about availability of online library services					
Am aware the university library is providing online library orientation					
Am aware the university library is providing online library induction					
Am aware the university is providing online library instructions					
As a result of awareness am able to visit the Internet regularly					

Part Two: Student awareness and utilisation of online library services

Please indicate to what extent you agree or disagree with the following statements concerning influence of student awareness on utilisation of online library services.

KEY: Very great extent = **5**, Great extent = **4**, Not sure = **3**, Less extent = **2**, Not at all = **1**

Statements	Very great extent	Great extent	Not sure	Less extent	Not at all
Awareness enhances utilisation of digital repository					
Awareness enhances utilisation of online newspapers					
Awareness enhances utilisation of online public access catalogue					
Awareness enhances utilisation of online electronic books					
Awareness enhances utilisation of online electronic journals					
Awareness enhance utilisation of online database					
Awareness enhances utilisation of online research papers					

SECTION F: LEARNERS' PROGRAMME OF STUDY AND UTILISATION OF ONLINE LIBRARY SERVICES

Please indicate to what extent your programme of study supports utilisation of online library services

KEY: Very great extent = **5**, Great extent = **4**, Not sure = **3**, Less extent = **2**, Not at all = **1**

Statement	Very great extent	Great extent	Not sure	Less extent	Not at all
Programme of study support utilisation of digital repository					
Programme of study supports utilisation of online newspapers					
Programme of study supports utilisation of public access catalogue					
Programme of study supports utilisation of electronic books					
Programme of study supports utilisation of electronic journals					
Programme of study supports utilisation of online database					
Programme of study supports utilisation of online research papers					

SECTION G: STUDENT UTILISATION OF ONLINE LIBRARY SERVICES

Please indicate to what extent you are able to utilise each of the following online library services

KEY: Very great extent = **5**, Great extent = **4**, Not sure = **3**, Less extent = **2**, Not at all = **1**

Online Library Services	To a very great extent	To great extent	Not sure	To a less extent	Not at all
Online digital repository					
Online newspapers					
Online public access catalogue					
Online electronic books					
Online electronic journals					
Online database					
Online research papers					

SECTION H: INSTITUTIONAL FACTORS AND UTILISATION OF ONLINE LIBRARY SERVICES

Part One: Please indicate your honest view regarding institutional infrastructural attributes as indicated in the questions below.

1. What is your view regarding the quality of Internet connectivity at the University library in relation to your demand of online library services?

- Above average
- Average
- Below average

2. How would describe the adequacy of computers available for use by learners at the University Library, in relation to your demand of online library services?

- Very adequate
- Adequate
- Inadequate

3. What is your view regarding the reliability of power supply at the University Library, in relation your demand of online library services?

- Very reliable
- Reliable
- Unreliable

Part Two: Please indicate to what extent you agree or disagree with the following statements concerning Internet connectivity and utilisation of online library services.

KEY: Very great extent = **5**, Great extent = **4**, Not sure = **3**, Less extent = **2**, Not at all = **1**

Statements	Very great	Great	Not sure	Less extent	Not at all
Internet connectivity determines use of online digital repository					
Internet connectivity determines use of online newspapers					
Internet connectivity determines use of online public access catalogue					
Internet connectivity determines use of electronic books					
Internet connectivity determines use of electronic journals					
Internet connectivity determines use of online database					

Part Three: Adequacy of computers and utilisation of online library services

Please indicate the extent to which you agree or disagree with the following statements concerning influence of adequacy of computers on utilisation of online library services.

KEY: Very great extent = **5**, Great extent = **4**, Not sure = **3**, Less extent = **2**, Not at all = **1**

Statements	Very great extent	Great extent	Not sure	Less extent	Not at all
Adequacy of computers influence my usage online newspapers					
As a result of adequacy of computers am able to use online public access catalogue					
As a result of adequacy of computers able to use online electronic books					
As a result of adequacy of computers am able to use online electronic journals					
As a result of adequacy of computers am able to use online electronic database					
As a result of adequacy of computers am able to use online research papers					

Part Three: Reliability of power supply and utilisation of online library services
Please indicate the extent to which you agree or disagree with the following statements concerning influence of reliability of power supply on utilisation of online library services.

KEY: Very great extent = **5**, Great extent = **4**, Not sure = **3**, Less extent = **2**, Not at all = **1**

Statements	Very great extent	Great extent	Not sure	Less extent	Not at all
Reliability of power supply determines use of online digital repository					
Reliability of power supply determines use of online newspapers					
Reliability of power supply determines use of online public access catalogue					
Reliability of power supply determines use online electronic books					
Reliability of power supply determines use of online electronic journals					
Reliability of power supply determines use of online database					
Reliability of power supply determines use of online research papers					

THANK YOU

Appendix III: Questionnaire for University Librarians

Please indicate the extent to which you agree or disagree with the following statement concerning utilisation of online library services by distance learners at the University of Nairobi.

KEY: Very great extent = **5**, Great extent = **4**, Not sure = **3**, Less extent = **2**, Not at all = **1**

Statements	Very great extent	Great extent	Not sure	Less extent	Not at all
Think that University of Nairobi has established online library services for distance learners.					
The University has created awareness concerning the availability of online library services to distance learners.					
Personal characteristics such as gender and age influence utilisation of online library services					
Learners computer literacy influence utilisation of online library services					
The student programme of study influence utilisation of online library services.					
Think the University is providing satisfactorily online library services to distance learners.					
Knowledge or skills are lacking for the utilisation of online library to distance learners					
The Internet connectivity is strong enough to enable distance learners utilise online library services					
The library has adequate functional computers to enable all learners access and utilise online library services					
The library has a reliable power supply to enable learners utilise online services at any time					

Appendix IV: Interview Schedule for University Librarians

1. In your opinion, do you think the University of Nairobi has established online library services for the distant learners? Please explain _____

2. To what extent has the University created awareness concerning the availability of online library services to distance learners? Please explain _____

3. Do you think personal characteristics such as gender and age influence utilisation of online library services by distance learners? Please explain. _____

4. In your opinion, do you think student computer literacy influence their use of online library services? If yes to what extent?

5. Does the student programme of study influence their usage of online library services?

6. In Your opinion, do you think the University is providing satisfactorily online library services to the distance learners? Please explain _____

7. What knowledge of skills are lacking for the utilisation of the online library services to distant learners?

8. Please give recommendations which you perceive as important in enhancing effective utilisation of online library services to distance learners at the University of Nairobi

THANK YOU

Appendix V: Letter of Clearance from the University



UNIVERSITY OF NAIROBI
COLLEGE OF EDUCATION AND EXTERNAL STUDIES
SCHOOL OF CONTINUING AND DISTANCE EDUCATION
DEPARTMENT OF EXTRA-MURAL STUDIES
NAIROBI EXTRA-MURAL CENTRE

Your Ref:

Our Ref:

Telephone: 318262 Ext. 120

REF: UON/CEES//NEMC/24/322

Main Campus
Gandhi Wing, Ground Floor
P.O. Box 30197
N A I R O B I

17th October, 2016

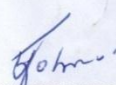
TO WHOM IT MAY CONCERN

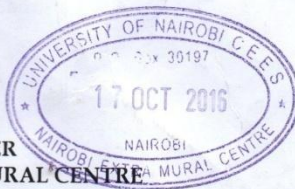
RE: PETER OCHIENG GOR -REG NO - L80/80085/2008

This is to confirm that the above named is a student at the University of Nairobi, College of Education and External Studies, School of Continuing and Distance Education, Department of Extra-Mural Studies pursuing Doctor of Philosophy in Distance Education.

He is proceeding for research thesis entitled " factors influencing utilization of online library services by distance students". The Case of University of Nairobi, Kenya

Any assistance given to him will be appreciated.


DR. JOHN MBUGUA
RESIDENT LECTURER
NAIROBI EXTRA MURAL CENTRE



Appendix VI: Authorisation Letter



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349, 3310571, 2219420
Fax: +254-20-318245, 318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
when replying please quote*

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No.

Date:

NACOSTI/P/16/47724/14461

28th October, 2016

Peter Ochieng Gor
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*Factors influencing utilization of online library services by distance learning students: The case of University of Nairobi, Kenya,*" I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **28th October, 2017.**

You are advised to report to **the Vice Chancellor, University of Nairobi the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.


BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The Vice Chancellor
University of Nairobi.

The County Commissioner
Nairobi County.


National Commission for Science, Technology and Innovation is ISO 9001:2008 Certified


Appendix VII: Research Permit

THIS IS TO CERTIFY THAT:
MR. PETER OCHIENG GOR
of UNIVERSITY OF NAIROBI, 30197-100
Nairobi, has been permitted to conduct
research in Nairobi County


on the topic: **FACTORS INFLUENCING
UTILIZATION OF ONLINE LIBRARY
SERVICES BY DISTANCE LEARNING
STUDENTS: THE CASE OF UNIVERSITY OF
NAIROBI, KENYA**

for the period ending:
28th October, 2017



Applicant's
Signature



Permit No : **NACOSTI/P/16/47724/14461**
Date Of issue : **28th October, 2016**
Fee Received : **Ksh 2000**


Director General
National Commission for Science,
Technology & Innovation

CONDITIONS
1. Present to the County Commissioner and
Deputy Commissioner of the area before
commencing your research. Failure to do that
will result in cancellation of your permit.
2. The applicant will not be interviewed
for the purpose of re-appointment.
3. The permit will be used unless it has been
cancelled.
4. The permit holder is prohibited from
selling and collection of biological
specimens without further permission from
relevant Government Ministries.
5. The permit holder is required to submit at least two (2) hard
copies and one (1) soft copy of your final report.
6. The National Commission for Science,
Technology and Innovation reserves the right to
cancel the permit at any time without
notice.



REPUBLIC OF KENYA
National Commission for Science,
Technology and Innovation

**RESEARCH CLEARANCE
PERMIT**

Serial No. **11496**

CONDITIONS: see back page

Appendix VIII: Table for Determining Sample Size

Table determining sample size from a given population by Krejcie and Morgan (1970)

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
33	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	331
90	73	460	210	4500	354
95	76	400	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	107	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	360
190	127	950	274	50000	381
200	132	1000	278	50000	382
210	136	1000	285	100000	384