FACTORS INFLUENCING THE USE OF LIBRARY INFORMATION SYSTEMS BY STAFF AND STUDENTS IN KABARAK UNIVERSITY

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Background to the study

Technology.

- Technology is changing the ways in which information is captured, processed, stored, disseminated and used; and almost all companies rely on information technology (Post and Anderson, 2005).

- The dynamic context of business is characterized by the digital economy, which has resulted from the convergence of computing and telecommunications technologies. This has had a significant effect on businesses and society in general and is epitomized by the impact of the internet and the World Wide Web.

- According to Avision and Fitzgerald (2003), organizations have found that their operations, products, services, information, markets, competition, and economic environment are all potentially affected by the digital economy; and as organizations take on expanded functions and grow in size, it is important for them to be equipped with a good information system from which data can be accessed for analysis by executives and managers at different levels.

The advent of computerized information system.

- This has presented a new world of doing business, one that will greatly affect future business careers. Laudon and Laudon (2009) asserts that "No matter whether you are a finance, accounting, management, marketing, operations management, or information systems major, how you work, where you work, and how well you are compensated will all be affected by business information systems.

- An understanding of information systems is essential for today's managers because most organizations need information systems to survive and prosper. Laudon & Laudon (2010) contend that the entire sectors of the economy are nearly inconceivable without substantial investments in information systems and today's service industries such as education could not operate without information systems. Indeed, information systems and technology can be centrally instrumental in achieving corporate goals and has been absorbed into the mainstream of commercial life to the point where there is hardly a

company of any size that does not depend on information systems for its operational success (Daniels, 1998).

Libraries today:

- are confronted with the challenging dynamic technological environment demanding the extensive and effective utilization of information and communication technologies (ICTs) in order to survive and meet the changing complex information needs of user community (Moorthy, Rao, and Goud, 2006). Indeed, information technology (IT) is a driving force for change in libraries and modern technologies have brought dramatic changes in today's library management and users expectations.

- are facing variety of issues, problems, threats and challenges in the introduction, use and management of new technologies. This implies that identifying the problems, understanding the issues and formulation of sound strategies are key to the successful management of technological changes in libraries.

Statement of the problem

- Kabarak University Library has invested heavily in ICT resources and internet connectivity in the quest of gaining a competitive advantage but despite the heavy investment by the university, there seems to be low use by majority of staff and students of Kabarak University.

- This study therefore hopes to establish the extent of usage and the factors influencing the use or non-use of information systems by staff and students at Kabarak University library.

Objectives of the study

To:

- find out influence of demographic characteristics of staff and students on the use of library information systems at Kabarak University.
- establish influence of ICT resources' availability and user skills on the use of library information systems by staff and students at Kabarak University.
- assess the influence of information quality and system quality on the use of library information systems among staff and students at Kabarak University.

Significance of the Study

The findings and recommendations of the study may particularly be useful to:

- the library users (staff and students) due to reduced errors, improved speed and access, a wide range and variety of information resources and services.

- the Management in the institutions of higher learning will enjoy benefits such as improved productivity, reduced staff, reduced unit cost of operation, improved control, and increased range and depth of service, etc.

- the Government and policy makers in assessing and coming up with sound strategies relating to the use of information systems and ICT resources.

- the study will also make significant contribution to the research literature in the field of information systems.

The scope of the study

- The study was conducted at Kabarak University Library and the population of study was the staff and students of Kabarak University.

Limitations and delimitations of the study

- The study was carried out in one academic library (Kabarak University Library) which was relatively young in terms of growth and therefore, the findings may not give a general conclusion of the usage of library information systems in all the academic libraries in the Kenyan private and public Universities that are widely distributed in the country. The study recommended further study to cover both public and private universities.

- The researcher faced lack of cooperation and willingness to answer the questionnaires by few respondents. To alleviate this problem, the researcher involved class representatives to administer the questionnaires to students in lecture halls and personal visits to lecturers in their offices to administer the questionnaires

LITERATURE REVIEW

Two parts:

The first part covered the theoretical review on:

- the Strategic perspective of Information systems which include Strategic business objectives of information systems; strategic uses of information systems as well as obstacles when applying information technology in the business.

- Information Systems in libraries with emphasis on the key factors in strategic technology planning, technology adoption patterns, changes in user behaviors and demands, and the impact of technology on library services.

The second part reviewed the empirical literature on the application/adoption and use of information and communication technologies in library management.
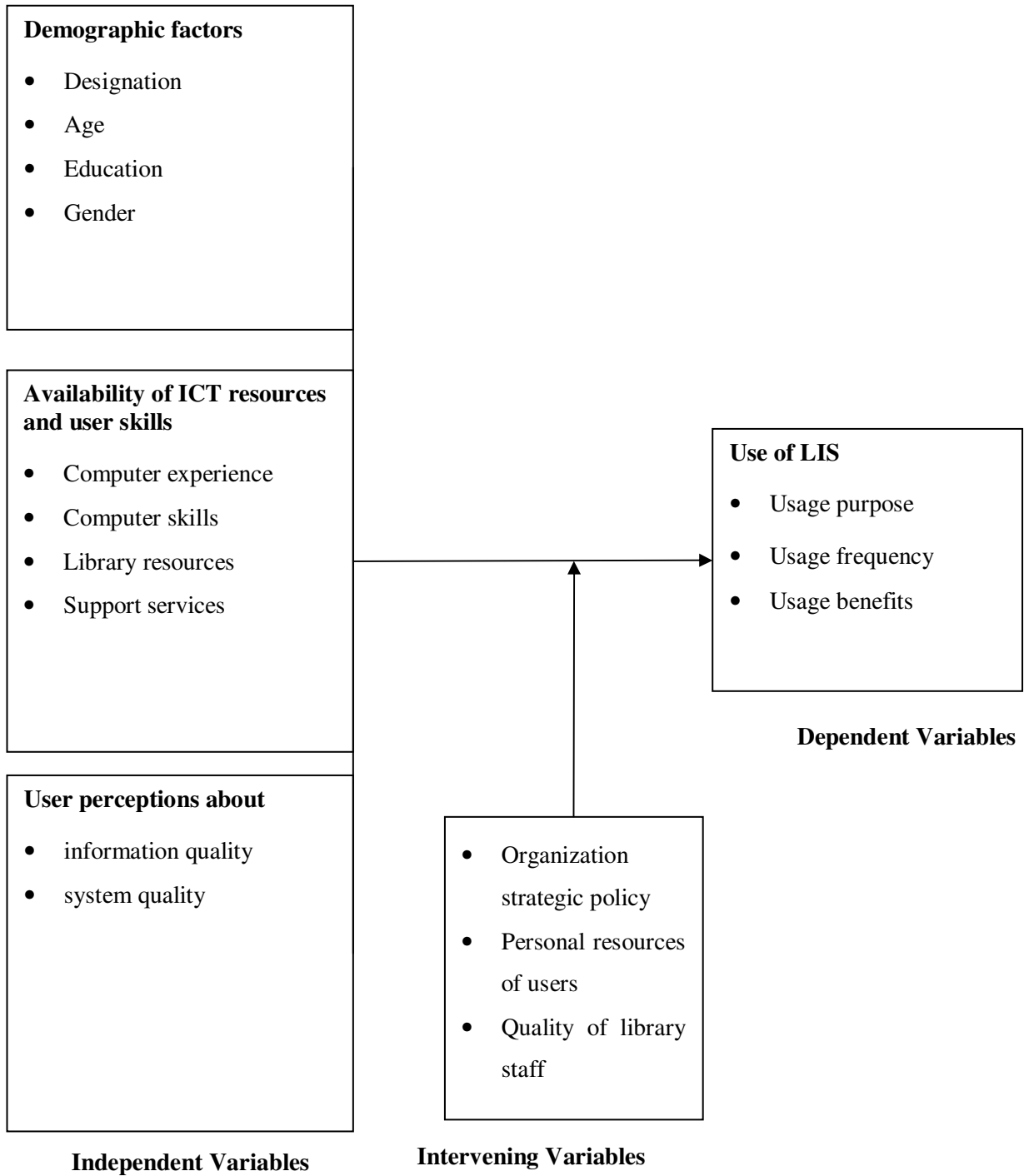
CONCEPTUAL FRAMEWORK

Demographic factors

- Designation
- Age
- Education
- Gender

Availability of ICT resources and user skills

- Computer experience
- Computer skills
- Library resources
- Support services

Use of LIS

- Usage purpose
- Usage frequency
- Usage benefits

Dependent Variables

User perceptions about

- information quality
- system quality

- Organization strategic policy
- Personal resources of users
- Quality of library staff

Independent Variables   **Intervening Variables**

Figure 2.1: Schematic diagram of the relationship among the study variables.

Source: Author, 2013.

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RESEARCH METHODOLOGY

Research Design

- A survey research methodology.

- Participants of the study: Staff, postgraduate students and students in year 3 & 4.

Target population

Comprised of:

- two hundred and eighty seven (287) staff and

- three thousand two hundred and ten (3,210) students at Kabarak University.

Sampling procedure and sample size

The elements of the study were categorized in to

- eighty nine (89) teaching staff,

- one hundred and ninety eight (198) non-teaching staff and

- one thousand six hundred and seventy three (1,673) students (undergraduates Year 3 & 4, and postgraduates).

These various strata were purposively formed and Stratified sampling applied to obtain the desired sample size. Thereafter, proportionate stratified sampling was adopted to select respondents from each stratum.

The total sample size for the study according to Yamane (1967) was obtained using the following formula:

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

Where, **n** is the sample size, **N** is the population size, and **e** is the level of precision (0.05).

The sub-sample size for each stratum of library users (staff and students) was determined using the proportionate stratified sampling as shown in the formula below:

$$n_n = (n/N) \, N_n$$

Where, n_n is the sub-sample size for each stratum, **n** is the sample size, **N** is the population size and N_n is the population size for each stratum.

Table 3.1. Sample size determination.

Category of Library Users		Population size	Sample size
Staff	Teaching staff	89	15
	Non-teaching staff	198	34
Students	Postgraduates	210	36
	Undergraduates Year 4	760	129
	Undergraduates Year 3	703	119
Total		**1,960**	**333**

Source: Registrar's office, Kabarak University, September, 2013.

3.5. Data collection and procedure

The data was collected from both the primary and secondary sources.

- The primary source of data was collected using questionnaires while secondary source of data relating to staff and students was obtained from records in the Registrar's office, Kabarak University.

- The questionnaires were administered to students in the Library premises and lecture halls while staff were reached in their respective offices in various schools.

Validity and Reliability of the measurement instruments

- Expert knowledge and secondary sources of information were sought for the validity of the measurement instruments.

- A pre-test was carried out to ascertain the reliability of the data collection instruments. This involved administering the questionnaires to the Nakuru Town Campus staff and students selected purposively.

3.7. Data Analysis Methods and Presentation

Data analysis used both descriptive and inferential statistics.

- The descriptive statistics were used to present the distributional properties of the data and explain the respondents' characteristics
- Inferential statistical tests were performed to investigate the nature, direction and strength of relationship between the variables.
- The analyzed data was presented through graphical illustrations in form of tables, graphs and charts.

RESULTS, ANALYSIS AND DISCUSSIONS

4.1 Introduction

This chapter presents the results from the data collected for the study. The chapter provides general library information system background information, the respondents' profile, data description of responses as per study objective, inferential statistics and relevant discussions placing the key findings of the study in context.

4.2 Descriptive Statistics

The descriptive statistics were used for two purposes: To present the distributional properties of the data and explain the respondents' characteristics.

4.2.1 General Information

The general information provides descriptive data regarding three items that were deemed necessary for proper functioning of the digital library services. These items included user access to the digital library information services, user source of knowledge regarding digital library information services use, and availability of electronic resources to the user to practically use the resources. According table 4.1 below, it was found that a large majority of the respondents of 93.2% actually accessed the Kabarak University Library home page while only 6.8% of the respondents did not. Of these users, the majority learned how to use the system on their Own which comprised 59% of the respondents, Training session was applicable to 12.9% of the respondents, 3.6% learned through Friend/relative, 14.5 learned through Written instructions provided within the Kabarak University learning environment while 1.6% of the respondents indicated having learned the system usage through Other way. A total 8.4% of respondents did not answer the question. A chi-square test showed that these differences were significant at α=0.05 ($\chi2 = 298.886$, df = 4, p = 0.000). Similarly, the paths to primary use of the digital library information systems were varied, where the respondents indicated that the University Library provided 26.9% point of access to users, University ICT centre 45.8%, Cybercafes outside the university were used 12%, while Home as a point of access used another 12%, non-response was at 3.2%. Again, a chi-square test of independence showed that there were significant differences regarding the point of access to library information system ($\chi2 = 79.083$, d.f = 3, p = 0.000). (See Table 4.1 below).

Table 4.1: General Digital Environment Information

	Response category	Frequency	Percent (%)
Have you ever accessed the library home page?	Yes	232	93.2
	No	17	6.8
	Total	249	100
How did you as a user learned to use Kabarak University online library services?	On own	147	59
	Training session	32	12.9
	Friend/relative	9	3.6
	Written instructions	36	14.5
	Other way	4	1.6
	Missing	21	8.4
	Total	249	100
Where do you usually use the electronic resources?	Library	67	26.9
	University ICT centre	114	45.8
	Cybercafe	30	12
	At home	30	12
	Missing	8	3.2
	Total	249	100

How did you as a user learned to use Kabarak University online library services? ($\chi2$= 298.886, df = 4, P = 0.000).

Where do you usually use the electronic resources? (Chi-Square = 79.083a, df = 3, P = 0.000).

4.2.2 Demographic Information

Since the study also sought to find the influence of the demographic factors on the use of library information system, descriptive statistics were used to provide information regarding the demographic composition of the respondents. In respect of respondents' designation, Students made up 79.5% of the respondents with the remainder of 18.5% consisted of Staff, 2% never responded to the question. Regarding the age brackets of the respondents, majority were in the age group 18-25 years making up 73.9% of the respondents, in the age group 26-35 years consisted of 16.5%, between 36 and 45 years were 6.8%, those in the bracket 45-55 years were 1.6% while 55+ years comprised 1.2%. The respondents' education ranged from those pursuing

or have completed Undergraduate degree who made up 75.5%, those who had completed or pursuing Masters degree comprised 14.1%, while those who were either studying for or have completed PhD degree were 1.6%. Nonetheless, 8.8% of the respondents did not answer this question. (See Table 4.2 below).

Table 4.2: Demographic Profile of Respondents

	Response category	Frequency	Percent (%)
Designation	Student	198	79.5
	Staff	46	18.5
	Total	244	98
	Missing	5	2
	Total	249	100
Age	18-25 years	184	73.9
	26-35 years	41	16.5
	36-45 years	17	6.8
	45-55 years	4	1.6
	55+ years	3	1.2
	Total	249	100
Education	Undergraduate degree	188	75.5
	Masters degree	35	14.1
	PhD degree	4	1.6
	Missing	22	8.8
	Total	249	100
Gender	Male	118	47.4
	Female	131	52.6
	Total	249	100

4.2.3 Availability of Electronic Resources and user skills

Regarding the availability of electronic resources (table 4.3 below), the items asked for the respondents' Computing experience Less than 2 years 59.4% 3-4 years 12.9%, 5-6 years 6.8%, Over 6 years 14.1%, Missing 6.8%. Respondents were also asked regarding the extent to which they believed they possessed the skills to navigate the digital landscape, those who responded Very low were 1.2%, Low 2.4%, Moderate 28.9%, High were 39%, while Very high 27.3%. The remaining 1.2% did not respond. On the question of how the respondents were satisfied with the resources provided by Kabarak University library generally, 6% indicated being Very dissatisfied, 6.4% were Dissatisfied, 13.7% were Neither dissatisfied nor satisfied. However, a

higher number of 26.5% Satisfied while the majority consisting of 44.6% Very satisfied, Missing responses were 2.8%. Alternatively, the respondents were asked to rate the extent to which library resources were adequate to support their needs. Strongly disagree responses were at 8.8%, Disagree 12.0%, Neutral 14.1%, Agree 26.9%, Strongly agree 32.1% while Missing 6%. Therefore the study found that overall, respondents were largely in possession of both skills and resources to enable them navigate the library information system landscape. This view is informed by observation that the first task of the library is to be informed about the needs and problems of the users so as to help satisfy them (Malliari & Kyriaki-Manessi, 2007). (See Table 4.3 below).

Table 4.3: Electronic Resources Availability and user skills

	Response category	Frequency	Percent (%)
How long do you estimate you have had experience related with information technologies?	Less than 2 years	148	59.4
	3-4 years	32	12.9
	5-6 years	17	6.8
	Over 6 years	35	14.1
	Missing	17	6.8
	Total	249	100
Do you have skills to navigate the digital information landscape	Very low	3	1.2
	Low	6	2.4
	Moderate	72	28.9
	High	97	39
	Very high	68	27.3
	Missing	3	1.2
	Total	249	100
Are you satisfied with resources	Strongly	15	6

provided by Kabarak University library generally?	dissatisfied		
	Dissatisfied	16	6.4
	Neutral	34	13.7
	Satisfied	66	26.5
	Strongly satisfied	111	44.6
	Missing	7	2.8
	Total	249	100
Overall, do you feel that Kabarak University library resources are adequate to support your needs?	Strongly disagree	22	8.8
	Disagree	30	12.0
	Neutral	35	14.1
	Agree	67	26.9
	Strongly agree	80	32.1
	Missing	15	6
	Total	249	100

4.2.4 User Satisfaction with Library Information Systems

User satisfaction was composed of two components with sub-items measuring them (table 4.4 below). The two components were information quality and system quality. Information quality related to the desirable characteristics of the system outputs and included dimensions such as Completeness which had a mean of 3.31 on a scale that ranged from 1 to 5 where a majority (50%) were indifferent on completeness of information provided by the library information system at Kabarak University; Accuracy of the information provided by the library information system had a mean of 4.19 with majority of respondents indicating that they were satisfied with the information accuracy (52.5%); Information format or presentation had a majority of 42.4%

indicating satisfaction corresponding to a mean of 3.55; likewise, 50% of the respondents were satisfied with the information they got in terms of it being Recent or up to date, corresponding to a mean of 4.31; and Reliability of information had a mean of 4.12 with majority indicating being satisfied (53.8%). On the other hand, system quality related to the desirable characteristics of the information system. Particularly, factors such as Accessibility with mean = 3.38 had majority being indifferent to its satisfaction at 38.1% , Adaptability had mean = 3.57 with a majority of 39.8% being satisfied, Integration had mean = 4.32 where 37.8% were satisfied, and finally regarding Timeliness the mean was 4.01 while majority were satisfied at 43.4%. Overall, in most instances respondents were satisfied with the library information system, however, there were also instances that they were indifferent. This leads to a conclusion corresponding with Malliari and Kyriaki-Manessi (2007) noting the importance of exploring users' behavior, measuring users' satisfaction, meeting users' needs, even before they are expressed in a library's quality services.

Table 4.4: Description of Satisfaction with Library Information System Quality

	Strongly dissatisfied	Dissatisfied	Neutral	Satisfied	Strongly satisfied	Mean
Provides me with a complete set of information	1.3	7.6	50	41.1	0	3.31
The information provided is clearly presented on the screen	1.7	1.7	8.1	52.5	36	4.19
The information provided is accurate	9.3	8.1	20.8	42.4	19.5	3.55
Provides me with the most recent information	0	1.3	7.6	50	41.1	4.31
Operates reliably	3.2	4.5	4	53.8	34.4	4.12
Provides readily accessible information	8.1	10.6	38.1	22	21.2	3.38
Digital library services can be adapted to meet a	3.3	18.4	17.2	39.8	21.3	3.57

variety of needs					
Integrates data from different sources	3.8	3.8	2.1	37.8	52.5	4.32
Provides information in a timely fashion	4.3	7.2	8.5	43.4	36.6	4.01

4.2.5 Library Information System Usage

According to the respondents, nearly half of them used the library information systems for research (49.1%), followed by education related uses (40.7%). The other uses included work related (7.7%), personal needs such as personal communication (1.7%), and recreation such as games (0.9%). The statistics revealed that library information systems were strategically used as per the University's goal of enhancing education and research activities (See Figure 4.1). These results were further reinforced by Post & Anderson (2005) who argued that organizations presumably see information systems as contributing to some of their goals - but they tend to be those associated with financial performance rather than with performance on the key and core strategic goals.
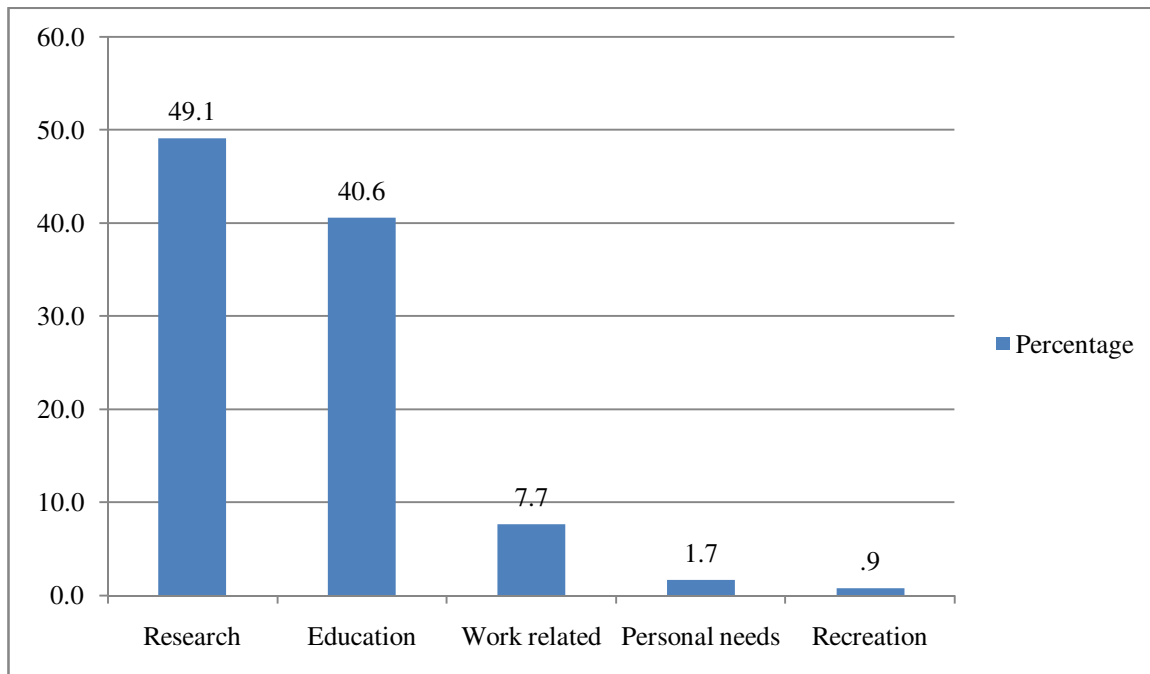

Figure 4.1: Uses of Library Information Systems

According to figure 4.2 below, usage frequency ranged from daily usage to rarely. In respect of this question, most respondents indicated they used the system a few times a week (40.2%). This was followed by daily usage where 31.4% of the respondents indicated this preference. Still, 12.2% of the respondents indicated that they used the system a few times a month, another 8.7% showing a few times a year preference while a minority of 7.4% showed rare usage of the system. (See Figure 4.2 below).
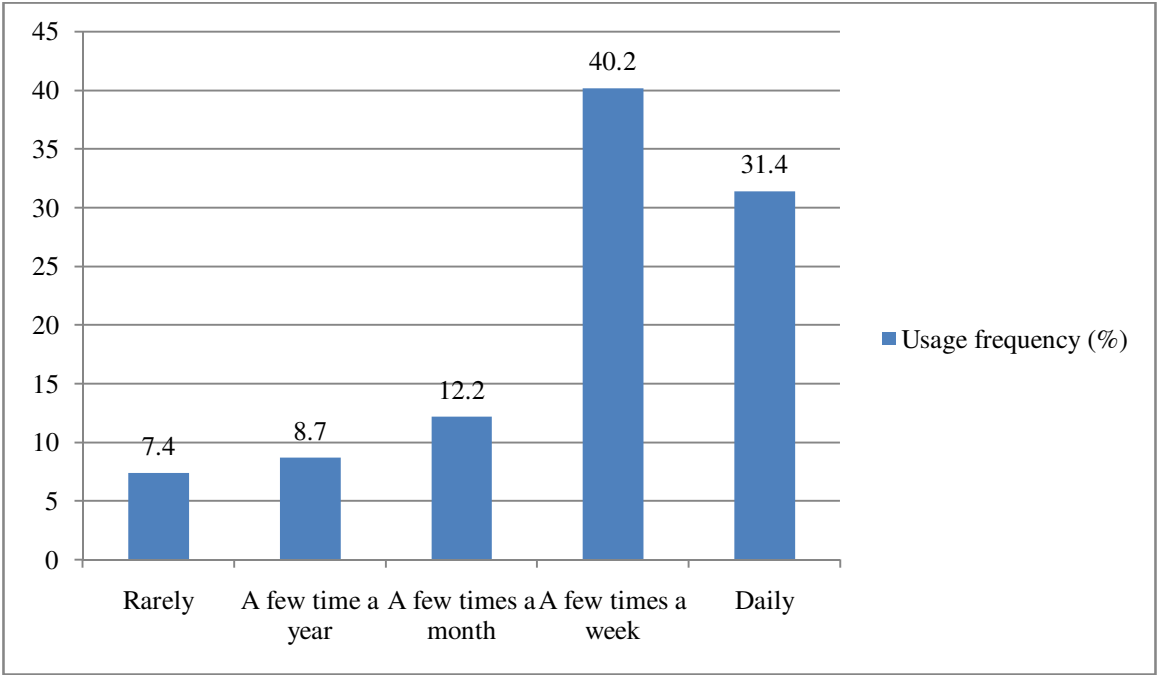

Figure 4.2: Usage Frequency

In terms of the system benefits as per the respondents, it was found that 66.7% indicated that they actually benefited from the system while 24.5% showed that the system was not beneficial to them. There was 8.8% non-response regarding the question (figure 4.3 below).
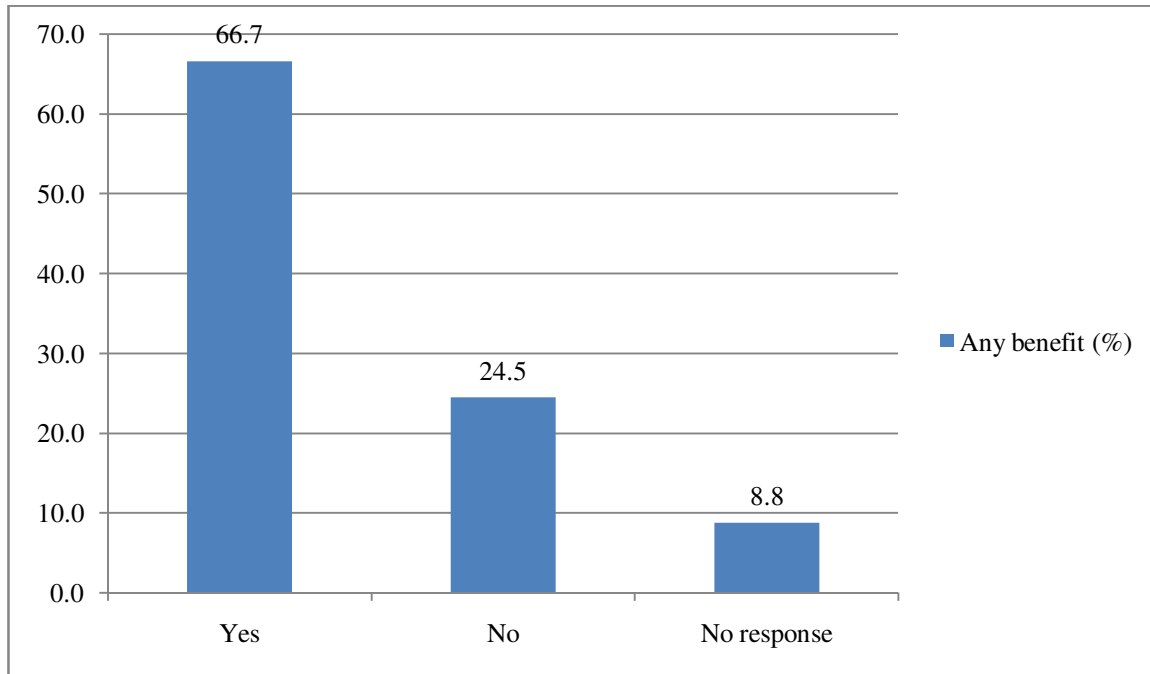
Figure 4.3: System benefits.

4.3 Inferential Statistics

Three inferential statistical tests, namely, chi-square test of independence, correlation analysis and multiple regression analysis, were performed to investigate the nature, direction and strength of relationship between variables.

4.3.1 Influence of user Demographic Characteristics

Chi-square tests were conducted to assess whether or not there were any relationship or association between the demographic factors and the dependent variable use of library information systems. The tests were conducted at the confidence interval corresponding to 95%, or alternatively, at the significance level $\alpha = 0.05$.

Regarding the influence of the demographic factor Designation, the cross-tabulation in Table 4.5 shows the frequency distribution of students with the corresponding staff library information system usage preferences. Accordingly, majority of students had library information system usage a few times a week (38.5%) followed by daily usage comprising 29.7% of respondents. This was compared to staff who had majority library information system usage of 52.4%, also a few times a week followed by daily usage at 38.1%. The test was not significant at $\alpha = 0.05$, indicating that there was not enough evidence to conclude that designation of the respondents

influenced the use of library information system usage $\chi2 = 9.322$, df = 4, p = 0.054. (See Table 4.5).

From the results, the high use by staff and students (90.0%) is a commendable progress in terms of the utilization of information systems. Therefore, the result that designation of the user as either staff or student being associated with the use of the library information systems supported the view of Dinpanah and Javanmard (2013), that the library information system should be conceptualized as an individual-oriented system where each individual may have a different orientation and preferences leading to varied uses based on those needs. The system should therefore present information in such a form and format that it creates an impact on its user, provoking a decision or an investigation. Further, the library system should seek to gain an understanding of how to promote the use of information technology for strategic benefits to its user groups (Ranganathan, et al., 2004). Thus the system need to continually assess its user base to ensure that it provides information and materials that is focused on the needs of those users. Likewise, assessing the user needs, the system need also to anticipate and provide for future needs ahead of time so that the user groups do not feel alienated due to lack of versatility or adaptability.

Table 4.5: Influence of User designation

				Usage frequency				
			Rarely	A few time a year	A few times a month	A few times a week	Daily	Total
Designation	Student	Count	22	19	17	70	54	182
		% within Designation	12.1%	10.4%	9.3%	38.5%	29.7%	100.0%
	Staff	Count	2	0	2	22	16	42
		% within Designation	4.8%	0.0%	4.8%	52.4%	38.1%	100.0%
Total		Count	24	19	19	92	70	224
		% within Designation	10.7%	8.5%	8.5%	41.1%	31.3%	100.0%

$\chi2 = 9.322$ df = 4   p = 0.054

Where, d.f - Degrees of freedom; P- Probability; r - Pearson product-moment coefficient; α – Confidence level; $\chi2$ - Chi-square test.

In respect of age, the data showed in Table 4.6 below that in all age brackets, the majority of the respondents used the library information systems either a few times a week or daily. Thus in the age bracket18-25 years 39.1% of the respondents indicated a few times a week, similarly, in the age group 26-35 years, a majority of 48.7% indicated a few times a week. In the bracket 36-45 years the majority usage was daily at 57.1% of the respondents, likewise, another daily usage peaked at 75.0% for those in the group 45-55 years. The age group 55+ years was characterized by multimodal usage at 33.3% for rare, a few times a week, and daily usage. In order to find out if the influence of the age on the usage was statistically significant, the chi-square value was examined which showed that it was not significant indicating that age of the respondents was not associated with their usage preference ($\chi2 = 15.362$, d.f = 16, p = 0.498). (See Table 4.5 below). The findings that use of library information systems was not significantly related to participant's library information system usage, however, did not support Abedalaziz, et al., (2013) prior findings that indicated that lower age related to higher system use preferences where the youngest participants (< 30 years old) significantly scored higher than the participants in the older groups of age in usage preferences of digital information systems. However, the study also focused on one user group, post graduate students, therefore providing a point of divergence with the present study. As such, the present study points to the fact that as the system expands to serve varied user groups, age becomes a lesser factor for demarcating the user needs in the university setting. Further more, the results were also in conformity with Mulla's (2012) interesting finding on user behaviors and demands that users change from the young to the aged or from the aged to the young.

Table 4.6: Influence of User Age

| | | | Usage frequency | | | | | |
			Rarely	A few time a year	A few times a month	A few times a week	Daily	Total
Age	18-25 years	Count	19	18	18	66	48	169
		% within Age	11.2%	10.7%	10.7%	39.1%	28.4%	100.0%
	26-35 years	Count	4	2	2	19	12	39
		% within	10.3%	5.1%	5.1%	48.7%	30.8%	100.0%

							Total
36-45 years	Count	0	0	1	5	8	14
	% within Age	0.0%	0.0%	7.1%	35.7%	57.1%	100.0%
45-55 years	Count	0	0	0	1	3	4
	% within Age	0.0%	0.0%	0.0%	25.0%	75.0%	100.0%
55+ years	Count	1	0	0	1	1	3
	% within Age	33.3%	0.0%	0.0%	33.3%	33.3%	100.0%
Total	Count	24	20	21	92	72	229
	% within Age	10.5%	8.7%	9.2%	40.2%	31.4%	100.0%

$\chi 2 = 15.362$ d.f = 16 p = 0.498

The level of education currently being pursued by the students and the completed education level for the staff were also assessed as to whether it influenced the use of the library information systems. The cross tabulation in Table 4.7 below indicated that the majority of the undergraduate respondents (39.9%) described their library usage as falling in the category a few times a week while masters respondents indicated that they had majority daily usage (37.5%). Meanwhile, Phd respondents were equally distributed between a few times a week usage and daily usage (50.0%). However, the chi-square test showed that the level of education did not significantly influence the level of use of the library digital information system ($\chi 2 = 7.528$, d.f. = 8, p = 0.481). (See Table 4.7 below).

The level of education was thus found not to be related with the use of library information systems. Hence in order to increase the level of use of the library information systems, greater availability of titles, promotion, and better integration within teaching and learning emerge as key requisites for effective service delivery and enhancement of the system, and this need to be undertaken across board targeting all the levels of education in the university (Mulholland & Bates, 2014).

Table 4.7: Influence of User Education

	Usage frequency	Total

				A few time a year	A few times a month	A few times a week	Daily	
			Rarely					
Education	Undergraduate degree	Count	19	18	14	69	53	173
		% within Education	11.0%	10.4%	8.1%	39.9%	30.6%	100.0%
	Masters degree	Count	4	2	6	8	12	32
		% within Education	12.5%	6.3%	18.8%	25.0%	37.5%	100.0%
	PhD degree	Count	0	0	0	2	2	4
		% within Education	0.0%	0.0%	0.0%	50.0%	50.0%	100.0%
Total		Count	23	20	20	79	67	209
		% within Education	11.0%	9.6%	9.6%	37.8%	32.1%	100.0%

$\chi2 = 7.528$ d.f. = 8   p = 0.481

Regarding the respondents' gender displayed in Table 4.8 below, males had majority indicating preferences tied at 36.8% in the categories a few times a week and daily usages. Meanwhile, the majority of females had usage preference of a few times a week representing 43.1% of the females. Chi-square test indicated that there were no significant differences between males and females as far their usages of digital information systems were concerned ($\chi2$= 2.899, d.f = 4, p = 0.575). (See Table 4.8 below).

This result was consistent with Omotayo (2006) finding that there was no evidence of a significant difference in the use of library information system between male and female group. This statement contradicted the findings according to Koohang (2004), that female users find it harder to learn to operate and explore the digital library system than male users and that female participants were significantly more satisfied than their male counterparts with the library's online resources (Blackman, 2003).

Table 4.8: Influence of User Gender

			Usage frequency					
			Rarely	A few time a year	A few times a month	A few times a week	Daily	Total
Gender	Male	Count	10	8	10	39	39	106
		%	9.4%	7.5%	9.4%	36.8%	36.8%	100.0%

	within Gender						
Female	Count	14	12	11	53	33	123
	% within Gender	11.4%	9.8%	8.9%	43.1%	26.8%	100.0%
Total	Count	24	20	21	92	72	229
	% within Gender	10.5%	8.7%	9.2%	40.2%	31.4%	100.0%

$\chi 2 = 2.899$ d.f = 4   p = 0.575

4.3.2 Influence of Electronic Resource Availability and User Skills

Pearson product-moment coefficient was used to explore the relationship between resources available to the user to facilitate the system use and system usage. The results showed that in most cases the relationship was moderately positive and significant, with the exception of Adequacy of online library resources (r = 0.317, p = 0.055, n = 218) which was positive, though not significant. Experience with computers had a positive correlation with usage, which was highly significant (r = 0.325**, p = 0.007, n = 214); Information technology skills also had a positive relationship with usage that was significant at $\alpha = 0.05$, (r = 0.216*, p = 0.011, n = 227); similarly, satisfaction with resources provided by Kabarak University library generally showed significant positive correlation with usage frequency (r = 0.223*, p = 0.021, n = 225). The correlation relation relationship between the independent variables were all not significant, though positive. However, they have not been discussed as their relationships were not integral to the study at hand. (See Table 4.9 below).

Overall, the results showed that as more resources become available or skills improved, there was more likely to be increased library information system usage increase in tandem with such improvements. For instance, with regard to skills, Klaib (2009) offers suggestion that there is need to offer the required lectures that inform users about the importance of libraries and libraries' departments, the practical training of online access to databases through internet, or training on the usage of periodical indexes as this is likely to improve their confidence in the usage of the information system. Further, the curricula offered should have courses or exercises

that support use of the library, with the program concentrating on theoretical aspects as well as practical aspects.

Regarding the resources, Oyeniyi (2013), noted that electronic resources were vital for effective use of library information system, with the resource items including non paper – based electronic information formats like CD-ROM , the Internet, and all web –based resources which offer a variety of reference and literary sources. These electronic resources provide off-line and online access to information by CD-ROM databases, Internet, as well as online databases. Other needed resources include shortage of labour force due to the failure of training institutions to produce ICT technicians and professionals needed, unreliable electricity supply, fixed telephone networks and number of computers, few usable computers, lack of policy framework, inadequate infrastructure and cost of bandwidth, and inadequate in-service training on ICT integration in education (Mwalongo, 2011). Further, the availability of infrastructure with social support inside the learning environment is very important. The context of environment has three identifiable aspects, namely human infrastructure (technical staff, administrative staff, and institutionalized policies), technological infrastructure (resources, facilities, and access), and social support (colleagues and administrators). However, a learning environment rich with technology is insufficient and inadequate to guarantee successful utilization and implementation of technology in higher education. Their ready acceptance of such a system would lead to increase in usage and motivate user to increased LIS usage (Asiri, et al., 2012)

Table 4.9: Influence of electronic resources availability and user skills

		1	2	3	4	5
How long do you estimate you have had experience related with information technologies?	r	1				
	p					
	n	232				
Do you have skills to navigate the digital information landscape	r	.167	1			
	p	0.111				
	n	230	246			
Overall, do you feel that the Kabarak University library information system resources are adequate to support your needs?	r	0.131	.181	1		

		1	2	3	4	5
	p	0.052	0.206			
	n	219	232	234		
Are you satisfied with resources provided by Kabarak University library generally?	r	0.115	0.05	.279	1	
	p	0.085	0.443	0		
	n	227	240	232	242	
Usage frequency	r	0.325**	0.216*	0.317	0.223*	1
	p	0.007	0.011	0.055	0.021	
	n	214	227	218	225	229

Note: * Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

1=How long do you estimate you have had experience related with information technologies?

2=Do you have skills to navigate the digital information landscape

3=Overall, do you feel that the Kabarak University library information system resources are adequate to support your needs?

4=Are you satisfied with resources provided by Kabarak University library generally?

5=Usage frequency

4.3.3 Influence of Information quality and System quality on the use of LIS

Given that it had been established that use of LIS varied as per the designation of the user, at this stage it was necessary to find out if the satisfaction of the user was also related to their designation. As for the students, the levels of satisfaction with information quality were: Low satisfaction corresponding with 5.6%, moderate satisfaction was associated with 41.4% of the students whereas a majority of 53.0% were indicated high satisfaction. This was in comparison to staff members who showed Low satisfaction, 6.5%, Moderate satisfaction with information quality was 56.5%, which was the majority while the remaining 37.0% indicated that their satisfaction with the information quality of the Kabarak Universisty information system. This distribution of responses was then subjected to chi-square test of independence and it was found that there was indeed no relationship between designation and the level of satisfaction ($\chi2 = 3.914$, d.f. $= 2$, p $= 0.141$).

Regarding satisfaction with the system quality of the Kabarak University library information system, the findings nearly mirrored those of the information quality. As for the students, those who indicated low satisfaction with the system quality made up 11.1% of the student respondent,

those who indicated moderate satisfaction were 29.3% of the student respondents while a majority of 59.6% responded as being highly satisfied with the system quality. The staff members had 12.3% being in Low satisfaction category, 30.3% being moderately satisfied and finally a majority of 57.4% that were highly satisfied. A chi square test showed that there were no statistical evidence for differences between the students and the staff ($\chi2$ = 2.470, d.f. = 2, p = 0.291).

The lack of differences in user satisfaction can be attributed to the fact that, as Petter, DeLone and McLean (2008) point out, the study utilized instruments that contained items related to system quality and information quality, rather than only measuring overall user net benefits from the system. Therefore, it was possible that users may be satisfied with the system as it was currently configured without regard to overall job impact. Therefore, an area that needs to be reviewed in future studies would include research on satisfaction with the user net benefits derived from the library information system. This is in contrast to studies measuring overall library user satisfaction as a function of two independent sources: Satisfaction with the information product received and satisfaction with the information system and library services used to retrieve the information product where both factors contribute independently to satisfaction in library users (Shi, et al., 2004). (See Table 4.10 below).

Table 4.10: User Satisfaction Levels

| | | | Information quality (Binned) | | | |
			Low	Moderate	High	Total
Designation	Student	Count	11	82	105	198
		% within Designation	5.6%	41.4%	53.0%	100.0%
	Staff	Count	3	26	17	46
		% within Designation	6.5%	56.5%	37.0%	100.0%
Total		Count	14	108	122	244
		% within Designation	5.7%	44.3%	50.0%	100.0%
	$\chi2$ = 3.914		**d.f. = 2**		**p = 0.141**	
			System quality (Binned)			Total

			Low	Moderate	High	
Designation	Student	Count	22	58	118	198
		% within Designation	11.1%	29.3%	59.6%	100.0%
	Staff	Count	8	16	22	46
		% within Designation	17.4%	34.8%	47.8%	100.0%
Total		Count	30	74	140	244
		% within Designation	12.3%	30.3%	57.4%	100.0%
		χ2 = 2.470	**d.f. = 2**	**p = 0.291**		

4.3.3 Composite Influence of Designation, Resource availability and Satisfaction on use of LIS

To investigate the relationship between the user demographic factors (designation), resource and skill availability and satisfaction on library information system usage, a multiple regression analysis was used (Table 4.11 below). In order to perform the test, a preliminary test was run to ensure that the basic assumptions for running regression analysis were valid in the case. The first assumption about non-existence of multicollinearity problem was examined using the Variance Inflation Factors (VIF) and tolerances for each of the independent variables. The results showed there was no concern for multicolinearity problem since all the Tolerance values were higher than the allowed minimum of 0.1 (Designation = 0.980; Resource availability = 0.996; and User satisfaction = 0.976), or alternatively, none of the VIF values exceeded 10 (Designation = 1.020; Resource availability = 1.004; and User satisfaction = 1.024). However, the fact that multicolinearity did not present a problem in the study does not mean that the independent variables had no correlation relationships with each other.

The other assumption to be examined was about the existence of linear relation among the variables. This was established through ANOVA test that was significant indicating that at least one of the independent variables related linearly with the dependent variable [$F(3, 215) = 42.178$, $p < 0.01$]. The model therefore showed that satisfaction with both the Information quality and the System quality explained 0.390 or 39% (as per the adjusted R^2) of the total variation of Usage of the digital library information system. The multiple correlation coefficient was 0.628 while the R^2 was 0.394.

Regarding the regression coefficients, one of the independent variables, Designation, showed negative relationship with usage frequency of the library information system ($\beta1 = -.036$, p > 0.05). From the initial coding of this variable, 1 represented students while 0 represented staff, thus the negative coefficient indicated that higher usage was associated with students than the staff, though this was not statistically significant. However, variable Resource availability had positive coefficient indicating that more resources were associated with increased LIS usage, though the relationship was not significant ($\beta2 = 0.046$, p > 0.05). The result therefore offered no proof that increased resources led to increased LIS usage. Indeed other factors besides resource availability determined the extent of utilization of the system, such as user attitude towards ICT in general and user routine work requires wider range of resources besides the traditional library sources (Asiri, et al., 2012). On the contrary, a highly significant positive coefficient was found in relation to User satisfaction ($\beta3 = 0.840$, p < 0.01) indicating that as users became more satisfied with both information and system quality, their usage of the LIS was likely to increase. This finding accords with results that the Technology Acceptance Model (TAM) provides a framework for determining user satisfaction with the resources and services of the library information system. Therefore, satisfaction or acceptance equates to meeting the needs of the LIS patrons accessing the online library's resources and services. Hence it predicts that users who are more satisfied with the resources and services of the library tend to have increased usage of the information system.

Table 4.11: Regression Analysis Results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.609[a]	.370	.362	.84968

a. Predictors: (Constant), User satisfaction, Resource availability, Designation

ANOVA[a]					
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	91.351	3	30.450	42.178	.000[b]
	Residual	155.219	215	.722		

	Total	246.570	218

a. Dependent Variable: Use of LIS

b. Predictors: (Constant), User satisfaction, Resource availability, Designation

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.015	.469		2.164	.032		
	Designation	-.036	.152	-.013	-.239	.811	.980	1.020
	Resource availability	.046	.094	.027	.490	.625	.996	1.004
	User satisfaction	.840	.076	.604	11.037	.000	.976	1.024

a. Dependent Variable: Use of LIS

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

- University ICT centre was the most popular point of access for the users followed by the library.

- In respect of user categories, there were significant usage differences between students and staff i.e. students had more intense usage rate than staff

- In most instances availability of resources were associated with increased usage with library systems' usage frequency,

- In respect of the relationship between user satisfaction with the library information and usage, it was found that both information quality and system quality contributed to increased use of library information systems.

- According to the respondents, nearly half of them used the library information systems for research (49.1%), followed by education related uses (40.7%).

- It was also found that adequacy of resources and usage was not significant indicating that this may have been brought about by lack of access to resources especially when users were outside the campus

- Age differences, users' attained level of education and gender did not account for any differences in the system usage.

Conclusion

- In conclusion, the study found that library information systems bring many benefits and advantages to users including having a direct access and downloading of full text articles via computer devices, providing current, latest and complete information resources, easier tracking of resources stored in digital form; remote, fast and fair access of digital library collections (Dinpanah & Javanmard, 2013). However, various factors influenced use of the library information system, including demographic background of the respondents, resources availability and skills, and user satisfaction with the library information system.

- As far as user demographics are concerned, the library information system should be designed to promote the use of information technology for strategic benefits to its user groups (Ranganathan, et al., 2004), through though understanding of the needs of the various user groups. In the present study, it was found that among the demographic factors tested, the only factor that was found to significantly influence the use of the library information systems was the designation of the users where students had more usage preference than their staff counterparts.

- In regard to resources, a survey of the literature showed that the degree of computer experience encourages or discourages users' to use technology. Therefore, Klaib (2009) offers suggestion that there is need to offer the required lectures that inform users about the importance of libraries and libraries' departments, the practical training of online access to databases through internet, or training on the usage of periodical indexes as this is likely to improve their confidence in the use of the information systems. The study therefore found that the major problem of LIS related to remote access where it was showed that the most popular point of access is the University ICT center. The resource items assessed had significant positive relationship with LIS usage indicating that they were indeed integral in enhancing the LIS usage rate. According to Asiri, et al. (2012), the major resources needed to operationalize optimum usage included human infrastructure (technical staff, administrative staff, and institutionalized policies), technological infrastructure (resources, facilities, and access), and social support (colleagues and administrators).

- In relation to user satisfaction with LIS, the study utilized measures of overall library user satisfaction as a function of two independent sources: Satisfaction with the information product received and satisfaction with the information system and library services used to retrieve the information product where both factors contribute independently to satisfaction in library users (Shi, et al., 2004). However, it was found that by using such an instrument, there were no differences between the various user groups that had initially provided evidence of different user needs, that is, student versus staff. This led to the adoption of Petter, DeLone and McLean (2008) suggestion that rather using the two measures of user satisfaction, measuring overall user net benefits from the system provides emphasis on overall job impact which needs to be adopted in future studies. Therefore, the users were largely satisfied with qualities of information and system being used in the university leading to higher use among the various categories of users.

Recommendations

- That the University to work on modalities to ensure equality and access to resources and skills necessary to navigate the library information system environment.

- While the present study found usage differences only in respect to user designation where students had more intense usage rate than staff, it would be important to keep in mind other factors such as gender, age group, and level of education. For instance, it had been found in Nigeria that females were more likely to lack access to online resources due to low computer ownership than their male counterparts (Oyeniyi, 2013).

- A promotional campaign (user education) to library users for availability of electronic information sources in the library. This may lead to increased use of library information systems and hence make library the most preferred point of access than the ICT centre.

- the user groups must be understood in terms of their LIS needs so as to ensure that their likely needs are met even before demands are made . This is likely to improve their satisfaction with the system and therefore their usage rate. The library therefore is likely to be immensely aided in this endeavor through programs such as benchmarking as well user satisfaction surveys.

- Finally, further research should be carried out to compare the influence of the factors examined in this study involving both public and private universities. In doing so, differences in demographic factors may become more explicit since the demographics of users in public and private universities are hypothesized to be different in significant ways, besides the differences in resource availability in both types of institutions.

REFERENCES

Abedalaziz, N., Jamaluddin, S., and Leng, C. (2013). Measuring Attitudes toward Computer and Internet Usage among Postgraduate Students in Malaysia, *Turkish Online Journal of Educational Technology - TOJET*, Vol. 12 (2) pp. 200-216.

Adams, R. (1995*).* Strategic information systems and libraries. *Library Management* vol. 16 · (1) pp. 11-17.

Adela J.W. C., Boudreau, M. and Watson, R. T. (2008) "Information systems and ecological sustainability", *Journal of Systems and Information Technology*, Vol. 10 (3), pp.186 – 201.

Adeoti-Adekeye, W.B. (1997). *The importance of management information systems. Library Review*, 46 (5), 318-327.

Alireza, I.M. and Mohsenzadeh, F. (2009). *Application of information technologies in academic libraries.* Electronic Library, The, Vol. 27 (6), pp.986 – 998.

Alter, S. (2002). *Information systems: Foundation of e-business, 4th ed.* New York: Pearson Education, Inc.

Asiri, M., et al. (2012). Factors influencing the use of learning management system in Saudi Arabian higher education: a theoretical framework. Higher Education Studies Vol. 2 (2) pp. 125-137.

Avison, D. and FitzGerald, J. (2003). *Information systems development: methodologies, techniques, and tools, 3rd ed.* London: McGraw-Hill Education.

Bailey, P. (2011). *How Library Management Systems can demonstrate value for money from information and library services.* Business Information Review Vol. 28, pp. 119.

Blackman, R. F. (2003). A study of the perceptions and attitudes regarding library services available to students enrolled in online degree programs (Doctoral dissertation). Available from ProQuest Dissertations database. (UMI No. 3126987)

Bloomberg, L.D. and Volpe, M. (2008). *Completing your qualitative dissertation: a roadmap from beginning to end.* Thousand Oaks, CA: SAGE publications, Inc.

Borg, W. and Gall, M.D. (2006). *Educational research: an introduction, 5ᵗʰ ed.* New York: Longman

Brophy, P. and Wyne, P.M. (2012). *Management Information Systems and Performance Measurement for the Electronic Library: eLib Supporting Study.* Retrieved June 15, 2012, from http://www.ukoln.ac.uk/services/elib/papers/supporting/pdf/mis.pdf

Bui, Y.N. (2009). *How to write a master's thesis.* London: SAGE publications, Inc.

Cresswell, J.W. (2009). *Research design: qualitative, quantitative and mixed methods approach (3ʳᵈ ed.).* Thousand Oaks, CA: SAGE publications, Inc.

Daniels, S. (1998) *"The strategic use of information systems",* Work Study, Vol. 47 (5), pp.167 – 171: MCB University Press · ISSN 0043-8022 Retrieved May 31, 2012, from http://www.emeraldinsight.com/journals.htm?articleid=851285&show=html

Feather J. and Sturges P (2003). *International encyclopedia of information and library science.* New York: Routledge

Firewall Media (2007). Dictionary of information technology. New Delhi: Firewall.

Gay, L.R., Mills, G.E. & Airasian, P. (2006). *Educational research: competencies for analysis and applications (8ᵗʰ ed.).* Upper Saddle River, NJ: Merrill Prentice Hall.

Government of Kenya. Ministry of Planning and National Development (2007). *Kenya Vision 2030.* Nairobi: Ministry of Planning and National Development.

Hong, W. (2002). *Determinants of User Acceptance of Digital Libraries: An Empirical Examination of Individual Differences and System Characteristics.* Journal of Management Information Systems Vol. 18 (3), pp. 97-124. http://dx.doi.org/10.1108/00330330510595715

Kabarak University (2012). *Strategic Plan 2012-2015*. Nakuru: Kabarak University.

Kanter, J. (2002). *Managing with information, 4th ed.* New Delhi: Prentice-Hall of India.

Kasalu, S. and Ojiambo, J. B. (2012). *Application of ICTs in collection development in private university libraries in Kenya.* Collection Building, Vol. 31 (1), pp.23 – 31.

Kashyal, M. M. (2006). *Computer-based library information systems: designing techniques, revised edition.* New Delhi: Ess publications.

Kim, K.K. and Michelman, J. E. (1990). *An Examination of Factors for the Strategic Use of Information Systems in the Healthcare Industry:* MIS Quarterly, Vol. 14, (2), pp. 201-215. Retrieved August 15, 2013 03:07 from: http://www.jstor.org/stable/248778

Klaib, F. (2009). Provided information literacy instructions at private university libraries in Jordan and trends of Zarqa Private University students towards its objective achievements. The International Information & Library Review, Vol. 41, (3), pp. 173-183.

Kochtanek, T. R. and Matthews, J.R. (2004). *Library Information Systems: from library automation to distributed information access solutions.* USA: Libraries unlimited.

Koohang, A. (2004). Students' perceptions toward use of the digital library in weekly web-based distance learning assignments portion of a hybrid programme. British Journal of Educational Technology, Vol. 3 (5), pp. 617-626.

Krejcie, R.V. and Morgan, D.W. (1970). *Determining sample size for research and activities.* Educational and Psychological Measurement, Vol. 30, pp. 607-610.

Kroenke, D. (2011). *Using MIS, 3rd ed.* New Jersey: Pearson Education, Inc.

Kumar, Shiv (2012). The impact of demographic characteristics of users on patterns of usage on search engines and OPAC", Library Review, Vol. 61 (3) pp. 172 – 187

Laudon, K. C. and Laudon, J.P. (2009). *Management information systems: new approaches to organization and technology, 8th ed.* New Jersey: Pearson Education, Inc.

Laudon, K. C. and Laudon, J.P. (2010). *Management information systems: managing the digital firm, 11th ed.* New Jersey: Pearson Education, Inc.

Lynch, C. (2002). *Serials in the networked environment*. *Serials Librarian*, Vol. 28 (2), 119.

Machi, L.A. and McEvoy, B.T. (2009). *The Literature review: Six steps to success*. London: Corwin Press.

Maina, S.M. (2012). *Quantitative and qualitative research methods simplified*. Nairobi: Frajopa Printers.

Majid, S. and Tan, A.T. (2002). *Usage of information resources by computer engineering students: a case study of Nanyang Technological University, Singapore.* Online Information Review, Vol. 26 (5), pp.318 – 325.

Makori, E.O. (2009). *Reinventing academic libraries in Kenya.* Library Hi Tech News, Vol. 26 (5/6), pp.10 – 13.

Malliari, A. and Kyriaki-Manessi, D. (2007) "Users' behaviour patterns in academic libraries' OPACs: a multivariate statistical analysis", New Library World, Vol. 108 (3/4), pp.107 - 122

Maquignaz, L. (2004). *The Centrality of the Integrated Library Management System: a Strategic View of Information Management in an E-Service Environment.* Retrieved June 15, 2012, from http://www.vala.org.au/vala2004/2004pdfs/02MaqMil.PDF

Markgraf, B. (2012). *Characteristics of Management information systems.* Retrieved September 20, 2013 from http://smallbusiness.chron.com/characteristics-good-management-information-system-59060.html

McLeod, R. and Schell, G. (2007). *Management information systems, 10th ed.* New Jersey: Pearson Education, Inc.

McNurlin, B. C. and Sprague, R.H. (2004). *Information systems management in practice, 6th ed.* Singapore: Pearson Education, Inc.

Moorthy, A.L., Rao, N.L. and Goud, S.S. (2006). *Technology management in libraries*. New Delhi: Allied publishers.

Mulholland, E. and Bates, J. (2014).Use and Perceptions of E-books by Academic Staff in Further Education. The Journal of Academic Librarianship, Vol. 40 (5), pp. 492-499

Mulla (2012). *Study of emerging information technologies in strategic library management.* Retrieved June 15, 2012 from http://www.jimahd.ernet.in/library/PDF/conf/021%20ZSMulla.pdf

Mutula, S. M. (2001). *The IT environment in Kenya: implications for libraries in public universities.* Library Hi Tech, Vol. 19 (2), pp.155 – 166.

Mwalongo, A. (2011). Teachers' perceptions about ICT for teaching, professional development, administration and personal use. International Journal of Education and Development using Information and Communication Technology (IJEDICT), Vol. 7, (3), pp. 36-49.

Odero, D.M. and Mutula, S.M. (2007). *Internet adoption and assimilation in Kenyan university libraries.* Library Review, Vol. 56 (6), pp.464 – 475.

Omotayo (2006). A survey of Internet access and usage among undergraduates in an African university. The International Information & Library Review, Vol. 38 (4), pp. 215-224

Oyeniyi, O. (2013). Gender differences in information retrieval skills and use of electronic resources among information professionals in South–western Nigeria. International Journal of Library and Information Science, Vol. 5 (7), pp. 208-215

OZ, E. and Jones, A. (2008). *Management information systems.* London: Cengage learning EMEA.

Paraman, V. and Marimuthu, V. (2011). *Ananlysis of information technologu applications in academic libraries in Kuwait.* Library Hi Tech News, Vol.28(2), pp. 9-15.

Petter, S., DeLone, W. and McLean, E. (2008).Measuring information systems success: Models, dimensions, measures, and interrelationships. European Journal of Information Systems Vol. 17, pp. 236–263

Polonsky, M.J. and Waller, D.S. (2011). *Designing and managing a research project: a business student's guide (2nd ed.).* Thousand Oaks, CA: SAGE publications, Inc.

Post G.V. and Anderson, D.L. (2005). *Management information systems: solving business problems with information technology, 4th ed.* New York: McGraw-Hill Irwin.

Reitz, J.M. (2004). *Dictionary for library and information science*. London: Libraries unlimited.

Roberts, M. and Wood, M (2002). *The strategic use of computerized information systems by a micro enterprise.* Logistics information management, vol. 15(2). PP. 115-125. MCB UP Limited. Rogerson, S. and Fidler, C. (1994). *Strategic Information Systems Planning: Its Adoption and Use.* Information Management & Computer Security, Vol. 2 (1), pp. 12-17

Rosenberg, D.(1998). *IT and university libraries in Africa. Internet Research,* Vol. 8 (1), pp.5-13.

Saunders, M., Lewis, P., and Thornhill, A. (2009). *Research methods for business students, 5th ed.* England: Pearson Education Limited.

Sekaran, U. and Bougie, R. (2009). *Research methods for business: a skill-building approach (5th ed.)* West Sussex, UK: John Wiley & Sons Ltd.

Shi, X., Holahan, P. and Jurkat, M. (2004). Satisfaction Formation Processes in Library Users: Understanding Multisource Effects. The Journal of Academic Librarianship, Vol. 30, (2), pp. 122-131

Shibanda, G. G (2002). *Development Strategy of a Technological University Library Management Information System (MIS): A case of Moi University, Kenya*. Retrieved June 15, 2012, from, http://www.iatul.org/doclibrary/public/Conf_Proceedings/2002/shibandu.pdf

Skretas, G. (2005),"Factors affecting the full use of library and information management systems by library personnel", Program, Vol. 39 Iss 2 pp. 139 - 146
Strategic information systems for competitive advantage .Retrieved June 05, 2012, from, http://www.scribd.com/doc/7047213/MIS-Chapter-03-Strategic-Information-Systems-for-Competitive-Advantage

Strategic Uses of Information Systems. Retrieved June 05, 2012, from http://klickfamily.com/david/school/cis123/L02_Strategic.html

Talukder, M. J. H. (2012). *Objectives of management information systems.* Retrieved September 20, 2013 from http://bdibb.blogspot.com/2012/12/discuss-main-objectives-of-management.html

Turban, E. et al. (2008). *Information technology for management: transforming organizations in the digital economy.* New Delhi: John Wiley & Sons (Asia) Pte. Ltd.

Veal, A.J. (2005). *Business research methods: a managerial approach, 2nd ed.* Sydney: Pearson Education Australia.

Vitez, O. (2012). *Characteristics of a Good Management Information System.* Retrieved June 15, 2012, from http://www.ehow.com/facts_5679174_characteristics-good-management-information-system.html

Yamane, T. (1967). *Statistics: An Introductory Analysis*, 2nd Ed., New York: Harper and Row.

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