Quality of Academic Resources and Students' Satisfaction in Public Universities in Kenya

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Abstract. Quality of academic resources and students' satisfaction in universities has emerged a high profile agenda in the 21st Century. Universities require the resources in order to effectively fulfill their core mandate of teaching, learning and research hence contributing to a fulfilling educational experience for the students. In Kenya, public universities have expanded rapidly without adequate financing from the Government over the last two decades. These factors have a bearing on the ability of the universities to provide quality academic resources that guarantee students' satisfaction which is yet to be determined. The study adopted cross sectional research design. Eight universities representing 36 percent of the accessible public universities participated in the study. Data were collected from 1062 third and fourth year undergraduate students using a questionnaire. The overall Cronbach's Alpha reliability coefficient for the entire scale was 0.887. The study found that quality of academic resources had four reliable dimensions of quality of teaching facilities, quality of library service environment, availability of text books in the library, and availability of internet services. It was found that independently, quality of teaching facilities, availability of textbooks, and quality of library service environment were positively and significantly related to student' satisfaction. Availability of internet services was insignificant in determining students' satisfaction in the universities.

Keywords: Academic resources; teaching facilities; textbooks; library service; internet services; students' satisfaction.

1. Introduction

Public universities play a key role in training human resources favourable to attainment of the United Nations Millenium Development Goals (World Bank, 2010a). However, diminishing public funding and increasing students' enrolments resulting to rapid expansion threaten the capacity of universities to fulfill this core mandate (Altbach, Reisberg & Rumbley, 2009). Confronted by these constraints, there have been concerns that the universities are not likely to deliver a fulfilling university experience that facilitates the development of a high calibre graduate (UNESCO, 2014). Indeed, universities are hard pressed by

stakeholders to pursue excellence in educational service with the ultimate aim of ensuring that customers, including students, are satisfied (World Bank, 2010[b]). According to Hansemark and Albinsson (2004), customer satisfaction is an overall attitude towards a service provider, or an emotional reaction to the service experience. McDougall and Levesque (2000) also define customer satisfaction as cognitive or affective outcomes that emerge in response to a single or prolonged set of service encounters. The Commission for University Education in Kenya (2008) lists parents, students, staff, community, funding agencies, and employers as the main stakeholders in universities. However, Firdaus (2006) expounds that students are the primary customers and outcomes of their perceptions of the university experience is relevant in the continuing debate on quality improvement in universities.

According to Kishore (2012), outcomes of students' perceptions of educational service quality in universities include positive word-of-mouth communication about their universities to their friends, future intention to come back to their university to pursue other academic programmes, and perceived value for money the student pays for educational services. Dib and Alnazer (2013) contend that students' satisfaction results to contentment with the educational services experience culminating to feelings of joy and pleasure for being associated with a university. Arokiasamy and Abdullah (2012) emphasize the need for universities to provide a fulfilling university experience because of the potential impact of students' satisfaction on the competiveness of an institution, motivation and ability of students to develop the desired competencies, retention of existing students, and efforts to attract and recruit new students in a highly competitive higher education market.

Although students' satisfaction in universities is affected by various factors, quality of academic resources, a key component of educational service quality, has generated a lot of interest in recent years (Prasad & Jha, 2013). Quality of academic resources is a multidimensional construct which is often approached from a range of indicators that support teaching, learning and research activities in a university. Such indicators include lecture facilities, laboratory facilities, library service, and access to Information and Communication Technology (ICT) infrastructure and digital resources (Taib, Warokka & Hilman, 2012; Mahmood, Dangi & Ali, 2014). Inadequate financing and rapid expansion of public universities over the years has resulted to deterioration of the average quality of academic resources (Yizengaw, 2008). Ndirangu and Udoto (2011) observe that low quality academic resources not only affect teaching and learning but also impacts on students' and lecturers' motivation, self-image, dignity, and sense of pride in their universities.

Coskun (2014) study in a university in Albania found that students give particular importance to academic facilities because they spend a lot of their time interacting with the facilities. Sufficient facilities are likely to enhance the interaction, bring about creative learning, and contribute to a fulfilling university experience. Salad (2014) study in Mogadishu found that adequacy of teaching facilities is significantly related to students' satisfaction. Similarly, Mansor, Hasanordin, Hafiz and Rashid (2012) research in a university in

Malaysia found that quality of academic resources significantly impacts on students' satisfaction perceptions. The findings suggest that students appreciate the provision of adequate laboratory equipment, lecture rooms, and other physical evidences of an excellent university. Contrary to this finding, J. Douglas, A., Douglas, A. and Barnes (2006) study in Liverpool John Moores University in England; and Khan, Ahmed and Nawaz (2011) study in Pakistan concluded that quality of academic resources has an insignificant relationship with students' satisfaction. The findings suggest that quality of academic resources is not a matter of consideration for students in a university.

Over the last two decades, public universities in Kenya have expanded rapidly without adequate financing from the Government (Republic of Kenya [ROK], 2007). Students' enrolment in the universities increased from 139,470 students in 2010/11 academic year to 276,349 students in the 2013/14 academic year (ROK, 2014). This translates to 98.1 percent growth in enrolment over a period of three years. According to Kinyanjui (2007), rapid increase in students' enrolment has resulted to widespread perception from stakeholders that the average quality of public university educational service has declined. Increasing enrolment has been associated with pressure on available teaching and learning resources (ROK, 2006). There have been concerns that the available infrastructure in the universities cannot adequately support students and teachers in achieving their academic goals (Ndirangu & Udoto, 2011). The situation may be more aggravated in the recently established public universities which were upgraded from middle level colleges without requisite infrastructure to support university teaching (Wanzala, 2013).

The Government also delinked admission of students to public universities based on available accommodation (ROK, 2005). Consequently, public universities in Kenya have on a number of occasions, been pressurized to admit more students than they can accommodate (ROK, 2006). Students possibly learn in congested and stressful environments likely to affect students' satisfaction which is the subject of the current study. In response to concerns for quality educational service delivery, public universities in Kenya are required by the Government to implement Total Quality Management practices such as International Organization for Standardization (ISO) systems with an aim of improving service delivery and ensuring that customers, including students, are satisfied with the university experience (Owino, Oanda & Olel, 2011).

The Commission for University Education [CUE] in Kenya demands that universities shall provide adequate lecture rooms/theatres, adequate laboratory facilities, quality university library commensurate to students' enrollment and quality ICT services as critical components of academic resources in the universities (CUE, 2014). The Commission's requirements are aimed at ensuring that the universities promote highest standards of teaching and learning and that students acquire skills consistent with educational goals and aspirations of Kenyans (CUE, 2014). However, the extent to which the existing quality control and improvements initiatives have impacted on the quality of university experience remains unknown. At a time when there is global recognition that students are the primary customers in universities, it is urgent to determine the

relationship between quality of academic resources and students' satisfaction in public universities in Kenya with the ultimate aim of identifying improvement priorities. The study was guided by the following objectives:

i. To determine the indicators of quality of academic resources in public universities in Kenya.
ii. To examine students' ratings of the indicators of quality of academic resources in public universities in Kenya.
iii. To determine the relationship between the indicators of quality of academic resources and students' satisfaction in public universities in Kenya.

2. Conceptual framework

In analyzing the relationship between quality of academic resources and students' satisfaction in the universities, it was important to conceptualize the linkage in terms of the independent and dependent variable chain. The conceptual framework shown in Figure 1 demonstrates that the independent variable, which is quality of academic resources, is a multidimensional construct of the dimensions of quality teaching facilities, quality library services, and access to ICT resources.
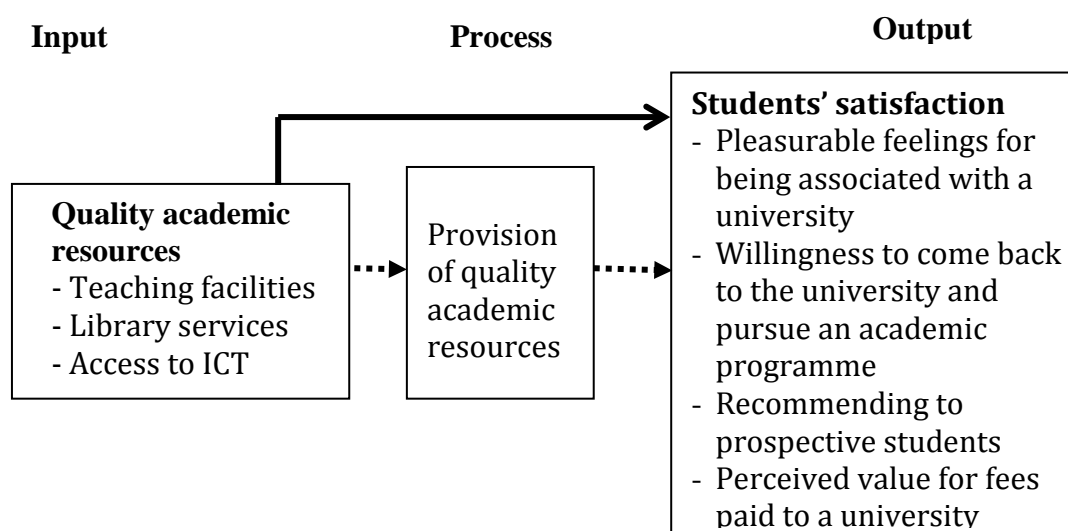
Input   **Process**   **Output**

Quality academic resources
- Teaching facilities
- Library services
- Access to ICT

Provision of quality academic resources

Students' satisfaction
- Pleasurable feelings for being associated with a university
- Willingness to come back to the university and pursue an academic programme
- Recommending to prospective students
- Perceived value for fees paid to a university

Figure 1: Relationship between quality of academic resources and students' satisfaction

The independent variable for the study is students' satisfaction. It was conceptualized as the composite mean score of students' feelings of pleasure and contentment for being associated with a university, future intentions to enrol in their universities for other academic programmes, recommending prospective students to pursue degree programmes in their university through positive word of mouth communication, and perceived value for fees paid to a university. Teaching facilities, library service, and access to ICT resources relate to students' satisfaction. Similarly, overall students' rating of quality of academic resources influences students' satisfaction. The extent to which quality of academic resources affects students' satisfaction depends on the commitment of the universities to ensure that the resources are sufficient and effective.

3. Methodology

The study used cross sectional design. According to Bryman and Bell (2007), cross-sectional design entails the collection of data from a random sample representing some given population at a given time in order to detect patterns of association between the variables of study. Henn, Weinstein and Foard (2009) explain that the key strength of cross sectional design is the collection of data at the same point in time hence mitigating the possibility of external time-related events and variables confounding on the findings. Cross sectional design was selected for the study because it enabled the researchers collect data at a single point in time hence minimizing time related events that were likely to impact on quality of academic resources and students' satisfaction in the universities. The design also enabled the researcher determine the relationship between quality of academic resources and students' satisfaction in the universities. Eight universities representing 36 percent of the accessible public universities participated in the study. Data were collected from 1062 third and fourth year undergraduate students using a questionnaire. Quality of academic resources was measured using 16 items while students' satisfaction was measured using six items placed on a five point Likert and Likert type scale.

To ensure validity of the questionnaire, the study used face and content validity which was achieved through expert review. Piloting was done in one of the public universities in order to determine the Cronbach's Alpha coefficient of reliability for the subscales and the entire questionnaire. The pilot university was exempted from the main study. The sample size for the pilot study was 110 third and fourth year undergraduate students as per Mulusa (1990) who recommends that piloting should involve at least 10 percent of the sample size for the main study. The pilot study revealed that the overall Cronbach's Alpha coefficient for entire scale (22 items) was .887. The reliability indices for the different subscales were; quality of academic resources (.852) and students' satisfaction (.883). The reliability indices for the entire scale and subscales were above the .700 threshold recommended by Pallant (2005). The questionnaire was therefore considered reliable and used in the actual study. Data from the main study were analyzed using descriptive statistics, factor analysis and regression analysis. Interpretation of the data was done with reference to the research objectives and the results are presented in the following sections.

4. Results and Discussions

The following results were obtained from the study;

4.1 Indicators of Quality Academic Resources

Principal Component Analysis (PCA) was applied in determining the indicators of the quality of academic resources in the universities from the questionnaire items. The analysis was necessary in order to determine whether the items accurately measured the intended indicators and ensure that the factors were defined by items which grouped for a particular factor only (Yong & Pearce, 2013). Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity results for the entire scale were examined. KMO test provides information regarding the grouping of survey items. It determines whether enough items predicted each factor. Bartlett's test is used to test whether

questionnaire items are correlated highly enough as to provide a reasonable basis for factor analysis (Field, 2009). The KMO and Bartlett's Test for the scale on quality of academic resources are summarized in Table 1.

Table 1: KMO and Bartlett's Test for the Scale on Quality of Academic Resources

KMO measure of sampling adequacy		.832
Bartlett's Test of Sphericity	Approx. Chi-Square	5970.790
	df	120
	Sig.	.000

The analysis found that KMO measure of sampling adequacy for the scale on quality of academic resource is .832 and was considered adequate because it indicated that enough items grouped into distinct factors of quality of academic resources (Leech, Barret & Morgan, 2005). The Bartlett's test results of the scale items show Chi-Square value = 5970.790 which is statistically significant at $p<.05$. According to Field (2009), a significant Bartlett's test infers that the variables in the scale on quality of academic resources had a high correlation as to provide a reasonable basis for factor extraction. Varimax orthogonal rotation was applied in extracting the indicators of quality of academic resources. The study settled for varimax orthogonal rotation because it reduces the complexities of factors by maximizing variance of loadings on each factor and therefore generating a simple structure as conveyed by Field (2009). According to Leech, Barret and Morgan (2005), a factor should have an Eigen value greater than one for it to be considered useful.

The solution generated revealed a total of 16 components explaining 100.0% of the variations in the quality of academic resources. Four (4) components had an Eigen value greater than one suggesting that the scale measured four dimensions which explained 60.568 percent of the variations in quality of academic resources as summarized in the rotated component matrix in Table 2. The matrix reveals that component one (1) had five items. The five items were interpreted as quality of teaching facilities and accounted for 31.16% of the variations in quality of academic resources. Six items loaded on component two (2). The items emphasized the need for library staff to be responsive to students' needs, the library having basic comfort for study and having adequate sitting space. Items in component two were grouped as quality of library service environment and accounted for 13.30% of variations in quality of academic resources. Three items loaded on component three (3). The component was interpreted as provision of internet services and explained 8.82% of the variations in quality of academic resources.

Component four (4) had two items. These items were interpreted as availability of textbooks in the universities libraries. After determining the factors that constitute quality of academic resources in public universities in Kenya, the study proceeded to check the internal reliability of each of the components in the scale. The study found that all the components had Cronbach's alpha above .700 threshold recommended by Pallant (2005). The analysis therefore revealed that quality of academic resources in the universities could be defined using four

reliable dimension or indicators. The indicators are quality of teaching facilities, quality of library service environment, availability of text books in the library, and availability of internet services.

Table 2: Indicators of Quality of Academic Resources

	Component				Factor and percentage variance
	1	2	3	4	
Lecture halls and rooms has enough tables and chairs	.759				Quality of teaching facilities, 31.16%
The university has adequate teaching laboratory facilities	.755				
The university has adequate lecture rooms and halls	.749				
Lecture halls and rooms have enough sitting space for students	.726				
The university has adequate computers for ICT lessons	.701				
Library staff are friendly and helpful		.792			Quality of library service environment, 13.30%
Library staff provide prompt services to students		.778			
The library has convenient opening and closing hours		.699			
The library has comfortable chairs and tables		.632			
When i visit the library, I always find a seat and a table to study from		.487			
The library provides a conducive environment for study		.483			
Students can access university internet on their phones and laptops			.883		Access to internet services, 8.82%
The university provides internet facilities for students			.879		
Library facilitates access to internet resources			.498		
The library is stocked with latest and authoritative textbooks				.816	Availability of text books in the library, 7.29%
The library has textbooks that lecturers recommend for my course				.815	
Cronbach's alpha value of component	.816	.784	.731	.774	Total variance 60.57%

Although the study identified four internally consistent indicators, quality of teaching facilities was the most important and accounted for 31.16% of the variations in quality of academic resources. The finding implies that students were most concerned with adequacy of lecture rooms and halls, availability of quality lecture chairs, adequate sitting space during lectures, sufficient and equipped laboratory facilities, and adequate computers for ICT lessons practicals. After determining the indicators of quality of academic resources, it was important to analyze students' ratings of the indicators in order to establish the extent to the universities had quality academic resources to support

teaching, learning and research activities and the results are presented in the following section.

4.2 Ratings of the Indicators of Quality of Academic Resources

Students ratings of the quality of academic resources were collected on a five point Likert and Likert type scale of strongly disagree (SD), disagree (D), not sure (NS), agree (A), and strongly agree (SA). Results summarized in Table 3 indicate that students' rating of the quality of teaching facilities was below average (M = 2.43, SD = 0.93) implying that most of the public universities had inadequate teaching facilities. Majority 727 (68.5%) of the students disagreed that the universities had adequate lecture rooms and halls suggesting that lectures were conducted in congested environments which possibly hindered effective teaching and learning. This is contrary to Isa and Yusoff (2015) assertion that adequate lecture facilities are a prerequisite for quality teaching and learning. Ndirangu and Udoto (2011) also argues that learning in congested environments decreases students' concentration and attention, affects students' motivation, self-image, and a sense of pride in their universities.

Majority 680 (64.0%) of the students disagreed that the universities had adequate teaching laboratory facilities implying that students pursuing disciplines requiring practicals had inadequate exposure to the enriching laboratory learning experiences. According to Reid and Shah (2006), teaching laboratories provides students and instructors with an opportunity to illustrate ideas and concepts, and to expose theoretical ideas to empirical testing. Hofstein and Lunetta (2003) also stress that laboratories provide students with an opportunity to handle equipment and chemicals, and to acquire and develop general skills such as team work, time management, and problem solving.

The results revealed that majority 724 (68.1%) of the students were not satisfied with the adequacy of computers for ICT lessons practicals. The study results imply that the universities were not adequately equipped with ICT infrastructure to facilitate practical orientation of students towards ICT skills possibly because on inadequate funding for ICT resources. The finding concurs with Tarus, Gichoya and Muumbo (2015) who found that inadequate ICT infrastructure was one of the key barriers to teaching of ICT skills in public universities in Kenya. On the quality of the library service environment, the study results indicated that students had above average ratings (M = 3.26, SD = 0.87). The results suggest that most of the public universities had a library service environment that could support students' private study and research needs. Majority 587 (55.3%) of the students agreed that library staff were friendly and helpful. Most 573 (53.9%) of the students also concurred that the staff provided prompt service to students. This is in line with Tiemensma (2009) who observed that approachable, helpful, and responsive library staff is a key ingredient towards performance excellence in provision of library services. Despite the positive ratings of the quality of the library service environment, majority 572 (53.9%) of the students indicated that the libraries did not have enough chairs and tables. The results imply that most of the universities did not have a library facility whose size could accommodate the existing students'

enrollment possibly because of inadequate finances to upgrade the existing library facilities and procure reading carrels.

Table 3: Students' Ratings of the Quality of Academic Resources

Factor	Item	SD	D	NS	A	SA
Quality of teaching facilities	The university has adequate lecture rooms and halls	293 27.6%	434 40.9%	65 6.1	239 22.5%	31 2.9%
	Lecture halls and rooms have enough chairs of acceptable quality	273 25.7%	350 33.0%	66 6.2%	299 28.2%	74 7.0%
	Lecture halls and rooms have enough sitting space for students	272 25.6%	350 33.0%	73 6.9%	304 28.6%	63 5.9%
	The university has adequate teaching laboratory facilities	240 22.6%	440 41.4%	124 11.7%	221 20.8%	37 3.5%
	The university has adequate computers for ICT lessons practicals	320 30.1%	404 38.0%	106 10.0%	197 18.5%	35 3.3%
Overall mean rating of quality of teaching facilities,		*M* **= 2.43,** *SD*, **0.93**				
Quality of Library Service Environment	The library provides a conducive environment for study	96 9.0%	113 10.6%	54 5.1%	582 54.8%	217 20.4%
	The library has comfortable chairs and tables	111 10.5%	177 16.7%	99 9.3%	502 47.3%	173 16.3%
	When i visit the library, I always find a seat and a table to study from	243 22.9%	329 31.0%	107 10.1%	304 28.6%	79 7.4%
	The library has convenient opening and closing hours	125 11.8%	147 13.8%	83 7.8%	513 48.3%	194 18.3%
	Library staff are friendly and helpful	150 14.1%	203 19.1%	122 11.5%	466 43.9%	121 11.4%
	Library staff provide prompt services to students	142 13.4%	214 20.2%	133 12.5%	477 44.9%	96 9.0%
Overall mean rating of quality of library service environment, *M* **= 3.26,** *SD* **= 0.87**						
Availability of text books in the library	The library is stocked with latest and authoritative textbooks	361 34.0%	346 32.6%	120 11.3%	188 17.7%	47 4.4%
	The library has textbooks that lecturers recommend for my course	223 21.0%	357 33.6%	89 8.4%	323 30.4%	70 6.6%
Overall mean rating of rating of availability of textbooks, *M* **= 2.47,** *SD* **= 1.13**						
Availability of internet services	The university provides internet facilities for students	114 10.7%	131 12.3%	47 4.4%	659 62.1%	111 10.5%
	Students can access university internet on their phones and laptops	92 8.7%	143 13.5%	49 4.6%	635 59.8%	143 13.5%
	Library facilitates access to internet resources	149 14.0%	199 18.7%	111 10.5%	493 46.4%	110 10.4%
Overall mean rating of availability of internet services, *M* **= 3.42,** *SD* **= 0.96**						

This was contrary to CUE (2014) requirement that universities should provide adequate library facility for students. CUE also requires that the facility should have adequate and appropriate furniture that guarantees privacy and comfort for each individual reader who seeks to use the library resources (CUE, 2014). Data on the provision of textbooks in the libraries revealed that students' mean rating was below average (M = 2.47, SD = 1.13) as summarized in Table 3. The results suggest that most of the public universities in Kenya did not have adequate number of latest and authoritative textbooks in circulation, including those that were recommended by the lecturers. This was likely to affect the standards, quality and relevance of university education as students did not have adequate textbooks to consult from. The finding on inadequate library resources concurs with Mwiria, Ng'ethe, Ngome, Ouma-odero, Wawire and Wesonga (2007) who argue that the acquisition of library resources is the worst victim of neglect in universities in Kenya.

Data on the availability of internet resources revealed that students' had above average ratings (M = 3.42, SD = 0.96). Majority 770 (72.6%) of the students agreed that the universities provided internet facilities for the students. A high proportion 778 (73.3%) of the students also agreed that the universities internet facility was accessible on their phones and laptops. The findings suggest that public universities in Kenya recognized the role played by internet services in higher education resulting to widescale uptake and facilitating access of the services to students. According to Bett (2014), availability and access to ICTs such as internet services is the basic minimum for any institution to apply ICTs in education. Indeed, it is a strategic option towards preparing students for effective participation in the global knowledge economy (Poda, Murry & Miller, 2006). Provision of internet services, as found in the current study, has a high potential in improving the students' academic and social encounters leading to a fulfilling university experience (Adesoji, 2012).

Further, most 603 (56.8%) of the students reported that the universities facilitated access to internet resources. The results suggest that the universities had subscribed to online resources to complement the textbooks available in the libraries. Amunga (2011) attest that a variety of online resources are available to public universities in Kenya through open access online platforms, institutional subscription to established online academic resource providers and through efforts of local and international collaborations and networks. According to Rotich and Munge (2007), availability of online resources, though not the panacea for the teaching and learning resource scarcity, has a huge potential of complementing the available teaching and learning resources hence improving the quality of university experience among the undergraduate students.

4.3 Students' Satisfaction in Public Universities in Kenya

The students' satisfaction scale had six items measuring overall students' satisfaction in the universities. Principal Component Analysis was used to determine whether the items in the scale accurately measured the construct of students' satisfaction as to help in finding solutions for the hypothesis of study. The scale was first examined for suitability to factor analysis using KMO measure of sampling adequacy and Bartlett's test of sphericity. The analysis

revealed that the Kaiser-Meyer-Olkin Measure of sampling adequacy for the students' satisfaction scale was .868 and was considered adequate for the study. The Bartlett's test results revealed Chi-Square value = 3910.495 and is statistically significant at *p*<.05. The analysis extracted one component that explained 66.746 % of the total variance in students' satisfaction. The total variance explained by the Principal Component Analysis for the students' satisfaction scale is summarized in Table 4.

Table 4: Total Variance Explained by the Components in Students' Satisfaction Scale

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.005	66.746	66.746	4.005	66.746	66.746
2	.722	12.041	78.786			
3	.437	7.288	86.074			
4	.368	6.126	92.199			
5	.271	4.514	96.713			
6	.197	3.287	100.000			

Extraction Method: Principal Component Analysis.

The Unrotated Component Matrix on Students' Satisfaction Scale revealed a one factor model of students' satisfaction. Consequently, there was no need for rotation. The scale was subjected to a Cronbach's alpha test, resulting in an overall scale of *a* = .898 which was above the recommended Cronbach's alpha threshold of .700. This showed that the items included in the students' satisfaction scale adequately captured a single construct. The scale was therefore used to represent students' satisfaction in the universities. Students' satisfaction was the dependent variable for the study and needed to be determined. To determine students' satisfaction in the universities, overall mean of the items measuring satisfaction was computed. On a scale of one (1) to five (5) where one was the lowest possible mean score and five the highest, the study found that overall, students' satisfaction was moderate (*M* = 3.08, *SD* = 1.04). The finding reveals that slightly above half of the students would; recommend their universities to prospective students, were satisfied with the educational experience in their universities, felt that they got value for fees paid, and would enroll in their universities for other academic programmes in future. Although the results suggest that the students perceived the universities more positively, Kapur and Crowley (2008) acknowledge that it is the desire of most individuals to pursue university education due to high rates of private returns such as lifetime earnings and self-esteem. Positive perceptions towards the universities could possibly be explained by the fact that the universities had provided the students with a lifetime opportunity to pursue university education, quality of educational services being provided notwithstanding. It was therefore important

to determine the relationship between quality of academic resources and students' satisfaction in the universities.

4.4 Quality of Academic Resources and Students' Satisfaction

The study sought to determine the relationship between the indicators of quality of academic resources and students' satisfaction in the universities. To test this relationship, a multiple linear regression analysis was applied. The analysis involved four independent variables (predictors) of quality of academic resources. The predictors were quality of teaching facilities (M = 2.43, SD = 0.93), quality of library service environment (M = 3.26, SD = 0.87), availability of text books in the library (M = 2.47, SD = 1.13), and availability of internet services (M = 3.42, SD = 0.96). Students' satisfaction in the universities was the dependent variable (M = 3.08, SD = 1.04) and the results are summarized in Table 5.

Table 5: Multiple Linear Regression Analysis: Quality of Academic Resources and Students' Satisfaction

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.482	.232	.229	.91007

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	264.278	4	66.069	79.773	.000
	Residual	875.430	1057	.828		
	Total	1139.708	1061			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.187	.128		9.249	.000
	Quality of teaching facilities	.186	.034	.167	5.564	.000
	Availability of textbooks	.188	.029	.205	6.522	.000
	Quality of library service environment	.298	.039	.249	7.636	.000
	Availability of internet services	.002	.033	.002	.065	.948

Dependent Variable: Students' satisfaction

The results summarized in Table 5 reveal that the *R*-value of the multiple linear regression model is .482 with an adjusted R^2 of .229. Quality of academic resources therefore accounted for 22.9% of the variations in students' satisfaction in the universities. To assess the statistical significance of the model, it was necessary to examine the ANOVA results. The results provide an *F* – test for the

null hypothesis that none of the dimensions of quality of academic resources is significantly related to students' satisfaction. The analysis revealed that the F-value ($F_{4, 1057}$ = 79.773) and p = .000. The model was considered significant because $p<0.05$. It was concluded that the dimensions of quality of academic resources in the model had a significant combined effect on students' satisfaction in the universities.

Further, it was important to determine the relationship between each of the indicators of quality of academic resources and students' satisfaction. This was achieved by assessing the standardized Beta coefficients (whether positive or negative) and the level of significance (Sig) or p values in the indicators of quality of academic resources in the model. According to Field (2009), a positive standardized Beta coefficient conveys that there is a positive relationship between an independent variable and an outcome whereas a negative coefficient represents a negative relationship. Pallant (2005) explains that the significance or p value indicates whether a variable is making a statistically significant unique contribution to the dependent variable. The study used $p<0.05$ to determine the statistical significance of variables in the study. Data summarized in Table 5 show that quality of teaching facilities was directly and significantly related to students' satisfaction (β = .167, p = 0.000). An increase in the quality of teaching facilities in the universities was likely to result to a proportionate increase in students' satisfaction. The finding implies that students are likely to be more satisfied pursuing their education in universities which have adequate teaching facilities that guarantee comfort, facilitates practical learning experiences, and supports the acquisition of ICT skills. The finding concurs with Mansor, Hasanordin, Hafiz and Rashid (2012) research a university in Malaysia which found that there is a significant relationship between quality of academic resources and students' satisfaction. However, the findings are contradicted by Khan, Ahmed and Nawaz (2011) study in universities in Pakistan which found that teaching facilities were having an insignificant relationship with student satisfaction.

Data summarized in Table 5 further show that there is a positive and direct relationship between availability of textbooks and students' satisfaction in the universities (β = .205, p = 0.000). The finding implies that the availability of a variety of authoritative textbooks that supports students' learning and research needs is a prerequisite for a fulfilling university experience. The finding concurs with Tuan (2012) study in universities in Vietnam which found that academic resources such as sufficient textbooks and references were important determinants of students' satisfaction. The quality of library service environment also had a direct and significant relationship with students' satisfaction in the universities (β = .249, p = 0.000). The finding implies that an increase in the quality of library service environment was likely to results to a proportionate increase in mean students' satisfaction in the universities. Students are more likely to be satisfied in universities providing libraries with adequate and comfortable seats. In addition, the library should be accessible to the students and the library staff should have customer focus. The finding concurs with Tuan (2012) study in universities in Vietnam which found that academic resources such as modern library facilities, sufficient textbooks and references were the

strongest determinants of students' satisfaction. Students' ratings of availability of internet services (β = .002, p = 0.948) was not significantly related to students' satisfaction since $p>.05$ controlling for other variables in the model. The finding implies that students were contented with the provision of internet services in the universities.

5. Conclusion

The conclusion of the study is that quality of teaching facilities, quality of library service environment, availability of text books in the library, and availability of internet services are reliable indicators of quality of academic resources in public universities in Kenya. The study concludes that the universities did not have adequate teaching facilities, the library service environment was constrained by library facilities that did not match students' enrollment, and inadequate textbooks to support teaching and learning. These constraints had the potential to affect the quality of academic programmes and students' satisfaction negatively. The study also concludes that there is a significant and direct relationship between quality of teaching facilities, availability of textbooks in the library and quality of library service environment and student' satisfaction in the universities. An improvement in the level of provision of these dimensions was likely to result to a proportionate increase in students' satisfaction in the universities. Availability of internet services had a direct but insignificant relationship with students' satisfaction implying that students were contented with the provision of internet services in the universities.

6. Recommendations
The following recommendations are made from the results and conclusions of the study:
  i.   The Commission for University Education (CUE) should enforce University Standards for Accreditation and Operations. It was evident that majority of the universities were operating without conforming to the stipulated minimum requirements in terms of quality and size of lecture facilities, laboratories, libraries, and ICT services as to guarantee students' satisfaction.
  ii. The Ministry of Education should also ensure that the universities budgets are fully funded. Quality university education cannot be guaranteed in an environment where universities are struggling to finance critical aspects such as teaching and learning facilities, ICT services, and quality library service.
  iii. The role of Kenya Universities and Colleges Central Placement Service should be strengthened. The Placement Board should work closely with CUE in controlling admission in public universities to commensurate the declared enrollment capacities of the universities.

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