International Journal of Business and Social Research
Volume 05, Issue 03, 2015

Effects of Funding Sources on Access to Quality Higher Education in Public Universities in Kenya: A Case Study

John Mutinda Mutiso[1], Prof. Maria Onyango[2], Dr. Michael Nyagol[3]

ABSTRACT

In the last two decades, Kenya has witnessed an exponential growth of students' enrolment in its public universities and an oscillatory government funding in these institutions precipitating quality concerns by employers on the skills of the graduates to meet industry needs. In education finance, the sources of funds and the size of the resources are key determinants of quality education. The objective of the study was to determine the relationship between various funding sources and access to quality education in Kenya public universities using a case approach. The data collection instruments used were an interview guide, a focus group discussion guide, a student's survey questionnaire and secondary document analysis. Data was collected from October to December 2014 in the case university from a sample population of 10 top university management staff, 36 heads of department (HoDs) and 400 undergraduate students. The study employed the education production function as a basic model of the study. The validity of the data collection instruments was established through scrutiny by thesis supervisors and the reliability test of the students' questionnaire returned a cronbach alpha of 0.88. F-test and analysis of variance (ANOVA) methods were used with aid of the statistical package for social science (SPSS) version 2.0.The conclusion of the study was that, the sources of funds had a positive effect on quality though the results were not significant, while government capitation, tuition and other sources of funds were significantly important for the access of quality of education in the institution (P =0.30, P = 0.018, P = 0.000). The study recommended the adoption of performance based funding to enhance quality in higher education.

Keywords: Higher education, human capital, public university, quality education.
Available Online: March 31, 2015.
MIR Centre for Socio-Economic Research, USA.

1.0 INTRODUCTION

[1] Doctoral Student, School of Business and Economics, Jaramongi Onginga Odinga University of Science and Technology (JOOUST), P.O. Box 210 – 40601, Bondo – Kenya.
[2] Dean School of Business and Economics, JOOUST, Kenya.
[3] Senior Lecturer, School of Business and Economics, JOOUST, Kenya.

In an effort to increase access, quality and size of higher education, a combination of funding sources are used in higher education institutions globally. These include public education funds, student loans, parents and funding from specialized institutions (Cheung, 2003). In different countries, allocation of public funds to higher education institutions is done by parent ministries or a relevant agency using various funding mechanisms and models (Salmi & Hauptman, 2006). The mechanisms primarily include performance budgeting and/or performance-based funding which inherently promote quality and relevance of the higher education system in those countries.

The world has realized that the economic success of the states is directly determined by quality of their education systems and the most effective factor of production is the human capital expressed in knowledge, skills, creative abilities and moral qualities of individuals in society. High quality higher education is of utmost importance for students, institutions and society. The widespread recognition that higher education is a major driver of economic competitiveness in an increasingly knowledge-driven global economy has made quality university education the most valued factor of production in recent times.

The term quality has different meanings to different scholars and remains hugely debated in various fields either be it in business or education. For instance, quality education has been defined as "the character of the elements of inputs, process and output of the education system that provide services that completely satisfy both internal and external stakeholders by meeting their implicit and explicit expectation" (Cheng & Tam, 1997). Thus, education quality is a multi-dimensional concept and cannot be assessed by only one indicator. Broadly, the measurement of higher education quality can be analyzed using two approaches. The first approach involves quantitative measurement of quality education in institutions through an input-process-output and outcome framework (UNESCO, 2004; Dare, 2005; Ankomah, 2005). The second approach involves qualitative measurement of quality in institutions through assessment of service quality of higher education institutions using quality management models such as Total Quality Management (TQM), SERVIQUAL, and ISO 9000 among others (Parasuraman, Zeithmal & Berry, 1985; Kelso, 2008).

Funding higher education is controversial on the quality outcomes of the human capital skills and competencies produced. Though there is a an assumption that an increase in educational resources in terms of funding to institutions leads to higher quality of education, empirical literature presents a persistent controversy whether sufficient funding resources are a necessary condition for providing quality education. On one hand, there are a number of empirical studies in developed countries which link positively the quantity of educational resources (funding) and the quality of education (students' outcomes) (McPherson & Schapiro, 1990; Krueger, 2003; Al-Samarrai, 2002; Woessmann, 2000; McMahon, 1999; Gupta, Verhoeven & Tiongson, 1999).

On the other hand, other studies present that, the relationship between funding resources and quality education is insignificant (Hanushiek, 2003; Hanushek & Kimko, 2000; Lee & Barro, 2001; Schultz, 1996; Colclough & Lewin, 1993). Economists argued that, greater reliance on private subsides is associated with higher measures of teacher quality and high student outcomes, while a greater reliance on public subsidies however leads to lower teacher quality ratings and hence lower students' outcome (Smith, 1993).

The main objective of the study was to determine the effects of funding sources on access to quality higher education in public universities in Kenya using a case study approach.
The following research hypotheses were tested during the study.

1. Ho: Sources of funds have no effect on quality of education on
   H_1. Sources of funds have effect on quality of education.
2. H_o: Government capitation funds have no effect on quality of education
   H_1: Government capitation funds have effect on quality of education
3. H_o: Tuition fee funds have no effect on quality of education

H_1: Tuition fee funds have effect on quality of education.

4. H_0: Other university sources of funds have no effect on quality of education
   H_1: Other university sources of funds have effect on quality of education

2.0 LITERATURE REVIEW

This section reviewed both theoretical and empirical literature relating to sources of funds and quality of education in higher education institutions.

2.01 CONCEPT OF SOURCE OF FUNDS IN HIGHER EDUCATION INSTITUTIONS

Public higher education institutions may be funded from several direct and indirect sources worldwide. The direct sources are government sources and the indirect sources are from students, self-generated funds and external sources. The government funds consists of both direct transfer: entitlements, formula funding performance contracts competitive funds, performances asides and tax exemptions and indirect transfers: scholarships, loans vouchers, tax and saving benefits. Amongst the remaining sources, students contribute to higher education through tuition fees, and commerce banks, firms and philanthropists through loans, research and consultancy contracts and donations respectively (Salmi & Hauptman, 2006).

Government funds as the principal source of funds in higher education come primarily through direct appropriations to public institutions in forms as either grants or loans that are normally used for funding operational costs or development projects in higher education institutions. The rationale for funding higher education is informed by the human capital theory developed by enlarged by Becker (1964). Higher education is considered as both a public and private good (Altbach, 2007). As a public good, higher education improves national tax and other socio-economic lifelong benefits to the country. As private good it improves the lifelong earnings of the individual.

The higher education system aims to achieve access, equity, increased internal efficiency (quality) and sustainability of institutions through four generic government funding models namely: performance budgeting, performance contract, competitive grants and performance based funding (Salmi & Hauptman, 2006). Performance based funding is suited to achieve both institutional and government goals in view of declining government appropriation and rising tuition in many countries (Harnisch, 2011).

In the past decade, scholars present that; government share of funding to higher education has decreased relative to funding from private sources due to expanding higher education systems (Cheps, IOE & Technolopis, 2009) and austerity measures (Johnstone, 2003; UNESCO, 2012). They argue that, the overall government and per student funding has decreased in real terms, a trend observed in both industrial and developing countries (Geiger & Heller, 2011, Aghion, Dewatripont, Hoxby, Mas-coll, & Sapir, 2008; Jongbloed, 2010)

These decreased funding to higher education institutions is informed by the revenue theory of costs as propounded by Bowen (1980). The theory posits that, the unit cost of higher education institutions is determined neither by rigid technological requirements for delivering education services, nor by abstract standard of need, but by the revenue available for education that can be raised per student unit. The theory presents that, public higher education institutions as non-for profit organizations have neither strong incentive to cut cost, nor forced by competition to lower cost to survive. It is stated that, within wide limits, institutions can adjust to available funds such that, when resources are increased, expenditure increases and unit costs go up; and when resources are decreased, expenditure decreases and unit costs accordingly decreases.

It is therefore stressed and argued that, public funding of higher education cannot be open-ended to determine cause and effect of educational resources and quality of education. Thus, it is imperative that,

funding agencies should define the scope and mission of higher education and set the available funds to it.

The current higher education funding model in Kenya is based on government capitation per head per government sponsored student in a public university, a variable development grant and a component of student loan and bursary. A figure of Kshs. 120,000 approximately US$ 1,445 was obtained by dividing the cost of running the universities by the students population based on 1991/92 costs (Magoha, 2005).The overall funding to the higher education sector has declined steadily in real terms over the years despite an increase in aggregate figure allocated to universities (World Bank, 2004).

Charging of tuition fees by higher education institutions is a cost sharing strategy to meet growing demand for, and offsetting decreasing government investment in higher education. Tuition funds are an important source of funds for higher education. Tuition fee is charged for instructions and other fees are levied to cover expenses associated with food and lodging, health and transportation services. The rationale for charging tuition and other fees in higher education is informed by the human capital theory (Becker, 1964) which considers higher education as both a public and private good (Altach, 2007). As a private good, it is argued that, it has significant impact on earnings of an individual (Baum & Payea, 2010) and therefore students should be charged tuition fees.

In Kenya the current funding model is based on a dual track policy. The Government sponsored students are admitted through a centralized system through the Joint Admission Board (JAB) and the self-sponsored (parallel) students who qualify for university admission with minimum university entry cut-off grade of C + (plus), and hence pay tuition fee based on market rates. The tuition charges for government sponsored students are Kshs 28,500, while students in parallel programmes (self-sponsored) pay amounts ranging from Kshs 120,000, Kshs 156,000 and Kshs 450,000 for humanities, science and medicine respectively. However, under the dual tuition fee policy, all students are treated the same irrespectively of their ability or inability to pay. The number of self-sponsored students is now believed to be more than government sponsored students in these institutions.

In the last two decades, Public universities have been generating internal revenue (track III) to mitigate the oscillatory government funding as a third source of funding. These sources include revenue from income generating activities (IGA'S) and donor aid funds. The generation on internal resources is an adaptive response by the institutions to external changes in the environment. These adaptive responses by public higher education institutions is underpinned by the Resource Dependency Theory (RDT) which posits that, organizations do not exist in vacuums, and that they have the ability to act flexibly and adapt to the environment in which they operate. The theory was first proposed by Pfeffer and Salancik (1978) informed by two key themes; the importance of the environment on the behavior of organizations and the ability of organizations to adopt various strategies in order to limit their resource dependence (Pfeffer and Salancik 1978).

In Kenya, revenue diversification initiatives by institutions include tuition fees and income generating activities which contribute about 10 to 50 percent of institutional revenue. Donor aid accounts for over 90 percent of the development expenditure budgets and form substantial proportion of funds for research activities in Kenya public universities (Riechi, 2012). The other recent innovative funding avenues are through the public private partnership Act of 2013, where public universities are allowed to engage investors under the build operate transfer (BOT) framework.

2.02 CONCEPT OF QUALITY EDUCATION

The concept of quality is perplexing and difficult to define. Cheng & Tam (1997) define education quality as "the character of the element of the education system that provides services that completely satisfy both internal and external stakeholder by meeting their explicit and implicit expectations".
Broadly the measurement of higher education quality can be analyzed using two approaches: an input-process-output and outcome framework which represents a quantitative approach and quality

assessment of institutions using quality management practices adopted from industry models representing a qualitative approach.

On the quantitative approach, Ankomah (2005) provides three processes necessary for identifying quality indicators in education quality: input process output/outcomes framework. The determinants of quality under this approach are education finance, education personnel, instructional content and materials, and educational facilities.

The second method of measuring quality involves assessment of service quality of higher education institutions qualitatively. Universities and colleges are educational service organizations that offer services to students as customers. Over the years, a number of higher education institutions have used quality management models originally developed from industry to manage quality. The widely used models in higher education institutions are: Total Quality Management (TQM), Balanced Score Card, SERVIQUAL, ISO 9000 and Business process re-engineering. Researchers have modified the service quality models to measure service quality in higher education institutions.

The quality models define perceived quality as a global judgment, or attitude related to the superiority of service. They define expectations as desires or wants of consumer beliefs concerning the service received. On service quality measurement, Parasuraman, Zeithmal, and Berry (1985) employed "gap analysis" to provisioning of services. They offered a framework for measuring service quality whereby, it is defined as the gap between customer expectations versus their perceptions of how the service is performed. The goal of any service organization is to close, or narrow the gap. Their study found that, customer shared five similar dimensions of service quality: Tangibles involving the appearance of physical facilities, equipment, personnel; Reliability involving the ability to perform the service accurately and dependably; Responsiveness involving the willingness to help customers and ability to provide prompt service; Assurance involving the knowledge and courtesy of employees and their ability to convey trust and confidence; and Empathy which involves the caring, individualized attention provided to customer.

A number of studies have also been conducted in the measurement of service quality in higher education. Kelso (2008) in a doctoral study measured student perceptions of service quality in higher education using a case study method in Southeastern University. The results indicated that students were satisfied with the certain facilities like library and less satisfied with all support services for learning and all the environmental categories. Mputhia (2007) study analyzed service quality measurement in tertiary colleges in Kenya using a case study of Zetech College and found that the expectation of service quality was high. However, research is limited on the application of modified service quality model on the relations between funding of higher education and quality of education gap in Kenya.

2.03 EMPIRICAL STUDIES ON SOURCES OF FUNDS AND QUALITY EDUCATION

There is an assumption that an increase in educational resources in terms of funding to institutions leads to higher quality of education and quality human capital. However, in empirical literature shows a persistent controversy on whether sufficient funding resources are a necessary condition for providing quality education. A number of empirical studies in developed countries show a positive link between the quantity of educational resources (funding) and the quality of education students' human capital outcomes. McPherson & Schapiro (1990) study has shown an increase of government expenditure leads to increases in institutional expenditure and hence a higher quality of students outcome. Krueger (2003) study, contents that resource expenditure is potentially correlated with student performance and hence to quality education. A number of studies have investigated the relationship between educational expenditures and student outcomes using test scores results in numeracy and literacy in primary schools, and found that there is a significant positive relationship between quantity of resources and quality of education (Al-Samarrai, 2002; Woessmann, 2000; McMahon, 1999; Gupta, Verhoeven & Tiongson, 1999).

However, other studies argued on the contrary that, the relationship between resources and quality education is insignificant. Hanushiek (2003) studies show that, there were no benefits from additional

spending in schools in developed economies. Other studies investigating the relationship between educational expenditures and student outcomes on test scores have found a negative relationship between quantity of resources and quality of education (Hanushek & Kimko (2000); Schultz, 1996; Colclough & Lewin, 1993). Economists have further argued that, greater reliance on private subsides is associated with higher measures of teacher quality and high student outcomes, while a greater reliance on public subsidies however leads to lower teacher quality ratings and hence lower students' outcome. Smith (1993) argues that, the performance of institutions of higher education is influenced by the sources of their operating revenue.

In the literature, there are theoretical gaps on the relationship of educational resources and quality higher education. First, there are limited studies on the extent of the effects of multiple sources of funds for public universities and quality of education. In most studies a description of the variables and quality of education were missing. Second, studies on government funding to higher education institutions gravitated on the impact of funding at the national level (macro studies). Micro-studies focusing on specific institutions which could give policy makers a practical view on the implications of the funding sources in public institutions are spares and rare. Thirdly, a number of studies have been conducted on cost sharing policy as a strategy of funding higher education. However, there are limited studies on the relationship between tuition source and other sources of funds in these institutions. Fourth, a number of empirical studies have been done on income generation sources and revenue diversification measures. However, studies linking other sources of funds (track III) and quality of education are limited. In overall, research on the link between the relationship between funding and quality issues in public universities in developing countries is also limited and inconclusive on the extent of the effects of quantity of educational resources and quality of education. Therefore this study helps to determine the effects of funding sources on access to quality education in public higher education institutions.

3.0 METHODOLOGY

This section discusses the methods and procedure used to address the research problem relating to the link between sources of funds and access to quality in higher education. The study therefore encompassed, the research design, the study area, the target population, sampling frame, type of data collection instruments, data collection procedures, operationalization of key variables, reliability and validity and analytical techniques used in this study.

The study adopted the education production function (EDF) concept to analyze the relationship between the inputs and output of the study. Thus, given a simple education function as $Y = f(X_1, X_2, X_3 \ldots X_n)$, where Y = Quality measure of education and X_1, X_2, X_3 …and X_n are input variables for quality output (Psacharapoulos, 1985) . The conceptual model assumes that, access to quality education would require a confluence of students' sources of funds, government capitation, tuition fees and other sources of funds. A quantity increase of educational resources leads to an increase in the level of access to quality education and hence to the accumulation of human capital skills.

Several frameworks have been used in to measure the quality of education in institutions. The dominant frameworks include the works of the following scholars (Parasuraman, Zeithmal & Berry, 1985; Dare, 2005; Ankomah, 2005; Kelso, 2008). The prevalent paradigms are interpretative and functionalist approaches. Thus the literature indentifies quantitative and qualitative methodology in analyzing the effects of the sources of funds and quality education.
The study adopted case study design using a mixed approach. The study was carried out in one of the Kenya public universities and the study population was composed of the university top management board staff; deans', chairpersons and directors (HoDs) of department, and undergraduates students making a total of 4525 respondents.

3.01 SAMPLING

Using Krejcie and Morgan's table (1970), a sample size from the target population was drawn as follows from the case institution: 10 Top management staff; 36 deans, directors and head of department (HoDs); and 400 undergraduate students as shown in Table 1.

For the institution that was adopted for case analysis, the following results were obtained as shown in table 1. On the number of participants in the study, a total of 361 respondents participated in the study from the sample population which included 4 top management staff members, 10 directors, deans and Heads of Departments (HOD's) and 347 students participated who participated in the study.

Table 1: Participants Response Rate

Subject	Instrument used	Expected Participants (N)	Actual Participants (S)	Response rate
Top management	Interview	10	4	40%
Deans/Directors/HOD	FGD'S	36	10	27%
Students	Questionnaire	400	347	86.5%
	Total	**446**	**361**	

3.02 DATA COLLECTION

3.2.1 SOURCES OF DATA

Primary data was collected using an interview guide on the top university management staff, a focus group discussion guide on the heads of departments (Hods) and Deans, a survey questionnaire on undergraduate students of the university, and an observation guide. Secondary data was extracted from a review of published information on higher education in Kenya.

3.2.2 DATA COLLECTION PROCEDURE

The data collection instruments of the study were: an interview guide, focus groups discussions (FGDs) through key information informants (KII), a student's questionnaire and secondary document analysis. A quantitative methodology was used to determine the variables that influence the quality of education in the institution. The instruments used to gather the data were interview guide, focus group interview guide, an observation guide and a student survey questionnaire. The structure of the questionnaire was both open ended and itemized on a 1-5 Likert scale, from very high or very good to very low or very poor. Open ended questionnaire enabled respondents to questions but also to give their view on issues of significance to the research topic.

Reliability refers to the extent to which a test in research is internally consistent and yields consistent results upon testing and retesting (Orodho, 2012).For this study, the questionnaire was formally pre-tested on 50 respondents from all the students in year 1 to 4. A cronbach alpha reliability coefficient of 0.88 was achieved.

The term validity refers to the degree to which conclusions (interpretations) derive d from the assessment are "well-grounded or justifiable, being at once relevant and meaningful" (Merriam Webster, 2014). To ensure content and construct validity of the instruments, the researcher together with the research supervisors validated the instruments for clarity of questions and acceptability. The study was conducted over the period between November and December 2014.
The study used regression analysis of data. The need to identify any violation of the underlying assumptions of linear is emphasized in research. The assumptions relate to the type of variables, homoskedasticity, linearity, normality of residuals and multicollinarity. Pearson correlation analysis was conducted to determine the direction, strength, and significance of the bivariate relationships between sources of funds and quality of education as shown in the model below. Statistical package for social science (SPSS) version 20.0 was used for analysis of data collected. Standard F-test and analysis of variance (ANOVA) were used to analyze the results.

The basic model for the study on sources of funds and access to quality education is derived as under: $Y = f(X_1, X_2, X_3, X_4)$. Where, **Y** = quality education, $\mathbf{X_1}$ = Sources of funds for students, X_2 = Government capitation funds allocated to the University, $\mathbf{X_3}$= Tuition funds, $\mathbf{X_4}$= Other Sources of funds. Thus, the regression equation is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \xi$$

Where, Y is the dependent variable, and X_1, X_2, X_3 and X_4 are independent variables, β_0 is Y intercept, β_1, β_2 , β_3 and β_4 are regression coefficients or change induced by Y by each X and
ξ is error term

To establish the degree of association and relationship of the funding sources and quality of education in the university, quality of education was proxied by education attributes factor defined as a dependent variable, while sources of funds, government funds, tuition funds and track III funds were defined as the independent variables in the quality model.

To estimate the quality of education variable, the researcher used the service quality model. The researcher used the students' questionnaire responses on the quality of education attributes grouped into seven categories representing service quality gaps in the institution. This included: reliability of service; assurance of staff; courtesy; empathy of staff; tangibles/infrastructure; learning environment and adherence to commitments to service charter as quality indicators for measurement of service quality. The responses on quality dimensions ("gaps") were coded and analyzed using a five point Linkert scale. To get the estimate of the education attribute, a summary of all the coded values of the each of the seven service quality categories was done, and then an average of the summed value was calculated. The calculated value was used to regress in the model as a proxy of the education attribute variable in the model.

To estimate the sources of funds in the institution, the researcher used the questionnaire responses on the sources of funds used by the students for their studies. The sources of funds in the study were: fees paid by parents/guardians; money received from scholarships; personal savings as well as loans. In order to get the total effect of sources of funds, a summary of all the coded values were recorded and then an average of the summed value was calculated. This was then listed separately and given a new identity. It is this new identity that was used to regress in the model.

To estimate the government capitation funds source, the researcher used the questionnaire responses on funds allocated to students in the university inform of HELB loans, HELB bursaries, government scholarship, CDF bursaries, and county bursaries. In order to get the total effect of government capitation, a summary of all the coded values was done and then an average of the summed value calculated. This was then listed separately and given a new identity. It is this new identity that was used to regress in the model.

To estimate the tuition funds source, the researcher used the questionnaire responses on money paid by the students to the university inform of tuition fees payable, accommodation fees, registration fees and other charges. In order to get the total effect of tuition funds, these parameters were coded and summed up together and their mean calculated. The new value was given a new identity and was used to regress in the model. To estimate the other sources of funds (track III), the researcher used responses from the questionnaire responses on funds received from donors/development partners, consultancies, loans, university endowment fund, work study, business as well as corporate sponsorships. In order to come up with a common value for regression, the coded values on these other sources of funds were summed and a mean calculated for the purposes of regression.

4.0 RESULT AND FINDINGS

This section presents the results of the statistical analysis carried out on the variables discussed in the foregoing sections. The study investigated the relationship between funding sources and access to quality education in Kenya public universities.

4.01 CORRELATION RESULTS

The main objective of the study was to determine the effects of funding sources on access to quality higher education in public universities in Kenya using a case study approach.

In order to establish the association between the variables, Pearson's correlation method was used to test the significance of the correlation using a two tail test at 95 percent level. The results in table 2 showed that, there is generally a weak positive correlation between quality of education and the four determinants (sources of funds, government capitation, tuition funds as well as track III funds) that the study looked at. All correlation coefficients were less than 0.5(50%).

Regarding the significance of the study variables, the correlation between quality of education and the sources of funds was not significant (p value =0.543), whereas the correlation between quality of education and government capitation, tuition funds and track III funds were significant at 1 percent level (p values = 0.000; 0.001; 0.000 respectively).

Table 2: Correlations Results

		Education attributes	Sources of funding	Govt. capitation	Tuition funds	Track III funds
Education attributes	Pear Cor.	1	.033	.252**	.182**	.315**
	Sig.(2-tailed)		.543	.000	.001	.000
Sources of funds	Pear Cor.	.033	1	-.171**	.082	-.066
	Sig.(2-tailed)	.543		.001	.128	.221
Government capitation	Pear Cor.	.252**	-.171**	1	.195**	.450**
	Sig.(2-tailed)	.000	.001		.000	.000
Tuition funds	Pearson Cor.	.182**	.082	.195**	1	.116*
	Sig.(2-tailed)	.001	.128	.000		.031
Track III funds	Pears Cor	.315**	-.066	.450**	.116*	1
	Sig.(2-tailed)	.000	.221	.000	.031	

*. Correlation is significant at the 0.05 level (2-tailed). **. Correlation is significant at the 0.01 level (2-tailed).

The table 2 above gives the correlation results i.e. the level of association between the dependent and the independent variables. Correlation coefficient falls between -1 and +1. Normally, there is a strong (-, +) correlation if the level of association exceeds 50% and approaches 100% while below 50%, the correlation is a weaker one. Negative correlation means that the variables move in a linear format but in the opposite direction whereas a positive correlation means that the variables move in a linear format in the same direction.

4.02 REGRESSION RESULTS

To establish the relationship between the dependent and independent variables in the model, a regression analysis was done using analysis of variance (ANOVA) method and the results were tabulated as shown in the table 3 below. From this table, the R-square is 0.573. This means that the independent variables namely source of funds, government capitation, tuition funds, track III funds, explains 57.3% of the quality of education and 42.7% may be attributed to other factors that the research left out. The F change as shown on table 3 was also at 4.729 with a significance of 0.000 meaning that the sample collected by the study, represents the true population of the study. From this result, the Durbin Watson statistics also approaches 2 hence the variables do not have a problem of autocorrelation between them.

Table 3: Regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	df1
1	.757[a]	.573	.568	.99889	.573	4.729	4

Table 4: Coefficients

Model	Unstandardized Coefficients	Standardized Coefficients		t	Sig.
	B	Std. Error	Beta		
(Constant)	1.683	.283		5.956	.000
Source of funds	.036	.031	.061	1.180	.239
Government capitation	.133	.061	.127	2.182	.030
Tuition funds	.134	.056	.123	2.385	.018
Track III funds	.258	.059	.248	4.404	.000

From the table 4 above, all the variables are positively related to the quality of education though the results are not significant. A unit increases in the sources of funds increase the quality by 3.6% (p value=0.239 i.e. greater than 5% level). Regarding the government capitation, tuition funds as well as track III funds, any unit increase in them results into an increase in the quality of education by 13.3%, 13.4% and 25.8% respectively. Their relationship to the quality of education is also significant since their p values are 0.030, 0.018 and 0.000 respectively.

From the table 5 below, the VIF (variance inflation factor), which measures multicollinearity is also impressive. As a rule of thumb, a multicollinearity that goes beyond 10 is disastrous but from this study, the variables do not exhibit serious multicollinearity hence the results are acceptable.

Table 5: Collinearity statistics

Model	95.0% Confidence Interval for B		Collinearity Statistics	
	Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	1.127	2.239		
Source of funds	-.024	.097	.957	1.045
Government capitation	.013	.253	.753	1.328
Tuition funds	.023	.244	.947	1.055
Track III funds	.143	.373	.797	1.255

This study sought to establish the association and relationship between the funding sources and the quality of education in a public university in Kenya. To test the research hypotheses of the study, the researcher used both correlation and regression analysis to determine the degree of association and relationship of the variables.

On analysis, the correlation results of the study showed that there was generally a weak positive correlation between quality of education and the four independent variables namely: sources of funds, government capitation, tuition funds as well as track III funds. All coefficients of correlation were less than 0.5percent. On the relationship of the variables at 5 percent level of significant, the regression results were as follows:

1. Ho: Sources of funds have no effect on quality of education.
   Results: There is sufficient evidence to accept the null hypothesis.
2. Ho: Government capitation funds have no effect on quality of education
   Results: There is sufficient evidence to reject the null hypothesis
3. Ho: Tuition fee funds have no effect on quality of education
   Results: There is sufficient evidence to reject the null hypothesis
4. Ho: Other sources of funds have no effect on quality of education

Results: There is sufficient evidence to reject the null hypothesis

4.03 DISCUSSIONS OF THE FINDINGS

On the extent on results which funding sources affect quality of education in the institution, funding sources have a positive effect on the quality of education in the university though the results were not significant. A unit increase in the funding source leads to an increase in the quality of education by 3.6 percent. These finding is consistent with Hanushiek (2003) study which found no strong or systematic relationship between expenditures and student performance. However, the study is consistent with Krueger (2003) micro-level analyses which found resource expenditure on education institutions potentially correlated with student performance as a proxy to quality education.

On the extent which government capitation affects quality of education in the institution, government capitation has a positive influence/effect on the quality of education in the University. The coefficient of the government capitation variable indicated that a unit increase in government capitation leads to an increase in the quality of education by 13.3 percent. The results also showed that this relation is very significant at 1 percent level. The finding is consistent with Lindsay (1976) studies that content that, government subsidies to public education increases the quality of education provided. The main reason advanced by economists is that the social value of education exceeds its costs. Substantial public expenditure leads to significantly greater university attainment, quality and amenities.

On the extent which tuition fee affects quality education, tuition funds were positively related to the quality of education in the University. A unit increase in tuition funds leads to a 13.4 percent increase in the quality of education. The results again showed that this relationship is significant at 1% level. The finding is consistent with Marginson (1999) study who presents that an overall increase in the significance of private funding (tuition) as a source of higher education income, drives towards increased efficiency and quality in institutions.

On the extent which other sources of funds (track III) affect quality of education in the institution, other sources had a positive effect on the quality of education. A unit increase in the level of track III funds results in a 23.8 percent increase in the level of quality of education. Again, this relationship is very significant at 1 percent level. The finding is consistent Pfeffer and Salancik (1978) study and recently improved on by Pfeffer (2005) study who present that revenue diversification balances the cost of education and quality with cumulative demand for participation.

5.0 RECOMMENDATIONS

The study findings can benefit the higher education sub-sector in Kenya especially the public universities. However, in view of the findings and conclusions of the study the following recommendations are of particular importance to the higher education sector policy considerations.

Following the conclusion that government capitation, tuition funds and other internally generated resources are significant determinants of quality education, there is need to develop a comprehensive policy for funding higher education in Kenya which is anchored in legislation. The current laissez faire approach of funding higher education in Kenya is detrimental to the long term vision of the country of developing a competitive global knowledge economy. The study recommends the creation of a strong buffer body anchored in law to activate the university fund provided for in the University Act, 2012 to address the twin challenge of increased student enrolment and provision of quality education. Performance based funding enhances both access and quality education in higher education institutions. However, it should be introduced gradually with consultations of all higher education stakeholders and the government. The study has following implications: *First*, he study findings is that, the fact that the government has been funding the institution through capitation and grants and students/parents have continued to pay tuition fee for education confirms the investment as both a public and private good.

This is consistent with the human capital theory (Becker 1964) which points that government invests in education for the public benefit and the individual for higher returns in earning in future. *Second*, the fact that the institution has experienced oscillatory government funding from time to time and has been able to adjust its budget to meet the spiraling costs of education confirms the revenue theory of cost (Bowen 1980). *Third,* with declining resources from government, it's possible that the internally generated resources by the institution has led to institutional adaptation to meet the changing external environment in funding consistent with the resource dependency theory (Pfeffer and Salancik 1978).

However, the study has certain limitations as well. *First*, the study is being a case study the findings may not form a basis of generalization across all public universities in Kenya, though it may provide valuable trends in the higher education for policy makers. *Second*, without relevant statistical analyses, adequate control of other variables was not possible due to limited detailed data in terms of study period. For quantitative analyses to make meaningful inferences on cause and effect of variables, a 30 year span period is required which in this case was a limitation. *Third*, during the field survey some respondents were hesitant to give free views on the funding aspects of the institution.

Finally, the study recommends that a quantitative study be conducted to determine the actual effects of the study variables on funding sources and quality education based on longitudinal data sets in other older universities in Kenya.

6.0 CONCLUSION

The purpose of this study was to determine the effects of finding sources on access to quality education in Kenya public universities using a case approach. To realize this purpose the study investigated four specific objectives. The study found out that government capitation, tuition funds and other sources of funds were significant determinants of quality education in higher education institutions.

Based on these findings, and on the discussion, the study concludes that the three funding sources from government, tuition and track III are key sources for the development of human capital skills. First, government capitation as a source increases the socio-economic benefits to the society by providing the necessary subsidies to expand the higher education system enrollment. Secondly, tuition fee source is an important source of private revenue for institutions for increased efficiency and provision of quality education. *Thirdly*, other sources of funds are vital in balancing of costs of higher education. The study developed the education production model which will enhance decision making among stakeholders in the higher education sector to improve the funding to public universities.

REFERENCES

Aghion, P. M., Dewatripont, C., Hoxby, A., Mas-Coell & Sapir, A. (2008). "Higher aspirations: An agenda for reforming European universities," Technical Report, Bruegel blueprint.

Al-Samarrai, S. (2002). "Achieving eduaction for all: How much does money matter?" IDS *working paper* 175, Brghton: Institute of Development Studies.

Altbach, P. (2007). The log of mass higher education. Tradition and transition: *The International Imperative in Higher Education, Rotterdam, Netherland, Sense Publishers* 3-22. P.G Altabach (ed.).

Ankomah, Y. (2005). Research priorities in relation to leadership and management for change. A paper presented at the national consultative workshop on educational quality implementation at Accra Ghana.

Baum, S. & Payea, K. (2010). Education Pays 2010: The benefits of higher education for individuals and society. New York: The College Board.

Becker, G.S, (1964) Human capital. New York: Columbia University Press.

Bowen, H. (1980). The cost of higher education: How much do colleges and universities spend per student and how much they should spend. *Carnegie Council on Policy studies in Higher Education*. pg 18-20.

Cheung, B., (2003). higher education financing policy: Mechanisms and Effects.

Cheng, Y.C., & Tam, V.M. (1997). Multi models of quantity in education. Quality assurance in education, 5 (1), 22 – 31. http://doi.org/10.1108/09684889710156558.

Cheps, IOE & Technolopis. (2009). *Progress in higher education reform across Europe – Funding Reform* (Vol. 1) (Vol 1, pp 1-24)

Colcough, C. & Lewin, K. (1993). E*ducating all the children: Strategies for primary schooling in the south.* Oxford: Clarendon Press.

Dare, A. (2005). *Indicators of quality*. A paper presented at the National consultative workshop on Education Quality Implementation n low income countries: Ghana.

Geiger, R & Heller, D. (2011). Financial trends in higher education in United States: Center for the study of Higher Education. Available at http: www.ed.psv. Educ/c.she/working papers/wpg236.

Gupta, S., Verhoeven, M. & Tiongson, E. (1999). 'Does Higher Government Spending Buy Better Results in Education and Health Care?', Working paper No. 99/21, International Monetary Fund, February.

Hanushek, E. (2003). The failure of input based schooling policies, Economic journal 113 (1) F64-F98.

Hanushek, E. A., & Kimko, D. D. (2000). 'Schooling, labour-force quality, and the growth of nations', *American Economic Review,* Vol 5: 1184-208.

Harnish, T. (2011). Performance-Based Funding: A re-emerging strategy in public higher education financing. American Association of State Colleges and Universities. *A Higher Education Policy Brief.*

Johnstone, D, (2003). Cost-sharing in higher education. Tuition, Financial Assistance, and Accessibility. *Czech sociological Review*, 39(3), 351-374

Jongbloed, B. (2010). Funding higher education: A view across Europe. Brussels, ESMU

Kelso, R. (2008). Measuring under graduating students perceptions of service quality in higher education. PhD. thesis, Available at http://www.scholarcommons.usf.edu/etd/328

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

Krueger, A. (2003). Economic considerations and class size. *The Economic Journal*, 113, F34- F63.

Lee, J. W., & Barrow, R. J. (1997). *Schooling quality in a cross section of countries,* Cambridge: National Bureau of Economic Research.

Lindsay, C. (1976). Theory of government enterprise. *Journal of political Economy* 84 10 61-1077.

Marginson, S. (1999). Diversity and convergence in Australia Higher Education. *Australia Universities Review*.1

McMahon, W. (1999). *Education and development: Measuring the social benefits,* Oxford: Oxford University Press.

Magoha, G.A.O. (2005, June). Memorandum presented by the University of Nairobi to the Public Universities Inspection Board. University of Nairobi: Nairobi.

McPherson, M., & Schapiro, M. (1990). does student aid affect college enrollment? New Evidence on a Persistent Controversy. *The American Economic Review,* Vol 81, No 1, 309-318

Merriam-Webster Online. Available at: http://www.m-w.com/ Accessed November, 2014

Orodho, J.A. (2012). Techniques of writing research proposals and reports in education and social sciences. Nairobi: Kanezja Publishers.

Parasuraman, A., Zeithaml, V.A., & Berry, L.L. (1985). A conceptual model of service quality and its implications for future research. Journal of Marketing, 49(4), 41-50. http://dx.doi.org/10.2307/1251430

Pfeiffer, J. (2005). *Developing resource dependence theory: How theory is affected by its environment. Great Minds in Management*: the Process of Theory Development. Oxford, UK: Oxford University Press.

Pfeiffer, J, & G.R Salancik. (1978). "The external control of organizations: a resource dependence approach. "New York: Harper and Row.

Psacharapoulos G. (1985). Return to education: A further international update and implications, *Journal of Human Resources*, 20(4), pp. 583-604.

Riechi, A.R.O. (2012). Revenue diversification in Kenya public Universities and implication for efficiency and equity: An analysis of education finance in Africa contex: Kenyatta University. Retrieved from: http://www.etd-library.ku.ac.ke

Salim, J., & Hauptman, A.M. (2006). Innovation in tertiary education financing & comparative evaluation of allocation mechanisms. World Bank Washington D.C, USA.P.45-49.

Schomburg, H. & Teichler, U. (2006). Higher education and graduate employment in Europe: Results of graduate surveys from twelve countries. Springer Verlag.
Schultz, T.W. (1961). Investment in human capital. *American Economic Review* 51 (March 1961); 1-17
Schultz, T. P. (1996). 'Accounting for public expenditure on education: an international panel study', *Yale Economic Growth Center Working Paper,* New Haven: Yale University.
Smith, A. (1993). An Inquiry into the causes of the wealth of nations, Oxford: Clarendon Press.
UNESCO. (2004): Education for all. The quality imperative. Paris: UNESCO Publishing.
UNESCO. (2012). The Impact of economic crisis on higher education. Bangkok: UNESCO.
Woessmann, L. (2000). 'New evidence on the missing resource-performance link in education', *working paper* 1051, Kiel Institute of World Economics.
World Bank. (2004). Facilitating Investment in the Global education Market. Washington DC: World Bank.