EFFECTS OF GOVERNMENT CAPITATION AND TUITION FEES ON LIQUIDITY OF PUBLIC UNIVERSITIES IN KENYA

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ABSTRACT

The financial challenges faced by public universities are a worldwide problem. Recent studies have shown how public universities cannot meet their liabilities when due. This has led to many universities almost facing insolvency due to many liabilities and fewer assets to cover them. The study on the liquidity of public universities has to be key to knowing how well our universities are equipped to perform better. How universities finance their operations is a key concern to stakeholders' eager to solve the financial difficulties public universities face. The study had a general objective: to assess the effects of government capitation and tuition fees on the liquidity of public universities in Kenya. The study was advised by Agency theory and Keynesian economics theory. The study used a Causal research design. The study's population was comprised of 31 Chartered public universities in Kenya, and it covered a period of five years, from 2016 to 2020. A census of all public universities was undertaken due to the small population size. The data was analysed using descriptive analysis, including calculating means and standard deviation and inferential analysis using a panel data regression model. The study used secondary data, which was quantitative and collected from the Office of the Auditor-General. The study obtained permits for research from NACOSTI and ensured that all data collected was only used for the study. The study unveils intricate insights into university liquidity in that government capitation and tuition fees have minimal liquidity effects. These findings underscore the financial complexities within universities, highlighting the necessity for strategic financial planning and resource allocation to ensure stability and resilience amidst shifting regulatory and economic landscapes. The study recommends that universities Implement cost-effective financial controls and measures to mitigate potential liquidity. Strengthening monitoring and evaluation systems is advised to ensure effective financial management practices are adopted. Policymakers are urged to review funding allocation policies and establish financial resilience policies for public universities while promoting collaborative funding initiatives amongst universities.

Keywords: Capitation, Liquidity, Public Universities, Tuition Fees.

INTRODUCTION

Over the years' higher education has grown tremendously since the introduction of the first higher learning institution in Kenya. From the onset, higher education was offered free of charge, but with the changing times, students have been tasked with catering for their higher fees to access higher education. Funding for higher learning institutions has been pegged for by capitation from the government. This has not been sufficient to cater to these higher institutions' rising costs.

Universities have been left alone to raise extra funds for their high running costs. They have turned to students' fees payable by students to try and bridge the void in funding left by the government. An observation of the financial state of several state universities in Australia and the liquidity levels of those universities was calculated. Liquidity is the ease with which an entity can meet short-term obligations. The study concluded that two universities were rated as low risk, one was rated as medium risk, and one as high risk (OAG, 2019). An institution with a liquidity ratio of 2 is considered stable, a ratio below 2 but above 1 is considered low risk, and those below 0.75 are high risk. The study found that Australian universities were pretty good off financially, but more needs to be done for them to be able to meet their obligations as and when they become due.

According to Ngowi and Flora (2015), the Capitation grant is one of the models for educational finance used in some nine countries in allocating financial resources to public schools. They are given to institutions based on the total number of registered students. The more the institution enrols students in government-sponsored programs, the higher the funding these universities receive from the government. Capitation grant funds essential teaching and learning resources. Government capitation was introduced to help students access education where they could not due to financial resources. In our public universities, government capitation is the major source of financing for their operations through development and capitation grants. Development grants are mainly used for infrastructural improvements, while Capitation grants support non-wage inputs to universities.

Around 2017, the government adopted the 'Differentiated Unit Cost' (DUC) model, where institutions were funded based on students enrolled and courses offered, Nganga (2020). Although this model brought some balance in the funding of smaller universities, larger universities lost huge sums of money in government capitation under this model. For universities to perform better, the government needs to develop a better financing model that caters to both large and small universities in Kenya.

Poor financial performance results from poor financing when an organisation's income is less than its expenses. Lack of proper finance is one of several issues that contribute to this disappointing outcome and the success and longevity of every firm depends on funding availability (Mwendwa et al. 2024; Gatauwa, 2022). Public universities receive, on average,48 per cent of their total revenues from government capitation (CUE, 2016). In recent years, state funding for public universities has declined in Kenya and other states. This is a major concern in many universities, as they depend largely on government funding to fund their operations.
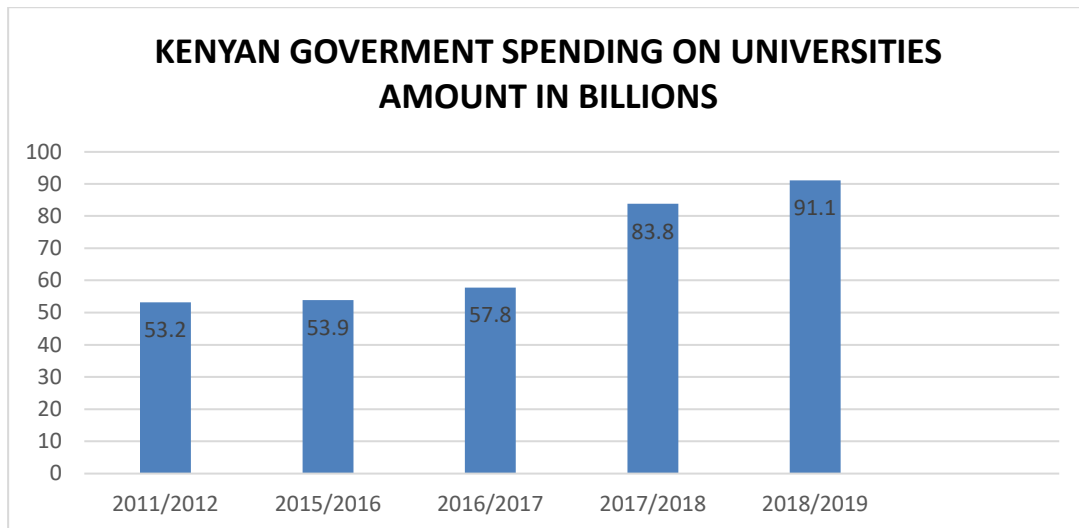
KENYAN GOVERMENT SPENDING ON UNIVERSITIES AMOUNT IN BILLIONS

Figure showing bar chart with values: 2011/2012: 53.2; 2015/2016: 53.9; 2016/2017: 57.8; 2017/2018: 83.8; 2018/2019: 91.1

Figure 1: Government funding of public universities.
(Source: The National Treasury 2011-2018.)

The amounts may seem to increase over time, but remember that the number of students and chartered universities also increased tremendously over the same period. That meant that more universities had to share the little amount allocated by the government.

Wangenge-Ouma (2008) observed significant student subsidies and lower recovery costs under the new arrangement. Pupils whom the Joint Admissions Board accepted were required to pay Kshs 16,000 in state-mandated fees and received substantial government subsidies. This meant that compared to their sister institutions in private universities where tuition fees are competitive, public universities had to admit students as placed by the government with their subsidised tuition fees, and this saw many of these institutions experiencing financial hardship. Since the flat rate was established back in 1992, it has yet to be revised, bearing in mind the inflation rates and other market factors that have led to a tougher economy from then to now.

Universities have been exploring ways to diversify their revenue streams, including research and consulting, in response to the ongoing decrease in government funding. However, in the end, many colleges decided to launch the Module II program (Ouma, 2012). Module II program meant that universities admitted fully paying students alongside those subsidised by the government. These programs were welcomed by society as it meant that the huge demand for higher education was now resolved by admitting more students as fully sponsored. The program generated more income for universities as more and more students were admitted.

Universities had hoped that the then-increasing number of Module II (self-sponsored) students would bridge the gap in university financing. However, three years ago, the government reduced the state-funded students' university entrance grade from a B to a C+, which reduced the lucrative degree program (Nganga, 2020). This resulted in a decline in student numbers in the parallel program, the biggest revenue generator for public institutions besides government subsidies, and an increment in state-funded students.

The move by the government saw universities admitting fewer students for the module II program, which used to collect huge sums of money in fees for these universities. These students were then

admitted through state-funded programs that needed to generate more money in fees compared to the Module II programs (Nganga,2020). This means that for universities to get more money from tuition fees, more students need to be enrolled in the Module II program, and more students need to be enrolled in the state-funded program

According to the World Bank (2010), the financial resources available to Public Universities from the government and tuition fees have declined across African countries. Therefore, universities must look for different funding options for their operations and only partially depend on the government, as has been the norm.

Liquidity is how well an organisation is able to meet its short-term needs without any difficulties (Mulwa, 2015). It is key for a firm since a firm can fail despite having positive financial performance. This research wants to find out how the liquidity of public universities is affected by government capitation, tuition fees, income-generating activities, and donor funding.

According to Rajab and Nyaundi (2018), the Auditor-General has reported several incidents of insolvency in most public universities. Table 1 below indicates that public universities have been struggling over time. This shows how they have been performing financially over time.

Table 1: Public Universities Revenue Deficit

FINANCIAL YEAR	TOTAL INCOME '000'	TOTAL EXPENDITURE '000'	DEFICIT '000'
2014-2016	226,430.27	230,107.02	(3,676.75)
2015/2016	279,617.98	281,487.54	(1,869.56)
2017/2018	85,700.00	88,900.00	(3,200.00)

Source: CUE (2014-2018).

All Public Universities in Kenya have no sound financial base, Mukhwaya (2018). He alluded that all are in the red zone. Older universities running expensive academic programs and with huge workforces are greatly affected. He highlighted that universities are indebted too much, and this may be caused by mismanagement. Public universities as part of unit of government have been grappling with the question of prudent utilization of public resources hence finding themselves in insolvency situations (Gatauwa, 2020)

Statement of the Problem

A report by CUE (2019) on the income and expenditures of public universities in Kenya stated that universities are operating at a deficit, and if the trend is not checked, these universities will not be able to provide the services they are required to.

The financial performance of public universities has been constrained by challenges appertaining to insufficient funding for their operations (Auditor General, 2017). According to the Auditor General report, all public universities in Kenya are on red alert due to their liquidation problems. This is evidenced by huge debt accumulations regarding unremitted dues, unpaid suppliers, and occasionally delayed salary payments to staff members. Over the last couple of years, Kenyatta University, the University of Nairobi, and Multimedia University are just a few examples that have accumulated a total of $ 4.6 billion in debts (Auditor General, 2019). These universities were,

therefore, unable to cater for their financial needs as and when they fell due. This was the case with the other public universities in Kenya.

Financing options available to public universities are not generating enough revenue for their operations. A 2016 report by CUE indicated that public universities in Kenya were receiving insufficient funds from the government to fund their budgets. As the main financier of university operations, the government needed to provide more, leading universities into a financial crisis (CUE, 2019). The reduction of Module II intakes in universities also reduced the amount of money universities received from this program. This has led to universities not living up to their expectations by providing poor quality services and stagnating growth as they cannot expand their resources, such as infrastructure and staffing, to support other activities. Without a proper financing strategy being developed by universities and less dependence on government capitation, universities will continue to perform poorly financially.

A review of the previous literature and research works shows a research and knowledge gap in the current literature regarding the financing options and liquidity of public universities in Kenya. The preceding literature is a manifestation that, although more effort by the state to provide better financing to public universities by having different financing models, the financial performance of these universities remains wanting (CUE, 2019) and remains conclusive, with different scholars having different conclusions in regards to public universities financing (Kamaan, 2014). This study is vital given the poor financial performance of Kenya's public universities. Thus, this study aims to look into the financial options and liquidity issues these organisations deal with.

Objectives and Hypothesis
    i.   To examine the effect of government capitation on the liquidity of public universities in Kenya.
    ii.   To examine the effect of tuition fees on the liquidity of public universities in Kenya.
This study was based on the following two hypotheses:
H01: Government capitation to public universities does not significantly affect their liquidity.
H02: Tuition fees have no significant impact on the liquidity of public universities in Kenya.

Significance of the Study
Policymakers will be keen on such a study as they would be able to find certain financing options available to universities and how they affect their liquidity. The study would equally enable them to know which sources of finance are hugely depended on to perform better financially.
The study findings would be important to scholars and researchers, as they will serve as a foundation for more research. Academicians would use this study to inform discussions on financing options available to public universities. This study would also serve as a reference source for future researchers.

THEORETICAL REVIEW

Agency Theory

The theory was developed by Jensen and Meckling (1976). In this theory, one party acts on behalf of the other. It is a principal-agent relationship where agents are managers, in this case, university vice-chancellors and the principal being the government. Information asymmetry is due to the agent holding more information than the principal, especially when it comes to the financial sector. According to Gatauwa (2022), the agent may be showing how well the institution is doing financially while it is not. The theory states that, with minimum supervision or monitoring, managers might decide to direct cash intended for the improvement of institutions to their selfish gains rather than the set functions.

According to Kivistö (2008), one of this theory's main advantages is its unique view on issues that other theories do not have. Different insights into the theory can help understand the level to which universities comply with governments' needs for them to be funded. He also states that one major weakness of this theory lies in its assumptions about human behaviour and motivation. Its focus on individuals' egocentric and cunning behaviour makes it disregard other human motives towards a certain task.

As a result, the study uses this theory to expound on the accountability the agent has to account for the principle to make sure finances are well utilised so that these institutions perform better financially. This is the case in universities; the government, as the principal, always monitors the conditions of public universities to make sure that the university management, acting as an agent, in this case, runs these universities accordingly. This theory was used to support all independent variables since the accountability of funds raised from these variables is of great importance.

Resource Dependency Theory

Pfeffer and Salancik (1978) developed the theory. It is concerned with how organisations' external forces influence behaviour and performance regarding resources gathered and utilised by the organisation for their development. The theory tries to explain how universities that are more dependent on external funding for their survival find it hard to develop since their progress is monitored and controlled by external forces.

Heatley (2018) states that the theory tries to analyse the significance of a resource to a company and what would happen to the said organisation if the resource is unavailable. An organisation aims to reduce reliance on other entities for resources it requires by getting resources by its own means. The theory offers several solutions, including joint ventures, inter-organisational relationships, and political actions to address the issue of dependency (Hillman et al., 2009).

Public universities' financing greatly relies on government capitation, which constitutes 48 per cent of their total income (CUE, 2016). This means that without government capitation, these universities may not be able to operate. The theory suggests that universities need to come up with other ways to generate finances to compensate for the funds they receive from the government and, hence, reduce their dependency.

EMPIRICAL REVIEW

Government Capitation and Liquidity

Bisogno, Citro, and Tommasetti (2014) studied Italian universities' financial health with an emphasis on budgetary and service-level solvency. Their model includes organisational variables (teaching and research), structural factors (size and quality of structures), and hybrid elements (the financial link between the state and each university). They discovered that only hybrid elements were relevant, and neither organisational nor structural factors impacted institutions' financial performance. They attributed this to financial difficulties being faced by the country, hence the government's allocation of fewer funds to universities. These lead to universities facing financial difficulties when trying to meet their obligations. They also found that the performance funding policy was ineffective without a proper mechanism to verify university accountability.

Mgaiwa (2018), in his study on The Paradox of Financing Public Higher Education in Tanzania and the Fate of Quality Education in Tanzania, found that the government has limited financing capabilities due to its reliance on the national government for funding. The implication of this is limited financial resources, which, in turn, causes a decrease in education quality and the capacity to re-innovate. These undependable and unfeasible financial sources prevent these universities from being competitive globally. The research recommended that to have feasible and dependable sources of resources, universities need to broaden their financial sources.

Iruonagbe and Egharevba (2015), in their study on Higher Education in Nigeria and the Emergence of Private Universities, found that the country's educational system is faced with inadequate government funding, which leads to issues like poor infrastructure and university riots, low budgetary allocation, old curricula, low or minimal research grants, and poor salaries. All these issues led to the establishment of private universities.

Tuition and Other Fees and Liquidity

Wangenge-Ouma (2008) noted that the government introduced a cost-sharing policy where they subsidised students' fees. This meant that students paid a flat rate of Ksh. 16,000 as school fees, and the government paid the rest for them. These moves by the government led to universities experiencing resource dependence difficulties where they fully depended on the government for funding. This move saw universities' financial performance decline as they could not rely on low capitation from the government for their operations. A robust financial structure is necessary for improved financial performance. But when it comes to public universities, the low tuition that students pay has left them without enough money to run their institutions. Universities with huge numbers of students from the Joint Admission Board tend to experience financial hardship as they rely more on government funding for their operations.

Murage and Onyuma (2015), in their study on IGAs at Egerton University, found out that the university applied several IGAs to subsidise their finances. The analysis found that Module II programs had the biggest surplus over ten years among the implemented IGAs. The surplus produced was put toward raising the institution's liquidity requirements. Although a surplus was generated in the Module II program, the amount was still insufficient to cater to the financial

constraints of the institution. More efforts need to be exerted in order to better the performance of universities financially.

For public universities to operate well, the government needs to develop policies that, when implemented, provide positive results. These policies may include better financing, management, and other policies that may better improve universities in general (Nganga, 2020; Mbuthia & Gatauwa, 2022). The current study indicates that the effect of funding choices on the liquidity of Kenya's public universities is moderated by government policy.

CONCEPTUAL FRAMEWORK

A conceptual framework is a graphical representation of the interconnections between the many research concepts, variables, and points of emphasis. Below is an image that shows how financing options and financial performance related to the operations of public universities in Kenya.
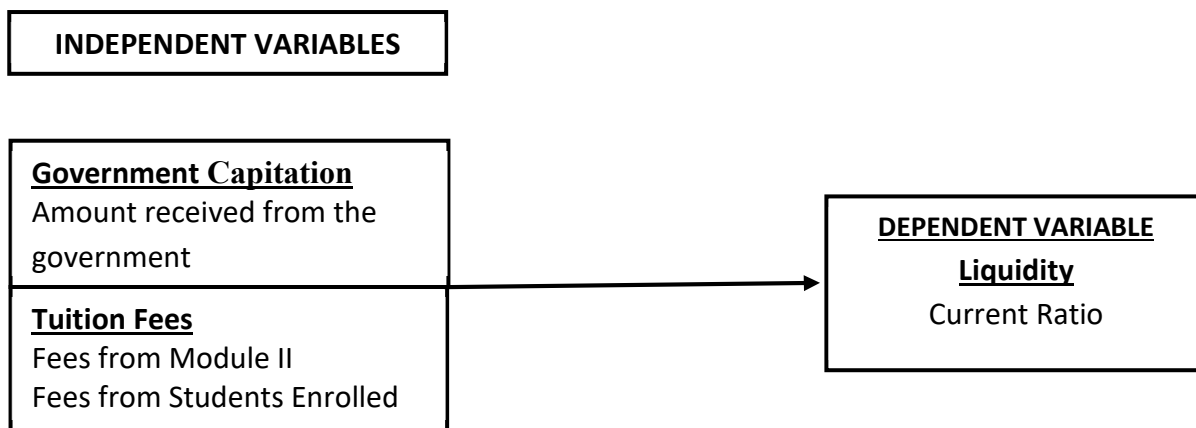
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┌─────────────────────────────────┐
│   INDEPENDENT VARIABLES          │
└─────────────────────────────────┘

┌─────────────────────────────────┐          ┌──────────────────────────┐
│ Government Capitation            │          │  DEPENDENT VARIABLE      │
│ Amount received from the         │  ──────► │  Liquidity               │
│ government                       │          │  Current Ratio           │
│                                  │          └──────────────────────────┘
│ Tuition Fees                     │
│ Fees from Module II              │
│ Fees from Students Enrolled      │
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Figure 2: Conceptual Framework.
(Source: Researcher 2024).

RESEARCH METHODOLOGY

The research adopted a positivist philosophy, where the researcher is impartial and works independently (Žukauskas et al., 2018). The study used a causal design because it is appropriate for characterising these universities' current state of affairs. This design is used to identify the cause and effect of a certain relation, and its focus is on an analysis of a unique issue to explain the relation between variables and help in adopting better policy actions (Wunsch & Gourbin, 2020). According to Burns and Burns (2008), a population refers to persons of concern used in a study to find a solution to a problem. The study period was five years, from 2016 to 2020, comprising all 31 chartered public universities. The census technique was used to select all Kenyan public universities. The 31 public universities between 2016 to 2020 were analysed for the study. According to Srinivas (2020), a Census is used when the population is small since it eliminates sampling errors and gives an equal chance to all study variables to be used in the study.

The study used a panel data regression model to investigate the impact of independent variables on the dependent variable. According to Orodho (2007), regression analysis is a statistical method for determining the correlations between variables. It includes different approaches to multiple variable

modelling and analysis. This model estimates the dependent variable in terms of the independent variable.

The model was as follows:
$Y_{it} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \varepsilon_{it}$………………………. Equation 3.1
Where:
Y_{it} = liquidity measured by the Current Ratio
X_1 = Government Capitation
X_2 = Tuition and Other Fees
$\beta_1\ \beta_2\ \beta_3\ \beta_4$ = Regression Coefficients
ε_{it} = Error term

RESULTS AND DISCUSSION

The study sampled all thirty-one public universities and analysed their financial year from 2015/2016 to 2019/2020. The response to the university's participation was 100 per cent, and all of them offered data for the five financial years. According to the World Bank (2020), Kenya's higher education system has faced financial difficulties in recent years. Although donor funding has historically been the number one source of finance for universities in Kenya, the report by the World Bank warns that this support has recently grown increasingly erratic and unpredictable.

Descriptive Statistics Analysis
The study analyses the liquidity of all public universities in Kenya by averaging their current assets and liabilities. Table 2 highlights the descriptive statistics for variables.

Table 2: Summary of Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Y1 (Liquidity)	31	6.536153	4.367905	1.260755	24.16949
X1(Government capitation)	31	6.35e+09	6.65e+09	1.26e+09	3.32e+10
X2 (Tuition fees)	31	4.89e+09	6.87e+09	3.46e+08	2.81e+10

Source: Researcher (2024)

Descriptive statistics on the liquidity of public universities are displayed in the table, with an average liquidity (Y1) value of roughly 6.54. This suggests that the universities have a typically acceptable amount of liquidity. Nonetheless, the 4.37 standard deviation indicates a significant variance in liquidity across the institutions. This result aligns with the findings of Sherstobitova et al. (2020), who point out that universities with moderate to high liquidity typically have stronger long-term sustainability and better financial health. The wide range of liquidity levels from 1.26 to 24.17 highlights the disparities in these universities' financial circumstances. While institutions at the higher end of this range are better suited to manage their current financial needs, those at the lower end may find it difficult to fulfil short-term obligations. This discovery aligns with the findings of Sharma and Morris (2018), who emphasise the significance of successfully preserving steady liquidity to handle financial risks and uncertainties.

The average value of government capitation (X1) is 6.35 billion, indicating a significant financial contribution from the government. Significant variety in the capitation amounts paid is highlighted by the standard deviation of almost 6.65 billion. The government's funding ranges from 1.26 billion at the lowest to 33.2 billion at the highest, showing significant variations. According to Liu et al. (2021), these variations in government support are frequently caused by budgetary restraints and fluctuating political agendas—aspects that are not usually properly accounted for in assessments. Furthermore, the significant difference in capitation amounts throughout institutions is consistent with the findings of Verba et al. (2000), who observed that discrepancies in financing result from the various standards applied in allocating public monies. The observed heterogeneity indicates that efforts to attain uniformity have either been implemented inconsistently or only partially successful, despite Trow's (2010) demand for standardised funding. The low standard deviations amongst institutions indicate persistent disparities in funding, a reflection of the difficulties in guaranteeing parity in funding for all universities.

The average tuition charge (X2) was 4.89 billion, with a 6.87 billion standard deviation. This demonstrates the considerable revenue that colleges receive from this source and the sizeable income disparity between various institutions. The findings of Smith and Brown (2017), which indicate that uniform tuition costs can result in a fairer distribution of educational resources and improve accessibility for diverse students, are consistent with the significance of tuition fees across universities.

Diagnostic Tests
The diagnostic tests conducted aimed to verify whether the panel data adhered to the primary assumptions of linear regression.

Multicollinearity Test
In the regression model, multicollinearity tests were performed to evaluate the degree of linear relationship between the explanatory variables. The Variance Inflation Factor and Tolerance Values are the main tests for collinearity. Variable x1 (Tuition fees) was omitted because of collinearity. Table 3 shows the results.

Table 3: Multicollinearity Results

Variable	VIF	1/VIF
X1 (Government capitation)	6.65	0.150484
X2 (Tuition fees)	6.65	0.150484
Mean VIF	6.65	0.000292

Source: Researcher (2024)

Table 3 indicates the VIF analysis performed on the regression model's explanatory variables. Based on the rule-of-thumb values, any VIF value greater than 5 or 10 can be problematic, indicating high multicollinearity (Hassan & Ross, 2022). The government capitation (X1) and tuition fees (X2) have 6.65 VIF values, showing a significant degree of multicollinearity, or strong correlation, between these variables. Due to their entangled effects, this degree of multicollinearity might make it difficult to isolate each variable's unique impact on the dependent variable. The multicollinearity

problem is reinforced by the corresponding 1/VIF values of 0.150484, which show that only a small percentage of the variance in each variable is uncorrelated with the others. The model appears to be affected by multicollinearity on average, as indicated by the mean VIF of 6.65. This could result in exaggerated standard errors and less trustworthy estimates, making it more difficult to evaluate the regression coefficients.

Test for Normality

Normality tests confirm if a sample follows a normal distribution, a fundamental presumption in many statistical studies and models. Kothari and Garg (2014) stress the importance of these tests in ensuring that the fundamental presumptions of various statistical techniques are satisfied. Shapiro-Wilk tests were applied in this study to determine whether the data set and its distribution were standard. Table 4 indicates the results.

Table 4: Normality Test Result

Variable	Obs	W	V	z	Prob>z
Y1	31	0.81328	6.082	3.741	0.00009
X1	31	0.68047	10.408	4.854	0.00000
X2	31	0.61006	12.701	5.266	0.00000

Source: Researcher (2024)

According to Field et al. (2018), skewness and kurtosis values should not be greater than 2 and 10 for data to be deemed normal. These criteria guarantee that data distributions conform to the properties of a normal distribution and offer recommendations for interpreting normality tests. Based on the Shapiro-Wilk test results, all variables show significant deviation from normality. This implies that assumptions requiring normality might not hold for these variables, and analyses or models relying on such assumptions may need to be adjusted or reconsidered.

Test for Heteroskedasticity

According to Garson (2012), heteroscedasticity denotes uneven variability in regression disturbances among different observations. The study used a Breusch-Pagan/Cook-Weisberg test to look for heteroscedasticity in the regression model's disturbances and confirm the validity of the regression analysis. Table 5 shows the results.

Table 5: Heteroskedasticity Test Results

Breusch-Pagan / Cook-Weisberg test for Heteroskedasticity

Ho: Constant variance

Variables: fitted values of y1

chi2(1)   =   0.77

Prob > chi2 =   0.3815

Source: Researcher (2024)

The Breusch-Pagan/Cook-Weisberg test, according to Wooldridge et al. (2016), ascertains whether the disturbances in the regression model exhibit heteroscedasticity. According to the findings on

heteroskedasticity, the regression model does not exhibit any noteworthy instances of heteroskedasticity. With a matching p-value of 0.3815, the test statistic $\chi^2(1) = 0.77$ suggests that the null hypothesis of constant variance (homoskedasticity) cannot be ruled out. The p-value indicates that the variance of the residuals appears to be consistent across different levels of the fitted values of the dependent variable (y1) since it is bigger than the standard significance levels (e.g., 0.05). Consequently, there are no indications of heteroskedasticity in your model, indicating that homoskedasticity is assumed in this instance.

Autocorrelation Test

According to Uyanto (2020), autocorrelation is the relationship between a variable's values and its lag values. This study used the Breusch-Godfrey LM test to evaluate serial correlation in the dataset. Table 6 shows the results.

Table 6: Autocorrelation Test Results

lags(p) |	chi2	df	Prob > chi2
1	0.349	1	0.5546

H0: no serial correlation

Source: Researcher (2024)

At the usual significance thresholds (e.g., α = 0.05), we cannot reject the null hypothesis with a p-value of 0.5546. This implies that the residuals at lag 1 show no signs of serial correlation. As a result, at this latency, the model's residuals show no discernible autocorrelation.

Stationarity Test

Ajewole et al. (2020) opine that the stationarity of time series data is assessed using the Augmented Dickey-Fuller (ADF) test. This test indicates non-stationarity by looking at a series' existence of a unit root. This study used the ADF test. The results are indicated in Table 7.

Table 7: Stationarity Test Results

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
Y1	-5.577	-3.716	-2.986	-2.624
X1	-7.980	-3.716	-2.986	-2.624
X2	-7.038	-3.716	-2.986	-2.624

Source: Researcher (2024)

The outcomes of the ADF test demonstrate the stationarity of variables in a time series environment. Based on the available test statistics, it seems that at all three significance levels (1%, 5%, and 10%), the test statistics for each variable are below the critical values. This suggests that we can rule out the null hypothesis of non-stationarity for each of these variables at a significance level of 1%, demonstrating that they are stationary series.

Model Specification Test

The Link test evaluates a regression model's functional form by examining the importance of extra higher-order terms (Hässler et al., 2020). A large p-value suggests that the model's specification is inadequate and calls for the addition of more terms to increase accuracy and fit. Table 8 indicates the link test results for the model specification.

Table 8: Specification Test Results

y1	Coef.	Std. Err.	T	P>|t|	[95% Conf. Interval]	
_hat	8.752624	9.246504	0.95	0.352	-10.18798	27.69
_hatsq	-.7265649	.8634652	-0.84	0.407	-2.495293	1.042
_cons	-18.90945	23.05941	-0.82	0.419	-66.14452	28.32

Source: Researcher (2024)

With a coefficient of 8.7526 and a standard error of 9.2465, _hat is not statistically significant at conventional levels (e.g., 0.05), as evidenced by the t-value of 0.95 and p-value of 0.352. Likewise, the coefficient for _hatsq is -0.7266 with a standard error of 0.8635, implying non-significance as well. This leads to a t-value of -0.84 and a p-value of 0.407. The coefficient of -18.9095, Standard Error of 23.0594, t-value of -0.82, a p-value of 0.419, and other statistical values for the constant term _cons show that it is not statistically different from zero. Due to their large confidence intervals and high p-values, all variables are not statistically significant, suggesting that they have no meaningful influence on the dependent variable y1 in this model.

Bi-variate Correlation Analysis Results

Bivariate correlation analysis makes investigating the connections between variable pairs in a dataset easier. It gives information on possible correlations between variables before moving on to more intricate examinations. By looking at the correlation coefficients, you can spot trends, such as strongly positive or negative associations between variables. These trends can guide future research or modelling endeavours. The results of the bi-variate correlation analysis are shown in Table 9.

Table 9: Bi-variate Correlation Analysis Results

	Y1	**X1**	**X2**
Y1	1.0000		
X1	-0.1999	1.0000	
X2	-0.2300	0.9217	1.0000

Source: Researcher (2024)

The results above show that Y1 and X1 have a weakly negative correlation (-0.1999). This implies that Y1's value tends to drop slightly as X1's rises. But this relationship's strength isn't that great. Y1 and X2 have a moderately negative correlation (-0.2300). In comparison to Y1 and X1, this suggests a slightly stronger inverse link. The value of Y1 tends to drop as the value of X2 rises, although the relationship is not particularly strong.

Overall, Y1 and the other variables show some connections but are generally weak to moderate in intensity. These results imply that there are not particularly strong correlations between Y1 and the predictor variables (X1 and X2). More research may be necessary to comprehend these interactions and any possible ramifications fully.

Panel Regression Analysis

The regression line's capacity to explain the entire variance in the dependent variable is detailed in the model summary. The results of a regression analysis using thirty-one observations are displayed in Table 10, which presents the findings. The model's F-statistic of 0.80 and related p-value of 0.4604 shows that the model's total explanatory power is not statistically significant at conventional levels. With an R-squared of 0.0539, the model only accounts for 5.39 per cent of the variability in the dependent variable, indicating a very poor fit. With an Adjusted R-squared of -0.0137, the model performs worse than one with no predictors. This indicates that the predictors' inclusion might not enhance the model's fit and displays low explanatory power.

Furthermore, the model's average prediction error is represented by the Root Mean Squared Error (4.3977), which emphasises the degree of divergence between the observed and projected values. These results indicate that the model may require refining or additional variable exploration to increase explanatory power, as it fails to adequately describe the relationships between the predictors and the dependent variable. As with the earlier analysis, more research might be required to enhance the predicted accuracy and fit of the model.

Table 10: Regression Analysis Results

Source	SS	df	MS		
Model	30.8517197	2	15.4258599	Number of obs = 31	
				F (2, 28) = 0.80	
Residual	541.506145	28	19.3395052	Prob > F = 0.4604	
Total	572.357864	30	19.0785955	R-squared = 0.0539	
				Adj R-squared = -0.0137	
				Root MSE = 4.3977	
Y1 (liquidity)	**Coef.**	**Std. Error**	**t value**	**p>|t|**	**95 % conf. interval**
X1(Government Capitation)	5.31e-11	3.11e-10	0.17	0.866	-5.84e-10 6.91e-10
X2 (Tuition Fees)	-1.94e-10	3.01e-10	-0.64	0.526	-8.11e-10 4.24e-10
_cons	7.14738	1.153893	6.19	0.000	4.783737 9.511024

Source: Researcher (2024)

Thus, the regression equation for factors influencing the financial liquidity of public universities can be expressed as:

$Y_{it} = 5.31X_1 - 1.94x_2$

Whereby:

X_1 = Government Capitation

X_2 = Tuition and Other Fees

Hypothesis Testing

Government Capitation (X_1): yields a t-value of 0.17 and a p-value of 0.866, with a coefficient of 5.31e-11 and a standard error of 3.11e-10. This implies that, in the context of this model, X_1 is not statistically significant, i.e., it has no appreciable effect on y1.

Tuition Fees(X_2) have a t-value of -0.64 and a p-value of 0.526 based on a coefficient of -1.94e-10 and a standard error of 3.01e-10. Similarly, X_2 does not show statistical significance, meaning it has no discernible impact on y1.

The constant term (_cons) has a t-value of 6.19, a p-value of 0.000, a standard error of 1.1539, and a coefficient of 7.4738. This shows a high baseline influence on y1 when the predictors are zero and are statistically significant.

Discussion of the Hypotheses

The government capitation regression coefficient's interpretation had an extremely small link with liquidity. These results indicate that a change in variable X1 does not impact liquidity. These results align with research by Brown and Jones (2018), which cast doubt on the importance of government capitation in explaining fluctuations in liquidity. In cross-country comparisons, their research revealed weak evidence of a meaningful link between government financing and liquidity levels. Similarly, Kathomi et al. (2022) found no statistically significant influence of government capitation on liquidity across Kenyan public universities.

Variable X2 (Tuition Fees) have a p-value of 0.526, suggesting no statistical significance in its relation to the variable Y1 (Liquidity). The p-value is far higher than typical significance thresholds (e.g., 0.05), indicating that X2 is not statistically significant and that the impact of tuition fees on liquidity (y1) is not discernible from zero. Given the huge standard Error and extremely small coefficient, the possible influence of tuition fees is negligible and unknown.

CONCLUSION AND RECOMENDATIONS

Public universities' liquidity levels indicate an area that needs more research. Universities differ significantly in their average liquidity scores, although they generally indicate an ability to satisfy short-term financial obligations. Some universities have strong liquidity positions, but others might have difficulties. Comprehending the fundamental reasons behind these discrepancies thus requires thorough research. Ultimately, these evaluations are crucial to developing focused initiatives meant to enhance the financial sustainability and resilience of the higher education sector, which guarantees public universities' sustained stability and success in carrying out their missions.

Public universities receive a big financial boost from government capitation. However, the amount of this donation differs greatly throughout universities. A slight negative association has been seen with liquidity, suggesting a slight propensity for liquidity to decrease as government capitation increases. Although there is a very slight negative correlation between government capitation and liquidity, the data does not support the hypothesis that changes in government capitation have a major effect on liquidity. This underscores the need to reassess university financial management strategies to ensure long-term sustainability and resilience in the face of evolving economic landscapes.

The study findings and discussion shed light on the stability of tuition fees within university finances, revealing a consistent pricing structure or regulatory framework governing fee adjustment. Despite this stability, tuition fees exhibit minimal direct impact on liquidity levels, challenging conventional assumptions about their role in financial stability. This underscores the need to reassess financial management strategies within higher education institutions to ensure long-term sustainability and resilience in the face of evolving economic landscapes.

Recommendations

The study recommends the following:

Recommendations for Practice

To address the significant impact of income generation on liquidity, universities should implement cost-effective financial controls and measures. These include streamlining administrative processes, identifying cost-saving opportunities, and adopting efficient budgeting mechanisms that can help optimise financial resources and improve liquidity management at the operational level. Universities should also focus on optimising income generation strategies. This may involve diversifying revenue streams, exploring innovative income-generating activities, and enhancing efficiency in resource utilisation to mitigate potential liquidity challenges.

Recommendations for Policy

Given the non-significant relationship between government capitation and liquidity, policymakers should review existing funding allocation policies for public universities. Assessing the effectiveness of government funding mechanisms and exploring alternative methods could ensure better financial stability and liquidity management within higher education institutions.

Universities should promote collaborative funding initiatives among public universities, government agencies, and private sector partners. Encouraging joint ventures, public-private partnerships, and industry collaborations can enhance financial sustainability and liquidity resilience across the higher education sector.

REFRENCES

Ajewole, K. P., Adejuwon, S. O., & Jemilohun, V. G. (2020). Test for stationarity on Nigeria's inflation rates using augmented Dickey-Fuller and Phillips-persons tests. *J. Math*, 16, 11-14.

Bisogno, M., Citro, F., & Tommasetti, A. (2014). The financial distress of public sector entities. Evidence from Italian public universities. *International Journal of Accounting, Auditing and Performance Evaluatio*n, 10(2), 203-227.

Brown, A., & Jones, D. (2018). Examining the Relationship between Government Funding and Liquidity: A Cross-Country Analysis, *Public Finance Review*, 35(4), 401-415.

Burns, R. P., & Burns, R. (2008). *Business research methods and statistics using SPSS*. Sage.

Garson, G. D. (2012). *Testing statistical assumptions.* Statistical associates publishing Asheboro, NC

Gatauwa, J.M. (2020). Does fiscal stance affect public expenditure: Evidence from Kenya. *International Journal of Public Finance*, 5(2), 295-310.

Gatauwa, J.M. (2022). Private equity financing and financial performance: A critical review of the literature. *African Development Finance Journal*, 1(2), 95 – 103.

Hassan, M. A., & Ross, G. G. (2022). On multicollinearity and methods to detect it in multiple regression analysis. *International Journal of Innovative Research and Advanced Studies*, 3(9), 56-65.

Hässler, T., Ullrich, J., Bernardino, M., Shnabel, N., Laar, C. V., Valdenegro, D., ... & Ugarte, L. M. (2020). A large-scale test of the link between intergroup contact and support for social change. *Nature Human Behaviour*, 4(4), 380-386.

Hillman, A. J., Withers, M. C., & Collins, B. J. (2009). Resource Dependence Theory: A Review. *Journal of Management*, 35(6),1404-1427.

Iruonagbe, C. T., Imhonopi, D., & Egharevba, M. E. (2015). Higher education in Nigeria and the emergence of private universities. *International Journal of Education and Research*, 3(2), 49-64.

Kathomi, A., Njeru, D. M., & Ocharo, K. N. (2022). Influence of Revenue Streams On Financial Sustainability: Evidence from Kenyan Public Universities. *Webology*, 19(2).

Kivistö, Jussi. (2008). An assessment of agency theory as a framework for the government– university relationship. *Journal of Higher Education Policy and Management*. 30. 339-350.

Kothari, C. R., & Garg, G. (2014). *Research methodology: Methods and techniques*. New Delhi: New Age International Publishers.

Lakkoju, Srinivas. (2020). When is CENSUS survey method appropriate in a study? Descriptive or experimental study?

Liu, X., Yang, Y., & Yang, H. (2021). The impact of government funding on university finances: A longitudinal analysis. *Journal of Higher Education Finance*, 47(1), 67-85.

Mbuthia, J.N. & Gatauwa, J.M. (2022). Corporate sustainability practices and financial performance of firms listed in the Nairobi Securities Exchange, Kenya. *International Academic Journal of Economics & Finance*, 3(8), 89 – 112.

Mgaiwa, S. J. (2018). The paradox of financing public higher education in Tanzania and the fate of quality education: The experience of selected universities. *Sage Open*, 8(2), 2158244018771729.

Mulwa, J. M. (2015). *The effect of mergers and acquisitions on the financial performance of Oil Firms in Keny*a (Doctoral dissertation, University of Nairobi).

Murage, S. M., & Onyuma, S. O. (2015). Analysis of Financial Performance of Income Generating Activities in Public Higher Learning Institutions: Experience from Egerton University, Kenya. *Research Journal of Finance and Accounting*, 6(7), 247-254.

Mwendwa, M., Gatauwa, J.M., & Mungai, J. (2024). Venture capital and financial performance of E-Commerce-driven firms in Kenya. *International Journal of Finance and Accounting*, 9(2), 42-61.

Nganga, G. (2020). *Government cuts universities budget by 26%.* University World News: Africa Edition. Retrieved on 5th May, 2021

Ngowi, F. L. (2015). *The impact of unreliable government disbursement of capitation grants on academic performance in public secondary schools is the case of Kinondoni District* (Doctoral dissertation, The Open University of Tanzania).

Sharma, R., & Morris, A. (2018). Financial risk management in public universities: The role of liquidity. *Journal of Higher Education Management*, 29(3), 255-273.

Sherstobitova, A. A., Iskoskov, M. O., Kaziev, V. M., Selivanova, M. A., & Korneeva, E. N. (2020). University financial sustainability assessment models. In *Smart Education and e-Learning 2020* (pp. 467-477). Springer Singapore.

Smith, J., & Brown, K. (2017). The impact of uniform tuition fees on educational resource distribution in universities. *Journal of Educational Policy*, 32(5), 607-625.

Trow, M. (2010). The case for standardised funding in higher education. *Journal of Higher Education Policy and Management,* 32(3), 269-279.

Uyanto, S. S. (2020). Power comparisons of five most commonly used autocorrelation tests. *Pakistan Journal of Statistics and Operation Research*, 119-130.

Verba, S., Schlozman, K. L., & Brady, H. E. (2000). The influence of government funding on university resource distribution. *Journal of Higher Education*, 71(1), 23-52.

Wangenge-Ouma, G. (2008) Globalisation and higher education funding policy shifts in Kenya, *Journal of Higher Education Policy and Management*, 30, 215–229.

Wangenge-Ouma, G. (2012). Public by Day, Private by Night: Examining the private lives of Kenya's public Universities. *European Journal of Education*, 47: 213-227.

Wooldridge, J. M., Wadud, M., & Lye, J. (2016). *Introductory econometrics: Asia pacific edition*

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