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Reforming the Public Universities Financing Scheme: The Case of Ghana's Higher Education Transformation Agenda

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Abstract

Public higher education institutions in Ghana are confronted with unending financing constrains every academic year thus affecting the financial health of these institutions. The financial sustainability of these institutions has become increasingly critical due to the persistent reported funding gaps and the weak funding allocation regime. Countries the world over have begun implementing reform programmes to deal with issues of financial sustainability of higher education. The study employed quantitative research methodology with a well-validated research instrument. This correlational study attempts to measure the relationship between the financing scheme variables and financial sustainability. The outcome of the study revealed that there was statistically significant relationship between the combined effects of the variables while three variables out of the seven were found to be significant in predicting best fit equation for financial sustainability. The study recommends to the Ministry of Education (MOE) and the National Council for Tertiary Education (NCTE), a review of the funding policy direction with a precise focus on addressing Ghana's higher education infrastructural deficit, skills gap, improving research, science and technology.

Key words: Financial Sustainability, Financing Scheme, Funding, Ghana Public Universities, Higher Education Institutions.

Introduction

African countries in recent time have adopted innovative and brave measures to guide government policies in identifying pragmatic solutions to challenges of higher education financing. Some of the

measures as stated by Carnoy, Froumin, Loyalka, and Tilak (2014) include, improved use of public cost sharing, promotion of private sector participation in education, developing income generating activities, and the implementation of distance education programmes. Noticeably, these measures failed to recognise the importance of the reliability and interrelationship between government policy, the accounting, and costing systems and policy regime in measuring the cost per student as a prelude to determining the funding gap per student.

Funding of higher education in Ghana has evolved over the years. As stated in the NCTE (2012), sustainable financing of tertiary education: building Ghana's future, higher education was fully funded by government between 1948 to the 1970s, and in the 1980s partial funding by way of academic facilities and residential user fees were introduced owing to a barrage of challenges faced by public higher education at the time. Most higher education institutions in sub-Saharan Africa (SSA) are confronted with financial challenges (Teferra, 2013) as it is in Ghana. The government of Ghana direct funding of public tertiary institutions has in recent years witnessed general decline in relative terms. Government funding focus is gradually shifting towards infrastructure provision while systematically reducing funding for recurrent expenditure. For instance, public higher education recurrent expenditure as a percentage of total government expenditure to public tertiary institutions decreased from 96.60% in 2012 to 77.30% in 2014. Whereas higher education capital expenditure as a percentage of total government expenditure to public tertiary institutions experienced considerable increase, from 1.40% in 2012 to 22.70% in 2014 (UNESCO Institute for Statistics, 2018). Table 1 provides the details.

Table 1: Public Tertiary Institutions Recurrent and Capital Expenditure as a % to Total Tertiary Expenditure

Description	Academic Years		
	2012	2013	2014
Current Expenditure as a % of total Expenditure on Public Tertiary Institutions	96.60	93.60	77.30
Capital Expenditure as a % of total Expenditure on Public Tertiary Institutions	1.40	6.40	22.70

Source: Researcher's own Analysis with data from UNESCO Institute for Statistics.

Despite the remarkable investment in higher education over the years there still exists a significant level of funding gap which cannot be financed by government alone (Bloom, Canning, & Chan, 2014). As stated in Tilak (2015), most countries continue to subsidise the provision of higher education while gradually drifting towards larger contributions from students, parents, and industry. The government of Ghana consequently launched a host of funding sources as a means of gradually mobilising the needed financial resources to finance the gap.

Cost sharing policy

The most common and perhaps visible funding mechanism is the cost sharing policy introduced in 1996. As (Teferra, 2013) rightly stated, the efficiency of cost sharing in many countries largely depends on the allocation of dedicated funds by government in addition to effective management. In Ghana, the cost sharing distribution is largely 70% government, 10% from students' fees, and the remainder of 20% mainly coming from institutions and private donations (Atuahene, 2014). The introduction of the cost sharing recorded some funding gains (Famade, Omiyale, & Adebola, 2015) by public universities. The policy was however stifled with ineffective, ill equipped, and non-committed management, lack of policy enforcement, ineffective fees collection systems, poor working environment and lack of staff motivation. Secondly, the cost sharing policy did not address the infrastructure-funding requirement of the public higher education Institutions. The policy further failed to adequately postulate solutions for prospective students' inability to pay anticipated increases in fees resulting from the introduction of the policy. Newman and Duwiejua (2015) intimated that the higher education funding gap between 2011 and 2015 was within the range of 39.7% and 41%. Government thinking and recent discussions on cost sharing points to a future reduction in Government contribution towards public higher educational Institutions recurrent expenditure. The future of government Policy direction places premium on investment in infrastructure, enhancing research grants and higher education budgetary allocation mechanism. While acknowledging the challenges of cost sharing, Ghana has made great strides in creating the awareness among Parents, Guardians and Students of the need to contribute towards their education (Knight, 2014).

Ghana Education Trust Fund (GETFund)

Prior to the setting up of the GETFund, industries engagements with higher educational institutions were unstructured (Arthur & Arthur, 2016). Collaborations were mostly through the effort of individual academic departments and faculties (Newman & Duwiejua, 2015) with little commitment from industry towards higher education. Act 581 of 2000 to streamline industry contribution to higher education through taxation then established the Ghana Education Trust Fund. The financing arrangement of the fund as prescribed by the Act is 2.5 percent of the Value-Added-Tax rate of 17.5 percent earmarked to provide the base funding. The objectives of the GETFund is to provide financial support for the provision of academic facilities and infrastructure to public educational institutions, students loan scheme, scholarship for needy students through the scholarship secretariat and faculty development and research (Atuahene, 2015; Ghana GETFund, 2000). Public universities in recent times have witnessed marked improvement in infrastructure, academic research, postgraduate studies through scholarship schemes, and the student's loan trust fund with funding support from the GETFund. As stated by Masaiti, Mwelwa and Mwale (2016), the board of trustees of the fund is permitted under the Act to set aside funds to support future contingency as defined by the trustees of the fund. Available data from the GETFund secretariat showed that total funds accruing and released to the fund experienced a steady increase from GH¢459.58 billion in 2011 and GH¢924.75 billion in 2015. Total disbursements by the fund within the same period increased from GH¢90.90 billion in 2011 to GH¢262.70 billion in 2015. Within the past five years GETFund disbursement to critical areas was GH¢819.90 billion. Tables 2 & 3 respectively shows the accrued funds and releases made to GETFund and disbursement made to critical areas in the past five years.

Table 2: GETFund Releases and Allocations

Description	Academic Years				
	2010/11	2011/12	2012/13	2013/14	2014/15
	GH¢ '000	GH¢ '000	GH¢ '000	GH¢ '000	GH¢ '000
Total Allocations	376,880	545,440	691,457	739,447	843,899
Total Accrued & Released	459,583	505,549	608,557	731,287	924,755
Surplus/(Deficit)	82,703	(39,891)	(82,900)	(8,160)	80,856

Note. GETFund=Ghana education trust fund. GH¢=Ghana cedi.
Source: Researcher's own analysis with data from the GETFund Secretariat.

Table 3: GETFund disbursement to Tertiary Institutions

Description	Academic Years				
	2010/11	2011/12	2012/13	2013/14	2014/15
	GH¢ '000	GH¢ '000	GH¢ '000	GH¢ '000	GH¢ '000
Infrastructure Development	62,898	94,133	135,772	134,900	215,700
Students Loans	14,000	15,000	16,500	21,000	26,000
Faculty Development & Scholarship	14,000	15,500	16,500	17,000	21,000
Total Disbursement	90,898	124,633	168,772	172,900	262,700

Note. GETFund=Ghana education trust fund. GH¢=Ghana cedi.
Source: Researcher's own analysis with data from the GETFund Secretariat.

More innovative ways needs to be explored in raising the financial resources required as pointed out by Sazonov, Kharlamova, Chekhovskaya, and Polyanskaya (2015) to expand enrolment as well as maintain quality, whiles ensuring national priorities in education are central to the national discourse on reforms.

Student Loan Trust Fund

Several countries in Western Europe, Asia and Africa have introduced reforms in students loan schemes with the aim of addressing the inadequacies and to realign the Schemes in line with national priorities (Afriyie, 2015; Johnstone, 2014; Nyahende, 2013). Until 1966, tertiary students in Ghana were fully funded with the aim of training the needed work force to meet the countries developmental agenda. A number of policy reforms were initiated due to the unsustainable nature of the policy at the time. The current schemes provides varied financial assistance to students based on their programme of studies (Ghana SLTF, 2011; National Council for Tertiary Education, 2012). As Masaiti et al. (2016) rightly pointed out cost sharing without adequate financial assistance would further worsen the existing disparities between the well-off and the poor between the urban and rural population, in Ghana. The scheme in the past four years has disbursed a total of GH¢47.18 million to students in both public and private tertiary institutions in the country despite the marginal decline in the number of students assessing the Scheme Loans (see table 4).

Table 4: SLTF Disbursement to Tertiary Institutions

Description	Academic Years			
	2010/11	2011/12	2012/13	2013/14
Total Loan Disbursement (in GH¢ '000)	13,924	10,108	7,925	15,228
No. of Students Accessing Loans:				
Public Institutions	24,794	17,059	11,792	15,079
Private Institutions	2,162	1,546	2,041	2,016
Total No. of Students Accessing Loans	26,956	18,605	13,833	17,095

Note. SLTF=Students loan trust fund. GH¢=Ghana cedi.
Source: Researcher's own analysis with data from the SLTF Annual reports for 2011, 2012, 2013, and 2014.

Whereas in the public universities the scheme support significantly covers user fees and living expenses, the releases are woefully inadequate in the private tertiary institutions. The success of the scheme should be assessed based on the specific objectives setting

up the scheme and their financial sustainability (Botlhale, 2015; Knight, 2014; Power, Millington, & Bengtsson, 2015). The NCTE's sustainable financing of tertiary education 2012 report articulated a number of useful recommendations to government aimed at resourcing the scheme whiles addressing issues of equity and loan recoveries to make the scheme much more sustainable.

Purpose of the Study

The purpose of this study is to assess the level of influence of the following individual statements relating financing scheme: Government Grants allocations are discretionary, Government Grants allocations promotes students' enrolment, Government Grants allocations promotes Graduate Research, Government Grants allocations provides facilities for research, science education, ICT and Library materials, Government Grants allocations promote Staff/Faculty development, good governance and industry collaborations, and Students Loans and Grants adequately support students', and the extent to which these statements influence financial sustainability in public universities in Ghana. The study further seeks to test the relative importance of these statements combined influence on public universities financial sustainability.

Research Questions/Hypotheses

The study focused on addressing the following three research questions and the related hypotheses namely: (a) what is the level of the relationship between the individual statements relating to financing scheme in achieving financial sustainability? (b) what is the level of the relationship of the combined financing scheme statements and public universities financial sustainability? and (c) what is the relative combined financing scheme statements contribution in achieving best fit equation model for public universities financial sustainability?

The related Hypotheses are: $\mathbf{H_0}$: there is no relationship between the combined effect of the financing scheme statements and public universities financial sustainability, and $\mathbf{H_1}$: there is a relationship between the combined effect of the financing scheme statements and public universities financial sustainability.

Methodology

Research Design

The study utilized quantitative research technique to analyse the cause and effect of the variable and to test the hypothesis between the dependent and independent variable. Similar studies in the past on higher education financial sustainability (Bhayat, 2015; Cernostana, 2017; Chatama, 2014; Sazonov et al., 2015) have confirmed the appropriateness of the research technique and the significance of the independent variable, financing scheme and the dependent variable. The research design technique took into consideration the relative short duration nature of the study and its minimal tolerance for ambiguity (Creswell & Creswell, 2017).

The study data collection was undertaken through a survey instrument (questionnaire) using emails and experts mainly made up of vice chancellors or their deputies, finance, internal audit and registry departments of the sampled public universities. The instrument validation was carried out among subject area experts. The modified instrument based on the suggestions received was further tested among 10 other independent subject area experts. All feedbacks were incorporated thus validating the instrument before administering.

A test-retest reliability was undertaken among 10 respondents from the sample over a 7-day period in order to test the consistency of responses. The reliability test results produced a coefficient of $r = .723$, well above the acceptable consistency limits of $r = 0.5$ (Creswell & Creswell, 2017).

A five-point Likert-scales web-based survey instrument was used for the data collection. Prior telephone conversations with respondents was undertaken followed by email despatched with an electronic link for respondents to access the web-based survey instrument. According to Schoenherr, Ellram, and Tate (2015), this approach was more convenient and faster than the use of mailing, telephone or physically administering the questionnaire. The data analysis comprised correlation and multiple regression analysis to establish the relative strength of the statements relating to financing scheme on higher education financial sustainability. The study settled on these statements to analyse the level of influence using multiple regression analysis mainly due to emphasis from previous studies which consistently highlighted their importance to financial

sustainability (Amir, Auzair, Maelah, & Ahmad, 2016; Erins & Erina, 2017;Marovah, 2015; Moghadam, Jorge, & Pirzade, 2017).

Population and Sample Strategy

The target population for the study comprised vice chancellors, pro vice chancellors, registrars, deputy registrars, finance directors, deputy finance director, directors of internal audit, deputy directors of internal audit, management accountants, budget officers, systems accountants and quality assurance officers of the seven sampled public universities established on or before the year 2005 or have been in existence for over 20 years. The study settled on these category of respondents due to their substantial expertise in HE management and finance. The computed target sample size at 95% confidence level for this research was 85. The response rate was 62.35% (53 valid responses). The sample size of 85 thus give sufficient representation of experts.

Results

Demographic Statistics

The study demographics were in two-fold namely respondents and institutional demographics. The key respondents' demographics comprised academic or professional qualifications, and their relevant professional experience. The participating institutional demographics included the institutions students' enrolment and accreditation status.

A greater number of participants (n = 32) representing 60% had 11 or more years of relevant professional experience. 3 (6%) had relevant experience between 6 to 10 years of whiles 13 and 5 had either 5 years or below and over 20 years of relevant professional experience respectively. Majority of participants (n = 33) representing 62% had both undergraduate, masters and professional level qualifications, 13 (25%) had undergraduate and master's level qualifications whiles 6 (11%) had undergraduate, masters and PhD/Doctorate qualifications. Only 1 participant (2%) had master's level and other qualifications (see table 5).

Table 5: Respondents Demographics

Demographics	Frequency	Percent	*N*
Work Experience			
1-5 Years	3	6	53
6-10 Years	13	25	53
11-20 Years	32	60	53
Over 20 Years	5	9	53
Academic/Professional Qualifications			
Degree & Masters	13	25	53
Degree, Masters & Professional Qualifications	33	62	53
Degree, Masters & PhD/Doctorate	6	11	53
Degree, Masters & Other qualifications	1	2	53

UEW had the highest number of undergraduate students' population of 56,612 (32.96%) whiles the KNUST had the highest postgraduate students' population of 5,806 (28.53%). GIMPA had the lowest students population of 5,109 and 2,612 undergraduate and postgraduate students respectively but recorded the highest (2,554) number of students studying diploma/certificate programmes. The UG had the lowest number of diploma/certificate students of 200. Table 6 gives summary position of the institutional students' enrolment statistics.

Table 6: 2017/2018 Students Population of Participating Institutions

Programme/Course	Students Enrolment							
	UG	KNUST	UCC	UDS	UEW	GIMPA	UPSA	Total
Diploma/Certificate	200	2,443	1,200	2,049	-	2,554	1,585	10,031
Undergraduate	33,503	35,508	18,746	15,347	56,612	5,109	8,378	173,203
Postgraduate	5,546	5,806	1,012	2,442	3,304	2,251	718	21,079
Total	39,249	43,757	20,958	19,838	59,916	9,914	10,681	204,313

Note: GIMPA = Ghana Institute of Management and Public Administration
KNUST = Kwame Nkrumah University of Science and Technology
UDS = University for Development Studies
UCC = University of Cape Coast
UEW = University of Education - Winneba
UG = University of Ghana
UPSA = University of Professional Studies

All seven institutions had Ghana national accreditation while six out of the seven institutions had both national and other international accreditations. A significant number of participants, representing 71.70% (n = 38) confirmed that all seven institutions had valid Ghana national accreditation whereas 28.30% (n = 15) indicated that their institutions possess both Ghana accreditation and other international accreditation status.

Descriptive statistics

The results of the descriptive analysis showed that the statement, Government Grants allocations are discretionary was significantly higher among the participants (M = 3.74, SD = 0.858). The mean values of the rest of the statements, Government Grants allocations promotes students' enrolment, Government Grants allocations promotes graduate research, Government Grants allocations provides facilities for research, science education, ICT, library materials, Government Grants allocations promote Staff/Faculty development, good governance & industry collaborations were fairly distributed (M = 3.36, SD = 1.06), (M = 3.13, SD = 1.08), (M = 3.17, SD = 1.14) and (M = 3.30, SD = 1.12),while the statement, students loans and grants adequately support students (M = 2.26, SD = 1.30) had the lowest among the participants. The variance and range of the statement, students' loans and grants adequately support students was significant at (Var = 1.70, Range = 4.00*)* and a dispersion of 1.30 compared to the rest of the statements. The test of skewness between the statements adequately normal for the purpose of this study. Table 7 provides the details.

Table 7: Respondents overall Response Ratings

Variable	*N*	*M*	*SD*	*Var*	Skewness	Range
Government Grants allocations are discretionary	53	3.74	0.858	0.737	-1.539	4
Government Grants allocations promotes students' enrolment	53	3.36	1.058	1.119	-0.574	4
Government Grants allocations promotes Graduate Research	53	3.13	1.075	1.155	-0.079	4
Government Grants allocations provides facilities for research, science education, ICT, Library materials	53	3.17	1.139	1.298	-0.265	4
Government Grants allocations promote Staff/Faculty development, good governance & industry collaborations	53	3.30	1.119	1.253	-0.292	4
Students Loans and Grants adequately support students'	53	2.26	1.303	1.698	0.786	4

Correlation Analysis

The correlation analysis results showed varied levels of positive correlation between the independent variable statements relating to financing scheme, and the dependent variable of financial sustainability. The Pearson's rank correlation results revealed that two statements, Government Grants allocation is discretionary and Government Grants allocation promotes graduate research showed medium positive correlation effect of r = .318 and r = .360 respectively, while the statements Government Grants allocations provide research facilities, science education, ICT and library materials, and Government Grants allocations promote Staff development, good governance and industry collaborations revealed minimal correlation effect of r = .258, and r = .294 respectively. Two statements namely, Government Grants allocations promotes students' enrolment and adequacy of students' loans and grants returned

correlation effect of $r = .113$, and $r = .085$ respectively well below the linear correlation threshold of $r = .196$. The relative degree of association between the statements relating to the independent variable and the dependent variable was significant at $p < .05$ (see table 8).

Table 8: Summary of correlation Analysis

Variable		1	2	3	4	5	6	7	*M*	*SD*
1	Financial Sustainability	-	0.318	0.113	0.360	0.258	0.294	0.085	22.77	4.705
2	Q1 Gov't Grants allocations discretionary	0.318	-	0.233	0.184	0.184	0.125	-0.022	3.74	0.858
3	Q2 Gov't Grants allocations and student's enrolment	0.113	0.233	-	0.769	0.715	0.703	0.083	3.36	1.058
4	Q3 Government Grants allocations promotes Graduate Research	0.360	0.184	0.769	-	0.830	0.813	0.084	3.13	1.075
5	Q4 Gov't Grants allocations and research facilities, science education, ICT, Library materials	0.258	0.184	0.715	0.830	-	0.788	0.034	3.17	1.139
6	Q5 Gov't Grants allocations and Staff development, good governance & industry collaborations	0.294	0.125	0.703	0.813	0.788	-	0.313	3.30	1.119
	Q6 Adequacy of students		-						2.26	1.303
7	Loans and Grants	0.085	0.022	0.083	0.084	0.034	0.313	-		
M		22.77	3.74	3.36	3.13	3.17	3.30	2.26		
SD		4.705	0.858	1.058	1.075	1.139	1.119	1.303		

Regression Coefficient

Regression analysis was undertaken using SPSS version 25. The regression results further enabled a derivation of a regression equation for financial sustainability (Y_{FS}). The coefficient of determination (R^2) and the p value further enabled the best-fit model to be determined. A test of significance using multiple regression analysis yielded a coefficient of $r = .542$, $F(6, 46) = 56.31$, $p = .001$, $R^2 = .293$. From the analysis (see table 9), three statements (government grants allocation is discretionary, government grants allocations promote students' enrolment and government grants allocation promotes graduate research) were significant in predicting financial sustainability with p values $p = .018$, $p = .022$, $p = .025$ and beta weights of .315, .483 and .629 respectively. The statements, government grants allocations provide research facilities, science

education, ICT and library materials (p = .723), government grants allocations promote Staff development, good governance and industry collaborations (p = .594) and adequacy of students' loans and grants (p = .788) were not significant and thus could not be considered in determining the best-fit model since their p values were above the threshold of p < .05. The results thus revealed that there was a significant positive relationship between the following statements relating to the independent variable (government grants allocation is discretionary, government grants allocations promote students' enrolment and government grants allocation promotes graduate research) and the dependent variable (financial sustainability) F (6, 46) = 56.31, p = .001, and R^2 = .293.

Table 9: Regression Coefficient

Variable	Coefficient	Std. Error	*B*	-95% CI	+95% CI	*T*	*P*
(Constant)	13.814	3.095		7.584	20.043	4.464	0.000
Q1 Gov't Grants allocations discretionary	1.725	0.702	0.315	0.312	3.138	2.457	0.018
Q2 Gov't Grants allocations and student's enrolment	-2.148	0.903	-0.483	-3.966	-0.330	-2.379	0.022
Q3 Government Grants allocations promotes Graduate Research	2.753	1.185	0.629	0.367	5.139	2.322	0.025
Q4 Gov't Grants allocations and research facilities, science education, ICT, Library materials	-0.364	1.023	-0.088	-2.423	1.695	-0.356	0.723
Q5 Gov't Grants allocations and Staff development, good governance & industry collaborations	0.591	1.101	0.141	-1.626	2.807	0.536	0.594
Q6 Adequacy of students Loans and Grants	0.139	0.512	0.038	-0.892	1.169	0.271	0.788

Note. CI = Confidence Interval

Results of the regression analysis

The results of the regression analysis revealed notable similarities with the results of the correlation analysis in relation to the variables with significant outcome and the degree of positive correlation. The best fit regression equation for financial sustainability are;

Y_{FS} = a + β_{GGD} + β_{GGE} +β_{GGR},

Where Y_{FS} = financial sustainability (predictor variable),

a = constant value

β_{GGD} = government grants allocation is discretionary (independent variable statement),

β_{GGE} = government grants allocations promote students' enrolment (independent variable statement), and

β_{GGR} = government grants allocation promotes graduate research (independent variable statement).

Hence regression equation for Y_{FS} = 13.814 + 0.315β_{GGD} - 0.483β_{GGE} + 0.629β_{GGR}.

The regression analysis determined the best regression equation by including all statements with coefficient higher than zero and *p* value of $p < .05$ significant level and which subsequently supported the rejection of the null hypothesis (H_0), there is no relationship between the combined effect of finance scheme statements and public universities financial sustainability.

Discussion

The results of the study showed that participants were optimistic about the level of influence of the individual statements relating to financing scheme on financial sustainability and institutional set objectives. Whereas past studies stated similar sentiments ((Afriyie, 2015; Lucianelli & Citro, 2017; Sazonov et al., 2015; Amir et al., 2016; Bhayat, 2015; Brandas & Stirbu, 2013; Chatama, 2014; Collins, 2014) the study results surprisingly presented statistical evidence to support three out of the seven statements as having statistically significant relationship. Previous studies relating to HEIs funding allocation focused on its relevance to institutional performance and growth but fell short of addressing the level its effect on financial sustainability (Newman & Duwiejua, 2015; Emmanuel Newman, 2013; Sam, 2016; Tilak, 2015; Williams, 2015). This study sought a deeper understanding of the depth of the relationship of these statements to HEIs financing scheme and financial sustainability of public universities. Another disturbing challenge confronting financing schemes and financial sustainability of public universities in Ghana is the extent to which government grants allocations promotes students' enrolment (Estermann, 2015; Jongbloed et al., 2015). This work established a clearer understanding of the relationship between government grants allocations influence on students' enrolment and

how it affects financing scheme and financial sustainability of public universities in Ghana. The study further concluded from the many previous research findings that funding allocation mechanism that targeted the student as the unit of determining output emerged as the preferred and reliable funding allocation mechanism (Newman & Duwiejua, 2015; Newman, 2013; Woelert & Yates, 2015) contrary to the discretionary funding mechanism practiced in Ghana. A third significant constrain is the extent to which government grants allocation for graduate research thereby impacting directly on the financing scheme and financial sustainability. This study sought to further enhance the studies conducted by (Kirillov, Vinichenko, Melnichuk, Melnichuk, & Lakina (2015) and Woelert & Yates (2015).

The study research questions sought to determine (a) the level of the relationship between the individual statements relating to financing scheme in achieving financial sustainability, (b) the level of the relationship of the combined financing scheme statements and public universities financial sustainability and (c) the relative combined financing scheme statements contribution in achieving best fit equation model for public universities financial sustainability. The results established a statistical relationship between the financing scheme variables (government grants allocation is discretionary, government grants allocations promote students' enrolment, government grants allocation promotes graduate research, government grants allocations provide research facilities, science education, ICT and library materials, government grants allocations promote Staff development, good governance and industry collaborations and adequacy of students' loans and grants) and financial sustainability. The correlation results established below minimal to medium positive correlation between the variables of financing scheme and public universities financial sustainability. The correlation results provided sufficient basic evidence of the financing scheme variables relationship with financial sustainability as corroborated by past studies (Estermann, 2015; Hoozée & Hensen, (2018); Kirillov et al., 2015). Further analysis to determine combined significance level of the study financing scheme variables to financial sustainability presented results that supported the rejection of the null hypothesis: H_0. The regression results illustrated significant relationship between the financing

scheme variables (government grants allocation is discretionary, government grants allocations promote students' enrolment, government grants allocation promotes graduate research) and financial sustainability as supported by Estermann (2015) and Newman (2013) and which further supported the derivation of the best fit equation. The weak relationship established between the financing scheme variables: government grants allocations provide research facilities, science education, ICT and library materials, government grants allocations promote Staff development, good governance and industry collaborations and adequacy of students' loans and grants and financial sustainability contradicts findings from previous studies (Carnoy et al., 2014; Nyahende, 2013; Tilak, 2015; Woelert & Yates, 2015).

The study relevance is the interesting findings which has a positive impact on financing mechanisms for HEIs, governments, government agencies HEIs regulatory institutions and donor agencies. The study affords HEIs to have a deeper appreciation of the financing scheme variables in reforming the funding mechanism into a more robust and sustainable financing scheme for HEIs in Ghana.

Conclusion

The study identified a statistically positive relationship between the individual statements (Government Grants allocation are discretionary, Government Grants allocations promote students' enrolment, Government Grants allocation promotes graduate research, Government Grants allocations provide research facilities, science education, ICT and library materials, Government Grants allocations promote Staff development, good governance and industry collaborations and students' loans and grants adequately support students') and financial sustainability. The study further established that there is a significant relationship between the combined effect of the statements (Government Grants allocation are discretionary, Government Grants allocations promote students' enrolment, Government Grants allocation promotes graduate research, Government Grants allocations provide research facilities, science education, ICT and library materials, Government Grants allocations promote Staff development, good governance and industry

collaborations and students' loans and grants adequately support students') and financial sustainability (**H1**).

Recommendations

The study outcome presents a number of useful practical recommendations relating to the financing scheme variables worth considering by HEIs managers and practitioners and experts.

1) HEIs funding allocation policy review: The government of Ghana through the ministry of education should consider a review of the funding policy direction with a clear focus of addressing infrastructure deficit, skills gap, research, science and technology.
2) Funding allocations based on students' enrolment: The findings of the study further stress the importance of allocating institutional grants and subventions based on student's enrolment into academic programmes. The NCTE and ministry of education should consider reviewing the current funding allocation guidelines in line with study recommendation.
3) Performance based funding allocations: Funding allocation reforms should aim to promote performance, fairness and healthy competition and the realisation of national development policy agenda among HEIs in the country. Performance should focus on achieving science and technology education, equity, good governance, quality assurance and promoting research output among other critical outputs. The findings of the study thus emphasise the importance of this funding allocation approach.
4) Infrastructure funding allocation: The GETFund and ministry of education should consider a review aimed at developing clear and transparent disbursement criteria for both public and private higher educational institutions that are Not-for-Profit by their incorporation.
5) Student loans and grants review: A review of student loans and grants should aim to make sufficient financing available to meet the basic needs of tertiary students, such as academic fees (user fees), hostel or accommodation charges and living expenses in every academic year

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