UNIVERSITY OF CAPE COAST

FUNDING OF INFRASTRUCTURAL FACILITIES IN PUBLIC UNIVERSITIES IN GHANA

JULIANA ESHUN

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BY

JULIANA ESHUN

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: …… Date: ……..

Candidate's Name: Juliana Eshun

Supervisor's Declaration

I hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Supervisor's Signature: …… Date: ……..

Supervisor's Name: Dr. Alfred Kweku Ampah-Mensah

ABSTRACT

The study explored funding of infrastructural facilities in Ghanaian public universities along the lines of opportunities for funding, adequacy of funds, areas that institutions prioritise for funding and challenges associated with funding of infrastructural facilities. The study adopted the quantitative approach, descriptive research design and relied on descriptive statistics (frequency, percentages and pie charts) to address the research objectives set for the study. A structured questionnaire was used to gather data from 275 respondents, consisting of academics in management positions and administrators in the three selected public universities (UG, KNUST, and UCC) in Ghana for data analysis. The data was processed using the IBM SPSS Statistics (version 26). The results showed that public universities mostly fund their infrastructural facilities through GETFund, grants from international donors, state-owned enterprises and corporations like GNPC, VRA and VALCO. Again, the study found that lecture rooms and residential halls are two most prioritised facilities that need funding. Also, funds from the Government, royalty income, state-owned corporations and GETFund were shown to be woefully inadequate. Finally, it was found that inadequate private investment frameworks and political interferences were major challenges to infrastructural facility funding. The study therefore concludes that universities place high premium on infrastructural facilities that seek to promote academic and research work. Again, private investment roles and non-governmental interferences are vital to infrastructural facility funding in Ghanaian Public Universities. The study recommends that universities find other innovative means of funding their infrastructure needs aside the already existing mechanisms.

KEY WORDS

Funding

Infrastructural Facilities

Ghanaian Public Universities

Academic Facilities

Educational Services

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DEDICATION

To my lovely husband, Mr. Joshua Ato Andoh and our son Jason P. Andoh

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LIST OF ACRONYMS

IGF	Internally Generated Fund
IMF	International Monetary Fund
HEIs	Higher Education Institutions
KNUST	Kwame Nkrumah University of Science and Technology
UCC	University of Cape Coast
UG	University of Ghana
MoE	Ministry of Education
GPRS	Ghana Poverty Reduction Strategy
UNESCO	United Nations Educational, Scientific and Cultural Organization
WDR	World Development Report
NEP	National Education Policy
GER	Gross Enrolment Ratio
NCTE	National Council for Tertiary Education
GNPC	Ghana National Petroleum Corporation
VRA	Volta River Authority
SSNIT	Social Security and National Insurance Trust
GETFund	Ghana Education Trust Fund
GTEC	Ghana Tertiary Education Commission
PPP	Public-private partnership
PO	Principal Officers (Chancellor, Vice Chancellor and Chairman of the University Council)

CHAPTER ONE

INTRODUCTION

Ghana's educational system has gone through various phases of transformation over the years. A few of the reforms that have occurred in the educational sector over the years include pre-tertiary curriculum reform, teacher education reform, technical, vocational education and training reform, secondary education reform, and tertiary education reform, among others. These transformations could be justified by the need to compete favourably and rub shoulders with other first-hand educational institutions throughout the world. The same goal applies to the nation's universities, whose primary duty is to educate, train and develop the country's human resources. That notwithstanding, education cannot take place in a vacuum, hence, all efforts must be focused on providing universities access to excellent infrastructure. In order to accomplish this, there needs to be a sizable body of research delineating the significance of funding infrastructure in these universities, notably public Ghanaian universities.

Background to the Study

The success of any educational system be it in an advanced or advancing setting, to a large extent, depends on infrastructure availability. Education has therefore assumed greater eminence among the many sectors of all economies across the globe. It is in this regard that Cobbold (as cited in Adu-Yeboah & Wie-Addo, 2009, p.1) averred that “education is an indestructible social weapon; a tool for the liberation of humanity from the shackles of ignorance and poverty, and an instrument for the empowerment of the minority and the marginalised in society”. However, education cannot

occur in vacuum hence, the need for all significant others to ensure, improve and promote infrastructural availability in all educational institutions. Very key among these educational institutions is higher learning institutions and these institutions are systems for knowledge development and also form an integral element to propel social growth and development in nations (Jamian & Idris, 2020; Wan & Sirat, 2018).

Furthermore, developmental agenda in most advanced nations could be perceived to have been influenced by the knowledge and research of universities. One of the key factors for the establishment of universities is the training of the needed human resource base to occupy strategic aspect of an economy to propel social and economic developments (Boni & Walker, 2016; Esia-Donkoh, Bampoh-Addo, & Afful, 2013). A report by UNESCO (1998, as cited in Alameddine & Ahwal, 2016) indicated that as part of a paradigm shift, higher education has become more vibrant and prepared for change in the hope of inducing innovation and progress in the society. This notion, therefore, calls for the placing of the tertiary education sector in a position responsible for delivering on its mandate, which is training the citizens to drive the wheels of national development.

Extant literature on the importance of higher education to national development suggests that higher education is a major driver of economic and social development in four ways (Fägerlind & Saha, 2016; OECD, 2008). That is, making an economic contribution through the formation of human capital, primarily by training a qualified and adaptable labour force, driving development through building the knowledge base through research and development, influencing development by dissemination and use of

knowledge through interactions such as consultancy services with the wider economy and finally contributing to the maintenance of knowledge via research and transfer.

Similarly, the Government of Ghana in the year 2001, delineated a precise set of priorities to be pursued in the medium term within the framework of the Ghana Poverty Reduction Strategy (Republic of Ghana 2005). Among the main objectives of the GPRS was to improve basic infrastructure to help absorb the increasing number of students who were willing to be educated (World Bank, 2002 as cited in Mundy & Verger, 2015). However, it seems to suggest that improving infrastructure delivery has not been that easy and growing concerns about Ghana's infrastructural debt have raised interest in government's options of financing current and future infrastructural projects as the way forward to achieving economic growth.

In light of this, the Ghanaian government developed a plan to use public private partnerships (PPP) as a means of delivering infrastructure projects to support various development projects in the nation, as outlined in the Ghana-Vision 2020 document, in an effort to achieve the infrastructure development goal (Badu, Kissi, Boateng, & Antwi-Afari, 2018). Additionally, the Ghanaian government issued US$ 750 million in 10-year bonds in 2007 for the same reason in an additional effort to raise money for the delivery of infrastructure projects (Badu, et al., 2018). As evidence of the government's desire to further this objective, the Ghana Education Trust Fund (GETFund) was established in August 2000 by a Parliamentary Act to help finance educational facilities among other things.

Education infrastructure remains a major problem in most developing nations, including Ghana, despite national infrastructure development efforts (Abugre, 2018; Dang & Pheng, 2015; Obokoh & Goldman, 2016). This is because it is the means by which the necessary skills, knowledge, and aptitudes are acquired, harnessed, and the creative abilities of individuals are released to pave the way for a better life and society, educational infrastructure development is the foundation of any strategy of human development and productivity (Republic of Ghana 2005). Education is a vital human right for all children who are school-age, and in Ghana, this right may not be realised if strategic steps are not implemented to ensure adequate provision of infrastructure to schools (Dzikum, 2015).

It is also important to note that funding for educational infrastructure is crucial to ensuring that the nation's education system is of the highest calibre (Ministry of Education, 2011). Although the government and other organisations have put a lot of effort into increasing access to funding and the availability of infrastructure facilities at all educational levels over the years, the quality of education remains a matter of national concern, with inadequate educational infrastructure remaining the biggest obstacle (GPRS 2012, as cited in Boateng, Boateng, & Bampoe, 2015). The slow pace at which facilities are being provided to universities and technical universities, which has led to a lack of teaching and learning facilities for the country's critical human resource training, is aggravating this problem.

Although finance continues to be a significant obstacle for the government, quality education is nevertheless a top priority on Ghana's development agenda. This is supported by rising public demand for

infrastructure expansion to keep up with the growing student population (Auditor General, 2013). The Vice Chancellor (VC) of the University of Ghana, Prof. Clifford Tagoe, lamented that the University had to painfully reject applications from many other qualified applicants due to staffing and facility limitations when speaking at the matriculation of freshmen and women for the 2008–2009 academic year. Furthermore, Salmi and Hauptman (2019) confirmed to the fact that in recent decades, the demand for higher education has grown more than the state's capacity to provide adequate public funding of infrastructure facilities for higher educational institutions.

Naz et al. (2012) also noted that physical facilities are the compulsory components of any educational institution and research have proved that students' performance and academic achievements are linked to better building quality, advanced laboratories, libraries and other physical facilities. Similarly, recent reports on our universities portray a general lack of infrastructural facilities. That is, an average public university in Ghana lacks basic infrastructure like regular water supply, electricity, and standard accommodation for students. In many instances, the washrooms that serve the students are in deplorable states as many do not have running water. Likewise, inadequate, poor and dilapidated infrastructures are some of the major factors that bedevil the current state of most Ghanaian universities (World Bank, 2014).

The World Bank's most recent World Development Report (WDR), "Learning to Realize Education's Promise," details the advantages of having an educated populace from a global standpoint (Filmer, Langthaler, Stehrer, & Vogel, 2018). The premise of this paper was that progress and development can only

be attained through education. Therefore, it is crucial to create educational infrastructure that maximises the usability and efficiency of the instruction being provided. The WDR emphasises once again that evidence-based, well-targeted educational policies are necessary for education to reach its full potential. That is creating a comprehensive framework that encourages excellent learning. In this regard, infrastructure development in higher educational institutions is an important aspect that needs to receive immediate attention from all sundries.

In a broader perspective, the term infrastructure defies a precise definition since it is comprehensive and encompasses a number of aspects (Badu et al., 2012). Ayogu (2007) defined general infrastructure in terms of educational buildings, electricity, water supply facilities and distributional systems, waste treatment facilities, correctional institutions as factors. The scholar further posited that infrastructure is defined in two ways; the broader definition which identifies a conceptually sensible type of natural monopoly capital stock that may or may not be privately owned and infrastructure that is seen as a public sector stock, implying that it is associated with any public good, such as enhanced security, time savings, improved health, and a cleaner environment.

However, it is argued that for any institution to achieve a greater infrastructure development, members of educational institutions need to invest resources to bring about its improvements. This implies that, developments in terms of infrastructure, requires all hands-on deck. Again, the issue of continuity comes to fore when institutional infrastructural development is raised. It suggests that members of educational institutions need to ensure that

they bring about sustained improvements in infrastructural facilities. With regards to recent advancements and the advent of modern and innovative methods, technologies and best practices, it is necessary to promote infrastructural development in educational institutions in the country so as to match up with advanced educational institutions across the globe.

Although, emphasis has been placed on making provision for appropriate amenities and facilities within the various institutions over the years, it appears the policies have not actually been implemented. In addition, there is sparse literature on these variables of concern, indicating that literature on infrastructure development in universities, and more specifically, Ghanaian universities is needed to bridge this gap and add to knowledge. The relevance of this issue under consideration is also seen in the fact that the needs and requirements of the students with regards to adequate infrastructural development will be addressed. In support of this, the National Education Policy (NPE, 1986) argued that lacking adequate infrastructure facilities and amenities in the educational environment can be a demotivating factor for both students and other members. The learning environment is thus influenced by the infrastructure.

Similarly, the Growth and Poverty Reduction Strategy in Ghana stipulates that government investment in public infrastructure is essential to the nation's development (Republic of Ghana 2005). Because public finances are stretched thin and there is no room for increased infrastructure spending, this traditional source of funding is in jeopardy (UNCTAD 2015). As a result, the nation is dealing with serious issues that are made worse by a lack of resources. Even if the students were eligible, it would not be possible to

increase student enrolment at academic institutions due to poor infrastructure. Additionally, the Gross Enrolment Ratio (GER) at tertiary institutions increased from just 3% in 2002/2003 to 9% in 2009 (World Bank 2012), demonstrating the severity of inadequate infrastructure and the subsequent bottlenecks on student enrolment in Ghanaian universities.

According to Atuahene (2009) and Mohamedbhai (2014), the lack of adequate residential and academic facilities results in the exclusion of more than 60% of qualified applicants who apply for admission to universities and the technical universities each year. The lack of resources allocated by African governments to higher education, as stated by Kigotho (2004 as referenced in Bewiadzi & Ismaila, 2016), has had a negative impact on the advancement of quality education in the majority of African nations. More worryingly, the recent sharp rise in tertiary enrolment has resulted in overcrowding and the deterioration of the meagre infrastructure that is still in place, which has resulted in a drop in quality. Therefore, it is clear that a key cause for concern that needs to be looked into is the absence of financial resources to support institutions in improving and expanding their facilities.

Statement of the Problem

According to the Auditor General's report in 2016, although Ghana's development priority is quality education through infrastructural development, increasing students' enrolment places huge financial burden on the government to expand existing infrastructural facilities to accommodate the increasing student population. The Gross Enrolment Ratio (GER) at tertiary institutions which stood at 11.77% in 2011 increased to 13.83% in 2013 and 16.01% in 2017 (UNESCO, 2020). Accordingly, Badu, Kissi, Boateng &

Antwi- Afari (2018) infer that the substantial increase in the number of students at tertiary institutions without a commensurate infrastructural development has led to congestion in the available infrastructural facilities in tertiary institutions in the country. The authors also argue that the situation is compounded as a result of the lack of maintenance culture in most of the tertiary institutions, leading to the deterioration of existing infrastructure.

Putting up new infrastructure to meet the increasing demand for tertiary education, or maintaining existing ones requires funds since infrastructural development is capital intensive. However, it is not clear whether these institutions have enough funds for infrastructural development to meet the increasing demand. If they do, what are their sources of funds and what opportunities exist for them to fund infrastructural development? These are the foci of this current investigation.

Though a considerable number of studies have been conducted on funding of tertiary institutions (Atuahene & Owusu-Ansah, 2013; Manuh, Griba & Budu, 2007; Okyere, Boateng, Nyarko & Ofori, 2015), it seems to indicate that these studies only touched on general funding, with little or no emphasis on infrastructural facilities.

However, studies that seemed to focus specifically on funding of infrastructural facilities (Badu et al., 2012; Badu, Kissi, Boateng & Antwi-Afari, 2018), only looked at financing mechanisms, challenges and strategies for educational infrastructural development in tertiary education in Ghana. The above studies failed to look at opportunities that exist for funding educational infrastructural facilities, adequacy of the funds earmarked for infrastructural facilities development in Public Universities, and prioritization of

infrastructural facilities that requires funding. These areas identified present a research gap worth exploring. It is against this backdrop that this study seeks to explore funding of infrastructural facilities in Ghanaian public universities along the lines of opportunities for funding, adequacy of funds and areas that institutions prioritise for funding.

Purpose of the Study

The study sought to explore the funding of infrastructural facilities in public universities in Ghana along the lines of opportunities for funding, adequacy of funds, areas that institutions prioritise for funding and challenges thereof.

Research Objectives

Precisely, the study sought to address the following objectives;

1. To assess the current funding mechanisms for infrastructural facilities available to public universities in Ghana.
2. To examine the infrastructural facilities that are prioritised for funding in public universities in Ghana.
3. To explore the adequacy of funds earmarked for infrastructural facilities of public universities in Ghana.
4. To explore the opportunities in existence for funding infrastructural facilities in public universities in Ghana.
5. To ascertain the challenges associated with the funding of infrastructural facilities among public universities in Ghana.

Research Questions

In order to understand the issues regarding funding of infrastructure in the public universities, the following research questions were formulated to drive the study:

1. What are the current funding mechanisms for infrastructural facilities available to public universities in Ghana?
2. What infrastructural facilities are prioritised for funding in public universities in Ghana?
3. How adequate are the funds earmarked for infrastructural facilities of public universities in Ghana?
4. What opportunities exist for funding infrastructural facilities in public universities in Ghana?
5. What challenges are associated with the funding of infrastructural facilities among public universities in Ghana?

Significance of the Study

Public universities in Ghana heavily rely on government funding for their operations and infrastructure development. Understanding the allocation of public funds and the government's priorities for higher education can help universities better advocate for their needs and secure adequate funding. The findings of this study will help the GTEC to find more robust measures to perform their advisory function to the government so that the funds allocated to the public universities for infrastructural development can be improved.

Also, the World Bank and other international financial institutions have significant investment portfolios in educational infrastructure projects worldwide. By demonstrating the effectiveness of educational infrastructure investments, the GTEC and the management of these public universities can

devise appropriate measures to generate more funds from these institutions, leading to improved facilities and learning environments in their various universities.

Understanding the challenges faced by public universities in funding infrastructural facilities can help institutions develop more strategic plans for infrastructure development. This can also help policy makers and the regulators (Ministry of Education and GTEC) to implement a regulatory framework that brings on board other relevant stakeholders to help finance infrastructural in these public universities to help contribute to the overall growth and development of these public universities.

The researcher intends to communicate the findings of this study to the public university management members and policy makers through presentation at seminars, viva and publication in education journals. Also I will develop a policy-brief for policy makers like the Provosts, Deans, Vice Deans among others and the regulators (GTEC) as a way of disseminating the finds and recommendations of this study to them.

Delimitations

The study was delimited to exploring the funding of infrastructural facilities in public universities in Ghana. Thus, the decision to focus on only one geographical context (i.e., Ghana), was to enable the researcher to fully cover the issue of funding of infrastructural facilities in institutions with similar characteristics (i.e., public policies, structures of the economy, economic indicators like inflation rate) for the purpose of ensuring external validity.

The study again, focused only on the three traditional public universities in Ghana, which are the University of Ghana, Legon (UG), Kwame Nkrumah University of Science and Technology (KNUST) and University of Cape Coast (UCC).

The study also relied on two groups of people from the various public universities. The first group consisted of academics in management positions in the three public universities selected for the study (UCC, UG and KNUST). The second group was made up of non-academic administrators (Administrators).

Limitations

Even though all respondents and participants were assured of their confidentiality and anonymity, some were skeptical about the responses they gave, judging from the questions asked the researcher concerning how confidential their responses were. The respondents expressed their fears regarding the economic hardship in the country which could grossly affect them if they should lose their jobs for revealing such sensitive pieces of information. They were however reassured of their confidentiality and anonymity.

Despite all of these efforts, some people eventually felt they were giving too much information and resorted to giving brief answers. This may have put pressure on the quantity and quality of the information they supplied, which would have lowered the level of insight participants brought to the study. The researcher reassured participants of the tremendous benefits their institutions stood to get from the study's findings in order to alleviate the

aforementioned difficulties and increase the overall trustworthiness of the study. This mechanism enhanced mass and willing participation.

Definition of Terms

These words have been defined by different authors but for the purpose of this study, operational definition for some key terms was provided to guide users of this study.

Academics in Management Positions: This refers to management staff in the public universities occupying positions as Provosts, Deans, Vice Deans, Directors, Deputy Directors, Registrars and Assistant Registrars. These people mainly form part of committees where they are directly or indirectly involved in the decisions regarding funding of infrastructural facilities in their various universities.

Administrators: This refers to the Non-Academic Administrators. Per public universities' nomenclature, Non-Academic Administrators include technical people who are employees of the universities. This group of people were selected purposively from the physical development and estate management section, physical planning sections and account sections of the three public universities used in the study.

Three Traditional Public Universities: The three traditional public universities refer to University of Cape Coast (UCC), University of Ghana (UG) and Kwame Nkrumah University of Science and Technology (KNUST). These universities were chosen for the study because they are the top three oldest universities in the country which have been in existence for over 50 years. They also exhibited characteristics that stimulate responses for this study and hence, the decision for their inclusion in the study.

Infrastructural facilities: This refers to the basic systems and services in place in any educational setting. It can be the physical and non-physical facilities that facilitate the teaching and learning process. It includes residential halls, lecture rooms, research laboratories, health facilities, recreational facilities, library facilities, digital resource facilities, auditorium, theatre and studio facilities, counselling facilities and utility facilities etc.

Academic facilities: These are the facilities that aid in lecturing, learning, and research in the university community. Some of these facilities may be lecture facilities, the library, laboratory facilities, access to information and ICT.

Higher Education: According to the Ministry of Education HE falls within Tertiary Education which is the post-secondary education one decides to pursue and it is optional.

Educational Services: Educational services is explained as those learning opportunities and services rendered to aid students to succeed in their education pursuit. Some of these services are the teaching services, counselling services, recreational facilities, health services, transportation, administrative services, internet facility, library services, laboratory services and others.

Organisation of the Study

There are five main chapters throughout the overall study. The study's introduction was covered in Chapter One, which included the study's background, problem statement, purpose, research questions, significance, delimitation, limitations, definition of terms, and study organisation. The review of relevant literature on the variables of interest in this study was included in Chapter Two. It also emphasised on the theoretical, empirical, and

conceptual frameworks. The third chapter focused on the research techniques used. The research design, study area, population, sampling procedures, data collection instruments, data collection procedure, and data processing and analysis were all covered in detail. The study's findings and analysis were presented in Chapter Four, while the summary, conclusions, suggestions for additional research, and recommendations were presented in Chapter Five.

CHAPTER TWO

LITERATURE REVIEW

Introduction

It is impossible to overstate how crucial infrastructure is to the implementation of any educational strategy in a nation since effective use of human capital is only possible in the presence of suitable infrastructure. According to Newman and Duwiejua (2015), the state is dominating in financing higher education in Ghana, as in many other African countries. This chapter provide insight on pertinent literature into the context of financing infrastructural facilities of public universities in Ghana. This chapter reviewed theoretical perspectives and conceptual views related to funding of higher education. Additionally, empirical studies were reviewed and lessons learnt from the literature reviewed, presented.

Theoretical Review

To understand the nature of theories underlying financing infrastructural facilities of public universities in Ghana, this study draws on and integrates three distinct bodies of research covering higher education funding systems policies. The literature in funding of higher education covers a rich set of cases on the adoption and implementation of funding systems (Dougherty et al., 2013). Therefore, this study impinges on resource dependency and political economy theories.

Resource dependency theory

The resource dependency theory is a product of organisational behaviour and management disciplines, and it holds that "the behaviours of organisations are moulded by the availability of external resources upon which

the organisation relies for life" (Fowles, 2014; Pilbeam, 2012; Santos, 2007). A movement in the income structure away from public appropriations and towards a greater reliance on tuition payments, according to Fowles (2014), has had substantial and possibly unanticipated effects for public universities because institutions are owed to the party providing the financing. According to Santos (2007), the political aspect of institutions and their connection to the external resource environment are underlined in light of the resource dependence hypothesis. They point out that higher education institutions must change their goals and focus areas to account for changing interests in order to obtain adequate funding, severing a portion of themselves from others.

The Resource Dependence Theory (RDT) espoused by Pfeffer and Salancik (1978) is hereby employed to explain the mentoring relationship between public and private universities. Organisations are the main unit of analysis within the theory. The theory argues that organisations depend on critical and important resources from other external organisations within their environment for their survival as well as their proper functioning, resources over which the organisations have limited control. The extent of the availability of the external resources correlates with the operations as well as the development of the organisation (Pfeffer & Salancik, 1978). The theory helps to explain the behaviour of an organisation within its environment.

The theory of resource reliance has also been used to examine the influence little financing can be seen to have on higher education institutions (Nisar, 2015). The success or failure of such programmes "depends upon the quantity of money associated with such resources and the dependency of universities on such sources of revenue," claims Nisar (2015, p. 294),

approaching the issue from the perspective of resource dependence theory. Furthermore, Nisar suggests that one factor contributing to the limited impact of some funding systems, particularly performance-based funds, is the fact that only a small portion of state appropriations are linked to performance-based funding, which is insufficient to meaningfully affect institutional behaviour, particularly the financing of infrastructure facilities.

Political economy theory

The approach to university funding, according to Saunders (2012, p. 397), "exemplifies a political economy which embodies a shift from public to individual benefits of higher education." According to Saunders, a broader set of political beliefs that favour the individual over the social and individual choice over social supply lends some support to this trend. The study by Zhang, Ning, and Barnes (2016) identifies "political variables" like interest group ratio, political ideology, electoral competition, voter turnout, budgetary authority of the governor, legislative professionalism, unicameral legislature, term limits, governance structures, political culture, party of the governor, and party of the legislature as having an impact on higher education funding policies.

Similar to how Delaney and Doyle (2014) point out that capital budgets lack funding formulas, this may suggest that capital budgets are more susceptible to state political processes. The fact that legislators directly administer capital financing rather than state higher education agencies suggests that capital funding is distributed through a more political process than state general appropriations, the authors claim. Similar circumstances apply in that funding for higher education requires parliamentary approval through the Ministries of Education and Finance. Weerts (2014) draws the

conclusion that decisions about state funding for higher education are positioned within a complex web of rational, political, and cultural-symbolic elements that exist at the state, governance, and campus levels based on the impact of community engagement on state appropriations in the US.

Conceptual Review

Funding in Higher Education

Resource allocation for higher education has become a focus of research on a global scale due to the increasingly constrained financial resources as a result of the economic slowdown, inflation, rising costs, and competition for government funds from other public sectors (Zhang et al., 2016). The level of investment made by a nation in its higher education sector impacts how developed that nation will be. Therefore, it is crucial to adopt the right strategies to bring about reforms in the financing of higher education, which presents a constant challenge to Ghana's public universities.

In this regard, the World Bank (2007, as cited in Khanal, 2021) notes that reforming the funding of higher education (HE) under challenges of expanding private demand for HE admissions and severely constrained public resources is a significant challenge faced by governments around the world. Understanding the bigger picture of revenue streams for both public and private universities is crucial given worries about public university finances. As governments struggled to pay for rapidly expanding HE systems, the way HE is financed in many nations has undergone significant change during the past twenty years. Public spending on education, meanwhile, has lagged behind or even decreased in some circumstances.

According to Altbach (2016), higher educational institutions have been heavily and occasionally fully dependent on public funds, at least in the public sectors that prevail in the majority of countries. In contrast to basic education, public health, and military, public higher education actually consumes a greater fraction of the overall education budget in nations with relatively low higher education participation rates. In any case, the cost of government spending consumes a sizable portion of the whole federal budget, leaving scant funds for other crucial tasks (Some, 2010). These revenues appear to be constrained and, in the majority of nations, unable to rise at the same rate to match the fast-rising higher educational costs. According to Altbach (2016), the difficulty of state revenues to rise gradually may be caused by the underlying economy' slow and occasionally unfavourable growth, which is seen in the majority of African nations, particularly Ghana.

According to the World Bank (2010), several nations have embraced more creative finance strategies and are starting to stray from historically based budgets. Nations such as Nigeria and Ghana, employ normative unit costs that are calculated based on the suggested cost of goods and services for a teaching unit by discipline as well as the appropriate student-teacher ratios for each subject. Some nations, including South Africa, establish financial agreements connected to the teaching and research outputs outlined in government-approved plans for investment (Pillay, 2009). Several governments, like those in Ethiopia, Ghana, Mozambique, and South Africa, add competitive money to universities' main budgets to encourage qualitative advancements, research, and collaborations (Newman & Duwiejua, 2015; Teferra, 2013).

Despite the fact that governmental funding for higher education is insufficient, the proportion of private resources in funding is growing (Mngomezulu, 2015). For nations putting in place finance structures or processes, Salmi and Hautpman (2006) offer three recommendations.

1. The administrative capacity of the government and the tertiary education institutions, including the degree to which different mechanisms promote flexibility of institutions to change and adapt rapidly and the capability of the system to collect necessary data;
2. The transparency and perceived objectivity of the proposed allocation mechanisms and the potential for leakage and corruption of the system; and
3. The political dimensions of adopting new reformed allocation mechanisms, particularly, the risks and difficulties involved in the transition from existing to new approaches.

Types of Funding Systems in Higher Education

This section presents the various types of funding systems in Higher Education.

Historical Based method

Utilizing the prior year or years as a baseline and making incremental adjustments based on broad factors like the nation's economic performance, government income, inflation rates, or institutional growth, is the most typical operational budgeting strategy for universities (World Bank, 2010). According to Collins (2013), this strategy was popular in Africa during the 1990s and is still used today in Ethiopia, Lesotho, Madagascar, Mauritania, Mozambique, Sudan, Zimbabwe, and the majority of other nations (Salmi, 2009). When

institutional leaders try to sway government choices about small budget changes, the historically described process might transform into "negotiated budgeting" (World Bank, 2010).

The final sums are unlikely to differ significantly from historical levels, but they might be somewhat increased due to unique circumstances, political factors, or the negotiators' persuasiveness (Jongbloed, 2008). Such negotiations are unlikely to affect the Ministry of Finance's allocation decisions due to income restrictions. University heads may occasionally successfully advocate for minor increases in their share after the overall budgetary allocation for the education sector has been decided. However, where staff salaries are determined by agreements with academic staff unions or public sector pay scales, and where levels of student services are decided upon in response to disputes with student associations, the room for budgetary negotiation is severely constrained.

Input-based formulas

The World Bank (2010) states that the most fundamental input is the number of employees or staff salaries, with the non-salary element of the budget being established as a predetermined percentage of the overall payroll. The average cost per student for the higher education system as a whole is a second option (World Bank, 2010). This necessitates the ability to produce aggregate statistics on enrollment and ongoing expenses, but it also calls for an effective incentive for outlier performance as institutions with average costs above the average will not have their full costs covered. Calculating normative unit costs constitutes the third strategy. In this, the optimal student-staff ratios and other efficiency requirements are applied to determine what costs per

student should be rather than what they really are. Because they tie how much each institution will get to a consistent efficiency-based criterion, normative cost formulas have a high potential to increase system-wide efficiency.

In addition, the World Bank claimed that because of government norm-based micromanagement, they also encourage uniformity rather than diversity and creativity across institutions. Nigeria and Ghana have both used this strategy. The recommended costs of goods and services for a teaching unit by discipline and the required student-teacher ratio by discipline are the two primary factors from which normative cost formulas are constructed (Mngomezulu, 2015). In Ghana, the actual amount of funding supplied to institutions by the Ministry of Finance has a tendency to be roughly 60% less than the normative cost projections. According to Mngomezulu (2015), rather than being caused by the implementation of reasonable norms, this substantial imbalance creates efficiency constraints as a result of significant underfunding. Instead of intentional modification, the outcome is generalised belt tightening.

The division of costs by field and degree of study is a useful consideration regardless of the sort of cost-per-student methodology used. On the basis of thorough system-wide evaluations of expenditure trends by disciplinary area and degree programme type, consensus is achieved on suitable expenses per student for each. Tanzania has applied this strategy (World Bank, 2010). For instance, postgraduate expenditures per student are usually greater than undergraduate costs per student when taking into consideration the lower-class sizes, increased need for student advising, and

more extensive use of libraries and laboratories connected with postgraduate education.

The World Bank also emphasised that courses that primarily rely on lectures (such as history, sociology, and literature) typically have lower expenditures per student than courses that need for a lot of laboratory work or field experience (for example, chemistry, engineering, veterinary medicine). Governments generally group disciplines with comparable unit costs into a small number of cost categories when such distinctions are established in the budgeting process in order to make the budget formula simpler.

Performance-based funding

Output measures are incorporated into the formula in a considerably more uncommon method of budget calculation. The number of graduates, the rate of student repetition, the proportion of minorities, women, or economically disadvantaged students who are admitted, and research output are examples of frequently used metrics, according to the World Bank (2010). Indicators used in performance-based formulas frequently correspond to public policy goals rather than organisational requirements, setting them apart from conventional budgeting techniques. Additionally, unlike more conventional allocation systems, which frequently reinforce the status quo, they may provide incentives for institutional change (Salmi & Hauptman, 2006). Nisar (2015) associates the current prevalence of performance-based funding with "a resurgence of what some scholars have called 'new accountability' at a global and national level".

In higher education management across the globe, the new accountability is currently widely embraced, according to Shin (2013),

particularly as a method of providing operational and/or research money to higher education institutions. Instead of the conventional emphasis on input or procedure, the new accountability promotes a shift in focus to the outcomes of campus activities (Shin, 2013). The neoliberal ideas of effectiveness, efficiency, and competition also serve as the foundation for performance-based funding. In light of this, Hicks (2012) argues that the goal of performance funding is to encourage poorer performers to improve by allocating more public funds to "performing" institutions than to less successful institutions. This will provide better performers a competitive advantage.

As Nisar (2015, p. 293) put it forthrightly, under the new accountability regime and the performance-based funding mechanism, higher education "is no longer considered a 'holy cow' which cannot be sacrificed and faces tough competition in terms of budgetary allocations from other sectors." According to Rabovsky (2012), there is a consistent pattern in the performance indicators employed, with graduation rates being the most frequently used indicator, followed by retention rates, outcomes for students of colour or those from low-income families, and the total number of degrees earned. Cost effectiveness, research productivity, external research financing, and staff or student population diversity are some additional but less frequently utilised metrics.

Zhang, Ning, and Barnes (2016) outlined key differences between performance-based funding and the conventional approach, including an attempt to reward institutions for actual performance rather than performance that was promised, the fact that performance indicators primarily reflect public

policy goals rather than institutional needs, and the fact that performance-based funding systems include incentives for institutional improvement.

Sources of Funding in Ghanaian Public Universities

In Ghana, there are several different ways to fund higher education. the Ghana Education Trust Fund (GET Fund), development partners, internally generated funds by the institutions, as well as contributions from students and the corporate sector, are the principal sources of funding (Newman & Duwiejua, 2015). The GET Fund is a public trust that was established by a Parliamentary Act in 2000 to give funds to support government initiatives for the provision of educational infrastructure and facilities within the public sector from the pre-tertiary to the tertiary level. The GET Fund Board is required to grant funds under Section 2(2a) of Act 581 in order to address issues with infrastructure development and the dearth of academic facilities at tertiary institutions. The building, remodeling, and rehabilitation of classrooms, labs, equipment, and dormitories are given particular attention. Since the Fund was founded, this area has received substantial attention.

According to Atuahene (2009), the GET Fund is significantly influencing the growth of universities and polytechnics in the nation, notably in the area of infrastructure, which has long been a significant concern for institutions. In light of this, institutions at all levels are going through a renaissance and quick face-lift. To be more precise, all public tertiary institutions (universities and polytechnics, now called technical universities) in the nation are undergoing rapid development in terms of classroom buildings, lecture halls, hostel development to ease the acute residential facilities for students, construction of libraries, and information and communication

technology centres. Some of Ghana's funding mechanisms are described in the following sections.

Tax revenue

Taxes, such as income, property, and sales taxes, are the main source of funding for state and local governments (Badu et al., 2018). Accrued Tax Revenue can be used to pay for government spending on education (Yoshino & Hirano, 2010). However, Yoshino and Hirano emphasised, most emerging economies struggle with inefficient tax collection due to flaws in the tax collection system; as a result, the revenues are insufficient to support their needs for infrastructure financing.

Revenue bonds

In order to construct, purchase, or renovate a property that generates income, a municipality, state, or other public entity may issue revenue bonds (Britannica, 2004). Revenue-generating properties, such student housing, might be taken into consideration while planning educational infrastructure. User fees, special taxes, and lease-back agreements are additional possible sources of revenue for the bonds (Badu et al., 2018).

Infrastructure investment by government trading enterprises

Government trading enterprises (GTEs) are sometimes referred to as public trading businesses, government business companies, public corporations, state-owned firms, or government-owned corporations. According to Chan, Forwood, and Sayers (2009), GTEs are operationally and legally independent of the government, and they raise money for infrastructure projects through retained earnings, budget appropriations, and borrowing. The Volta River Authority (VRA), the Social Security and National Insurance

Trust (SSNIT), and the Ghana National Petroleum Corporation (GNPC) are current examples of GTEs in Ghana. For example, SSNIT has the capacity to build up sizable reserves that are then invested to produce income to supplement the member contributions. Investments have been made over time in a variety of fields, including education (SSNIT-Ghana 2014).

Private financing

Public-private partnerships, often known as P3s, are infrastructure projects that are commissioned by the government but at least partially financed by the private sector. P3s are infrastructure projects that are wholly owned and run by the private sector (Yoshino and Hirano 2010). This style is also described by studies by Yoshino and Hirano (2010) as the complete allocation of money, followed by private sector ownership of infrastructure. Private primary, secondary, and tertiary schools in Ghana are all instances of educational infrastructure that falls under the category of private finance. PPPs are long-term agreements between private entities and a public agency for the provision of public goods or services, where the private party is responsible for a sizable portion of the risk and management (World Bank 2012). There are two types of private financing: debt and equity. A significant amount of infrastructure finance is provided by debt; however, this mostly depends on the predictability and stability of income flows (Yoshino and Hirano 2010). Although some private enterprises have been partially funded by issuing bonds in capital markets, particularly in Europe, debt funding is mostly made up of bank loans (EPEC 2010 as cited in Badu et al., 2018).

Equity financing

Equity financing entails buying common stock or ordinary shares in a company (Secretariat to ICA, 2007 as cited by Badu et al., 2018). It also refers to obtaining capital for commercial purposes by exchanging full or partial ownership of a company's equity for cash or other assets, as Badu et al. (2018) point out. Large pension funds, some of which have invested directly in equity holdings at the start-up phase of projects, have recently been involved in the development of equity financing of infrastructure projects (Chong & Poole, 2013). Irving and Manroth (2009) noted that the use of pension money for infrastructure by SSNIT, including educational projects, is a typical example of equity financing in Ghana.

Funds Allocation to the Higher Education Sector in Ghana

Through the Ghana Tertiary Education Commission, the government provides tertiary institutions with monetary support (GTEC). The Education Regulatory Bodies Act 2020 mandates GTEC to enquire into the financial needs of public tertiary education institutions and advise the Minister in charge of Education on block allocations of funding for tertiary education's operating costs and grants for capital expenditures. To Newman and Duwiejua (2015), in reality, the total amount of money allocated by the Ministry of Education to NTEC (now GTEC) for the tertiary sector is decided through a combination of mechanisms namely:

1. Historical funding or incrementalism: fund allocation is the same yearly, based on the previous year’s allocation with minor variations;
2. Bidding and bargaining: a case is presented for funding every year based on annual budgetary demands from GTEC; and

3. Discretion: the final decision on quantum of allocation to the tertiary sector depends on the total allocation of funds received from the ministry of finance to the education sector.

Concept of Infrastructural Facilities

The term "infrastructure" is broad and includes a number of components (Kapur, 2019). These consist of items like playgrounds, libraries, labs, computer centres, technology, machinery, tools, and other things. The researcher claims that higher education institutions' members need to spend money to upgrade their infrastructural amenities. Kapur (2019) argued further that in order to start infrastructural improvements, people must carry out their responsibilities in a way that advances educational institutions. Additionally, it is the responsibility of the educational institution's members to continuously develop the infrastructure. The service and facilities required for an economy to operate, as well as the physical and organisational structures required for the running of a society, system, or enterprise, make up infrastructure (Aladejana, 2013).

Similar to how Ajibola, Awodiran, and Salu-Kosoko (2013) defined infrastructural facilities as a collection of interconnected structural components that support development, infrastructural facilities in the context of schools refer to any tools or resources (hardware or software) that are used to support teaching and learning without the need for human labour. It appears to show that the state of the learning environment in higher education, particularly the infrastructure, has a significant impact on students' academic performance and effectiveness. Facilities such as enough power and water supplies, a good communication system, an upgraded transit system, adequate

classrooms, libraries, and laboratories, as well as furniture pieces and sporting equipment, are all necessary for optimal learning in educational institutions (Fagbohunka, 2017).

Again, universities require infrastructural support, which consists of buildings (offices, residential flats, labs, and workshops), roads, drainage projects, and other civil and heavy engineering works, in order to be able to carry out their functions (Mac-Barango & Kakulu, 2014). Among other things, this infrastructure base is necessary for the efficient provision of top-notch education. Offices, residential structures, and classrooms all offer the reading and studying circumstances needed. Residential housing also enables academic and non-academic workers to live comfortably.

The health of university environments is influenced by telecommunications, recreation and sporting facilities, a road and drainage system, and waste disposal and management services. In general, the fundamental goals and structure of universities have not changed over time. Universities compete with one another for both intellectual and physical resources. Aithal and Aithal (2019) claim that because private colleges are autonomous and have often existed for more than a century, they are able to create a significant number of physical infrastructures in many industrialised countries. Aithal and Aithal (2019) emphasised that private colleges may invest more money in building better infrastructure because of their liberty in using funds for their accelerated development. In contrast, public universities depend on restricted public financing.

Types of infrastructural facilities

It is widely acknowledged that high-quality education requires high-quality facilities. According to Audu, Umar, and Idris (2013), providing proper facilities will guarantee high-quality instruction. All of these will have an impact on how instructional activities are carried out in higher education institutions, hence their absence could cause higher education as a whole to decrease. Buildings, houses, and other significant infrastructure are all examples of facilities, which are also referred to as "built environment" in the facility management sector (Witt et al., 2013).

The infrastructure and material resources utilised to support the delivery of high-quality education are all included in teaching facilities. Infrastructure describes the fundamental organisational and physical infrastructure required for the institution to operate successfully. This can be observed in the form of any physical building or space needed by the institution to carry out its programmes and associated activities, (Masoumi & Lindström, 2012). Facilities are to provide responsive and high-value infrastructure for a safe and functional physical environment to enable the University in completing its academic, healthcare, research, and public service operations.

Physical infrastructure

Physical infrastructure is needed to make the stakeholders in the teaching-learning process comfortable and safe (Aithal & Aithal, 2019). Despite the demand for a robust, secure physical infrastructure in a convenient location, the ideal educational system encourages learning in a quiet, open space. In practice, admission and counselling areas, classrooms, counselling

rooms, faculty chambers, meeting rooms, laboratories, studios, gymnasiums, theatres, cafeterias, games and sports facilities, auditoriums, libraries/digital resource centres, xerox and printing centres, parking facilities, roads with walking and bicycle paths, landscaping, students feeding areas, supporting industries, attractive and green buildings, structure and design of each building,

Physical infrastructure, in terms of its relevance, offers comfort facilities to the stakeholders and can be built for a variety of purposes, including: minimum requirement with basic facilities to fulfil the goals of higher education, fair level to satisfy stakeholders and differentiate to gain competitive advantage, or luxurious level to establish monopoly and have a significant impact on stakeholders This suggests that it is impossible to overstate the general significance of physical infrastructure to the effective and efficient operationalization of any institution.

By making significant financial investments, physical infrastructure can be developed to any degree, according to Altbach (2016). That instance, developing a sizable, eye-catching infrastructure can aid in the initial development of a brand, but the problem is that competitors may adopt the same investment strategy and engage in industry competition. Due to the possibility that it will not provide any differentiating advantage, this may limit institutional infrastructure outlook (Liu, Wang, Song, & Li, 2013). Therefore, physical infrastructure should support the academic and research endeavours of the university's numerous schools and departments. In contrast to private institutions, where the choice is made by the sponsoring corporation, the

government invests in the physical infrastructure of public universities through a number of autonomous authorities (Liu et al., 2013).

Digital Infrastructure:

All stakeholders benefit from digital infrastructure's ability to streamline tasks and improve organisational effectiveness (Aithal & Aithal, 2019). The numerous supporting facilities improve the efficiency of the services provided and reduce the amount of time required by various stakeholders to access such services. Krishnan (2005) further emphasised that digital infrastructure includes a paperless office system employing an automatic learning management system that encompasses digital information processing for all teaching, learning, testing, and evaluation operations. Both push and pull formats are used to deliver information to all stakeholders online. According to Aithal & Aithal (2019), the university website is at the centre of the admissions process, and students and professors are paid in digital payment formats for all costs.

Innovative academic Infrastructure:

Aithal & Aithal claim that among all types of infrastructure, academic infrastructure is the most crucial (2019). It defines the effectiveness of the teaching and learning process and is the major goal of the educational system (Aithal & Aithal, 2019; Krishnan, 2005; Altbach, 2016). The calibre of a university's output is also determined by its creative academic infrastructure. According to Aithal & Aithal (2019), innovative academic infrastructure can be developed by means of various innovative academic activities such as;

1. Industry oriented curriculum to meet the present and future demands of the industry.

2. Employability skill focused curriculum for increasing employability of the graduates.
3. Specialty and super specialty professional courses.
4. Multi-skill development and certification opportunities.
5. Co-curricular and extracurricular activities
6. Value-added employability skills enhancement papers.

Aithal and Aithal (2019) made the same case for these value-added papers that focus on skill development, saying that they ought to be offered separately and taught by experts in the field.

Intellectual property infrastructure:

The concept of intellectual property infrastructure refers to all intangible assets that make one institution apart from another. The institution can advance into the near future with larger accomplishments and develop name and reputation at international levels, but only if it focuses on improving their intellectual property infrastructure, claim Aithal and Aithal (2019). By concentrating on research and innovation that results in the creation of new knowledge, a research-based institution with a purpose has the chance to contribute its intellectual property on the entire nation. Aithal and Aithal (2019, p.12) further argued that a university can enhance its intellectual property infrastructure through the implementation of:

1. Research oriented experienced faculty members to motivate students and other faculty members to involve in research and innovation which adds intellectual property infrastructure of the university.

2. The university identifies some emerging areas in different subjects and supports the expert faculties in those areas to do research and to publish papers as well as patents.
3. The university must admit more research scholars within its capacity of support. University should also develop post-doctoral research programmes to keep the doctoral graduates in sustained research contribution.

Emotional infrastructure:

All stakeholders must feel a sense of belonging to the organisation, according to Aithal & Aithal (2019). That is to say, every organisation faces a significant problem when it comes to creating emotional surplus with regard to both customers and employees. In order to speed their expansion, universities should aim for emotional excess as their primary infrastructure. Again, extra care in all service areas of both higher education and research activities is necessary and sufficient conditions for developing emotional infrastructure in HEI. These conditions include providing a good working environment for all stakeholders, ethical policies, and a transparent academic and administrative system (Liu et al., 2013).

Furthermore, Liu et al. (2013) showed that building a significant emotional infrastructure for universities requires more time since these institutions must establish their legitimacy and identity over time by their devoted and dedicated services to the community. In light of this, Aithal and Aithal (2019) emphasised that the institution must put out consistent effort over an extended period of time in order to establish significant amounts of emotional infrastructure and use it as a resource for brand construction.

Networked infrastructure:

By establishing connections with business, alumni, schools of higher learning, and other research organisations, we may generate synergy for our collective progress (Aithal & Aithal, 2019). Researchers claim that the goal of collaboration results in a positive-sum game. Businesses that prioritise successful networking can increase their prospects for individual and group growth as well as improve their brand recognition. As a result, other infrastructures such as innovative academic infrastructure, intellectual property infrastructure, and emotional infrastructure can be supported by collaboration and partnership with local, national, and international authorities.

Universities can grow and prosper among other top HEIs through effectively networking with companies, other HEIs, and diverse research groups (Aithal & Aithal, 2019). The network collaboration model ought to have a well-thought-out strategy for including business professionals in the teaching and learning process. According to Altbach (2016), industry-institute contact has the potential to enhance their offerings at every stage, including course and subject planning, curriculum development, collaborative training, collective evaluation, and employment opportunities.

Significance of Infrastructure Facilities

The concept of infrastructure has been employed widely, not just by educational institutions but also by enterprises, federal and local governments, and the general public. This is because infrastructure development is receiving enough attention from individuals. The aforementioned statement suggests that understanding infrastructure development in schools is essential because it

supports the comprehensive and whole-person development of human capital (Draga, 2017). The author further posits that by properly constructing the infrastructure, the staff members of the schools can also benefit in a number of ways, including their ability to carry out their duties in an organised manner, inspire learning, and implement job requirements. Further, offices, classrooms, and other areas of the school also develop environments that are suitable for carrying out tasks and duties. Given that, people are content and satisfied with their academic environment, they in turn become better equipped to work effectively toward the achievement of their personal and professional goals.

Additionally, the presence of adequate infrastructural facilities within schools is crucial for enabling institution staff to effectively fulfill their responsibilities (Ndou, 2004). The author indicated that these staff members often rely on computers and other technology in their daily tasks, underscoring the importance of providing them with suitable office furniture, tools, and supplies. In light of this, it can be inferred that such provisions enhance their ability to convey complex intellectual concepts to their students, a fundamental aspect of education.

As a result, having an adequate infrastructure is required for both the management of universities and the initiation of academic activities for students, claims Fagbohunka (2017). According to Fagbohunka (2017), the construction of a university can make a major contribution to the overall development of an underprivileged region. Therefore, university infrastructure makes a significant contribution and offers opportunities for productive activities in the environment. It also encourages investment, allows for greater movement of people and goods, facilitates information flows, and helps with

the commercialization and diversification of the economy (World Bank, 1994).

Since infrastructure is the cornerstone of progress and is essential for giving students a successful, consistent, and high-quality education, it is difficult to give up on the pursuit of adequate infrastructure in Ghana's tertiary education sector. Therefore, the development of infrastructure reduces stress through reducing tension and promoting health. According to Fagbohunka (2017), it contributes to a decrease in crime across the country. Infrastructure has always been crucial in fusing a region's economies together. A region's potential to prosper and expand economically depends on how well-developed and efficient its infrastructure is. In a dynamic approach, infrastructure is seen as a regional public good that moves production inputs across and among countries, helping the area achieve higher productivity and growth. According to Fagbohunka (2017), infrastructure may help with four issues: social, environmental and health-related, economic, and development-related.

Infrastructure services are therefore essential to the growth of the economy. According to Fagbohunka (2017) and Bhattacharyay, infrastructure fosters the conditions for productive activities to take place and also contributes to the creation of economic growth (2009). For instance, the lack of an adequate power supply, water supply, transportation infrastructure, or communication infrastructure may prevent the optimization of manufacturing processes or geographical advantages. An efficient infrastructure network can promote new innovation in other industries as well.

Problems with Financing Infrastructure Facilities

Africa has a more severe higher education funding issue than the rest of the globe (World Bank, 2010). While state resources allotted to current expenditure in that sector have only doubled, the total number of students enrolled in higher education in Africa has tripled, rising from 2.7 million in 1991 to 9.3 million in 2006 (an average annual rate of 16%). (Increasing at an average annual rate of 6 percent). In the rest of the globe, public funding of higher education has generally increased along with the number of students enrolled in higher education. According to World Bank, the difficulties associated with financing higher education in Africa are particularly neccessary due to the rate of population expansion on the continent. The finance of higher education issue must be taken into account in light of how the educational industry is developing (World Bank, 2010).

Additionally, the expansion of higher education enrolment is directly tied to the advancements made in the areas of universal elementary and secondary enrollment. The improvement of higher education's quantitative and qualitative standards must therefore be seen in the context of the sector's coordinated and consistent development rather than being seen in isolation (World Bank, 2008). The potential for the growth of higher education depends on decisions taken in the context of flow management (plans to regulate enrollment) and financial trade-offs at each educational level (UNESCO, 2007).

Sub-Saharan Africa's educational system has had tremendous growth and stable enrolment growth over the past 15 years (World Bank, 2010). At all educational levels, however, the number of pupils has grown more quickly

than the supply of public resources. Public spending per student has decreased, and this is true not just for higher education but also for other educational levels. The World Bank claims that the loss in funding is partly as a result of the continent's rising enrollment and declining per-student spending, which favours funding for teaching over research and undergraduate over postgraduate education.

The inability of institutions to provide sufficient compensation or to invest in infrastructure, research facilities, and equipment has reduced their potential to boost total research capability (World Bank, 2010). The World Bank emphasised that when one examines the little contribution of African colleges to global academic research, the effects of this situation are obvious. Similar to this, a review of the literature on higher education in Sub-Saharan Africa shows that the main issues faced by African universities include a lack of funding, an excessive reliance on government funding and school fees, as well as a lack of money for crucial investments in infrastructure and qualified staff (Adedeji, Okotoni, Ogunleye, 2019; Iruonagbe, Imhonopi & Egharevba, 2015; Kajawo, 2019).

It's also important to note the management difficulties at these public universities (Kajawo, 2019). Toguebaye (2015) asserts that the inflexibility of legislation and the insufficient degree of autonomy in the financing and management of higher education institutions are the main causes of the financial crisis facing higher education in many African nations. For instance, in the majority of African nations, tuition is fixed by the government. Allowing institutions more freedom to choose their own tuition rates while ensuring that they adhere to the core goal of improving access to higher

education will have the twin benefit of providing universities with fresh resources and giving students more control over their education.

According to Toguebaye (2015), the financial system of many public institutions in Africa imposes line budgeting and necessitates the Minister of Finance's approval before any budgetary modifications can be made. The implementation of medium-term development strategies is not encouraged by these financial system provisions. These days, everything seems to be in favour of giving higher education institutions more autonomy.

Similar to this, Newman and Duwiejua (2015) argue that if the NCTE (now GTEC) fails to recognise the leadership issue to ensure the execution of recommended solutions, leadership and political support represent a threat to management autonomy, which causes new funding mechanisms in Ghana remain on paper. By sending the Minister a draught policy brief on the suggestions, the Council has started the process of arguing for the change. This is due to the possibility that this new mechanism may never be used if the political establishment does not embrace it. The necessity for precise and trustworthy data on the performance of higher education institutions is another obstacle, according to Newman and Duwiejua (2015), for formulaic funding of institutions.

Without statistics on enrollment, research outputs, and data on the established performance indicators, it would be difficult to operate the suggested base funding, performance funding, and research money. To obtain greater financing, the institutions can be inclined to inflate their performance records. To boost the private sector's engagement in creating educational infrastructure, an effective regulatory framework is necessary, however in

Ghana this is not the case (Ministry of Finance and Economic Planning 2013). More frequently than not, there is no definite structure in place to account for private investment participation.

The ability of the institutions to gather, authenticate, and present correct and reliable data from their departments and faculties for submission to the GTEC constitutes a difficulty, according to Newman and Duwiejua (2015). The experts contend that the Council has given public monies to institutions of higher learning over the years regardless of how well such institutions operate. The new mechanism necessitates a significant change in how GTEC allocates public monies to schools of higher learning. According to Newman and Duwiejua (2015), the Council's relationships with tertiary education institutions need to be reoriented. In order to make sure that the new system is implemented on the basis of reliable data, the Council must also establish a process to evaluate the data provided by the institutions. Additionally, the GTEC staff's lack of comprehension of the suggested funding system as well as their limited ability for data collection and analysis may hinder the implementation of the proposed funding mechanism.

Empirical Review

Mac-Barango and Kakulu (2014) conducted a study on enhancing infrastructural facilities for sustainable development in Nigerian Universities. The findings revealed that universities world-wide are centers of excellence; intellectualism, research and teaching aimed at solving societal problems and extending the frontiers of knowledge. In the views of scholars, a situation where no University in Nigeria or Africa qualifies to be among the first 200 universities in the world, gives concern and generates a need to look inward

and identify the problems associated with this occurrence. Over the years, Nigerian universities have had dwindling budgets when compared to student enrolment.

The authors postulate that budgetary allocations fall short of reference standard as stipulated by UNESCO that 26% of a nation's budget be for the educational sub sector. Serious gaps exist in the developmental programmes of most government and private institutions. Education for Sustainable Development (ESD) is not described as one of the key objectives of the education sector in Nigeria. There is the need to mainstream ESD into all spheres of university community. World declarations on sustainable development and sustainability have given further impetus to the paper. Mac-Barango and Kakulu (2014) revealed that the impact of ESD on the provision of infrastructural facilities can enhance the eco-friendliness in Nigerian University communities and promote ecological campuses. In addition, the right level of sustainable infrastructural development can be enhanced through ESD thus enabling universities meet their objectives as 21st century centers of excellence.

Kapur (2019) also conducted a study on Infrastructure Development in Schools. He highlighted this view in both schools and higher educational institutions. The scholar argued that infrastructure development is a crucial factor that must be considered. Kapur (2019) went on to say that the term "infrastructure" is broad and includes a variety of elements. These consist of things like playgrounds, libraries, labs, computer centres, technology, machinery, tools, and other things. Infrastructure needs to be improved, and members of educational institutions must invest resources in this process.

According to Kapur (2019), if infrastructural advances are possible, people will be able to do their responsibilities appropriately, advancing educational institutions. Therefore, it is the responsibility of the educational institution's members to ensure that ongoing infrastructure improvements are made. In light of recent developments and the introduction of cutting-edge teaching techniques, he came to the conclusion that it is essential to support infrastructure growth in educational institutions through funding.

In 2017, Fagbohunka looked at the academic achievement of students and the university's infrastructure at Nigeria's Adekunle Ajasin University in Akungba Akoko. The findings showed a positive correlation between the student's academic performance, power supply, and health facilities using a total of 180 questionnaires that were distributed using a systematic sample technique in each of the six faculties. It was further shown that while water supply was acceptable, internet and transit amenities were insufficient. The study noted that a Chi Square statistical technique evaluation of the effect of infrastructure on students' academic performance produced a significant value of 177.1 at a 0.05% level. The study suggests that in addition to urgent attention being paid to the expansion of internet facilities and the transportation sector of the University, the government should upgrade and considerably improve the current facilities. He promoted the development of commercial partnerships in the university's infrastructure.

Similarly, Aithal and Aithal (2019) conducted a study on essential infrastructures for world class universities. According to Aithal and Aithal, higher education institutions including universities encounter more challenges due to enhanced competitions worldwide. Innovations in higher education

model are assuming greater importance than expected as a result of enhanced higher educational demands. Again, the advancement in technology adopted by mass educational institutions offers opportunities for infrastructural facility expansion which is capital intensive. The scholar averred that privatisation of higher education leads to an enhanced competition among universities to attract students globally. Aithal and Aithal (2019) argued that universities are competing with each other in terms of their physical and intellectual assets and hence postulate that the six essential infrastructure to be developed by any university for accelerated growth and world-class standard are (1) Physical infrastructure, (2) Digital infrastructure, (3) Innovative academic and training Infrastructure for confidence building, (4) Intellectual property infrastructure, (5) Emotional infrastructure, and (6) Networked infrastructure.

Newman and Duwiejua (2015) conducted a study on models for innovative funding of higher education in Africa. The scholars focused on the case of Ghana by reviewing extant literature. The study employed qualitative approach to analyzing funding of tertiary education in Ghana based on a series of conferences organised by the National Council for Tertiary Education. The purpose of the study was to garner the views of stakeholders on funding tertiary education in Ghana. The study utilised stakeholder groups such as the Vice-Chancellors of Ghana, Conference of Rectors of Polytechnics, Principals of Colleges of Education, University Teachers Association of Ghana, Polytechnic Teachers Association of Ghana, Association of Ghana Industries, Ghana Employers Association, National Union of Ghana Students, Ministry of Education, Ministry of Finance and Graduate Students Association of Ghana.

Newman and Duwiejua (2015) noted that there is, therefore, an urgent need for the development of a new funding model to facilitate the steering of public higher education institutions towards the implementation of national policy priorities for tertiary education. The study also revealed GETFund as the main source of funding public universities, hence other reliable sources be established. It was again revealed that current models for fund allocation in Ghana are inadequate in several ways, thus, the incremental and negotiated budgeting approach of funding of tertiary education institutions make room for serious planning in budgeting. The researchers added that lack of reliable data, inadequate budget allocation, politics etc. pose as challenges to funding public universities in Ghana.

In addition, Mačerinskienė and Kučaidze (2016) investigated the diversification of higher education funding of resources, funding forms and methods. The scholars highlighted that according to the trends of globalisation in higher education, primarily, the trend of massification, diversification of higher education funding resources becomes a particularly relevant issue. The diversification of higher education funding resources (income resources) is the most common response to the mass higher education and relevant challenges encountered by higher educational institutions. The study consequently presented groups of diversifications of higher education funding resources (state funding, external funding and internal funding) whereas the main forms and methods of each group of higher education funding resources diversification were analysed. Mačerinskienė and Kučaidze (2016) pointed out that the main providers of HE services can receive funding from the public

and other (nonpublic) funding sources such as the state, external and internal funding sources.

According to Badu et al. (2018), education is the cornerstone of any country's development; in developing nations it has become the backbone of human resource development, assuring successful economic progress; nevertheless, its associated infrastructure development is insufficient. The provision of the necessary infrastructure is proving challenging for governments all around the world. Badu et al. (2018) argued that infrastructure development has evolved into a yardstick for comparing the rates of economic growth in developed and developing nations. Therefore, the purpose of their study was to examine the funding mechanisms, problems, and solutions for the development of educational infrastructure in tertiary education in Ghana. To collect data from educators, financial officials, and pupils, the study used the quantitative paradigm. Utilizing descriptive statistics, the survey's data were analysed. The findings suggested that there are a number of public-private partnerships that can be used to manage the development of educational infrastructure, including build-operate-transfer, build-own-operate, management contracts, service contracts, leases, traditional design-build, and turnkey operations.

Likewise, the sufficiency, effectiveness, and equity of higher education were also addressed by Fahim and Sami (2011) in Egypt. The researchers assert that in order to address Egypt's issues with financing higher education in the future, they will have to look for alternate funding sources. Nevertheless, it was a matter of fact to guarantee that everyone had access to high-quality education, even those who could not pay it. In order to do this, the researchers

evaluated Egypt's public higher education spending in terms of its sufficiency, effectiveness, and equity. It also examines how demographic shifts, the demand for high-quality education, and the shift to private education delivery will affect the nature of financing higher education in the future. It concludes by outlining some alternative approaches to the issue of financing higher education in Egypt, such as promoting the growth of not-for-profit private higher education within a framework that is well-regulated and also prioritises equity and quality.

Summary of Literature Review

On the basis of the subject matter, this review is contextualized in Ghana. The discussions from the review provided research-based data for self-reflection, and also benefit private universities that are at an early stage of exploring successful funding models and "best practices" for coping with the global economic recession. This systematic literature review has revealed key patterns, theories, and issues in higher education funding in the Ghanaian public universities. However, the researcher does not know the extent to which this is carried out in the selected schools. With regard to the statement of the problem, the researcher found out from higher educational institutions, the extent to which the concepts in the literature were operationalised in the various setting. The funding sources and ideas discovered in the literature review revealed the right strategies to put in place and the deficiencies associated with financing infrastructural facilities.

It is crucial to emphasize that despite the extensive research conducted on funding higher education and related variables, there still remain some gaps. These gaps arise from the fact that the studies conducted by various

researchers (Aithal & Aithal, 2019; Audu, Umar, Idris 2013; Fagbohunka, 2017; Mačerinskienė & Kučaidze, 2016) on financing infrastructural facilities in higher education were not carried out within the Ghanaian context. In addition, the research undertaken by Newman and Duwiejua (2015) pertaining to the creative financing of higher education in Africa appears to lack a specific focus on the financing of infrastructural facilities. Once again, it is evident that the existing gap in the literature, where previous studies failed to address the financing of infrastructural facilities, is a clear deficiency that this work aims to rectify. It is worth noting that the literature review guided the formulation of research questions and the selection of research methods employed in this current study.

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter outlines the methods used to make sure that the study's conclusions are solidly supported by the data gathered. The research methods are organised according to the following main themes in this chapter: research design, study area, study population, sampling procedure, data collection instruments, data collection procedure, and data processing and analysis.

Research Approach

Research approach which other researchers refer to as research methodology or methods, helps researchers in deciding on the type of method to adopt when conducting a study. According to Christensen, Johnson, Turner, and Christensen (2011), there is the need to consider the purpose and aims of the research and the accessibility of the preferred information. According to Ihuah and Eaton (2013), a research method is the comprehensive approach to the design process of carrying out research, which includes all aspects from the theoretical foundation through to the collecting and analysing of data.

Three major approaches have been acknowledged in the literature. According to Saunders, Lewis, and Thornhill (2016) as well as Sekaran and Bougie (2016), mixed, quantitative, and qualitative methodologies are most widely applied. There is a need to carefully select a method that meets the goal of a certain study, even though scholars contend that no one approach is more useful than the others (Saunders et al., 2016). The objective of the quantitative method, is to gather numerical data, analyse it in accordance with statistical principles, and then develop conclusions based on the findings (Nardi, 2018).

This approach adheres to strict statistical protocols that permit generalisation of the results, measurement, and analysis of descriptive and causal correlations between variables (Saunders et al., 2016). A quantitative approach is a methodology that focuses on testing, verifying, and identifying variables logically, critically, and in an objective way.

According to Saunders et al. (2016), the qualitative approach on the other hand, is a method that pertains to reasonably and judgmentally challenge, validate and recognise variables, in a detached manner. A qualitative methodology deals with methods of investigating a phenomenon of which the purpose is not to generalise findings across a given population. Creswell (2014) expound that a strategy for investigating and comprehending the significance people or communities assign to a sociological or cultural situation is known as qualitative methodology.

In the view of Creswell (2014), mixed methods concern the combination of both qualitative and quantitative techniques so that evidence may be mixed to increase the knowledge gathered on a given phenomenon. According to Saunders et al. (2016), mixed method is more robust and provides comprehensive answers to research questions. It aims to minimise the limitations encountered in qualitative or quantitative studies. The use of "both forms of data" "enables scientists to effectively extrapolate outcomes from a sample to a populace and to get a greater knowledge of the issues of interest," (Creswell & Plano-Clark, 2007, p. 224).

This study employed the quantitative research methodology to enable the researcher gather relevant numerical data to test, verify and identify infrastructural facilities availability in the Ghanaian Public Universities. It is

worth noting that the quantitative methodology emanates from the positivist philosophy or paradigm. According to Sekaran and Bougie (2016) the positivist paradigm anchors scientific investigation on the assumption that the world around us is real and that we can learn about it. The positivist researchers further hold the belief that research is used to uncover a reality that already exists.

Research Design

Research design is a plan that provides the framework for the overall shape of a study. Within quantitative, mixed and qualitative approaches of research, there are several types of research designs that a researcher can choose from. This study adopted the descriptive survey design since the objective of the study was to describe the current state of funding of Infrastructural facilities in Public Universities in Ghana, without manipulating or controlling any variable. Again, since the researcher does not seek to influence any variable to measure the ensuing changes, the descriptive survey design which emanates from the quantitative approach was deemed appropriate.

Further, the descriptive survey design is a common design in social sciences because of its appropriateness in solving many social related problems. According to Creswell and Creswell (2017), descriptive survey design is devoted to the gathering of information about prevailing conditions or situations for the purpose of description and interpretation other than simply collecting and tabulating facts. This type of research design involves adequate analysis, interpretation, comparisons, trend identification and relationships. Additionally, Creswell, (2014) infers that the descriptive survey design

involves the collection of information from a sample or the full population of people in order to describe the population's views, beliefs, behaviors, or attributes. The descriptive survey design is also used to gain insight into the thoughts, ideas, opinions, and attitudes of a population.

In comparison to other research designs, descriptive survey design is also efficient in terms of allowing the researcher to collect vast amounts of data at a cheap cost and effort (Creswell, 2014). Creswell continues to aver that descriptive survey researchers collect quantitative, numerical data using questionnaires and statistically analyse the data to explain patterns in answer to research questions and research hypotheses. Also, the descriptive survey design provides constructive feedback to educational administrators regarding teacher job satisfaction, educational climate, how systems work, and much more beneficial information. In doing so, changes can be made and ideas can be adapted to increase the success of schools and educational structures and programs. Descriptive survey design is flexible and practical as it identifies current circumstances and points to the latest needs.

Looking at these assertions made about the ideal situations to use the descriptive survey design and how it aligns with the aims of the study, which was to describe the issues that pertain to funding infrastructural facilities in public universities; in order to explain the real happenings of events on the ground; to help improve the funding structure for infrastructure in Public Universities. It was appropriate for the descriptive survey design to be used in this study.

The rational for choosing the descriptive survey for this study is based on two main factors. The descriptive survey design was preferred for this

study because it enabled the researcher to describe and interpret issues regarding the current state of funding infrastructural facilities in the public universities in Ghana. Moreover, the use of this design permitted the researcher to study and describe, the current funding mechanisms available to the Public Universities, the infrastructural facilities that are prioritised for funding and also the adequacy of the funds earmarked for funding of infrastructural facilities in these public universities. The design also helped to bring to bear views of the respondents on the funding opportunities that exist in the public universities for funding infrastructural facilities and challenges of funding infrastructural facilities existing in public universities.

Secondly, Hair, Black, Babin, Anderson and Tatham (2010) noted that descriptive survey design has the potential of providing a lot of information from quite a large number of individuals in a study. Since the study covered academics in management positions and administrators in the public universities in Ghana, the large number of the respondents required a design which could allow for easy sampling of the respondents. Hence, this design enabled the researcher to obtain evidence from a large group of respondents concerning the exact state of funding infrastructural facilities in the public universities. Specifically, the design allowed the researcher to collect information from the respondents faster using a questionnaire.

The advantage of the descriptive survey design is that, it enabled the researcher to obtain unaltered views from respondents in a natural setting in a specific time. This design, however, has some limitations including, that is, posing questions that may not be well understood by the respondents which can result in the tendency of respondents eliciting wrong responses (Creswell,

2014). In spite of these limitations, the researcher overcame them by adopting measures such as pre-testing of the instrument to help identify questions that were not well understood by the respondents and reword them.

Study Area

The present study was conducted in three Ghanaian Public Universities, namely, University of Ghana, Kwame Nkrumah University of Science and Technology and University of Cape Coast, hence, these universities formed the study area.

University of Ghana (UG)

The University of Ghana (UG) is an institution of interest since it is the oldest and has the greatest proportion of overseas students among more than fifty (50) universities (University of Ghana Basic Statistics, 2018). It is renowned and regarded as one of the greatest in West Africa. In its early years, when it was first established in 1948 as the University College of Gold Coast, it was a subsidiary of the University of London, which oversaw its academic programmes and conferred degrees. The university is located in Accra, the nation's capital. In 1962, it became a separate institution.

With around 40,000 students enrolled in regular, sandwich and distance education as well as additional students from affiliated schools, the university today offers both undergraduate and post-graduate academic programmes (University of Ghana, 2021). There is a growing number of international students enrolled in the university programmes each year. This is not surprising owing to the other special programmes created just for them. It is the mission of the University of Ghana (UG) to create a supportive environment that makes the University increasingly relevant to national and

global development through cutting-edge research as well as high-quality teaching and learning. Its vision is to become a world-class, research-intensive university over the next ten years while also making it appealing to international students.

The university currently has a variety of foreign and Ghanaian organisations as affiliates, and it has developed connections with various universities in Africa, Europe, and North America for student exchange, teacher and staff exchange, and cooperative research (University of Ghana, 2021). It is located in Legon, which is twelve kilometres northeast of Accra's downtown. With a teaching hospital and secondary campus in Accra, the medical school is located at Korle-Bu. The Ghana Atomic Energy Commission also houses a graduate school of nuclear and allied sciences, making it one of the few universities in Africa to provide programmes in nuclear sciences. Additionally, it has resources like the Institute of African Studies, the International Programs Office, and the Balme Library, the largest library in the subregion. The University of Ghana adopted the collegiate system beginning with the academic year 2014–2015, classifying all schools and departments under four colleges: The College of Basic and Applied Sciences, the College of Humanities, the College of Education, and the College of Health Science.

Kwame Nkrumah University of Science and Technology (KNUST)

The Kwame Nkrumah University of Science and Technology is located in Kumasi, Ashanti region, Ghana. The main university in the Ashanti area and Kumasi Metropolis is the Kwame Nkrumah University of Science and Technology, the first public university to be established in the nation. The

University has its origins in the Asantehene Agyeman Prempeh I's aspirations to create a university in Kumasi as part of his efforts to modernise his Ashanti realm. Due to the conflict between King Prempeh I and the British Empire, his wish to maintain the independence of his Ashanti nation and build a university for the Ashanti kingdom was never implemented. When he ascended to the Golden Stool in 1935, however, his younger nephew and successor, King Asantehene Agyeman Prempeh II, continued with this goal.

The Prempeh's' ambition was realised when construction of what would become the Kumasi College of Technology began (www.knust.edu.gh). The first students were admitted to the engineering faculty of the Kumasi College of Technology in 1951 (they enrolled in 1952), and in 1952, a parliamentary Act gave the institution legal standing as the Kumasi College of Technology. Kumasi, the capital of the Ashanti Region, is located about eight miles (13 km) to the east of the main university campus, which has an area of roughly seven square miles (www.knust.edu.gh). The Vice Chancellor, Chairman of the University Council, and Chancellor are the University's top administrators. The University Council oversees governance, principally through the Academic Board.

Through their representation on the University Council, Academic Board, Welfare Services Board, Faculty and Departmental Boards, Residence Committee, Library Committee, and on the Hall Councils, students take part in the administration of the university. The University has offered admission to around 15,000 applicants, down from 23,000 new students admitted for the 2022 Academic year. This brings the total student population to around 85,000. Since January 2005, KNUST has changed from an earlier, centralised

administrative structure to a decentralised collegiate one. The faculties have been consolidated under this system into six colleges, including the Colleges of Agriculture and Natural Resources, Health Sciences, Humanities and Social Sciences, Arts and Built Environment, Engineering, and Science (www.knust.edu.gh).

University of Cape Coast (UCC)

The Ghanaian government formed an international panel in 1960 to advice on future university education and the prospect of building a third university at Cape Coast. The 1962-founded school is associated with Ghana's University. The university wants global fame (UCC, 2021). In 1964, the government gave the three Public Universities unique missions. In accordance with the emphasis on science education, the College was renamed 'The University College of Science Education' and tasked with producing Arts and Science graduate teachers for secondary schools, teacher training institutions, and technical universities in Ghana.

On October 1, 1971, Act 390 granted the College university status. 1992's University of Cape Coast Law confirmed this (PNDC Law 278). Cape Coast University separated its professional education and degree programmes. This was done to allow students flexibility and choice in course offerings while focusing on its fundamental purpose of providing education programmes in other colleges. The University is organised into five Provost-led Colleges: College of Humanities and Legal Studies, College of Education Studies, College of Agricultural and Natural Sciences, College of Health and Allied Sciences, and College of Distance Education, and fifteen Dean-led Faculties/Schools: School of Graduate Studies; Arts; Social Sciences; Law;

Agriculture, Biomedical Science. In 1963, Cape Coast University had 155 students and in 2021/2022, 74,549. The university now accounts for about 19,389 Regular, 5494 Sandwich, and 49,665 distance students. It worth noting that as part of its achievement, the University of Cape Coast has recently been ranked first in global research in Africa (Times Higher Education, 2022).

Population

Population is the total number of possible respondents in a study. According to Leedy and Ormrod (2010), population in the context of research is a collection of people, objects, or things from whom measurement samples are taken. The study's population comprised two groups of people. The first group consisted of academics in management positions in the three public universities selected for the study (UCC, UG, KNUST). The second group was made up of non-academic administrators (Administrators). Per public universities' nomenclature, Non-Academic Administrators include technical people who are employees of the universities.

The non- academic administrators were selected purposively from the physical development and estate management section, physical planning sections and account sections of the three public universities used in the study. The justification for the selection of these three public universities was based on the fact that they are the top three oldest universities which have been in existence for over 50 years in the country. By this, it is implied that these selected public universities have well-established and well-grounded infrastructural facilities and high gross enrolment rates that increase yearly. They further exhibited characteristics that stimulate responses for this study. Table 1 presents the breakdown of the target population based on the list

provided by the various universities under the study. In all, the total target population for the study was estimated to be 882 with the University of Ghana having the highest number and UCC with the least. This may possibly be explained by the fact that UCC is the youngest with regards to the year of establishment.

Table 1: Population Distribution of the Universities

University	Population
University of Cape Coast	288
Kwame Nkrumah University of Science and Technology	296
University of Ghana, Legon	298
Total	**882**

Source: Field Survey, Eshun (2019)

The decision to delimit the study population to only the academics in management positions and administrative staff was due to the fact that academics in management positions and administrative staff of which majority of them double as committee members are directly or indirectly involved in decision making regarding funding of infrastructural facilities in their various Universities. Moreover, the top management staff (Vice Chancellor, Chairman of the University Council and the Chancellor) who are the Principal Officers in the Universities who could have also been used were not available at the time of the study.

Sample and Sampling Procedure

A sample is a subset of the population that actively participate in a study. The appropriateness of the methodology and instruments, as well as the adequacy of the sampling approach employed in a study, determine the quality of a research (Neuman, 2014). The scholar also assert that sampling procedure is the process of selecting and analyzing a relatively small number of persons

or measures of individuals, things, or events in order to learn anything about the entire population from which it was drawn.

The act, method, or technique of selecting a suitable sample, or a representative part of a population, for the goal of ascertaining parameters or characteristics of the entire population, is referred to as sampling (Neuman, 2014). The author added further by positing that sampling procedures permit the choosing of a sample from a population to serve as the foundation for estimating or predicting the prevalence of an unknown piece of information, circumstance, or outcome in the larger group.

In this present study, the simple random sampling and purposive sampling techniques were used to select participants for the study. The population of this current study was classified into two group of people that is; academics in management positions and administrators. The academics in management positions was selected using the simple random sampling however, the administrators were selected purposively. This was because the researcher wanted those who were information rich and were in a capacity to provide information relating to funding of infrastructural facilities, as such the administrators were purposively selected from the physical development and estate management section, physical planning sections and account sections of the three public universities.

The simple random technique is a probability sampling technique because it draws from a wider population (Singh & Masuku, 2014). Most importantly, the random selection of the sample members limits the probability that one chooses a biased sample. On the other hand, the purposeful selection of respondents based on the respondent's personal

characteristics is known as judgment sampling or purposive sampling technique (Tongco, 2007). Simply put, the researcher selects what information is necessary to have and then searches for individuals who can and are willing to provide it due to their knowledge or experience (Bernard 2002, Lewis & Sheppard 2006). In the view of Bernard (2002), key respondents in purposive sampling are perceptive, self-reflective, and knowledgeable individuals of a community of interest who are able and willing to contribute their knowledge of an occurrence as in the case of the non-academics in management positions at the three public universities. Purposive sampling can be applied to both qualitative and quantitative research methods (Tongco, 2007).

The lottery method was further used to select participants from the selected universities. This method was used as a sampling technique to draw sample elements from the population since each element in the population has an equal chance of being selected Alvi (2016). Again, the lottery method eliminates selection biases, and it is a very reliable method of selecting a random sample. The method was used to identify the number of each academics in management positions and administrators in the various selected institutions on separate slips of paper of identical size and shape. The researcher folded the identical slips and mixed them up in a container and the slips were drawn from the container one after the other until the desired sample size was obtained.

Subsequently, the sample was selected based on Krejcie and Morgan (1970)'s sample size determination table. Krejcie and Morgan (1970)'s sample size determination table is based on a 95 percent confidence level and .05 margin of error, indicative of its high robustness. A sample of 269 was

estimated for a population of 882 participants. Having met the criteria, the researcher in an attempt to ensure reliability of the study, increased the sample size from 269 to 300 to make room for any possibility of some respondents' failure to complete the questionnaire or refusal to respond to the questionnaire. Saunders, Lewis, and Thornhill (2016) advance that the larger the sample's size, the lower the likelihood of error in generalizing findings to the population. In light of this, the estimated sample size was considered large and appropriate for the study. To reiterate, the sample was drawn from three public universities (UCC, KNUST, UG). Hence, to get a true representation of the respondents from each university, the proportionate ratio was used to derive the number of respondents from each university.

This approach was chosen to facilitate the selection of a representative group of each section of the population identified, as the population was rather large and homogeneous in characteristics. The formula was the total number of supposed respondents in each university divided by the total target population of the institution and multiplied by the sample size. For example, the total number in the University of Cape Coast was 288 and the grand total of population was 882. Therefore, the number of participants from UCC sampled for the study was $288 \div 882 \times 300 = 97.9592$ which is rounded up as 98. The number of respondents from the other schools were determined in a similar manner and the results are presented in Table 2.

Table 2: Sample Size Representation across selected Universities

University	Population	Proportion	Sample size
University of Cape Coast (UCC)	288	0.33	98
University of Ghana, Legon (UG)	298	0.34	101
Kwame Nkrumah University of Science and Technology (KNUST)	296	0.34	101
Total	**882**		**300**

Source: Field data, Eshun (2020)

Data Collection Instruments

A structured questionnaire was used to collect data from respondents. A structured questionnaire is a well-constructed series of questions or items to which participants in a research or program must respond to. Due to the novelty of the phenomenon in the Ghanaian context and the quest to cover ample aspects of infrastructure funding in Ghanaian universities, the researcher employed necessary steps in developing an instrument to elicit responses from respondents. The questionnaire was used because it allowed for the actual conditions regarding the funding of infrastructural facilities in public universities to be known easily.

In addition, it offers greater assurance, anonymity and promise wider coverage since the researcher can approach participants more easily than other methods (Nyarko-Sampson, 2010). This was made possible by administering the questionnaire to a large number of academics in management positions and administrators in the three selected public universities in Ghana to ascertain their views on the issues being studied. The instrument further aimed at eliciting information from the academics in management positions and administrators at the selected public universities in Ghana regarding the phenomenon.

The questionnaire was divided into five sections which in all contained 57 items. The first section focused on respondents' demographic information. The following sections of the instrument were designed to correlate with the 5 research questions. The next section centered on funding mechanisms employed by the universities. The subsequent section concentrated on prioritization of infrastructural facilities for funding. The fourth section focused on the adequacy of funds. While the fifth section elicited responses on funding opportunities for this universities, the last section centered on the challenges of funding infrastructure in these institutions.

As noted by Krosnick (2018), the use of questionnaire provides greater anonymity because there is no face-to-face connection between respondents and researchers. Despite these merits, questionnaires do have some inherent disadvantages that pose threats to the usage and validity of the instrument. Krosnick (2018) posits that designing and developing a questionnaire takes a lot of time and effort. Complex question frameworks are also not possible because questionnaires must be short and easy to understand. In dealing with the disadvantages associated with the instrument used in the study, meticulous steps were taken to ensure the internal validity of this study.

Pre-Testing

According to Pallant (2016) and Saunders et al. (2016), pre-tests are necessary prior to a main survey for the following reasons, first, they make sure that the scale items, directions, and questions are all clear. They also assist potential respodents in understanding the questions and providing proper answers. Finally, they assist researchers in eliminating any questions that would offend possible respondents. In accordance with this, after an approval

of the questionnaire was granted by the supervisor, it was then converted to a google document format and administered to 20 respondents; 10 Academics in management positions and 10 Administrators to pre-test the instrument. This sample size was deemed appropriate as it conforms to Saunders et al.'s (2016) minimum criteria of 10 for pilot studies by students.

In pre-testing of the research instrument, Krosnick (2018) averred that a critical assessment of each question and its meaning as interpreted by a respondent is required. He also claims that a pre-test should be conducted under real-world conditions on a sample that is a representative of the study population that will be employed in the final research. Pre-testing an instrument aids at detecting of measurement defects and also enables the researcher to know whether or not the concepts have been appropriately operationalised (Adosi, 2018). For these reasons, the research instrument used in this study was pretested to ensure its high validity and reliability as shown in Table 3.

The questionnaire instrument was pre-tested on the academics in management positions and administrators in the University of Education, Winneba campus. This sample was chosen purposively because they shared similar characteristics in terms of being a well-established public university which has been in existence for quite a long time. It appears the University also has well established infrastructural facilities and relatively higher Gross Enrolment Rate. By these characteristics, it was deemed appropriate to be used for the pilot testing.

Reliability and Validity

Key important criteria to ensure when employing a questionnaire for a study is the issue of validity and reliability of the instrument. Validity is

essentially demonstrating that a given instrument measures what it claims to measure (Sürücü & Maslakçi, 2020). The term "reliability" simply refers to an instrument's stability and consistency in measuring what it intends to measure (Cresswell, 2014). The role of reliability is to minimise the errors and biases in a study (Saunders et al., 2016). Validity and reliability tests were conducted to ensure that the instrument truly measures what was intended to be measured. First of all, to ensure content validity in this study, items on the instrument were carefully formulated to match the research objectives.

The questionnaire was also submitted to the principal supervisor and other experts in the field to professionally scrutinise it and make necessary corrections, clarification, deletion, and additions regarding the questionnaire items, instructions, consent form, grammatical errors, and layout of the instrument. In addition, the researcher's supervisor assisted in vetting and reframing some items on the instrument to ensure that the study covered all relevant aspects of funding of infrastructural facilities in public universities in Ghana.

Table 3: Results of Pre-testing of Questionnaires

Constructs	No. of Items	Cronbach Alpha
Funding mechanisms	15	0.773
Prioritization of Infrastructural facilities for funding	10	0.742
Adequacy of funds	11	0.839.
Funding Opportunities	12	0.731
Funding of infrastructure	8	0.822

Source: Field data, Eshun (2021)

It has been revealed in the earlier researches that reliable scales are those with Cronbach's Alpha coefficient of 0.70 or more (Pallant, 2016).

Similarly, Agyapong (2010) also concurred with these scholars by revealing that for an instrument to be deemed reliable, the measure must display a positive correlation (reliability coefficient) that reaches or has a reliability coefficient (r) of .70 or above. Based on this threshold, it can be concluded that the study had a good internal consistency as shown in Table 3.

Data Collection Procedures

In every research project, the primary goal of data collection is to obtain information to answer the research questions (Creswell & Creswell, 2017). They also claim that data collection procedures are made up of several interrelated steps, including sampling, obtaining permissions, and recruiting participants and respondents, as well as identifying data sources, recording data, and conducting data collection procedures. First, an ethical clearance was obtained from the University of Cape Coast Institutional Review Board (UCC-IRB) through an application process. This was done to ensure all ethical consideration requirements were satisfactorily met.

After the ethical clearance, the researcher collected an introductory letter from the Director of the Institute for Educational Planning and Administration, University of Cape Coast, to solicit the needed assistance and cooperation from the respondents (academics in management positions and administrators) for the effectiveness of the study. The researcher visited the selected universities to seek permission and then arranged for convenient days and time for the administration of the questionnaires. Arrangements were made with the respondents to schedule and administer the questionnaire. The respondents were presented with various platform through which the questionnaire could be answered. This became necessary due to the Covid 19

pandemic at the time of the study and also the busy schedule of the respondents. The respondents were given options to answer the questionnaire either electronically through the e-mail or google form or fill the hard copy of the questionnaire. After the data collection process, 275 out of the 300 sampled respondents answered and submitted both electronically and printed hard copy of the questionnaires. One hundred and ninety-nine (199) respondents submitted responses using the printed hard copy of the questionnaires while 76 respondents submitted their responses electronically. This represents a 91.66% return rate.

Data Processing and Analysis

Data collected from respondents was analysed descriptively. Descriptive statistics were used because it enabled the researcher to analyse and describe the occurrences via the data garnered in order to address each research question posed for the study (Pallant, 2016). The raw quantitative data obtained from the questionnaires were processed and organised using Statistical Package for Social Sciences (SPSS) version 26. The data analysis involved the use of the descriptive statistics (i.e., frequencies, percentages, charts, tables, means and standard deviation). The closed-ended responses were coded while the open-ended responses grouped accordingly. The process involved first collecting the instrument to be checked with corresponding questionnaire numbers to see whether all questions were answered by the respondents. Second, coding of the test items was done such that the respondents' level of judgment on the options provided by the researcher was determined. Third, after coding, the data was then entered into SPSS for data analysis.

Table 4: Research Questions and Statistical Tools used for Analyses

Research Question	Statistical Tool used for analysis
1. What are the current funding mechanisms for Infrastructural facilities available in Public Universities in Ghana?	Descriptive analysis such as frequency and percentage tables.
2. How adequate are the funds earmarked for infrastructural facilities in Public Universities in Ghana?	Descriptive analysis such as frequency and percentage tables.
3. What Infrastructural facilities are prioritised for funding in Public Universities in Ghana?	Descriptive statistics by way of frequencies and percentages.
4. What Opportunities exist for funding infrastructural facilities in Public Universities in Ghana?	Descriptive analysis in the form of frequency and percentage tables.
5. What challenges are associated with the funding of infrastructural facilities among Public Universities in Ghana?	Descriptive analysis in the form of frequency and percentage tables.

Source: Eshun (2021)

Chapter Summary

The research design that was used for this study was the descriptive survey design which allowed for the use of quantitative data. This design is suitable for this study owing to the fact that the study sought to describe the reality regarding funding of Infrastructural facilities in public universities in Ghana. The study garnered data from 275 respondents using the purposive sampling and simple random sampling techniques. A self-developed questionnaire was administered to elicit responses from respondents for analysis. The quantitative data obtained from respondents were analysed using descriptive statistics via SPSS and STATA software.

CHAPTER FOUR

RESULTS AND DISCUSSION

In this chapter, the findings of the research are presented and discussed. Pie charts, percentages, frequencies and means are used in presenting the data. The chapter begins with the demographic characteristics of the respondents then to the presentation of the results obtained from the analysis of the data gathered, followed by a chapter summary.

Demographic Characteristics of Respondents

To ascertain a fair knowledge on the background of the respondents, the researcher collected few information from the participants including their sex age, and role. The descriptive analysis of the demographic variables is presented in this section. Figure 1, 2 and 3 presents the results of sex of the respondents, age and role of the respondents respectively. Their percentages and frequencies were also reported. From the results as shown in Figure1, indicated that 57 percent, representing 158 of the total respondents (275) were males whiles 43 percent of the respondents, representing 117 were females.

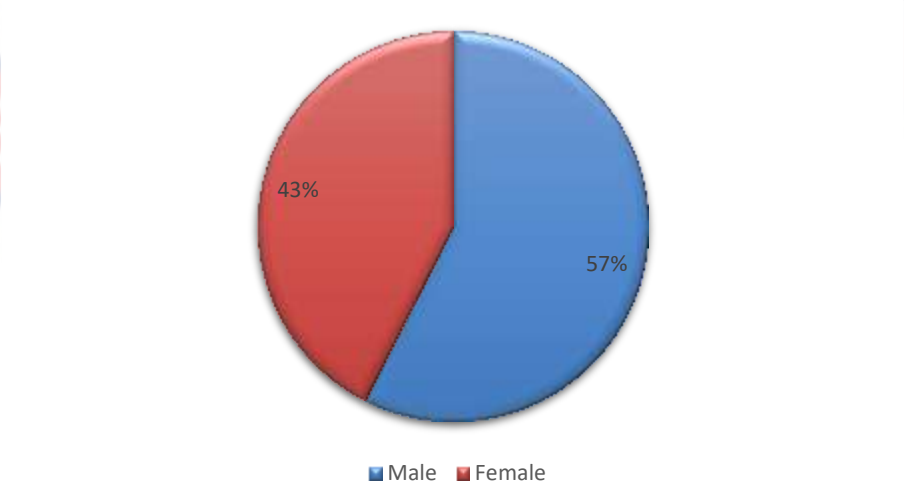

Figure *1*: Sex of the respondents
Source: Field data, Eshun (2021)

In terms of age distribution, as shown in Figure 2, majority of the respondents (148), representing 41 percent of the total number of respondents, were between the ages of 31 and 40 years, followed by respondents whose ages ranged between 41 and 50 years, who accounted for 27 percent of the total number of respondents. In addition, 14 percent of those who answered the survey were under the age of 30, with 18 percent representing those over the age of 50.

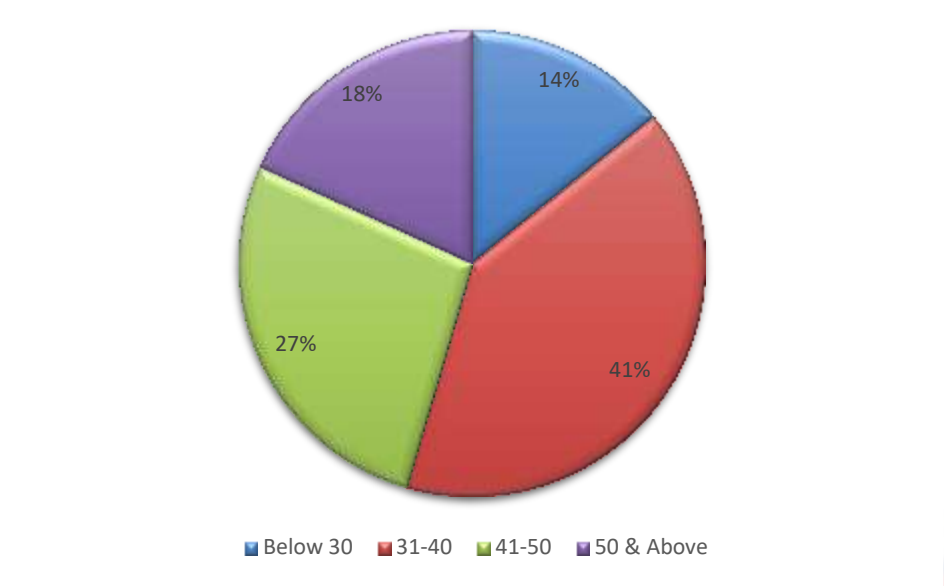

Figure 2: Age of respondents
Source: Field data, Eshun (2021)

Role of Respondents

Figure 3 presents the role of the respondents in the present study. As indicated in Figure 3, 199 (72%) of the respondents identified their function as academics in a managerial position, while 76 (28%) respondents identified their role as administrators.

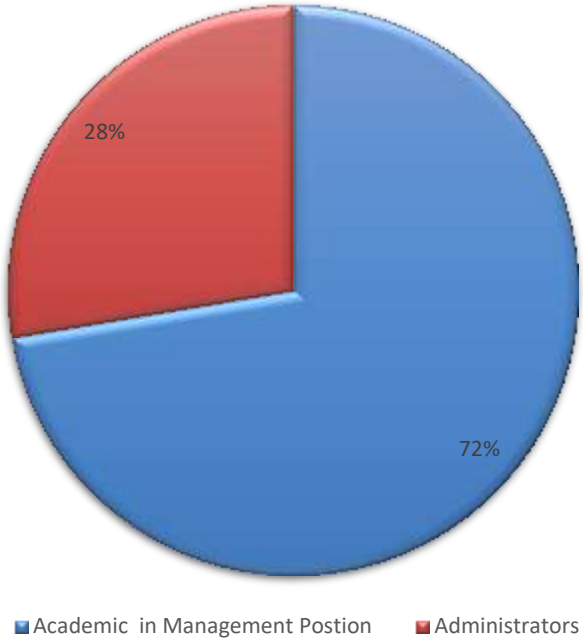

Figure 3: Role of Respondents
Source: Field data, Eshun (2021)

Table 5: Sex of Respondents across Role of Respondents

SEX	Role of Respondent		TOTAL
	Administrators	Academic in management position	
Female	36	81	117
Male	40	118	158
TOTAL	76	199	275

Source: Field survey, Eshun (2021)

Results

This section presents the findings for each research question that guided the study. In respect to the analysis, descriptive statistics (percentages, frequencies and means) were employed to address the research questions of the study. To reiterate, the following objectives guided the study; to assess the current funding mechanisms for infrastructural facilities available to public universities in Ghana; to examine the infrastructural facilities that are

prioritised for funding in public universities in Ghana; to explore the adequacy of funds earmarked for infrastructural facilities of public universities in Ghana; to explore the opportunities in existence for funding infrastructural facilities in public universities in Ghana; to ascertain the challenges associated with the funding of infrastructural facilities among public universities in Ghana.

Funding Mechanisms currently available for Funding Infrastructural Facilities (FMIF) in Ghanaian Public Universities

To address this research question, the respondents were made to indicate their levels of agreement or disagreement with statements measuring the availability of funding mechanisms in their respective universities. Findings to this research question are presented in Table 6.

Table 6: Funding Mechanisms -Statements, Frequencies and Percentages

Statements	Distribution of the 4-point Likert scale							
	SD		D		SA		A	
	N	(%)	n	(%)	N	(%)	n	(%)
My institution acquires funds from state-owned enterprises and corporations like GNPC, VRA, VALCO, SSNIT, etc. to finance educational infrastructural facilities	61	22.18	69	25.09	150	54.55	21	7.64
My institution enters into long-term contracts with private entities to fund infrastructure facilities	34	12.36	89	32.36	108	39.27	44	16.00
My institution funds infrastructural facilities through GET fund	25	9.09	40	14.55	161	58.55	49	17.82
My institution receives grants from international donors	31	11.27	46	16.73	156	56.73	48	17.45
My institution receives certain quotas from government for infrastructural development	10	3.64	71	25.82	117	42.55	77	28.00
My institution generates funds internally for infrastructural development	16	5.82	77	28.00	114	41.45	68	24.73
My institution finances infrastructural facilities through alumni fundraising	34	12.36	110	40.00	75	27.27	56	20.36
My institution obtains funds through the activities of Institutional Advancement	34	12.36	72	26.18	132	48.00	37	13.45
My institution receives royalties on patented inventions and licensing of intellectual property to fund infrastructural facilities	45	16.42	135	49.27	76	27.74	18	6.57
My institution has established a specialized endowment funds for infrastructural development.	50	18.18	112	40.73	77	28.00	36	13.09
Funds from development and social partners	26	9.45	44	16.00	124	45.09	49	17.82
Observation	275							

Note: SD=Strongly Disagree, D=Disagree, A=Agree and SA=Strongly Agree
Source: Field survey (2021)

The three topmost funding mechanisms currently available for funding infrastructural facilities in Ghanaian Public Universities as shown in Table 6 are: GETFUND, representing 161 (58.55%); grants from international donors, representing 156 (56.73%); state-owned enterprises and corporations like GNPC, VRA, VALCO, SSNIT, representing 150 (54.55%), certain quotas from government 117 (42.5%) respectively. The respondents also indicated that least infrastructural facilities funding mechanisms in their institutions are royalties on patented inventions and licensing of intellectual properties 135 (49.27%) followed by established specialized endowment fund, representing 112 (40.73%) and funding of infrastructure through alumni fundraising 110 (40%).

The implication of this result is that funding of infrastructure in tertiary institutions in the country is mainly left in the hands of the governmental agencies. This position finds support from the study of Atuahene (2006, p.188) who averred that "since GETFund began operation in July 2001, a modest achievement has been made in the infrastructure development of various tertiary institutions." The scholar added that from the inception of his study, over 500 single projects have been undertaken by GETFund, most of which involve large constructional works and extensive rehabilitation of buildings in public tertiary institutions in the country. Also, some state-owned corporations also play vital roles in the infrastructural facility funding of Ghanaian Public Universities as confirmed by the present study. For instance, GNPC in 2021 cut sod for the construction of Institute for Law and Corporate Governance Complex in the University of Cape Coast (www.ucc.edu.gh).

Report on the University of Cape Coast's site indicated that the Vice Chancellor of the University of Cape Coast called for the support of the alumni to embark on the various fundraising activities branded as UCC @ 60 contributions towards the sponsorship of the legacy project- the building of the Biomedical and Clinical Research Laboratory for UCC (ww.ucc.edu.gh). This confirms the study's result that fund raising from alumni for infrastructure facilities provision mechanisms were considered the least, hence, the clarion call on them by the VC for such supports.

Infrastructural Facilities Prioritised for Funding in Public Universities in Ghana.

To address this research question, the respondents were made to indicate their levels of agreement or disagreement with statements measuring the facilities prioritised for funding in their respective universities. Findings to this research question are presented in Table 7.

Table 7: Prioritisation of Infrastructural Facilities for Funding

IF	Distribution of Ranks																			
	1		2		3		4		5		6		7		8		9		10	
	n	%	n	%	n	%	n	%	n	%	n	%	N	%	n	%	n	%	n	%
LR	97	35.3	43	15.6	27	9.8	7	2.5	26	9.5	36	13.1	24	8.7	2	.7	8	2.9	5	1.8
RH	76	27.6	52	18.9	39	14.2	47	17.1	18	6.5	2	0.7	2	0.7	16	5.8	9	3.3	14	5.1
DR	75	27.3	126	45.8	44	16.0	2	0.7	14	5.1	1	0.4	4	1.5	3	1.1	5	1.8	1	0.4
RL	39	14.2	62	22.5	49	17.8	58	21.1	52	18.9	6	2.2	4	1.5	4	1.5	2	0.7	3	1.1
AT	12	4.4	27	9.8	25	9.1	17	6.2	31	11.3	43	15.6	56	20.4	26	9.5	28	10.2	10	3.6
CF	6	2.2	25	9.1	21	7.6	7	2.5	8	2.9	12	4.4	44	16.0	55	20.0	46	16.7	51	18.5
HF	39	14.2	43	15.6	63	22.9	26	9.5	50	18.2	35	12.7	7	2.5	11	4.0	7	2.5	1	0.4
LF	28	10.2	55	20.0	17	6.2	53	19.3	30	10.9	52	18.9	28	10.2	2	0.7	7	2.5	3	1.1
RF	3	1.1	21	7.6	23	8.4	13	4.7	19	6.9	22	8.0	7	2.5	45	16.4	60	21.8	62	22.5
UF	25	9.1	28	10.2	28	10.2	16	5.8	19	6.9	3	1.1	24	8.7	53	19.3	41	14.9	38	13.8

Note: IF=Infrastructural facilities; LR=Lecture rooms; RH=Residential halls; DR=Digital resources; RL= Research laboratories; AT=Auditorium, theater and studio facilities; CF=Counselling facilities; HF=Health facilities; LF=Library facilities; RF=Recreational facilities; UF=Utility facilities

Source**:** Field survey, Eshun (2021)

Table 7 presents the results for objective two. It sought to ascertain the infrastructural facilities prioritised in Ghanaian Public Universities for the purpose of funding, supposing there is the availability of funds. There were ten (10) facilities listed in all for respondents to indicate which was most prioritized on a scale of 1 to 10, where 1 indicates the highest prioritized facility and 10 indicating the least prioritised facility that should be funded on the caveat that there was adequate funding available to the institutions. The goal of this objective was to help provide some form of information to government and NGOs about the infrastructural facilities that need to be funded in the various public universities.

According to the results as indicated in Table 7, lecture rooms 97 (35.3%) were ranked as the most prioritised infrastructural facility for funding in public tertiary institutions in the country. This was followed by residential halls 76 (27.6%), digital resource facilities 75 (27.3%), research laboratories 58 (21.1%), library facilities 55 (20%) and health facilities 50 (18.2%) respectively. From Table 7, the least prioritised facilities were recreational facilities 62 (22.5%), followed by auditorium, theater and studio facilities 56 (20.4%), utility facilities 53 (19.3%) and counselling facilities 51 (18.5%) respectively.

From the results, it seems to indicate that lecture rooms and residential halls were ranked as the first and second most prioritised infrastructural facilities that need to be funded in the Ghanaian Public Universities. This could be attributed to the rising rate of students' enrollment in the various public universities as a result of the Free SHS Programme policy initiated in 2017. Although enrolment kept increasing in universities even before the

inception of the Free SHS initiative, it seems to indicate that the phenomenon has multiplied right after the initiative. Similarly, according to the United Nations Educational, Scientific and Cultural Organisation (UNESCO) Institute of Statistics, Ghana had a total higher education enrollment of 15.7% in 2018, compared to 11.8% in 2011, with the former representing about 2,879,063 of the population aged 19 to 23. The total enrollment of female students increased from 8.9% in 2011 to 13.6% in 2018. On the other hand, enrollment for males increased from 14.5% in 2011 to 17.7% in 2018 (UNESCO Institute of Statistics, 2020). In addition, as reported in University of Ghana Strategic Plan 2014-2024, overcrowding of public universities' facilities, both academic and residential and inadequacy of teaching faculty were identified as the two major challenges faced by Ghanaians public universities. It can be inferred that the results obtained from this present study backs these assertions made by these organisations.

For instance, as a result of the inadequate lecture rooms and residential halls in public universities coupled with the prevention of congestion in various residential halls, in an attempt to maintain social distancing during the COVID-19, the University of Cape Coast in the 2019/2020 academic year was compelled to make use of The Nduom School of Business Campus (a private Institution) to accommodate about eight hundred (800) students who were admitted in that year (www.ucc.edu.gh).

Similarly, rooms that used to formerly accommodate two students each, have recently been increased to four occupants. To make the matter worse is the recent uproar by students in these public universities about the hike in the cost of private residential facilities in and around the university.

The reason being that there are inadequate residential facilities in the university to accommodate these students, hence, they are compelled to move out in search of private facilities for their accommodation purposes. Against these factors, the ranking of these facilities as the first and second facilities that need to be funded was not surprising as the increasing enrollment in these public universities must commensurate an increased number of lecture rooms and residential facilities.

In relation to digital facilities and research laboratories, Dadzie (2005) and Seniwoliba (2014) noted that Ghanaian Public Universities have significantly improved, hence, the ranking of these facilities as the next most important, following lecture and residential halls, could explain the recent ranking of the University of Cape Coast as the first university in terms of global research in West Africa (Times Higher Education, World University Ranking, 2022). In this regard, public universities need funding to upgrade their research profile in order to meet the growing research needs and growing demand for online educational programs.

The results also indicated that the least priorised facilities in Ghanaian public universities include recreational facilities, auditorium, theater and studio facilities, utility facilities and counselling facilities. This implies that when students' academic and security needs are not met, universities are likely to record low students' enrollment as many students will opt for other universities with adequate lecture rooms, residential facilities, digital resources over those with recreational facilities, auditorium, theater and studio facilities, utility facilities. With regards to this finding, management, government agencies and other tertiary education funding bodies will be informed about

the categories of facilities to fund supposing there are adequate funds available.

Funds Earmarked for Infrastructural Facilities for Public Universities in Ghana

Having identified the various sources of funds used by public universities in financing their infrastructural projects, this section presents information on the adequacy of funds earmarked for funding infrastructure in the Ghanaian public universities. To respond to this objective, respondents were asked to provide their opinion regarding eleven statements measuring the extent to which funds received are adequate or not. The results from the analysed data are presented in Table 8.

Table 8: Adequacy of Funds Earmarked for Infrastructure Facilities

Sources of Funding	Distribution of the 4-point Likert scale							
	Woefully Inadequate		Inadequate		Adequate		Very Adequate	
	N	(%)	n	(%)	N	(%)	n	(%)
Funds from GET fund.	111	40.36	135	49.09	16	5.82	13	4.73
Grants from international donors.	71	25.82	122	44.36	65	23.61	17	6.18
Internally generated funds by the institution.	65	23.64	96	34.91	107	38.91	05	1.82
Funds from development and social partners.	71	25.82	148	53.82	55	20.00	01	0.36
Fund from state-owned enterprises and corporations like GNPC, SSNIT, VRA, VALCO etc.	111	40.36	128	46.55	34	12.36	02	0.73
Funds from Government	60	24.73	150	54.55	53	19.27	04	1.45
Contributions from private sector/entities.	83	30.18	129	46.91	54	19.64	09	3.27
Funds from Alumni fundraising.	112	40.73	120	43.64	35	12.73	08	2.91
Funds obtained through the activities of Institutional Advancement.	78	28.47	137	50.00	54	19.71	05	1.82
Funds generated from established royalty income from patent inventions and licensed of intellectual property.	155	56.57	102	37.23	15	5.47	02	0.73
Funds from specialized endowment funds for infrastructural facilities funding	80	29.09	124	45.09	64	23.27	07	2.55
Observation	**275**							

Source: Field survey, Eshun (2021)

In Table 8, three entities emerged as woefully inadequate; funds from established royalty income from patent inventions and licensed of intellectual property, funds from GETFund, state-owned enterprises and corporations like GNPC, SSNIT, VRA, VALCO etc., and funds from Government. The result from Table 8 further showed that 93.8% of the respondents opined that, funds generated from established royalty income from patent inventions and license of intellectual property were woefully inadequate. This was followed by 89.45% and 79.28% for GETFund and funds from Government respectively.

Though there were several sources, it appears the funding from these respective sources are on their own not adequate. Perhaps, if all these sources come together, they may be adequate for addressing certain facility demands. This finding aligns with the views of Atuahene (2006, pp. 192-193) that "For all the universities within his study area, over five different projects (construction works) were going on at the same time and none of them are near completion." In line with this, it can be deduced that majority of the funds earmarked for infrastructural facilities in the universities are inadequate, hence, the need to combine the various sources of funding to achieve the ultimate goal of infrastructural facility provision in these public universities. By this, the results from this study indicate that public universities must begin to make efforts to discover other sources of infrastructural facilities funding, being it public or private so that together, they can help resolve infrastructural facility demands.

Funding Opportunities that exist for Funding Infrastructural Facilities in Public Universities in Ghana

The subsequent section presents the results of the various funding opportunities that exist for Ghanaian public universities. The breakdown of the results for the various funding opportunities that exist in Ghanaian public universities to finance their developmental projects are presented in Table 9. As observed from the Table 9, majority of the respondents indicated their agreement to the existence of somewhat funding opportunities that are available for acquiring funds from sources like state-owned enterprise, private partnership, GET fund, internally generated funds and many other opportunities as shown in Table 9.

From the results as displayed in Table 9, Public universities have the opportunities to partner with state institutions for infrastructure funding 196 (71.27%); opportunities to receive certain quotas from government 184 (66.91%); and opportunities to receive grants from international donors 168 (61.09%). The least opportunities that exist for these institutions as indicated in Table 8 are; opportunities to acquire funds from state-owned enterprises 92 (33.45%); financing of facilities through alumni fundraising 84 (30.55%) and long-term contracts with private entities for facility funding 70 (25.45%). This results further substantiate the recent call on alumni body of the University of Cape Coast by the Vice Chancellor to support the building of the Biomedical and Clinical Research Laboratory (www.ucc.edu.gh).

These results also concur with the findings of some existing literature (Fowles, 2014; Pilbeam, 2012; Santos, 2007) which concluded that public universities and other tertiary institutions mostly obtain financial resources

from the state, internally generated fund, GETfund revenue and local authority revenue for funding their infrastructure facilities. The implication of this result is that if governmental entities become financially-constrained, universities will not be able to get any substantial funds to meet their infrastructural demands. In light of this, universities must explore other areas of funding such diversification and enlargement of their income sources through costing and pricing of their activities, swift decision making on commercial possibilities, responsive supply of educational programmes and research activities among others, so as to generate enough funds for their infrastructural demands.

In addition, incentives for income generation can also take the form of matching funds linked to funding generated from outside sources and tax incentives to stimulate philanthropic and charitable giving to tertiary education institutions. The universities can then rely on these incomes or funds to meet their infrastructural facility demands.

Table 9: Funding Opportunities for Infrastructure Facilities

Funding Opportunities	Distribution of the 4-point Likert scale							
	SD		D		A		S A	
	N	(%)	N	(%)	n	(%)	n	(%)
Opportunities exist for my institution to acquire funds from state-owned enterprises and corporations like GNPC, VRA, VALCO, SSNIT, etc. to finance educational infrastructural facilities	36	13.09	92	33.45	134	48.73	13	4.73
Opportunities exist for my institution to enter into long-term contracts with private entities to fund infrastructure facilities	19	6.91	70	25.45	164	59.64	22	8.00
Opportunities exist for my institution to fund infrastructural facilities through GET fund	11	4.00	66	24.00	163	59.27	35	12.73
Opportunities exist for my institution to receive grants from international donors	24	8.73	42	15.27	168	61.09	41	14.91
Opportunities exist for my institution to receive certain quotas from government for infrastructural development	13	4.73	58	21.09	184	66.91	20	7.27
Opportunities exist for my institution to generate funds internally for infrastructural development	17	6.18	66	24.00	156	56.73	36	13.09
Opportunities exist for my institution to finance infrastructural facilities through alumni fundraising	11	4.00	84	30.55	160	58.18	20	7.27
Opportunities exist for my institution to obtain funds through the activities of Institutional Advancement	20	7.27	68	24.73	166	60.36	21	7.64
Opportunities exist for the establishment of social partnership with state institutions, businesses and other agencies for funding infrastructural facilities.	10	3.64	50	18.18	196	71.27	19	6.91
Opportunities exist for my institution to establish royalty income from patented inventions and licensing of intellectual property to fund infrastructural facilities	27	9.82	64	23.27	168	61.09	16	5.82
Opportunities exist for the formation and use of specialized endowment funds in infrastructural development	28	10.18	64	23.27	165	60.00	18	6.55
Observation	275							

Note: SD=Strongly Disagree, D=Disagree, A=Agree and SA=Strongly Agree
Source: Field survey (2021)

Challenges of Funding Infrastructure

The last objective of the study sought to find out challenges of funding infrastructure in Ghanaian public universities. The information derived from the analysis show that public universities in Ghana on average, encounter some difficulties regarding funding infrastructural facilities as shown in Table 10. From the results in Table 10, over reliance on government's allocation of fund, representing 113 (41.09%); Inadequate enabling framework for private investment 108 (39.27%) and management's misappropriation of funds 100 (36.36%) are the major challenges bedeviling the infrastructure funding in Ghanaian public universities. This resonates the report of the Ministry of Finance and Economic Planning report (2013), confirming these aforementioned challenges as major challenges. On the contrary, lack of reliable data on infrastructural facilities 79 (28.73%) and misplaced priority of funds 62 (22.55%) were the least challenges identified to be bedeviling infrastructural facility funding respectively.

Atuahene (2006, p. 271) shared in similar sentiment by stating that financial austerity, lack of improvement of physical facilities, massification and financial stringency remain a peril at the pinnacle of funding infrastructure in higher educational institutions in Ghana. Further, the regulatory framework of Ghanaian public universities makes the environment very difficult for private sectors to help in providing infrastructure in public universities. Thus, there is no clearly define structure to permit the participation of private investment in funding facilities in public universities, which a major challenge to infrastructure funding. This result is consistent with the findings of Badu et al. (2018), who found that absence of enabling framework for Private

Investment in Infrastructure is a challenge in funding higher education in Ghana.

The findings in Table 10 again reveal that political influence is among the factors that hinder the funding of infrastructural facilities in Ghanaian Public Universities. This result is in line with the findings of Badu et al. (2018) who assert that political influence was ranked as the number one challenge to funding infrastructural facilities in tertiary educational infrastructural development in Ghana.

Table 10: Challenges of Funding Infrastructure

Statement	Distribution of the 4-point Likert scale							
	SD		D		A		SA	
	N	(%)	N	(%)	n	(%)	n	(%)
Management's misappropriation of funds	78	28.36	76	37.64	100	36.36	21	7.64
Misplaced priority of funds	62	22.55	96	34.91	82	29.82	35	12.73
There is inadequate enabling framework for private investment in infrastructure facilities	42	15.27	76	27.64	108	39.27	49	17.82
Lack of reliable data on infrastructural facilities for funding of institutions	79	28.73	105	38.18	62	22.55	29	10.55
Political influences affect funding of infrastructure	62	22.55	72	26.18	91	33.09	50	18.18
There is weak institutional capacity as a result of inadequate level of autonomy in financing	50	18.18	116	42.18	85	30.91	24	8.73
Over reliance on government's allocation of funds	35	12.73	91	33.09	113	41.09	36	13.09
Observation	275							

Source: Field survey (2021)

Chapter summary

This chapter presented the empirical results of the study. This included the descriptive analysis of the variables used in this present study. Graphs, tables, Frequencies, percentages, mean rankings were used in analysing the data. The results from the study revealed that public universities in Ghana are funded through a number of sources. The primary sources being grants from Government of Ghana, the Ghana Education Trust Fund (GETFund), development partners, domestically generated fund by the institutions and donations from alumni and private sector. However, the results also showed that, there is inadequate funding from the various sources as identified in the study.

In addition, majority of the respondents agreed that there exist funding opportunities for their institutions to acquire funds from sources like state-owned enterprise, private partnership, GETfund and internal generation of funds. Also, in terms of facilities that public universities prioritised for funding, lecture rooms were ranked as the most prioritised infrastructural facility for funding. This was followed by resident halls, digital resource facilities and research laboratories whereas, the least being counselling facilities. Lastly, the information derived from the analysis showed that public universities in Ghana on average, encounter some system and structural difficulties regarding funding of infrastructural facilities.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The present study explored funding of infrastructural facilities in Ghanaian public universities along the lines of opportunities for funding, adequacy of funds and areas that institutions prioritise for funding. Therefore, this chapter provides a summary of the findings on the study. It covered significant conclusions drawn from the study, and relevant recommendations derived from the findings of the study to aid in policy direction.

Summary of the Study

The study was based on conceptual opinions in relation to the significant contributions of funding of infrastructural facilities in Ghanaian public universities along the lines of opportunities for funding, adequacy of funds and areas that institutions prioritise for funding. Specifically, the study examined the following research objectives in order to;

1. assess the current funding mechanisms for infrastructural facilities in public universities in Ghana.
2. examine the infrastructural facilities that are prioritised for funding in public universities in Ghana.
3. explore the adequacy of funds earmarked for infrastructural facilities of public universities in Ghana.
4. explore the opportunities in existence for funding infrastructural facilities in public universities in Ghana.
5. ascertain the challenges associated with the funding of infrastructural facilities among public universities in Ghana.

The study employed the descriptive survey design which made use of quantitative data. The study population comprised two groups of people; academics in management positions in the three public universities selected for the study (UCC, UG, KNUST) and the second group was made up of non-academic administrators (Administrators). With reference to the public universities' nomenclature, Non-Academic Administrators include technical people who are employees of the universities. This group of people were selected purposively from the physical development and estate management section, physical planning sections and account sections of the three public universities used in the study. The study also made use of 275 respondents using spurposive and simple random sampling techniques in obtaining the appropriate sample size. To allow for statistical inferences, the quantitative data from the self-administered questionnaire was analysed using descriptive statistics such as frequency and percentage, tables, pie charts and mean rankings.

Key Findings of the Study

With regards to research question one; what are the current funding mechanisms for infrastructural facilities available to public universities in Ghana? The study found that the three topmost funding mechanisms currently available for funding infrastructural facilities in Ghanaian public universities are GETFund, grants from international donors, state-owned enterprises and corporations like GNPC, VRA, VALCO, SSNIT.

Based on research question two; what infrastructural facilities are prioritised for funding in public universities in Ghana? The study found that lecture rooms were ranked as the most prioritised infrastructural facility for

funding, followed by residential halls, digital resource facilities, research laboratories respectively and the least most prioritised was the recreational facilities.

Regarding research question three; how adequate are the funds earmarked for infrastructural facilities of public universities in Ghana? The study found that royalty income (patent inventions and license of intellectual property), funds from GETFund, state owned enterprises and corporations (GNPC, SSNIT, VRA, VALCO) and funds from the Government were woefully inadequate for Ghanaian public universities.

In line with research question four; what opportunities exist for funding infrastructural facilities in public universities in Ghana? The study found that public universities in Ghana have the opportunity to partner with state institutions for infrastructural funding, to receive certain quota from government, to receive grants from international donors.

With regards to research question five; what challenges are associated with the funding of infrastructural facilities among public universities in Ghana? The study found that over reliance on government's allocation of fund, inadequate enabling framework for private investment, management's misappropriation of funds and political interferences were challenges facing Ghanaian Public Universities in terms of funding of infrastructural facilities.

Summary of the Key Findings

It is worth knowing that greater access to higher education has been a major driver of human growth that contributes to the achievement of economic, social and political stability in a society. However, the rising of public demand and well as resource restrictions, establishing and supporting

Ghanaian Public Universities has become a difficult issue for government and other policy makers across the globe. The following summaries are provided for the study's findings as presented earlier.

Based on the findings for objective one, GETFund, grants from international donors, state-owned enterprises and corporations like GNPC, VRA, VALCO, SSNIT are major funding mechanisms for funding infrastructural facilities in Ghanaian Public Universities. The implication of this is that in the cases where these funding mechanisms (GETFund, grants from international donors, state-owned enterprises and corporations like GNPC, VRA, VALCO, SSNIT) do not have adequate funds, infrastructural facility funding in the universities will come to a halt. To take proactive measures to curb this, institutions must make effort to create innovative ways of generating funds for their infrastructure funding other than relying on these mechanisms.

Based on the findings for objective two, lecture rooms, residential halls, digital resource facilities and research laboratories are the most prioritized educational infrastructural facilities that need to be funded. The implication is that university enrolment will decline in the long-run if these facilities are inadequate. Management must therefore channel available funds into the provisions of these worthwhile facilities other than undertaking any other projects.

Based on the findings for objective three, royalty income (patent inventions and license of intellectual property), funds from GETFund, state owned enterprises and corporations (GNPC, SSNIT, VRA, VALCO) and funds from the Government were woefully inadequate for funding

infrastructure in Ghanaian Public Universities. The implication of this is that management may not be able to obtain sufficient funds from these entities for the funding of their infrastructural facilities. Management can therefore have a talk with these entities to amass their quotas so that the amount can be quite substantial for infrastructure facility funding.

Based on the findings for objective four, the study found that public universities in Ghana have the opportunity to partner with state institutions for infrastructural funding, to receive certain quota from government, to receive grants from international donors. The implication of this that management is actually aware of its sources of infrastructure funding, however, these sources are limited to provide enough funds to meet their infrastructure demands.

Based on the findings for objective five, over reliance on government's allocation of fund, inadequate enabling framework for private investment, management's misappropriation of funds and political interferences were major challenges facing Ghanaian Public Universities in terms of funding of infrastructural facilities. The implication of this is that these challenges to infrastructural facility funding will persist, thereby endangering the future of tertiary education in the country if management of these institutions do not take steps to curb them.

Conclusions

The following conclusions were, therefore, drawn based on the study's key findings: In reference to the first research objective, it can be concluded that there exist various infrastructure mechanisms, ranging from public support through to private support that universities tap into to obtain support for funding their infrastructural demands.

In light of the findings on objective two, that the infrastructural facilities that are most prioritised for funding in Ghanaian Public Universities are lecture rooms, residential halls, digital resource facilities, research laboratories etc., it is concluded that universities place high premium on infrastructural facilities that seek to promote academic and research work.

In reference to objective three, it is concluded that funds from established royalty income from patent inventions and license of intellectual property, funds from GETFund, state owned enterprises and corporations like GNPC, SSNIT, VRA, VALCO etc. are largely inadequate.

In reference to objective four, it is concluded that there is a high level of awareness of infrastructural facility funding opportunities among Ghanaian Public Universities.

In view of the final research objective, it is concluded that the major challenges faced by Ghanaian Public Universities are more of structural and external influences.

Recommendations

On the strength of the research findings and conclusions made, the following recommendations are hereby offered:

In relation to research objective one, the study found that GETFund, grants from international donors, state-owned enterprises and corporations like GNPC, VRA, VALCO, SSNIT are major funding mechanisms for funding infrastructural facilities in Ghanaian Public Universities. On the basis of this finding, the study recommends that relevant stakeholders (Ministry of Finance, Government, and GTEC) should employ innovative mechanisms of generating revenue such as forming a uniform body to ensure that portions of

monies paid into the consolidated funds are being invested into a sinking fund for a fixed period. Such funds after their maturity should be used to accelerate infrastructural growth in Ghanaian public universities. The GTEC can equally set aside part of fees received for accreditation of the various programmes run by these universities into a fund which will solely be used to provide infrastructure for these institutions.

In light of objective two which found that the infrastructural facilities that are most prioritised for funding in Ghanaian public universities are lecture rooms, residential halls, digital resource facilities, research laboratories etc., it is recommended that academic facilities such as lecture theaters, residential halls, digital resource facilities, research laboratories be the focus of stakeholders when there are available resources for funding infrastructural facilities since their absence or inadequacy will grossly affect the quality of academic works.

In relation to objective three which found that royalty income (patent inventions and license of intellectual property), funds from GETFund, state owned enterprises and corporations (GNPC, SSNIT, VRA, VALCO) and funds from the Government were woefully inadequate for Ghanaian public universities, it is recommended that a committee be formed by the management of these universities to delineate the best approach to adopt in getting assistance from all these available opportunities for funding infrastructural facilities in Ghanaian public universities. This may enhance their chances of accessing the funds as mere knowledge of their existence does not guarantee access.

In line with objective four which found that there is a high level of awareness of funding opportunities, it seems to indicate that the extent of access is unknown. Therefore, it is recommended that the management of these public universities try to explore those opportunities as well.

Finally, in relation to the fifth objective which found that the major challenges faced by Ghanaian public universities are more of structural and external influences, it is recommended an adequate regulatory framework be implemented in order to increase the involvement of the private sector in developing educational infrastructure. This may take the form of signing a memorandum of understanding between the private sector and public universities to specifically reach a census on the best way they can help in the provision of infrastructural. By this, they will be willing to invest in infrastructural projects in the various universities freely without any restrictions.

Suggestion for Further Research

This research has given an insight into the funding of infrastructure facilities in public universities in Ghana and has indicated the right steps stakeholders need to take going into the future to ensure increased revenue generation to fund infrastructural development. Further studies are needed to evaluate the issue pertaining to funding of infrastructural facilities in the private universities and also the other public universities which were not covered in this study. Other researchers can also adopt new methods of investigating this phenomenon using a combination of the most recent established public universities and some of the private universities in Ghana.

REFERENCES

Abugre, J. B. (2018). Institutional governance and management systems in Sub-Saharan Africa higher education: Developments and challenges in a Ghanaian research university. *Higher Education, 75*(2), 323-339.

Adedeji, S. O., Okotoni, C. A., & Ogunleye, A. O. (2019). Access and quality of private university education in Southwestern Nigeria. *US-China Education Review*, *9*(1), 21-33.

Adosi, C. (2018). *Internship experiences of Institute for Educational Planning and Administration (IEPA) students of University of Cape Coast*. (Masters' Thesis, University of Cape coast, Ghana). Retrieved from https://ir.ucc.edu.gh/xmlui/handle/123456789/3854.

Adu-Yeboah, C., & Wie-Addo, K. A. (2009). Accessing education at a cost: stories of students in difficult circumstances. *Ghana Journal of Education and Teaching*, *2*(8), 25-32.

Agyapong, D. (2010). Micro, small and medium enterprises activities, income level and poverty reduction in Ghana: A synthesis of related literature. *International Journal of Business and Management*, *5*(12), 196–205.

Aithal, P. S., & Aithal, S. (2019, October). Essential infrastructures for world-class universities. *Proceedings of National Conference on Research in Higher Education, Learning and Administration, 1*(1), 1-23.

Ajibola, M. O., Awodiran, O. O., & Salu-Kosoko, O. (2013). Effects of infrastructure on property values in unity estate, Lagos, Nigeria. *International Journal of Economy, Management and Social Sciences, 2*(5), 195-201.

Aladejana, F. O. (2013). *Secondary education in Ekiti State: The functional perspective*. Paper presented at the Ekiti State Education Summit. Ado-Ekiti, Nigeria, 8-9 September 2013.

Alameddine, M. M., & Ahwal, H. W. (2016). Inquiry based teaching in literature classrooms. *Procedia-Social and Behavioral Sciences, 232*, 332-337.

Altbach, P. G. (2015). What counts for academic productivity in research Universities? *International Higher Education*, *4*(79), 6-7. Retrieved from https://ejournals.bc.edu/index.php/ihe/article/view/5837/2015/05/16.

Alvi, M. (2016). *A manual for selecting sampling techniques in research*. Retrieved from https://mpra.ub.uni-muenchen.de/70218/1/MPRA_paper_70218.pdf.

Atuahene, F. (2006). *A policy analysis of the financing of tertiary education institutions in Ghana: An assessment of the objectives and the impact of the Ghana Education Trust Fund* (Doctoral dissertation, Ohio University).

Atuahene, F. (2009). Financing higher education through value added tax: A review of the contribution of the Ghana Education Trust Fund (GETFund) in fulfilment of the objectives of Act 581. *Journal of Higher Education in Africa, 7*(3), 29-60.

Atuahene, F., & Owusu-Ansah, A. (2013). A descriptive assessment of higher education access, participation, equity, and disparity in Ghana. *Sage Open*, *3*(3), 1-16.

Auditor-General, V. (2013). Operating Water Infrastructure Using Public Private Partnerships.

Audu, R., Umar, I. Y., & Idris, A. M. (2013). Facilities provision and maintenance: Necessity for effective teaching and learning in technical vocational education. *Journal of Research Method in Education*, *3*(1), 28-32.

Ayogu, M. (2007). Infrastructure and economic development in Africa: A review. *Journal of African Economies*, *16*(1), 75-126.

Badu, E., Edwards, D. J., Owusu-Manu, D., & Brown, D. M. (2012). Barriers to the implementation of innovative financing (IF) of infrastructure. *Journal of Financial Management of Property and Construction*, *17*(3), 253-273.

Badu, E., Kissi, E., Boateng, E. B., & Antwi-Afari, M. F. (2018). Tertiary educational infrastructural development in Ghana: Financing, challenges and strategies. *Africa Education Review*, *15*(2), 65-81.

Bernard, H. R. (2002). *Research Methods in Anthropology: Qualitative and Quantitative Methods.* AltaMira Press. *Walnut Creek, California*.

Bewiadzi, S., & Ismaila, M. (2016). Financing higher education in Ghana: The impact of Ghana Education Trust Fund (GETFund) on the development of tertiary institutions in Ghana. *Tertiary Education Series*, *8*(1), 1-39.

Bhattacharyay, B. N. (2009). *Infrastructure development for ASEAN economic integration*. Retrieved from https://think-asia.org/handle/11540/3726.

Boateng, G. O., Boateng, A. A., & Bampoe, H. S. (2015). Microfinance and poverty reduction in Ghana: Evidence from policy beneficiaries. *Review of Business & Finance Studies*, *6*(1), 99-108.

Boni, A., & Walker, M. (2016). *Universities and global human development: Theoretical and empirical insights for social change*. London: Routledge.

Britannica, E. (2004). *Encyclopædia Britannica Online*. Britannica Online.

Chan, C., Forwood, D., Roper, H., & Sayers, C. (2009). Public infrastructure financing-an international perspective. *Productivity Commission Staff Working Paper*. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1565073 on March 5, 2010.

Chong, S., & Poole, E. (2013). Financing infrastructure: A spectrum of country approaches. *Bulletin*, *4*, 65-76.

Christensen, L. B., Johnson, B., Turner, L. A., & Christensen, L. B. (2011). *Research methods, design, and analysis*. New York, USA: Sage Publications.

Collins, C. S. (2013). An overview of African higher education and development. *The development of higher education in Africa: Prospects and challenges*, *21*, 21-65.

Creswell, J. W. (2014). *A concise introduction to mixed methods research*. New York, USA: Sage Publications.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative and mixed methods approaches*. California, United States: Sage publications.

Creswell, J. W., & Plano Clark, V. L. (2007). *Designing and Conducting Mixed Methods Research*. Thousand Oaks, CA: Sage Publications.

Dadzie, P. S. (2005). Electronic resources: access and usage at Ashesi University College. *Campus-wide information systems*, *22*(5), 290-297.

Dang, G., & Pheng, L. S. (2015). *Infrastructure investments in developing economies*. Singapore: Springer.

Delaney, J. A., & Doyle, W. R. (2014). State spending on higher education capital outlays. *Research in Higher Education*, *55*(5), 433-466.

Dougherty, K. J., Natow, R. S., Bork, R. H., Jones, S. M., & Vega, B. E. (2013). Accounting for higher education accountability: Political origins of state performance funding for higher education. *Teachers College Record*, *115*(1), 1-50.

Draga, L. (2017). Infrastructure and equipment. *Basic education rights handbook: Education rights in South Africa. Braamfontein, South Africa: Section27.* Retrieved from http://section27. org. za/wpcontent/ uploads/2017/02.

Dzikum, E. A. (2015). *Examining the professional skills of basic school supervisors in GA South Municipality of Ghana*. (Doctoral dissertation, University of Sussex, United Kingdom).

Esia-Donkoh, K., Bampoh-Addo, H., & Afful, D. (2013). Making employee training and development a tool for efficiency and effectiveness in Ghanaian universities. *Journal of Education and Practice*, *4*(24), 88-93.

Fagbohunka, A. (2017). Infrastructural Facility and the Students' Academic Performance-A Critique. *The Indonesian Journal of Geography, 49*(1), 11-16.

Fägerlind, I., & Saha, L. J. (2016). *Education and national development: A comparative perspective*. Oxford, United Kingdom: Pergamon Press.

Fahim, Y., & Sami, N. (2011). Adequacy, efficiency and equity of higher education financing: The case of Egypt. *Prospects*, *41*(1), 47-67.

Filmer, D., Langthaler, M., Stehrer, R., & Vogel, T. (2018). Learning to realize education's promise. World Development Report. The World Bank.

Fowles, J. (2014). Funding and focus: Resource dependence in public higher education. *Research in Higher Education*, *55*(3), 272-287.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). *Multivariate data analysis*. New York: Pearson Education.

Hicks, D. (2012). Performance-based university research funding systems. *Research Policy*, *41*(2), 251-261.

Ihuah, P. W. & Eaton, D. (2013). The pragmatic research approach: A framework for sustainable management of public housing estates in Nigeria. *Journal of US-China Public Administration*, *10*(10), 933-944.

Institute of Education Sciences (IES). (2006). *IES Style Guide*. U.S. Department of Education. Retrieved from https://nces.ed.gov/statprog/styleguide/pdf/styleguide.pdf/2009/07/21.

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.

Irving, J., & Manroth, A. (2009). *Local sources of financing for infrastructure in Africa: a cross-country analysis* (Policy research working paper series No. 4878). World Bank, Africa Region, African Sustainable Development Front Office. Retrieved from https://doi.org/10.1596/1813-9450-4878.

Jamian, A. R., & Idris, M. R. M. (2020). Transformation of education in Malay Language to contribute future development of the nation. In K. E. Zegwaard & K. Hoskyn (Eds.), *Proceeding from the International Conference on Language, Literature and Culture*. (pp. 1-10). Sumatra, Indonesia. doi: 10.5281/zenodo.4278206.

Jongbloed, B. (2008). Funding higher education: a view from Europe. *Center for Higher Education Policy Studies, 6*, 1-30.

Kajawo, S. (2019). Examining performance and challenges of private universities in Malawi. *International Journal of Research and Innovation in Social Science (IJRISS), 3*(6), 48-58.

Kapur, C. (2019). Infrastructure development in schools. *Journal of Education Development*, 53(2), 45-56.

Khanal, K. P. (2021). Financing higher education in India. *Journal of Higher Education Policy and Leadership Studies, 1*(1), 30-45. Retrieved from https://johepal.com/article-1-30-en.html on 08.07.2021.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational & Psychological Measurement*, 30(3), 607-610.

Krishnan, J. (2005). Audit committee quality and internal control: An empirical analysis. *The Accounting Review*, *80*(2), 649-675.

Krosnick, J. A. (2018). Questionnaire design. *The Palgrave handbook of survey research*, 439-455.

Kumar, R. (2011). Research Methodology: A Step-by-Step Guide for Beginners (3rd ed.). New Delhi, India: SAGE Publishers Ltd.

Leedy P, Ormrod J (2010). *Practical Research: Planning and Design* (9th ed.). New York: Pearson.

Lewis, J. L., & Sheppard, S. R. (2006). Culture and communication: can landscape visualization improve forest management consultation with indigenous communities?. *Landscape and urban planning*, *77*(3), 291-313.

Liu, K., Wang, C. X., Song, S. S., & Li, Q. (2013). Evaluation on sustainable development level: a case study of Liaocheng City. *Applied Mechanics and Materials*, *361*, 111-114.

Mac-Barango, D., & Kakulu, I. I. (2014). *Enhancing infrastructural facilities for sustainable development in Nigerian Universities-Education for Sustainable Development (ESD), A veritable tool.* Retrieved from https://d1wqtxts1xzle7.cloudfront.net/41684288/Enhancing_Infrastructural_Facilities_for20160128-6563-jst64jlibre.pdf?1453984392=& response-content disposition=inline3B+filename3DEnhancing_ Infrastructural_ Facilities.

Mačerinskienė, I., & Kučaidze, N. (2016). Diversification of higher education funding: Resources, funding forms and methods. In Whither our Economies. *Proceedings from Mykolas Romeris University, Vilnius, Lithuania*. (pp. 333-344). MRU CRIS.

Manuh, T., Gariba, S., & Budu, J. (2007). *Change and transformation in Ghana's publicly funded universities. Partnership for higher education in Africa*. Oxford, UK: James Currey and Accra, Ghana: Woeli Publishing Services.

Masoumi, D., & Lindström, B. (2012). Quality in e-learning: a framework for promoting and assuring quality in virtual institutions. *Journal of Computer Assisted Learning*, *28*(1), 27-41.

Ministry of Education. (2011). Good infrastructure, essential for quality education delivery. Retrieved on October 7, 2023, from www.moe. gov.gh/moe/.

Ministry of Finance and Economic Planning. (2013). *Economic development and poverty reduction strategy II, 2013-2018*. Kigali, Rwanda: MINECOFIN.

Mngomezulu, B. (2015). *The challenges of massification of higher education and its ramifications with a focus on Africa: What role can industry play*? Proceedings from the 9th International Technology Education and Development Conference. Madrid, Spain, 2-4 March 2015.

Mohamedbhai, G. (2014). Massification in higher education institutions in Africa: Causes, consequences and responses. *International Journal of African Higher Education*, *1*(1), 60-83.

Mundy, K., & Verger, A. (2015). The World Bank and the global governance of education in a changing world order. *International Journal of Educational Development*, *40*, 9-18.

Nardi, P. M. (2018). *Doing survey research: A guide to quantitative methods*. London: Routledge.

National Policy of Education (1986). *Ministry of Human Resource and Development*. Retrieved from https://goo.gl/Zoh8DB, retrieved on 1st February 2019.

Naz, A., Khan, W., Daraz, U., Hussain, M., Alam, I., & Alam, H. (2012). Assessing the consequential role of infrastructural facilities in academic performance of students in Pakistan. *International Journal of Social Sciences & Education*, *3*(2), 463-475.

Ndou, V. (2004). E-government for developing countries: Opportunities and challenges. *Electron. J. Inf. Syst. Dev. Ctries.*, *18*(1), 1-24.

Neuman, W. L. (2014). *Basics of social research* (2nd ed.). New York: Pearson/Allyn and Bacon.

Newman, E., & Duwiejua, M. (2015). Models for innovative funding of higher education in Africa–The case in Ghana. In P. A. Okebukola (Ed.), *Towards innovative models for funding higher education in Africa* (pp. 1-23). Accra, Ghana: Association of African Universities.

Nisar, M. A. (2015). Higher education governance and performance-based funding as an ecology of games. *Higher Education*, *69*(2), 289-302.

Nyarko–Sampson, E. (2010). Teacher trainees' appraisal of guidance and counselling programmes in colleges of education in Ghana: A study of selected colleges in the Eastern and Greater Accra zones. *Nigerian Journal of Guidance and Counselling*, *15*(1), 95-111.

Obokoh, L. O., & Goldman, G. (2016). Infrastructure deficiency and the performance of small-and medium-sized enterprises in Nigeria's liberalised economy. *Acta Commercii*, *16*(1), 1-10.

OECD (2008). "*Information economy product definitions based on the central product classification (version 2)", working party on indicators for the information society*. Paris: OECD Publishing. Retrieved from http://dx.doi.org/10.1787/222222056845/2009/11/03.

Okyere, E. D., Boateng, E., Nyarko, G. S., & Ofori, R. (2015). Funding post-graduate education and research in public universities of Ghana: Challenges and prospects. *International Journal of Humanities and Social Sciences*, *2*(1), 495-504.

Pallant, J. (2016). *EBOOK: SPSS survival manual*. United Kingdom: McGraw-Hill Education.

Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. New York, NY: Harper & Row, Publishers, Inc.

Pilbeam, C. (2012). Pursuing financial stability: a resource dependence perspective on interactions between pro-vice chancellors in a network of universities. *Studies in Higher Education*, *37*(4), 415-429.

Pillay, P. (2009). Challenges and lessons from East and Southern Africa. In J. Knight (Ed.), *Financing access and equity in higher education* (pp. 19-39). Leiden, Netherlands: Brill.

Rabovsky, T. M. (2012). Accountability in higher education: Exploring impacts on state budgets and institutional spending patterns. *Journal of Public Administration Research and Theory*, *22*(4), 675-700.

Republic of Ghana. (2005). Growth and poverty reduction strategy (GPRS II) (2006–2009). National Development Planning Commission. Retrieved

October 6, 2023, from http://planipolis.iiep.unesco.org/2005/ghana-growth-and-poverty-reduction-strategy-gprs-ii-2006-2009-3756

Salmi, J. (2009). *The challenge of establishing world-class universities*. Washington DC: World Bank Publications.

Salmi, J., & Hauptman, A. M. (2019). Appendix–Innovations in tertiary education financing: A comparative e-valuation of allocation mechanisms. In A. S. Preker, H. Beciu & E. L. Keuffel (Eds.), *Financing the education of health workers: Gaining a competitive edge* (pp. 421-520). World Scientific Series in Health Investment and Financing.

Salmi, J., & Hauptman, A. M., (2006). Resource allocation mechanisms in tertiary education: A typology and an assessment. In Guni (Ed.), *Higher Education in the World 2006: The Financing of Universities* (pp. 60-81). London, United Kingdom: Palgrave MacMillan.

Santos, J. L. (2007). Resource allocation in public research universities. *The Review of Higher Education, 30*(2), 125-144.

Saunders, M. (2012). A political economy of university funding: The English case. *Journal of Higher Education Policy and Management*, *34*(4), 389–399.

Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research methods for business students*. England: Pearson Education Limited.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. New York: John Wiley & Sons.

Seniwoliba, J. A. (2014). Academic quality assurance practices in Ghanaian public universities: Experience from University for Development Studies. *Global Educational Research Journal*, *2*(9), 152-166.

Shin, J. C. (2013). The world-class university: Concept and policy initiatives. In J. Shin, & B. Kehm (Eds.), *Institutionalization of world-class university in global competition* (pp. 17-32). Dordrecht: Springer.

Singh, A. S., & Masuku, M. B. (2014). Sampling techniques & determination of sample size in applied statistics research: An overview. *International Journal of Economics, Commerce and Management*, *2*(11), 1-22.

Some, T. H. (2010). In search of sources other than governmental in the financing of higher education in Sub-Saharan Africa: a word of caution beyond the gains. *Journal of Higher Education in Africa*, *8*(1), 73-98.

SSNIT (2014). *Social Security and National Insurance Trust*. Accra: Ghana. Retrieved from .https://www.ssnit.org.gh/about-us.

Sürücü, L., & Maslakçi, A. (2020). Validity and reliability in quantitative research. *Business & Management Studies: An International Journal*, *8*(3), 2694-2726.

Teferra, D. (2013). Funding higher education in Africa: State, trends and perspectives. *Journal of Higher Education in Africa*, *11*(1-2), 19-51.

Times Higher Education World University Ranking (2022). *Empowering global higher education*. Retrieved from https://www.timeshighereducation.com.

Toguebaye, B. S. (2015). *Performance contracts in public universities in Senegal*. Paper presented at the Innovative Approaches to Funding

Higher Education and Research in Africa. Lome, Togo, 16 August, 2015.

Tongco, M. D. C. (2007). *Purposive sampling as a tool for informant selection*. New York, USA: Sage Publications.

UNCTAD. (2015). World investment report, global value chains: Investment and trade for development. 2013. Retrieved from https://unctad.org/ system/files/official-document/wir2013_en.pdf on 2015/06/08.

UNESCO (2007) '*Education for Sustainable Development'*. Paris: UNESCO. Retrieved from www.unesco.org/education/desd/.

UNESCO Institute for Statistics (2020). *Education: From disruption to recovery*. Retrieved from https://en.unesco.org/ covid19/education response.

UNESCO, I. (2020). *Basic texts of the 2003 convention for the safeguarding of the intangible cultural heritage*. Paris: UNESCO.

United Nations Conference on Trade and Development. (2013). *World Investment Report 2013: Global Value Chains: Investment and Trade for Development*. Retrieved from https://unctad.org/system/files/ official-document/wir2013_en.pdf/2014/03/14.

University of Cape Coast (2019). *UCC basic statistics*. Cape Coast, Ghana. University of Cape Coast. Retrieved from https://ucc.edu.gh.

University of Cape Coast (2021). *UCC basic statistics*. Cape Coast, Ghana. University of Cape Coast.

University of Ghana. (2014). Strategic Plan 2014-2024.

University of Ghana. (2018). Basic Statistics. Retrieved from https://ug.edu.gh

Wan, C. D., & Sirat, M. (2018). The development of Malaysian higher education: Making sense of the nation-building agenda in the globalisation era. *Asian Education and Development Studies*, *7*(2), 144-156.

Weerts, D. J. (2014). State funding and the engaged university: Understanding community engagement and state appropriations for higher education. *The Review of Higher Education*, *38*(1), 133-169.

Witt, E., Lill, I., Malalgoda, C., Siriwardena, M., Thayaparan, M., Amaratunga, D., & Kaklauskas, A. (2013). Towards a framework for closer university-industry collaboration in educating built environment professionals. *International Journal of Strategic Property Management*, *17*(2), 114-132.

World Bank (2012), Transformation through infrastructure: World bank group infrastructure strategy update FY2012–2015. Washington D.C., United States: World Bank.

World Bank (2014), World Bank *President Sees $100 Billion Increase in Lending Ability to Help End Poverty*. World Bank Press. Retrieved from: http://www.worldbank.org/en/news/press-release/world president-100-billion-increase-lending-poverty on 2014/04/01.

World Bank. (1994). *World development report 1994: Infrastructure for development*. Washington D.C.: The World Bank.

World Bank. (2008). *Decentralization in client countries: An evaluation of the world bank support: 1990-2007*. Washington D.C.: The World Bank.

World Bank. (2010). "*Chinese investments in special economic zones in Africa: Progress, challenges, and lessons learned*." Washington, DC: World Bank.

World Bank. (2011). *The world bank annual report 2011*. The World Bank.

Yoshino, N., & Hirano, T. (2010). Fiscal stability, the infrastructure revenue bonds and bank-based infrastructure funds for Asia. (GEM Working Paper). Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstractid=1694975

Zhang, Q., Ning, K., & Barnes, R. (2016). A systematic literature review of funding for higher education institutions in developed countries. *Frontiers of Education in China*, *11*(4), 519-542.

APPENDICES

APPENDIX A

UNIVERSITY OF CAPE COAST

INSTITUTE FOR EDUCATIONAL PLANNING AND ADMINISTRATION

FUNDING INFRASTRUCTURAL FACILITIES QUESTIONNAIRE

The following questions are part of an educational study being conducted by a graduate student of the University of Cape Coast. It is aimed at exploring funding of infrastructural facilities in Public Universities in Ghana. Please respond to all statements by ticking [√] in the box against the response that best describes your opinion. Please respond candidly to the questions. Your responses will be kept absolutely confidential.

PART A

Personal information

Please tick [√] the appropriate boxes for items 1 - 4

1. **Age:** Below 30 [ ] 31 – 40 [ ] 41 - 50 [ ] Above 50 [ ]

2. **Sex:** Male [ ] Female [ ]

3. **Role:** Accountant [ ] Dean [ ] Vice Dean [ ] HoD [ ] Director [ ] Assistant Director [ ] Provost [ ] Registrar [ ] Assistant Registrar [ ]

4. **Years of experience in current role:** 0-5 years [ ] 6-10 years [ ] 11-15 years [ ] 16-20 years [ ] Over 20 years [ ]

PART B

SECTION A: FUNDING MECHANISMS

Please give your candid opinion on the extent to which the following funding mechanisms exist in your institution by ticking [√] in the responses that best describe your opinion.

Key: Strongly Disagree (1), Disagree (2), Agree (3) and Strongly Agree (4)

S/N	**Statement**	**1**	**2**	**3**	**4**
5	My institution acquires funds from state-owned enterprises and corporations like GNPC, VRA, VALCO, SSNIT, etc. to finance educational infrastructural facilities				
6	My institution enters into long-term contracts with private entities to fund infrastructure facilities				
7	My institution funds infrastructural facilities through GETfund				
8	My institution receives grants from international donors				
9	My institution receives certain quotas from government for infrastructural development				
10.	My institution generates funds internally for infrastructural development				
11.	My institution finances infrastructural facilities through alumni fundraising				
12.	My institution obtains funds through the activities of Institutional Advancement				
13.	My institution receives royalties on patented inventions and licensing of intellectual property to fund infrastructural facilities				
14.	My institution has established a specialized endowment funds for infrastructural development.				
15.	Funds from development and social partners				

16. Beyond the stated funding mechanism what other mechanism do you employ for infrastructural development? (Please list as many as comes to mind)

……..……...……

……

SECTION B: PRIORITISATION OF INFRASTRUCTURAL FACILITIES FOR FUNDING

Please rank the following options in order of preference with the availability of funds. The top priority for funding should be ranked 1st followed by the 2nd etc. up to the 10th (least prioritized).

S/N	**Infrastructural facilities**	**RANKS (1st, 2nd ,3rd ,4th ,5th etc)**
17.	Resident halls	
18.	Lecture rooms	
19.	Recreation facilities	
20.	Research laboratories	
21.	Health facilities	
22.	Library facilities	
23.	Digital resource facilities	
24.	Auditorium, theatre and studio facilities	
25.	Counselling facilities	
26.	Utility facilities	

SECTION C: ADEQUACY OF FUNDS

Please give your opinion on the extent to which you agree that funds received are adequate by ticking [√] in the responses that best describe your opinion.

Key: Woefully Inadequate (1), Inadequate (2), Adequate (3) and Very Adequate (4)

S/N	**Sources of Funding**	**1**	**2**	**3**	**4**
27.	Funds from GETfund				
28.	Grants from international donors				
29.	Internally generated funds by the institution				
30.	Funds from development and social partners				
31.	Fund from state-owned enterprises and corporations like GNPC, SSNIT, VRA, VALCO etc.				
32.	Funds from Government				
33.	Contributions from private sector/entities				
34.	Funds from Alumni fundraising				
35.	Funds obtained through the activities of Institutional Advancement				
36.	Funds generated from established royalty income from patent inventions and licensed of intellectual property				
37.	Funds from specialized endowment funds for infrastructural facilities funding				

SECTION D: FUNDING OPPORTUNITIES

Please give your opinion on the extent to which the following funding opportunities exist at your institution by ticking [√] in the responses that best describe your opinion.

Key: Strongly Disagree (1), Disagree (2), Agree (3) and Strongly Agree (4)

S/N	**Statement**	**1**	**2**	**3**	**4**
38.	Opportunities exist for my institution to acquire funds from state-owned enterprises and corporations like GNPC, VRA, VALCO, SSNIT, etc. to finance educational infrastructural facilities				
39.	Opportunities exist for my institution to enter into long-term contracts with private entities to fund infrastructure facilities				
40.	Opportunities exist for my institution to fund infrastructural facilities through GETfund				
41.	Opportunities exist for my institution to receive grants from international donors				
42.	Opportunities exist for my institution to receive certain quotas from government for infrastructural development				
43.	Opportunities exist for my institution to generate funds internally for infrastructural development				
44.	Opportunities exist for my institution to finance infrastructural facilities through alumni fundraising				
45.	Opportunities exist for my institution to obtain funds through the activities of Institutional Advancement				
46.	Opportunities exist for the establishment of social partnership with state institutions, businesses and other agencies for funding infrastructural facilities.				
47.	Opportunities exist for my institution to establish royalty income from patented inventions and licensing of intellectual property to fund infrastructural facilities				
48.	Opportunities exist for the formation and use of specialized endowment funds in infrastructural development				

49. Beyond the stated funding opportunities what other opportunities exist? (Please list them) ……..……..……

……

SECTION E: CHALLENGES OF FUNDING INFRASTRUCTURE

Please give your opinion on the extent to which the following are challenges to the funding of infrastructural facilities by ticking [√] in the responses that best describe your opinion

Key: Strongly Disagree (1), Disagree (2), Agree (3) and Strongly Agree (4)

S/N	Statement	1	2	3	4
50.	Management's misappropriation of funds				
51.	Misplaced priority of funds				
52.	There is inadequate enabling framework for private investment in infrastructure facilities				
53.	Lack of reliable data on infrastructural facilities for funding of institutions				
54.	Political influences affect funding of infrastructure				
55.	There is weak institutional capacity as a result of inadequate level of autonomy in financing				
56.	Over reliance on government's allocation of funds				

57. Beyond the stated funding challenges what other challenges do you face? (Please list them) ……..……..……..……

……

APPENDIX B

ETHICAL CLEARANCE

UNIVERSITY OF CAPE COAST

INSTITUTIONAL REVIEW BOARD SECRETARIAT

TEL: 0558093143 / 0508878309
E-MAIL: irb@ucc.edu.gh
OUR REF: UCC/IRB/A/2016/936
YOUR REF:
OMB NO: 0990-0279
IORG #: IORG0009096

26TH APRIL, 2021

Ms. Juliana Eshun
Institute for Educational Planning and Administration
University of Cape Coast

Dear Ms. Eshun,

ETHICAL CLEARANCE – ID (UCCIRB/CES/2021/14)

The University of Cape Coast Institutional Review Board (UCCIRB) has granted ***Provisional Approval*** *for the implementation of your research titled* ***Funding of Infrastructural Facilities in Public Universities.*** *This approval is valid from 26TH April, 2021 to 25TH April, 2022. You may apply for a renewal subject to submission of all the required documents that will be prescribed by the UCCIRB.*

Please note that any modification to the project must be submitted to the UCCIRB for review and approval before its implementation. You are required to submit periodic review of the protocol to the Board and a final full review to the UCCIRB on completion of the research. The UCCIRB may observe or cause to be observed procedures and records of the research during and after implementation.

You are also required to report all serious adverse events related to this study to the UCCIRB within seven days verbally and fourteen days in writing.

Always quote the protocol identification number in all future correspondence with us in relation to this protocol.

Yours faithfully,

Samuel Asiedu Owusu, PhD
UCCIRB Administrator

ADMINISTRATOR
INSTITUTIONAL REVIEW BOARD
UNIVERSITY OF CAPE COAST