KYAMBOGO UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF CIVIL AND BUILDING ENGINEERING

APPLICABILITY OF PUBLIC PRIVATE PARTNERSHIPS IN DEVELOPMENT OF INFRASTRUCTURE IN HIGHER INSTITUTIONS OF LEARNING IN UGANDA

BY

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CERTIFICATION

The undersigned professionals certify that they have read the dissertation and hereby recommend for submission to Kyambogo University a dissertation entitled "**Applicability of Public Private Partnerships in Development of Infrastructure in Higher Institutions of Learning in Uganda",** in fulfillment of the requirement for the award of a Master of Science in Construction Technology and Management Degree of Kyambogo University.

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DECLARATION

I, **MABONGA Sylvia Namakoye**, hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree of the university or other institute of higher learning, except where due acknowledgement has been made in the text and reference list.

Signature:  Date: November, 2019

MABONGA SYLIVIA NAMAKOYE

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DEDICATION

This dissertation is specifically dedicated to the following groups of people;

- the girl child and the message is that when you persevere, you achieve.
- all women in my country that we too can contribute to an improved difference.
- lastly, to the Engineering community, with an intension to contribute knowledge for institutions to the benefit of our adored nation Uganda.

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LIST OF ACRONYMS

ADB	Asian Development Bank
ADBG	African Development Bank Group
CVI	Content Validity Index
KPI	Key Performance Indicators
MUK	Makerere University
OECD	Organization for Economic Cooperation Development
PPDA	Public Procurement and Disposal Act
PDU	Procurement Disposal Unit
PPPs	Public Private Partnerships
SDGs	Sustainable Development Goals
Shs	Shillings
UCU	Uganda Christian University
UMU	Uganda Martyrs Uganda
UNECE	United Nations Economic Commission for Europe

ABSTRACT

Public Private Partnership system is considered an innovative finance strategy which offers good prospects for global construction industry. Yet, since the adoption of the system in Uganda, the benefits have not been fully realized. This research, therefore aimed at establishing the extent of use of the Public Private Partnerships, the question of continuity or and starting to use it, inspirations and barriers affecting its applicability in higher institutions of learning in Uganda. The study adopted a cross sectional survey research design, with both quantitative and qualitative approaches. With a sample size of 138 respondents that were purposively selected, regression and correlation analyses were performed to establish the significance of the bio-data and inspirations to show the determination to continuation of the PPP system. The survey results show that PPPs have only been embraced to a minimal extent of 4% in higher institutions of learning in Uganda. Further analysis showed there was interest to continue or start using PPPs. Inspirations were established as; availability of funds for development, completed within stipulated time, cost and transfer of all risk to the contracting party in fig. 4.12. Barriers were found as; PPPs projects are feared to be complex and risky, lack of expertise on establishing and managing projects, lack of legislation or compatibility with the existing procurement ordinances and lack of political support. This research can be impactful to policymakers to adopt when implementing future projects by use of a developed framework in fig. 4.15 that would offer solutions to the identified barriers.

Key words: Barriers, Continuity, Development, Infrastructure, Inspirations, Public Private Partnerships.

CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Governments in developing as well as developed countries are increasingly using Public Private Partnerships (PPPs) as a viable approach to bridge the much needed infrastructure gap (Kurniawan, 2013). As infrastructure funding gaps escalate worldwide, PPPs offer an increasingly valuable solution to financial and administrative constraints of the public sector. A Public-Private Partnership is a contractual agreement between a public agency and a private sector entity through which skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public (Valdimarsson, 2007; Krishnan, 2014).

PPPs enhance economic growth through supporting better integration of services, strengthen governance and quality levels and maximize innovation opportunities (Klijn et. al., 2007; Kurniawan, 2013). Studies by Bernadine & Carla (2016) show that in Africa, governments use PPPs to gain the much needed private sector investment and expertise for economic development. African governments now have a greater need for infrastructural development to support the continent's population growth and demand for its commodities from emerging markets all over the world (Bernadine & Carla, 2016). Through Public Private Partnerships, governments can radically improve infrastructure networks and boost service delivery to the people (Farlam, 2005).

In Uganda, government embarked on Public Private Partnership since early 1990s because of its potential ineffective and radical development and improvement of public

infrastructure and efficient service delivery. PPPs enable investments into public sector and more effective public resources management, higher quality and timely provision of public services (Ndandiko, 2006). A number of contracts have been witnessed in which the private sector entities are indebted to operate, expand and modernize public facilities like the local markets, bus parks, abattoirs, recreation centers, roads and in return obtaining service user fees (Caines et. al., 2003). Additionally, Public Private Partnership contracts have been concluded for provision of essential services such as, solid waste collection, street parking management, street lighting maintenance, street repairs and their general cleanliness (Nsasira et. al., 2013).

In Education sector, PPPs arrangements have provided a unique opportunity to wed the potential inequality reducing impact of public financing of education to the efficient provision by private schools and this has led to development of education sector (World Bank, 2014). Proponents of PPPs have cited improved flexibility and accountability in education service delivery as major benefits of such programs. Partnering with already-in-place private education institutions to increase access is cheaper than building new institutions or classrooms and training instructors or lecturers (World Bank, 2014).

Despite the continued financial and human resource support through the Public Private Partnerships, there remain big gaps in infrastructure development in public institutions (Education Institutions-Universities) in Uganda. The basic education infrastructure including decent libraries, laboratories and classrooms to match the increasing enrolment are still inadequate. This has put the PPPs interventions in question

particularly whether their promotion in the education sector has had any significant impact or not (World Bank, 2011, Grimsey, 2002). Some researchers have endeavored to examine the effect of hindrances such as, lack of qualified human resources to effectively apply the PPPs, weak public sector regulatory frame work, lack of adequate financial, technical and managerial capabilities to enable the growth in PPPs and political interference among others (Ndandiko, 2006) on the effectiveness of PPPs in infrastructure development.

This study sought to establish the applicability of public private partnerships in the development of infrastructure in public institutions four major stakeholder groups to include main shareholders, employees, customers and the general public (Jones & Wicks, 1999).

1.2 Problem Statement

Public Private Partnerships have the potential to effectively develop the much needed infrastructure and at the same time deliver quality timely services to the public institutions (Ndandiko, 2006). The (GoU) is in need of availing infrastructure and yet, is constrained by the stringent national budget and hence falling into debts in order to finance the development of infrastructure which is key to the economic growth of all sectors in general. Some Universities still lack physical infrastructure including space for laboratories, tutorials, lecture rooms and offices.

Recently, Uganda's public debt has increased by 22% from Shs 33.99 trillion as at June 30, 2017 to Shs 41.51 trillion as at June 30, 2018 (Auditor General's report, Jan 4, 2019). Research has shown that there are several ways through which government can be able to avoid the heavy debt and yet still have infrastructure developed without

consuming the limited resources and hence reducing the debt. PPPs are seen as the most reliable and effective means of matching the growing need to provide infrastructure along with the budgetary constraints to reduce the public debt due to its mobilization of private capital to bridge the gap in financing and management of infrastructural investments in Uganda.

However, the success of the PPPs in Uganda has not been realized like it is in the developed and other developing countries. Lack of facilities to enable quality training is contributing to unskilled graduates, which leads to unemployment. This study therefore sought to investigate the applicability of PPPs in development of infrastructure in public institutions in Uganda as a finance strategy to be embraced to aid the upgrade of facilities as part of ensuring quality education to enable attaining educational Standard Development Goals –SDGs by 2040.

1.3 Research Objective

1.3.1 Main Objective

The purpose of the study was to investigate the applicability of PPPs in development of infrastructure in higher institutions of learning in Uganda.

1.3.2 Specific Objectives

i. To determine the extent of the use of PPPs in developing infrastructure in higher institutions of learning in Uganda,
ii. To determine the inspirations affecting the applicability of PPPs in higher institutions of learning in Uganda,
iii. To identify the barriers affecting the applicability of PPPs in higher institutions of learning in Uganda and

iv. To develop a frame work to enhance the adoption of PPPs as a finance strategy to develop infrastructure in higher institutions of learning in Uganda.

1.4 Research questions

i. To what extent are the PPPs being used in developing infrastructures in higher institutions of learning in Uganda?

ii. What are the inspirations affecting the applicability of PPPs in higher institutions of learning in Uganda?

iii. What are the barriers affecting the applicability of PPPs in higher institutions of learning in Uganda?

iv. What frame work can enhance the adoption of PPPs as strategy to develop infrastructure in higher institutions of learning in Uganda?

1.5 Justification

The government of the Government of Uganda (GoU) adopted and implemented Public Private Partnerships because of its potential to effectively develop the much needed infrastructure and at the same time deliver quality timely services to the public institutions (Ndandiko, 2006). However, the success of the PPPS in Uganda as a strategy to develop infrastructure has not been fully utilized. The role of PPPs as a financial strategy to lessen the burden on government by reducing the debt significantly has not been realized. Consequently, a study of this nature is necessary to establish the extent of use of PPPs, the inspirations and barriers to the effectiveness of PPPs in developing infrastructure in higher institutions of learning in Uganda.

1.6 Significance

The findings of the study if adopted by government may help to reduce public debt by closely working with private sector as an alternative source of financial resources to finance infrastructure in public institutions. This could be part of the solutions to meet the educational national development plan and educational sustainable development goals 2040. The study can aid institution policymakers to make informed decisions basing on the realized effects of PPPs on the construction phases in reality and this may help higher institutions of learning by articulating the role of managerial competence and organizational culture. The study might be a basis for further research studies by subsequent researchers on how best PPPs can be made to perform and realize the objectives for which they are adopted.

1.7 Scope of the study

The Scope for this study covered the subject under study, the area that was covered and the time were as indicated below;

1.7.1 Time scope

The study was conducted from December, 2018 to October, 2019. This included the period for proposal writing.

1.7.2 Content scope

The research was limited to the applicability of PPPs in developing infrastructure in higher institutions of learning in Uganda that included; Makerere University, Kyambogo University, Gulu University, Busitema University, Uganda Christian University, Uganda Martyrs University, Ndejje University and Nkumba University.

1.7.3 Geographical scope

The study considered the eastern, northern and central regions and was limited to public and private universities in Uganda. In the whole country, the total number of universities in general comes to fifty-three (53), having 11 No. public universities, 38 No. private universities, 4 No. military universities and more 3 No. other degree awarding institutions.

However, the criteria used for the selection was; the national lincense status, age of an institution in operation of not less than 10 years, the population of students of not less than 10,000. This meant that such institutions should have developed the necessary infrastructures for proper service. In addition, these universities should have relatively enough land acreage to allow expansion, hence the need for the incorporation of PPPs for the development of their infrastructure. From the above criteria therefore, the public universities selected included; Gulu University, Busitema University, Makerere University and Kyambogo University while private Universities include; Uganda Christian University, Uganda Martyrs University, Ndejje University and Nkumba University.

1.8 Conceptual framework

A conceptual framework is an analytical tool with variations and perspectives. It is used to make intangible peculiarities and also organize ideas. It is particularly useful as an organizing device in research. With a sound conceptual framework in place, the purpose of the study was well compressed. There are several types of conceptual frameworks that line up with the research purpose and these include but not limited to; working hypothesis, formal hypothesis, practical idea type and many others.

The independent variables were; design and agreement, procurement, construction and operation, monitoring and evaluation while PPPs effectiveness was the dependent variable. Regulatory framework was treated as an intervening variable.

Design and agreement was looked at in terms of PPP design and suitability. Procurement was looked at in terms of tendering, negotiation and contracting. Construction was looked at in terms of savings and comparisons realized during implementation. Post construction was measured using operation, monitoring and evaluation while PPPs effectiveness was measured using cost reduction, timely delivery and quality of output. Regulatory frame work was looked at in terms of legal context, institutional capacity and national policy.

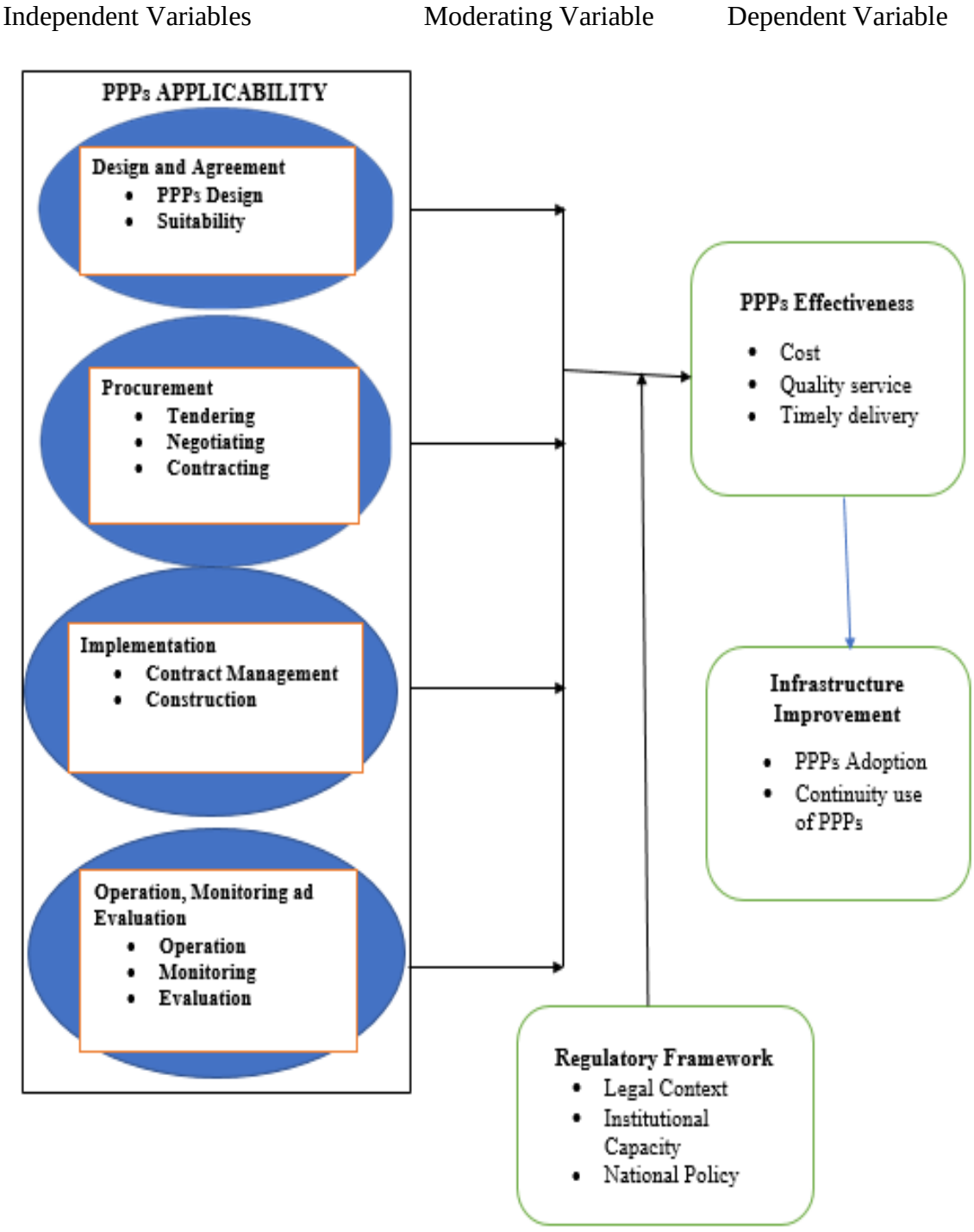

Figure 1.1: ***Proposed conceptual framework***

Source: Adopted from Kurniawan (2013) and modified by Researcher (2019)

1.9 Chapter one summary

A Public Private Partnership is a contractual agreement between a public agency and a private sector entity through which skills and assets of each sector (public and private) are shared in delivering a service or facility for the use of the general public (Valdimarsson, 2007; Krishnan, 2014). The government of Uganda is in need of availing infrastructure and yet, is constrained by the stringent national budget and hence falling into debts in order to finance the development of infrastructure which is key to the economic growth of all sectors in general. Research has shown that there are several ways through which government can be able to avoid the heavy debt and yet still have infrastructure developed without consuming the petite resources and hence reducing the debt and one of the strategies is PPPs. There was need therefore to understand the applicability of this kind of arrangement, the inspirations and barriers affecting its application in higher institutions of learning, in order to capitalize on benefits and solve the pinching problem of the increasing public debt. Chapter One introduced the problem, the main and specific objectives, justification, significance, scope of study and the proposed conceptual framework.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the available literature on the variables of the study based on the objectives and the conceptualization of the study variables as stated in chapter one.

2.2 Design and agreement of PPPs

One of the most critical issues in designing the Public Private Partnership contract for infrastructure projects is the allocation of project risks between the public and private sectors (Iossa & Elisabetta, 2015). Contracts and legal agreements are at the heart of any PPPs transaction. With sound agreements, PPPs and concessions can achieve the objectives set forth by government (Bing et. al., 2005). With poorly structured agreements, these partnerships have a higher likelihood of failing. With hundreds of millions of dollars at stake, it is imperative that time and other resources are well spent in designing good PPP and concession contracts.

2.3 Procurement

Attention is required for the design of procurement procedures and contract management monitoring systems while dealing with PPPs. Crucial to the selection process of a PPP is whether it will provide value for money and above all additional value than traditional public procurement methods. The benefits and costs should be systematically analyzed considering both quantifiable and non-quantifiable items. Procurement rules exist in most countries and for all international financing agencies and these must be followed (Hardcastle, 2005).

The proper procedures of advertising tenders, negotiating, contracting and evaluation must be adhered to in order to realize value for money (Hawkins et. al., 2011;

Buckingham et. al., 2010). The tender advertisement period has to take into account the need for approval from the lender or donor, the need to adhere to local or national government regulations and bureaucratic procedures, whether it will be advertised internationally, regionally or nationally and the scope of works (Hawkins et. al., 2011; Buckingham et. al., 2010).

2.4 Construction/Implementation

Construction is the actual implementation of engineering projects that is a tangible stage and in most cases the core matter of why the whole system is conceived right from the idea conception, through to the procurement stage till the real end of the story which is the end of the defects liability period in the operation monitoring and evaluation stage.

Ideally in construction of Buildings, different phases are tagged portions of absorption of contract sums as follows: substructure absorbs approximately 35%, superstructure absorbs approximately 20%, roofing absorbs approximately 15%, and finishes & fittings absorb approximately 30%, this is from the comparison of bills of quantities from various unrelated projects, using the subtotals for the different stages.

In the UK, arguably one of the most efficient PPP market in the world, advisory costs during project development average 2.6% of project capital cost (World Bank, 2019). Advisory costs in lesser developed PPPs markets like Uganda run even higher.

Therefore, funding, budgeting and expenditure mechanisms for project development are important to a successful program, enabling and encouraging government agencies to spend the amounts needed for high quality project development (World Bank, 2019). PPPs have enabled governments to expedite project completion, reduce costs

and more rapidly introduce innovation. Although they must be properly conceptualized, structured, and implemented for the right reasons, from both a short and a long-term lens.

2.5 Operation, monitoring and evaluation

The success of project implementation always determines whether the project will deliver value for money. Therefore, it is crucial to establish sound implementation systems to oversee the implementation of the PPPs projects to avoid stalling projects (World Bank, 2018). Monitoring project progress is a main programme management tool and it is so crucial if the project has to succeed (World Bank, 2018). As an administrative procedure, the main task of monitoring is to assure that project inputs and outputs are in line with the original plan and that the expenditure incurred complies with the rules of eligibility.

2.6 Regulatory framework

Regulatory framework encompasses all the laws, regulations, policies, binding contracts, standard PPPs contracts and other administrative ruling governing the use of PPPs in a given country (Procuring Infrastructure Public-Private Partnerships Report 2018). An effective PPP agreement requires effective regulatory and strategic structures to be put in place to guide the process (Ibrahim et. al., 2012). Efficient legal, regulatory and contractual conditions can only perform successfully when they are based on and supported by the government's institutional framework/national policy (Ibrahim et. al., 2012). The institutional structure ought to aim at both facilitating PPPs progress and providing clear borders to protect the interests of all stakeholders (Duffield, 2005; EC, 2003; Ibrahim et. al., 2012).

2.7 Effectiveness of PPPs

The effectiveness of PPPs is measured basing on the quality of the work delivered and the time taken to deliver the work. The ability to reduce the financial burden on the government expenditure is one of the greater benefits of using PPPs (Romero, 2014; Ruud, 2013). Ability to achieve, from the point of view of the public sector, a greater benefit in relation to the expenditures, compared with the situation when the public sector implements the given project by itself, using its own forces and from its own sources, i.e. respecting the principle of value for money best describes the effectiveness of PPPs (Romero, 2014; Ruud, 2013).

The quality of the output and the timely delivery constitute crucial factors to consider while getting to PPPs agreements (Romero, 2014; Ruud, 2013). Meanwhile through PPPs projects, the private sectors are accepting responsibilities to maintain the asset throughout the long term operational concessionaire period (Hashim et. al., 2017). PPPs offer a full package comprising the combination of the design, construction, finance, operation and maintenance of the facilities which the payment being made based on the pre-determined standards and performance of the service provided (Hashim et. al., 2017). Since it has a significance relationship between performance and whole life cycle project, the private sector must be able to provide high quality services as required by the standard in terms of level, quality and timeline (Hashim et. al., 2017).

2.8 Extent of use of PPPs in infrastructure development

According to Asian Development Bank-ADB (2010), Public-Private Partnerships (PPPs) have been gaining recognition in many developing countries as an important

means of mobilizing private sector capital and expertise for infrastructure investments and service provision. Governments in most developing countries face the challenge to meet the growing demand for new and better infrastructure services (Brewer & Graham, 2016). As available funding from the traditional sources and capacity in the public sector to implement many projects at one time remains limited, governments have found that partnership with the private sector is an attractive alternative to increase and improve the supply of infrastructure services (Brewer & Graham, 2016). Although PPPs in infrastructure development was rated successful overall, there are areas for improvement in both, public sector and private sector operations, as implied by lower performance ratings for PPP related assistance in infrastructure sectors outside power and roads, technical assistance for the preparation of specific PPP projects and earlier PPP project development facilities and financial intermediation loans that met with little demand as they did not address impediments to private sector participation in infrastructure (ADB, 2010).

While ADB support for the establishment of initial policy and legal PPP frameworks was generally successful, more efforts are needed to help with their implementation and address remaining weaknesses in the enabling environment. The sustainability and impact of public sector support was reduced by a lack of adequate capacity development support and changes in political commitment to reforms.

2.9 The factors affecting the use of PPPs

After many years of adoption of PPP in most countries in Sub-Saharan Africa, very few projects have been completed and commissioned on time for use or consumption (Kurniawan & Fredy, 2013). This is an indication that there are some factors that hindered the successful implementation of the PPP in most of African countries

(Kurniawan & Fredy, 2013). There have been very little achievements recorded in most of the projects where Public Private Partnership is used to address the shortfall in the provision of affordable infrastructure (Akintoye, 2003; Bernadine & Jones, 2016).

In many countries, PPPs have been widely used to develop infrastructure but in many developing countries the result was disappointing (ADB, 2008). It has been noted that most government have not developed clear frameworks for monitoring or performance auditing as well as the tendering mechanism to foster effectiveness of PPPs. In addition, many critics in regards to PPPs, have highlighted factors such as lack of transparency in the tendering process, the absence of referred guidelines, incomplete Key Performance Indicator (KPI) and less training and education as factors hindering the success of PPPs (Karimi et. al., 2015).

According to UNECE (2008) one of the key challenges facing the governments is that despite the traditional procurement methods, which focus on inputs, PPPs requires skills to identify the output of the projects. In addition, the management of PPP contracts is complex, demanding, prone to failure, and subject to abuse by unscrupulous individuals, firms or politicians, unless controlled and disciplined, through highly transparent procedures, and professional contracts and conscientious monitoring processes (Karimi et. al., 2015).

2.10 Impact of the factors affecting the use of PPPs

Public-Private Partnerships (PPPs) have become a major scheme in supplying the needs of public works (Ho & Tsui, 2009). PPPs are unique and distinctive from the

traditional public delivery in many aspects especially, the better pooling of resources and the opportunism embedded in PPPs (Ho & Tsui, 2009). However, there is a general consensus among various scholars that a stream of challenges has led to dreary achievement of the objectives for which PPPs are set up. Shift from traditional procurement methods to PPP is not an easy task.

2.11 Chapter two summary

This section reviewed the available literature on the variables of the study based on the objectives and the conceptualization of the study as outlined in the introduction. It showed that, in all projects, design and contract agreement is a fundamental fact that aids success and it is no different for the PPPs system. It further elaborated that, if poorly structured, there can be a high chance of the implementation failing. The benefits and costs should be systematically analyzed considering both quantifiable and non-quantifiable items. Procurement rules exist in most countries and for all international financing agencies and these must be followed. Proper procedures of advertising tenders, negotiating, contracting and evaluation must be adhered to in order to realize value for money. Key challenges identified as facing the governments were that despite the traditional procurement methods, which focus on inputs, PPPs requires skills to identify the output of the projects. Furthermore, the management of PPP contracts is complex, demanding, prone to failure, and subject to abuse by unprincipled individuals, firms or politicians, unless controlled and disciplined, through highly transparent procedures, and professional contracts and conscientious monitoring processes. However, given the benefits that come with PPPs, there is need to achieve hope and know that even with challenges, it is not an impossibility to embrace PPPs.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This section explores the research design, target population, sample size and sampling techniques, data sources, data collection methods, measurement of the variables, validity and reliability of the data was established.

3.2 Research design

The design of a research topic is used to explain the type of research which include; experimental, survey, correlational, semi-experimental and review. An impactful research design usually creates minimum bias in data and increases trust on the collected and analyzed research information. Research design which produces the least margin error in experimental research can be touted as the best.

The key characteristics of research design are; neutrality, where results are projected are free from bias and neural; reliability, where if a research is conducted on a regular basis, the researcher involved expects similar results to be calculated every time; validity, where when there are multiple measuring tools available for research design but valid measurement tools help the researcher in gauging results according to the objective of research and nothing else and generalization, where the outcome of the research design should be applicable to a population and not just a restricted sample.

The research design used was the survey type and to be specific, the cross sectional survey design adopting both qualitative and quantitative approaches. The data collected from the surveys were statistically analyzed to draw meaningful research conclusions as in the next chapter.

3.3 Research approach

This research approaches includes both qualitative and quantitative. Qualitative approach was implemented in cases where a relationship between collected data and observation was established on the basis of mathematical calculations whereas quantitative was implemented in cases where it was important for the researcher to have statistical conclusions to collect actionable results. In one way, for the first objective that dealt with the extent of use of PPPs, the relationship was to numbers and quantities in form of the population. On the other hand, the approach was qualitative in way of relating to opinion about the inspirations and barriers affecting the use of PPPs and in development of the relationship between bio-data of the respondents and the continuation of the PPPs system.

3.4 Study population

In the whole country, the total number of Universities in general comes to fifty-three (53), having 11No.public universities, 38No. private universities, 4No. military universities and more 3No.other degree awarding institutions. However, 8No. universities both public and private was considered for this study. The criteria used to arrive at the eight from the fifty-three included; the universities which are licensed by National Council of Higher Education and have been in existence for more than 10 years. In addition, the universities selected must have at least a minimum of 10,000 students and considerable size of land for expansion hence the need for PPPs.

The information of number of respondents was obtained from the respective Universities. From each university, only key respondents from key positions were picked from the Contracts Committee, Estates, University Secretary's Office, Finance

office and the PDUs office and the numbers of the expected population was availed by the universities' sources in respective departments as indicated in table 3.1.

Table 3.1: Sample population

S/n	Institutions	Contracts Committee	Estates	Secretary's Unit	Finance Office	PDU office	Total
1.	Kyambogo	5	5	4	6	4	24
2.	Makerere	5	7	6	9	5	32
3.	Busitema	5	4	3	8	5	25
4.	Gulu	5	5	4	6	4	24
5.	UCU	5	5	5	7	5	27
6.	UMU	5	6	5	6	5	27
7.	Ndejje	5	5	4	8	4	26
8.	Nkumba	5	5	4	6	4	24
	Total	**40**	**42**	**35**	**56**	**36**	**209**

3.5 Sample size and selection

A sample population was 209 respondents according to Krejcie & Morgan table in appendix 4, the sample size of 136 of respondents was qualifying but 138 respondents participated in this study, because they were the returned questionnaires. Stratified random sampling was used to group the respondents into different status. Non proportionate sampling technique was then used to select the officers purposively from each department. In addition, these categories of respondents were chosen because they were believed to have adequate knowledge about the subject investigated (MC Evily & Marcus, 2005). A case study was adopted approach because case study research enables an in-depth, detailed study of an individual or a given organization.

3.6 Sources of data

The researcher collected primary and secondary data for this study. Primary data was collected using self-administered questionnaire to the respondents. Then secondary data was reviewed from different researchers in relation to the same topic.

3.7 Data collection instruments

Primary data was collected mainly by administering open and closed ended questionnaires. Questionnaire was adopted because it elicits specifics which are easy to analyze and compare among different groups and economical in terms of time and finances. This was easy by use of a software called Mwater version that provided a link which would still be attended to respondents that seemed to be very busy and with less free time. The data collections tools are shown in table 3.2.

Table 3.2: Data collection tools used for respective objectives

S/n	Objective	Data collection tools	Method
i	To determine the extent of the use of PPPs in developing infrastructures in institutions of higher learning in Uganda.	Questionnaires	Quantitative & Qualitative
ii	To determine the inspirations that affect the applicability of PPPs in institutions of higher learning in Uganda.	Questionnaires	Quantitative & Qualitative
iii	To identify the barriers that affect the applicability of PPPs in institutions of higher learning in Uganda.	Questionnaires	Quantitative & Qualitative
iv	To develop a frame work to enhance the adoption of PPPs as strategy to develop infrastructure in institutions of higher learning in Uganda.	Questionnaires	Quantitative & Qualitative

3.8 Data processing and analysis

After collecting the data using the questionnaire, it was compiled, sorted, edited, and checked for quality, accuracy and completeness. Data were expressed in numeric terms for analysis using SPSS version 25 program and Excel which provided descriptive outcomes in order to develop the relationship among variables. The parametric tests were carried out and it was established that the data obtained was non parametric that is with 'distribution free'. Explanations were made to give meaning to the collected data. The significance of the relationship among the variables was analyzed using correlation coefficients in chapter four.

3.9 Analytical techniques

The statistical software for SPSS version 2.5 was used to test including reliability analysis using Cronbach's alpha. The values of the independent and the dependent variables were entered into Microsoft excel for analysis. Using the analysis pack, a multiple linear regression analysis was performed at 0.05 level of significance. Multiple regression was selected to enable the researcher to assess the association between two or more of independent variables.

3.9.1 Testing reliability

The reliability of the survey data was statistically determined using the Cronbach's Alpha. The values for Cronbach's Alpha ranges from 0 to 1, where a value of more than 0.7 is considered acceptable, signifying good internal consistency and reliability of the data set (George & Mallery, 2003; Nunnally, 1978). The Cronbach's alpha reliability analysis is normally exaggerated by a lot of variables so there is no specific significant value. The following ranges are acceptable as per George & Mallery (2003);

0.90 - 1.0	excellent
0.80 - 0.9	good
0.7 - 0.79	acceptable
0.6 - 0.69	questionable
0.5 - 0.59	poor
0.0 - 0.49	unacceptable

3.9.2 Testing validity

By using testing validity formula to establish the Content Validity Index

$$CVI = \frac{Number\ of\ Items\ declared\ Valid}{Total\ Number\ of Items} \text{..... } Eqn\ (3.1)$$

Using the above formula, the CVI range of 0.7-0.99 is considered acceptable as per the limits provided by (Yaghmale, 2009).

3.10 Ethical considerations

Ethics are self-regulatory guidelines for making decisions and defining professions. There are considerations in research set forth by American Sociological Association's (ASA's) code of ethics. These include;

- professional competence, which emphasizes the need for ongoing education in order to remain professionally competent and utilize the appropriate scientific, professional, technical administrative resources needed to ensure competence.
- integrity, this covers the observation of honesty, fairness and respect of other professions. Professionals need to conduct their affairs in ways that inspire trust and confidence.
- professional and Scientific Responsibility, this shows that adherence to the highest scientific and professional standards and accept responsibility for their work.

- respect for people's rights, dignity and diversity and worth of all people. Avoidance of discrimination based on age, gender, race, ethnicity, national origin, religion, sexual orientation, disability, health conditions or marital, domestic or parental status.

This study, was therefore, conducted with all considerations in mind and clearly indicated that it was for academic purposes. The researcher was given an introductory letter from the department of origin to the respective institutions of higher learning in Uganda. The researcher further ensured that only questions related to the research objectives were asked. The researcher explained the nature and purpose of the study, and informed the potential respondents that all information provided would be treated with utmost confidentiality as per Appendix 06.

3.11 Chapter three summary

This chapter spells out the criteria used to carry the research, detailing how the choice of the population was reached, the type of research design used, the approaches utilized, sources of data collected, the data collection instruments and processing tools used. It further shows the reliability test, validity test of the survey data were using Cronbach's Alpha and finally ethical consideration.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

The results from the questionnaire survey, analysis of those findings and their discussions are in relation to the objectives of the study and the research questions. Discussions have been presented based on general agreed engineering principles and in relation to other scholars.

4.1.1 Questionnaire response rate

A total of 209 questionnaires were distributed among the various departments in the chosen universities and out of which 138 were returned. The response rate of the questionnaire survey was 66.03% giving a non-response bias of 33.97% which could be because the respondents did not spare the time to attend to the questionnaires. According to Richardson, (2005), a response rate of more than 50% is considered acceptable and therefore the obtained rate of 66.03% shows that the information obtained is representative enough.

4.1.2 Reliability of the survey results

The Cronbach's Alpha obtained after the computation by use of SPSS Version 2.5 was 0.863. Table 4.1, therefore shows the Cronbach's alpha reliability analysis for the bio-data of the respondents, the extent of use of the PPPs system, the inspirations and barriers of use of the system.

Table 4.1: Cronbach's Alpha reliability analysis for the study

No.	Variables	Cronbach's Alpha
1	Extent of use of the systems	0.826
2	Inspiration to use the system	0.894
3	Barriers to use the system	0.913
	Average	**0.878**

According to the analysis, the Cronbach's alpha is in the range of 0.826 to 0.913 which is considered good. The average Cronbach's alpha for all the selected variables equals **0.878** which concludes that we had a good reliability for the survey data. This indicates the good uniformity of responses and reliability of the research instrument (Norusis, 2008).

4.1.3 Validity of the survey results

Out of the total number of 138 questionnaires received, only one (1) questionnaire was declared invalid during the cleaning of data because the responses were uncoordinated and hence considered invalid. Using the formula in equation 3.1, the CVI was found as **0.99**, which falls within the acceptable range of 0.7-0.99 as per the limits provided by Yaghmale, (2009).

4.2 Bio-Data of the respondents

According to the analysis of the responses, majority of the respondents were from Uganda Martyrs University with the highest ranking of 20%, followed by Gulu University, Makerere University, Kyambogo University, Ndejje University, Busitema University, Uganda Christian University and lastly Nkumba University in the ranking of the highest to the lowest. The display also shows the percentage contribution of the respondents from the various Universities as shown in fig 4.1.

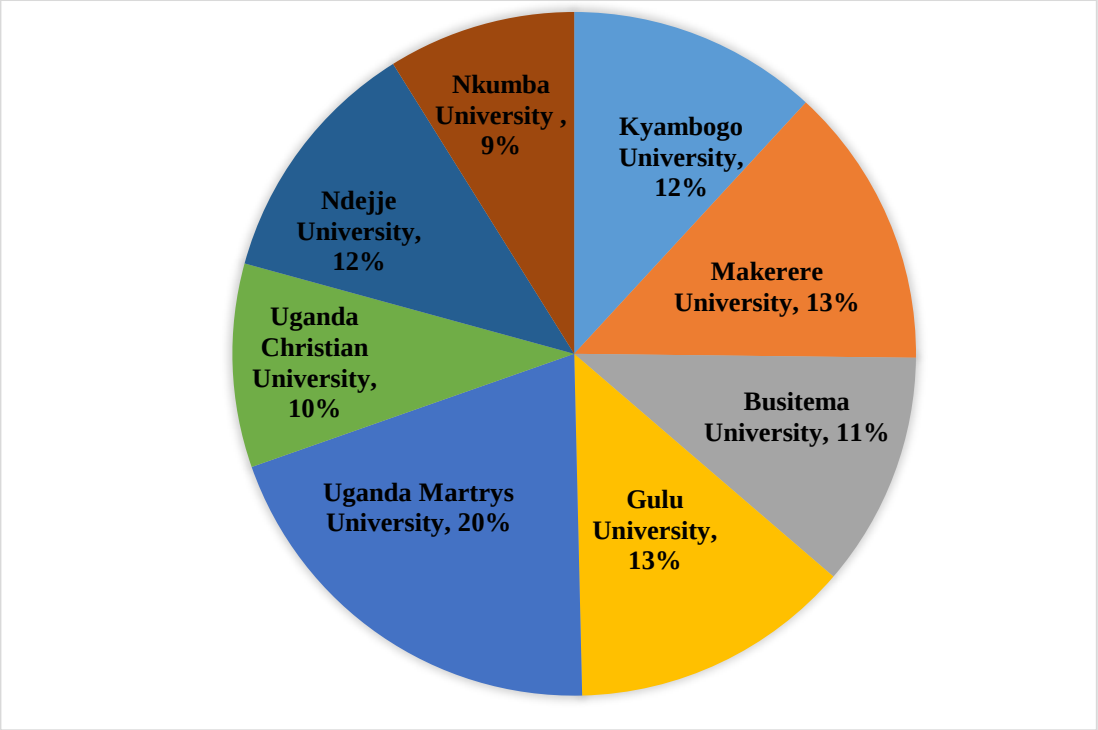

Figure 4.1 Higher institution of learning of respondents chosen for the study

4.2.1 Duration of existence of the higher institutions of learning

Analysis of the duration of existence of the Universities reveals that majority of the respondents' Universities have existed for over 16 years.

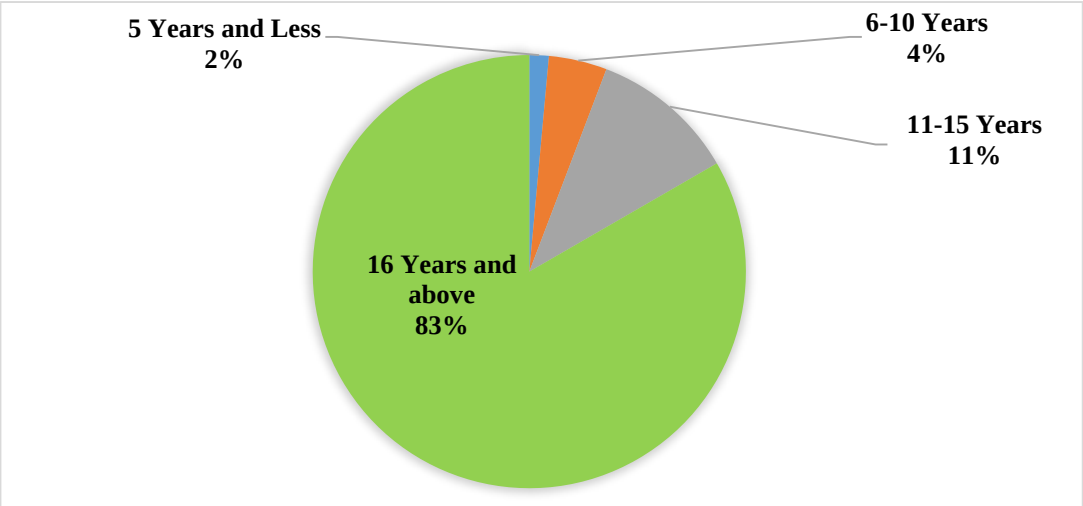

Figure 4.2: The number of years the chosen institutions have existed

This is in accordance with the methodology, where the criteria used to choose the higher institutions of learning to be studied and that covered the aspect of number of years in existence of the institution and the result of 83% for over 16 years in existence in my opinion gives a good and fair enough background for comparison of other options of procurement methods that have been in place, in relation to the status of infrastructure development at hand presently.

4.2.2 Respondents' duration in service in the institutions

After data entry and analysis, it revealed that the largest percentage of the respondents had served the University for 5 years or less, followed by those who had served between 6-10 years, then those from 16 years and above and lastly those between 11-15 years implying that biggest number of respondents had served their Universities for a short period of time as displayed in figure 4.3.

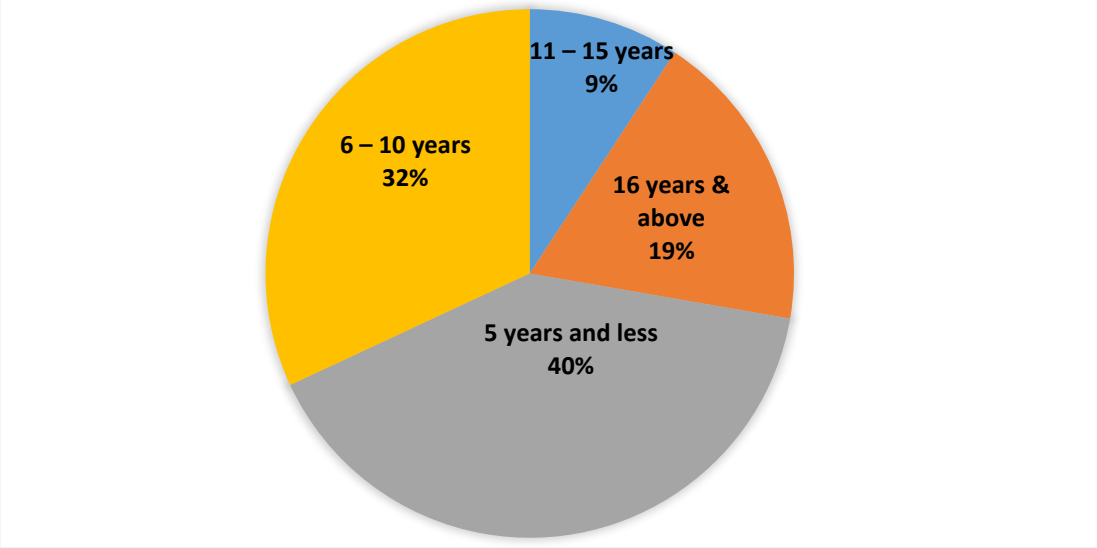

Figure 4.3: Respondents' duration in service in the institutions

From figure 4.3, it was established that most university employees in various departments had served for between 1 to 10 years which duration bracket covers two

stages of 5years and less, and between 6 to 10 years. Such finding of employees who had not stayed for long, almost derailed our fairness of data. However, the realization of 19% of the respondents showing they had worked for over 16 years gave the researcher the confidence to be able to have a fair background on which to base the discussion in the forthcoming sections.

4.2.3 Respondents education level

Information pertaining highest education status was analyzed and the findings indicated that the majority of the respondents had pursued Bachelor's Degree as their highest education level, followed by those who had pursued Master's Degree, then diploma, lastly certificates or less and other education documents apart from the mentioned.

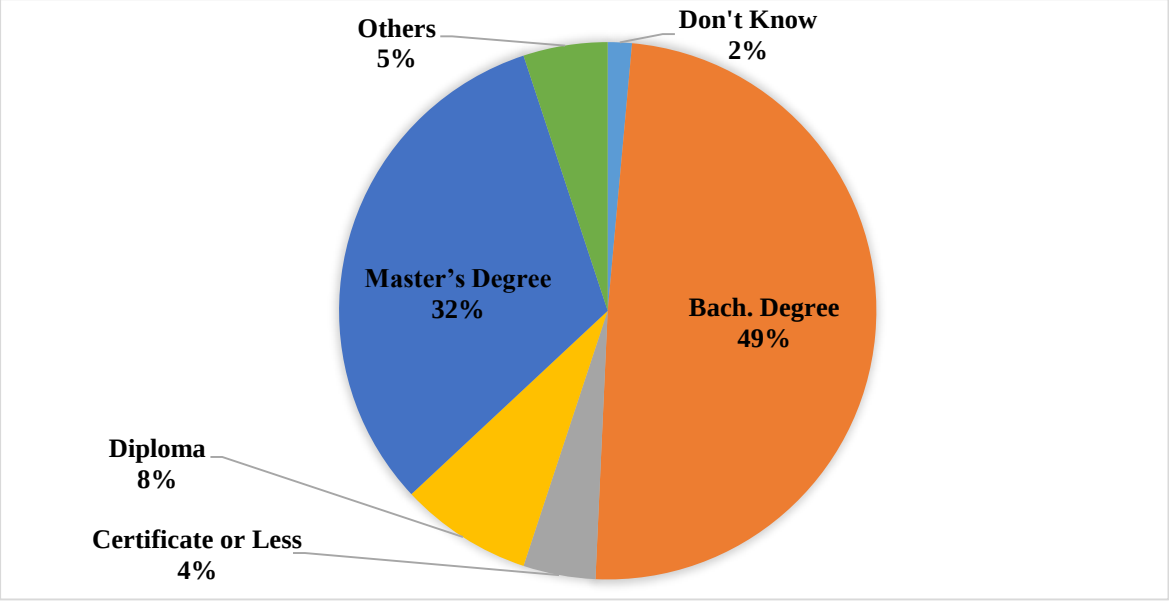

Figure 4.4: Respondents education level

This infers the majority of the respondents were learned and hence expected to have answered questions with utmost knowledge hence reliable outcomes are expected.

Most respondents being holders of Bachelor's degrees and Masters degrees renders this research dependable with information that is from informed positions and this is evident with a CVI of 0.99, meaning invalid items were of a negligible portion. According to Robert et. al, (2017), it was important to use relatively educated respondents in this research in order to have hold of reliable and dependable information.

4.2.4 Bio-data summary

From the obtained questionnaires' response rate of 66.03% out of 209 targeted respondents, that is considered as acceptable as per Richardson (2005) that qualifies 50% as representative data, with the Content Validity Index of 0.99 that is within an acceptable range of 0.7-.0.99 as per limits provided by Yaghmale (2009), and in reference to the results in the bio-data that revealed that; the majority of institutions had existed for over 16 years, most respondents were graduates and above, who had served for a period between 0 to 10 years, all these establishments give the confidence to trust the obtained information from such a population for this research's legitimacy.

4.3 Objective one: The extent of use of PPPs in developing infrastructure in higher institutions of learning in Uganda

With the use of Mwater-Electronic data collection tool, respondents were provided with questions which sought information on the extent of use of PPPs in developing infrastructure in the various named Universities. After the data collection, SPSS and MS-Excel Software Packages were used to, clean, edit and analyze data to establish the extent of use of PPPs in developing infrastructure in higher institutions of learning in Uganda. Below are the findings that addressed this objective in this research.

4.3.1 Infrastructure development in various institutions in the recent past

According to the analysis of the responses about institutions carrying out infrastructure development in the recent past, the highest percentage of the respondents agreed their universities had been carrying out infrastructure development, followed by small percent who denied their institutions carrying out infrastructure development and the rest did not know as presented in figure 4.5.

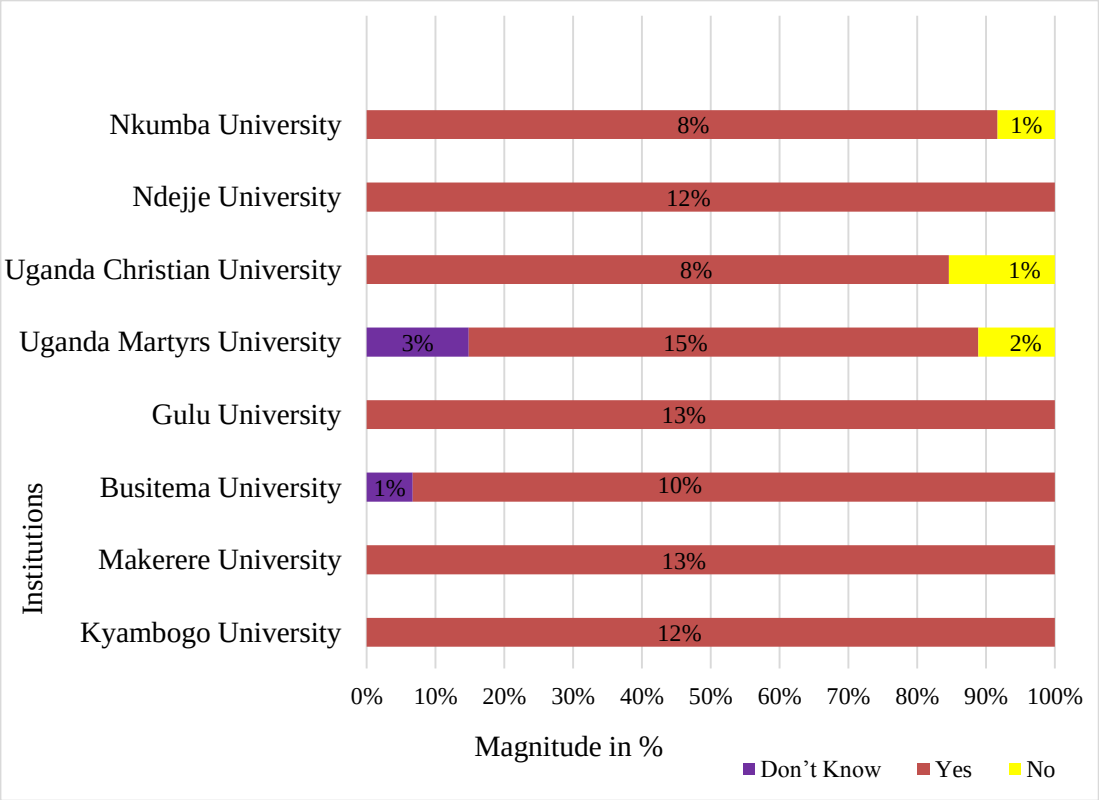

Figure 4.5: Infrastructure development in the institutions in the recent past

Just like transport sector, infrastructure development in higher institutions of learning in Uganda is a key sector which opens up economic activities within the country and across the boarders by provision of educational services (Biau et. al., 2008). This therefore implies, that since the biggest number of respondents agreed their

Universities carrying out infrastructure development in the recent past, there are higher chances for the need of PPPs involvement in those Universities to better the performance.

4.3.2 Institutions' satisfaction with the present infrastructure

It was established that a small percentage of the respondents agreed that their Universities are satisfied with their infrastructural development and the rest disagreed hence they were dissatisfied with the infrastructure in place and this was clearly shown in figure 4.6.

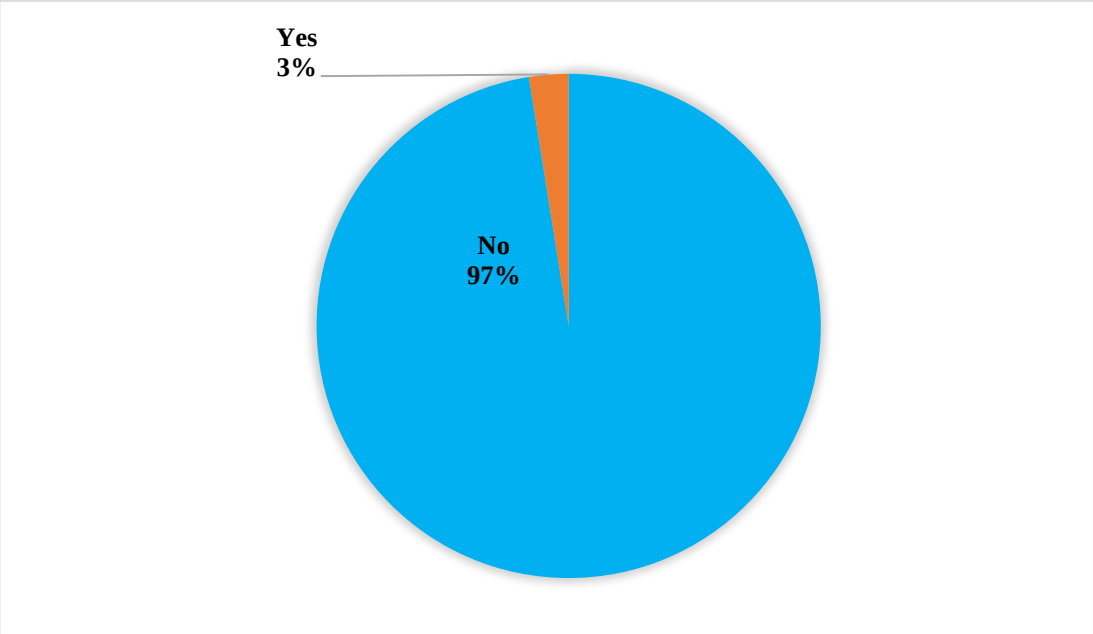

Figure 4.6: Respondents' satisfaction with the present Infrastructure development

According to Priyanka (2015), the expression of dissatisfaction with the infrastructure in place in higher institutions of learning in Uganda, calls for an awakening and shows the need of intervention of financial strategies that help the nation to attain the infrastructure development and at the same time not to be strained by the financial burden in place. This implies the need and hunger for more infrastructure development to support the population growth and demand for its commodities from emerging

markets all over the world which is in line with a report from Bernadine & Carla (2016) hence need for PPPs to enact infrastructural development in higher institutions of learning in Uganda.

4.3.3 Formal ways used in award of contracts in institutions

From the data collected, the highest percentage of the respondents agreed to traditional method as the widely used method of awarding contracts in the various Universities with 60% out of 138 respondents, followed by cost-plus method, then other methods of awarding contracts were used which included (in house construction method for a respondent in Uganda Christian University, Bidding brought up by a respondent in Busitema University and Ad measurement contracts), PPPs method, lump sum method and the least method used was the Design and Build method as presented in figure 4.7.

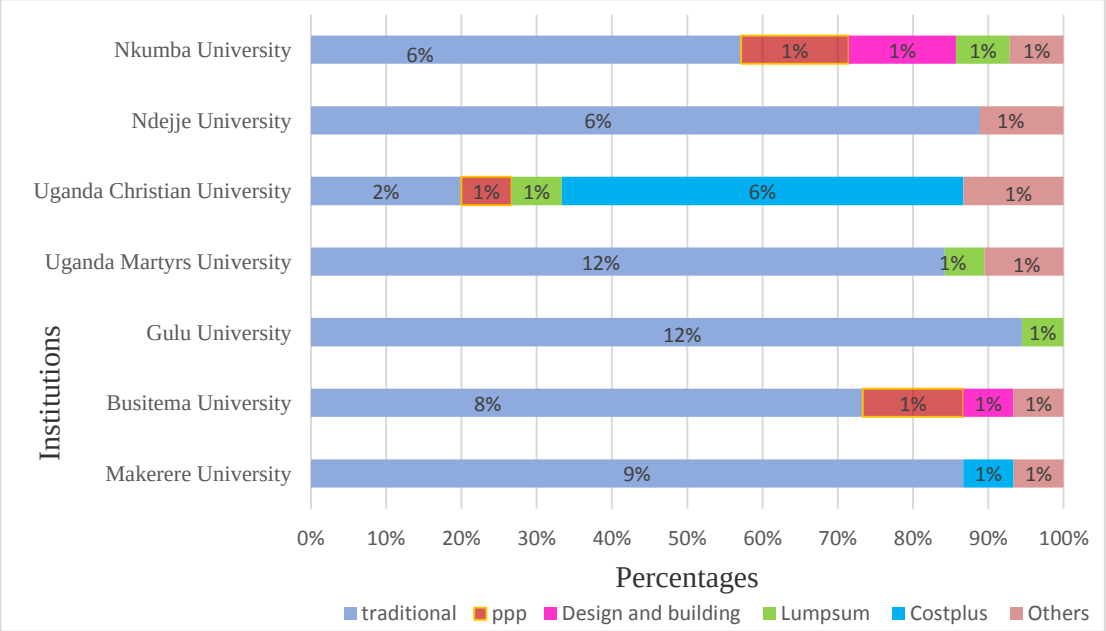

Figure 4.7: Formal methods for awarding contracts in institutions

According to Osei-Kyei et. al., (2017), it was established that, despite the enthusiasm from the Public and Private sectors, there had been slow progress in the

implementation of the PPPs policy as well as an increased number of failed or distressed Projects particularly in Countries in developing regions (World Bank, 2015; Zhang, 2005: Chan et. al, 2010; Liu Wilkinson, 2011). Similarly, this finding indicates that, PPPs have not been readily embraced yet, even with the impressive benefits that are spelt out by most researchers as one of the best financial strategies.

4.3.4 How the used formal methods of procurement affected the project cost

Data was collected to establish the effect of the used formal procurement methods on the completion of projects within their planned budgets which unfolds a picture of cost effectiveness. The majority of the respondents of 35% out of 138 total were not sure if the projects had been completed within the planned budget. However, a relative number of 30% out of 138 total number of respondents agreed to projects having been completed within the planned budget, then others and the least percentage disagreed projects having been completed within the planned budget as shown in figure 4.8.

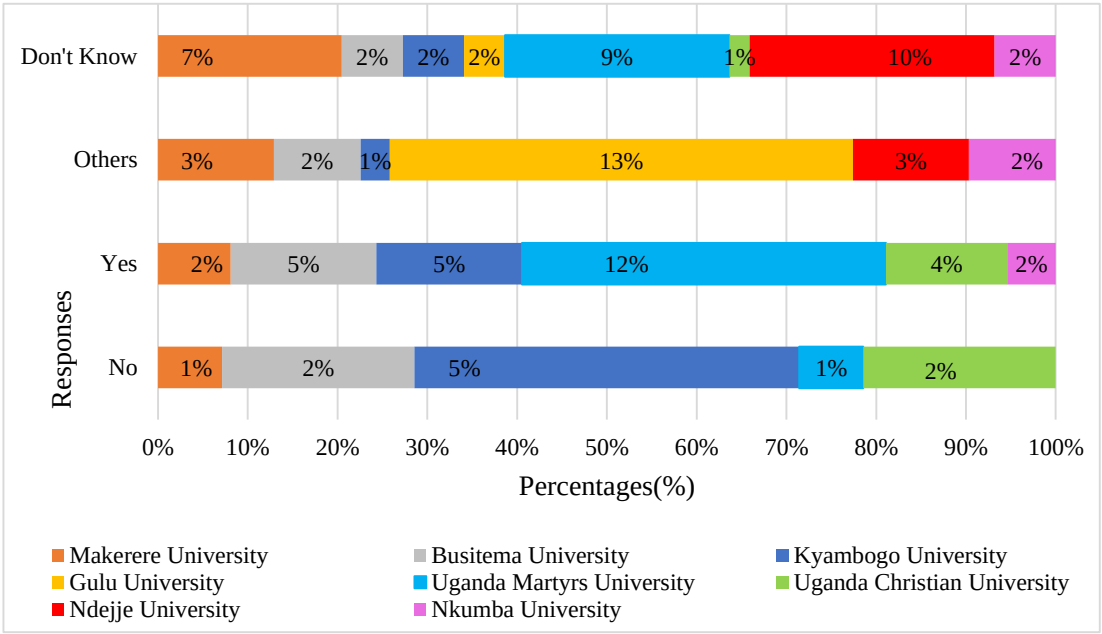

Figure 4.8: Projects completed within the planned budget

According to Chan et. al., (2009), the high cost of public debts, public budgetary constraints and the increasing demand for services have left many governments with no option than to leverage the private sector's expertise and finance through PPPs approach. This explains the constraint to cover project costs by other methods of procurement in this research. This implies, the project cost control has not been realized to full capacity with the present contract procurement methods. This finding indeed affirms that the influence of the used formal procurement methods; the traditional method, the cost plus, and the lump-sum on project cost as a measure of effectiveness is still lacking. Therefore, there is need to take on a financial strategy that is able to relieve the institutions of the debt strain and also be in position to develop the infrastructure within the anticipated project costs.

4.3.5 Funding obligation

It was established that the highest percentage of the respondents agreed to Universities as sole funders of the ongoing projects with 73% out of 138 respondents as shown in figure 4.9, then lastly other entities that included; the Government of Uganda, African Development Bank and other Donors.

According to Osei-Kyei et. al., (2014), there are three articulated features to define and qualify PPPs; first, it must be a partnership and contractual arrangement between two parties where one is a Public Entity, most often referred to as a Contracting Authority. Secondly, sharing of responsibilities and risks. The Government of Ghana indicated that any transaction or partnership without a shared risk over a period of time cannot be considered as PPPs (MOFEP, 2011).

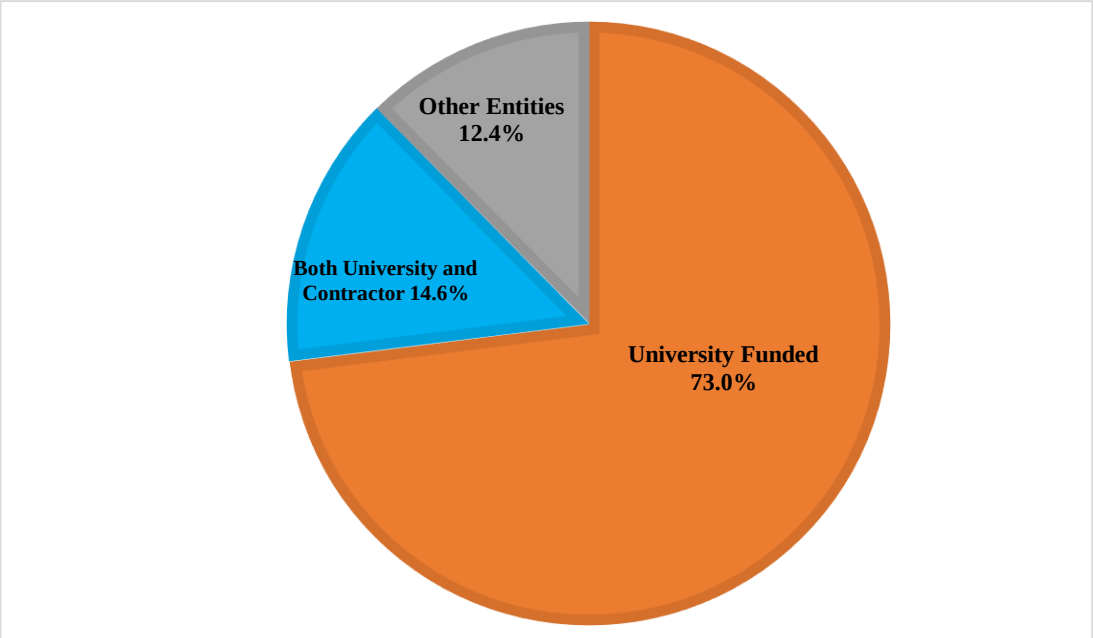

Figure 4.9: The funding entities of the ongoing projects

Finally, a transaction can be considered to be PPPs only if the Private Partner executes public infrastructure project whose provision is traditionally deemed to be done by a Private Sector. Thus Public infrastructure are considered as PPPs only when they are financed and executed by a Private sector.

Contrary to the findings about the funding obligation of the parties of the ongoing projects within the higher institutions of learning in Uganda, the establishment spelling out the Universities as sole funders of the Projects does not indicate the utilization of PPPs in the institutions. This is an indicator that PPPs are not yet embraced to a noticeable extent which is contrary to (ADB, 2010) report which stated that Public Private Partnerships (PPPs) have been gaining recognition in many developing countries as an important means of mobilizing private sector capital and expertise for infrastructure investments and service provision.

4.3.6 The project contract duration

From the responses received, in relation to the contract period of the executed and ongoing Projects, the highest contract period was less than 2 years, followed by a period of 3-5, then respondents who did not know the contract period of the contracts and lastly a period of 6-15 years as shown figure 4.10.

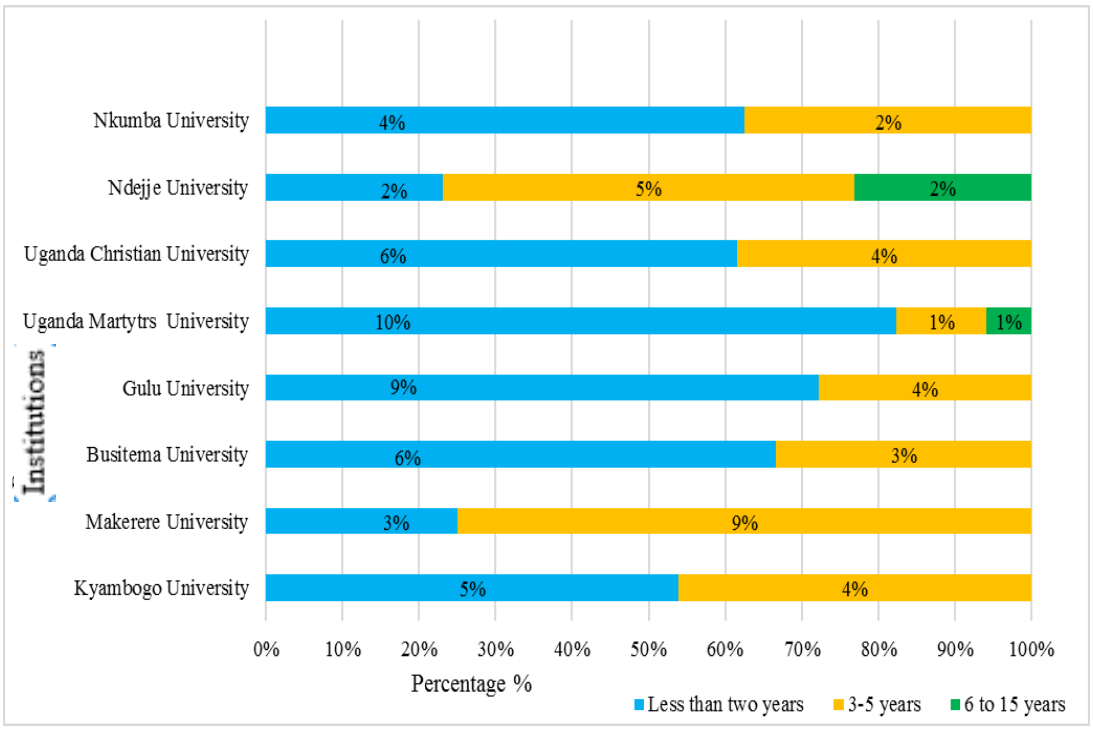

Figure 4.10: Projects contract duration

According to Jefferies, (2006) and Lu et. al., (2013 such systems are evidently long since they involve owning and operating the infrastructure, to retrieve the injected funds plus their agreed profits before transferring the completed to the contracting authority. However, the findings in this section show that the majority of the projects fall in the category of the duration less than 2 years. This implies that the systems in

place cannot be qualified as PPPs due to failure to meet the long duration indicator of PPPs as a financial strategy.

4.3.7 Objective one summary

This research established that; there is infrastructure development going on in various in higher institutions of learning. However, respondents showed dissatisfaction with the sufficiency of the present infrastructure and this indicated the need to have more developments in place. It was further established that the institutions use formal methods of awarding contracts and most used methods are; the Traditional, Cost-plus, Lump sum and PPPs with only 4% extent of use out of the 138 population. Therefore, the use of PPPs in developing infrastructure in higher institutions of learning in Uganda has been embraced to a minimal extent thus to only 4% out of 138 respondents and that was further broken down to 2% for Public institutions and equally 2% for Private institutions.

4.4 Objective two: The inspirations affecting the applicability of PPPs in infrastructure development in higher institutions of learning in Uganda

From the section that established the extent of use of PPPs in the earlier objective, it was clearly concluded that PPPs are embraced to a minimal extent of only 4%; having 2% in the Private higher institutions of learning and equally 2% in the Public higher institutions of learning. With benefits of PPPs as detailed by several researchers including; the alleviation of poverty in developing countries by Bhatia & Gupta, 2006, the reduction of strain on government finances by Cheung et. al., (2009), Walker and Smith (1995) also indicated that governments are driven to use PPPs because the Private sector is better organized than the public sector. From such literature, it was

therefore found important to establish if these institutions would be willing to either embrace PPPs the more or start using them for those who had not embraced them.

4.4.1 Continuation and or starting the use of PPPs

Figure 4.11 shows the majority of the respondents upon inquiry, positively responded and showed willingness to continue and or start using PPPs method of procurement. The observation is that more than 50% of the respondents agreed to take on PPPs.

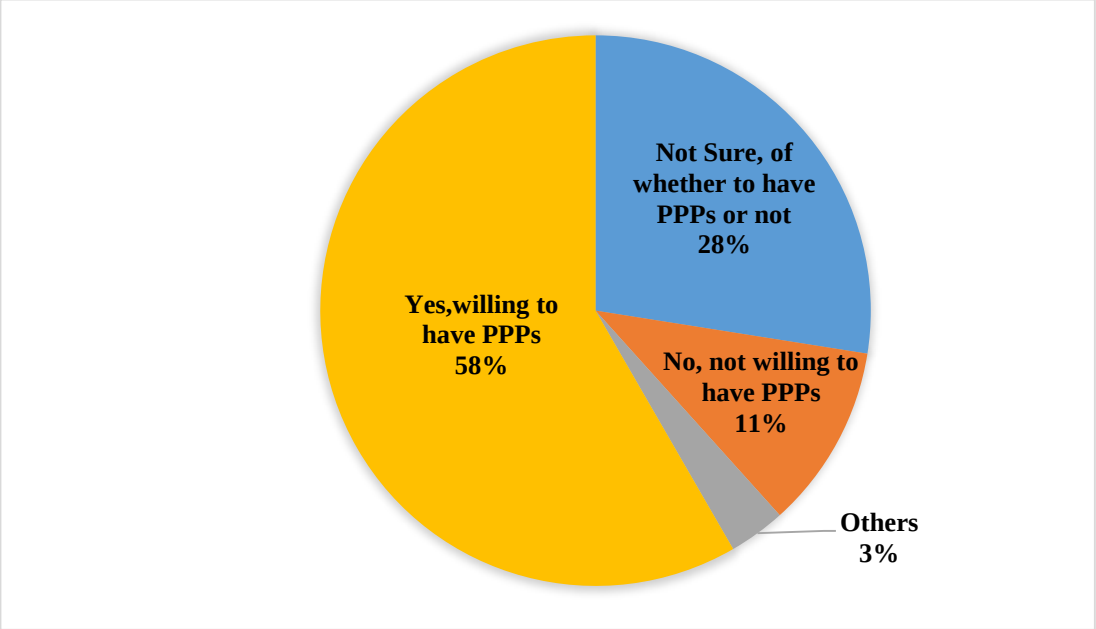

Figure 4.11: Continuation or Starting to use PPPs in higher institutions of learning

Public Private Partnerships (PPPs) have been gaining recognition in many developing countries as an important means of mobilizing private sector capital and expertise for infrastructure investments and service provision. This therefore is a promising gesticulation in this research, in a way that even if the extent of use of PPPs is minimal presently, the longing and willingness to embrace the arrangement is on a somewhat

high rating which yields the opportunity to establish the reasons that attract the institutions to go in for the earlier seemingly a non-embraced arrangement.

4.5 The relationship between the continuation of PPPs system and Bio-data of the respondents

From the results in objective one; it was found that the PPPs system is used to the minimum of only 4% in all the universities and to only 2% in both private and public higher institutions of learning in Uganda, with a total number of 138 respondents. This research hence went further to establish the category of the respondents that were willing to continue or start using the PPPs system in question. Regression and a correlation of the continuation of the PPPs system and the bio-data of the respondents were run and the following were the outcomes.

The correlation table 4.2(a) reveals that, the university of the respondents have the highest influence on the continuation of the system since they have the highest correlation magnitude of 0.9654, followed by category of the respondents with 0.7465, highest education system with 0.5762. Department of the respondent and duration of service had negative values so have little or no influence on the continuation of the system.

Table 4.2(a): Correlation of bio-data and continuation of PPPs

		Continuation to Use the System	University of Respondents	Category of Universities	University Existence	Duration in Service	Dept.	Education Status
Continuation to Use the System	Correlation Coefficient							
	Sig. (2-Tailed)							
	N							
University of The Respondent	Correlation Coefficient	0.9654						
	Sig. (2-Tailed)	0.0460						
	N	138						
Category of the Universities	Correlation Coefficient	0.7465	0.7191**					
	Sig. (2-Tailed)	0.0021	0.000					
	N	138	138					
University Existence	Correlation Coefficient	0.37190	0.5352**	-0.0805**				
	Sig. (2-Tailed)	0.0390	0.0000	0.0000				
	N	138	138	138				
Duration of Service	Correlation Coefficient	-0.6380	0.5242	0.3088	0.1357*			
	Sig. (2-Tailed)	0.0032	0.0310	0.0440	0.0100			
	N	138	138	138	138			
Dept.	Correlation Coefficient	-0.7718	0.7407	0.4711	0.1594	0.4310		
	Sig. (2-Tailed)	0.0085	0.137	0.0380	0.0680	0.0400		
	N	138	138	138	138	138		
Education Status	Correlation Coefficient	0.5762	0.6479	0.6084*	0.3553	*-0.0590	0.3398*	
	Sig. (2-Tailed)	0.0016	0.2090	0.0300	0.0390	0.0170	0.0220	
	N	138	138	138	138	138	138	

****. Correlation is Significant at the 0.01 Level (2-Tailed).**

***. Correlation is Significant at the 0.05 Level (2-Tailed).**

Table 4.2 (b): Regression of continuation PPPs and bio-data

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-19.9000	19.2941	-1.0314	0.9016	-265.055	225.255
University of respondents	0.7183	0.3964	1.8121	0.0453	-15.786	19.700
Category of University	0.2000	0.1252	1.5981	0.0039	-1.473	1.708
Existence of University	0.0231	0.0947	0.2439	0.0370	-1.099	1.307
Duration in service	-0.0370	0.0559	-0.6615	0.0043	-0.695	0.726
Department	-0.3636	0.1836	-1.9806	0.0096	-2.180	2.485
Education Status	0.0206	0.0310	0.6650	0.0027	-0.389	0.398

$$Y_{\text{PPPs}} = -19.900 + 0.718X_1 + 0.200X_2 + 0.023X_3 - 0.037X_4 - 0.364X_5 + 0.206X_6 \ldots Eqn\ (4.1)$$

The equation 4.1 was derived from the table 4.2(b). The relationship between the continuation of the PPPs system and the Bio-data of respondents shows that the variables; number of universities (X_1), categories of private and public (X_2), the education level of respondents (X_6) and the number of years in existence of the universities (X_3) in increment positively affect the continuation or starting to use the PPPs system. However, the variables; number of departments (X_5) consulted in the universities and the duration of service (X_4) of the respondents in increment negatively affect the continuation or starting to use the PPPs system. Y_{PPPs} denotes the continuity of the PPPs system.

This research went further to establish the category of the respondents that were willing to continue or start using the system in question. Regression and a correlation of the continuation of the PPPs system and the bio-data of the respondents was run and the following were the outcomes.

4.5.1 The more the universities, the more the assurance to adopt of PPPs

From the results from this research, it was established that for every one-unit increase in the number of universities, there is an increase of 0.7183 in continuation of the PPPs system. This gives the hope that when much bigger numbers of higher institutions of learning are involved the benefits of the PPPs system can be explored by our country.

4.5.2 The more institutions in the categories the more assurance to adopt PPPs

Given the result of an increment by 0.200 units in continuation of the PPPs system per every unit increase in university category, this finding affirms the need expressed by the higher institutions of learning to embrace the PPPs system.

4.5.3 The more the university existence the more willingness to embrace PPPs

The finding in this research confirms the criteria used in the methodology to select the institutions that were chosen before conducting the research. It included the age or number of years in existence of a university, with an assumption that after a period of growth, there would be need for expansion in terms of development of infrastructure due to the bigger numbers of users in the universities. With a coefficient **0.023;** it clearly showed that with every unit increase in existence of the higher institution of learning, there was an increase by 0.0231 units in the continuation of the PPPs system. Following the circumstance that even when the private sector avails funds for development, it is still the client through users that later pays the injected funds through the tolls, therefore the more years in existence of the institution would undoubtedly

guarantee the reasonable population of users or students in a long run and this would in turn reduce on the recovery period of the loaned funds.

4.5.4 The more educated the workers are the more readiness to use the PPPs

From the coefficient **0.0206**; it was established that respondents with higher levels of education were in support for the PPPs systems in higher institutions of learning. Noting from one of the barriers that the PPPs system are highly complex and risky, with some of the key areas mentioned as; their policy impact (McLaughlin & Osborne, 2000) and management skills (Klijn & Teisman, 2000). It was noted further that the arrangement has a range of forms that are highly contingent (Pollitt, 2003). Such key issues may be addressed and solved at a higher level by sensitizing a populace of a fair level of education. In a way, it is made much simpler when documentation is done, reference to the archives at a later period is certain and continuity is by all means guaranteed.

4.5.5 The more departments consulted, the less the willingness to take on PPPs

In this research, a number of departments within the higher institutions of learning were chosen and these included; Finance, Contracts committee, Estates, Secretary's Unit and Procurement and Disposal Unit departments. However, on the issue of continuation of the PPPs system, it was noted from the results, that the more the departments consulted within the institutions, the less the willingness to take on the arrangement in question. To borrow an old adage from history that **"too many cooks spoil the broth"** (Gascoigne, 1575) this could mean several departments may have had different perceptions about PPPs system.

4.5.6 The more the duration of workers, the less the interest to implement PPPs

From the results, the coefficient **-0.0370** showed a negativity which meant that of every one increase in the amount of time in the university, the continuation of the PPPs reduces by 0.0370 units. From the management perspective, institutions as work places have traditions and culture in place that is naturally and gradually adopted by workers as they acclimatize with the environment. In this way, the same is protected and passed to new generations that join in. Therefore, this may describe the opposition to embrace an arrangement that has not been in place before.

In conclusion, the relationship between the continuation of the PPPs system and the Bio-data of respondents shows that the variables; number of universities, categories of private and public, the education level of respondents and the number of existence of the universities in increment positively affect the continuation or starting to use the PPPs system. However, the variables; number of department consulted in the universities and the duration of service of the respondents in increment negatively affect the continuation or starting to use the PPPs system.

4.6 Model fitting information

Model fitting information reveals how the model (the alternate) relates to a model with no independent variables. The model with no independent variables is represented by the “Intercept only” model and the model with co variances is represented by “Final” model. The significance level of the alternate model is determined from the (*P*-value) which is compared to the maximum probability value set at 0.05. The alternate model represented by *P*-value 0.022 in table 4.3, showed that the model was good enough.

Therefore, according to this finding, it was concluded that there is a high significant relationship between bio-data of the respondents and continuation of the PPPs system.

Table 4.3: Model fitting for the relationship of bio-data and continuation of PPPs

Model	-2 Log Likelihood	Chi-Square	Degree of freedom	Sig.
Intercept Only	98.263			
Final	95.628	16.635	5	0.022

4.7 "Goodness of fit" information

The goodness of fit in table 4.4 represents how data fit the alternate model and how significant it is to conclude that bio-data of the respondents actually has influence on the continuation of the PPPs system. It was calculated by comparing the computed chi-square value with chi-square critical value in appendix 5 and the computed chi-square was greater than the table chi-square value hence the alternate model was concluded as fit and valid.

Table 4.4: "Goodness of fit" relationship of bio-data and continuation of PPPS

	Chi-Square	Degree of freedom	Sig.
Pearson	48.534	5	0.033
Deviance	49.121	5	0.049
Link function: Logit.			

According to the findings, the computed Pearson chi-square value was 48.534 and the table chi-square value was 11.070 hence we conclude that the model was significant and the independent variables (bio-data of the respondents) have influence on the continuation of the PPPs system.

4.8 Inspiration for continuation/starting the use of PPPs

The inspiration of the different respondents to continue or start using the use of PPPs in higher institutions of learning in Uganda have been established as; Availability of funds for infrastructure development taking the highest percentage of 43.7% out of total responses of 138 respondents followed by Projects being completed within stipulated time compared to other methods, then Projects completed within the anticipated cost compared to other methods, followed by clear transfer of all risk to the contracting party and then lastly, better quality of the construction works without university supervision as shown in figure 4.12.

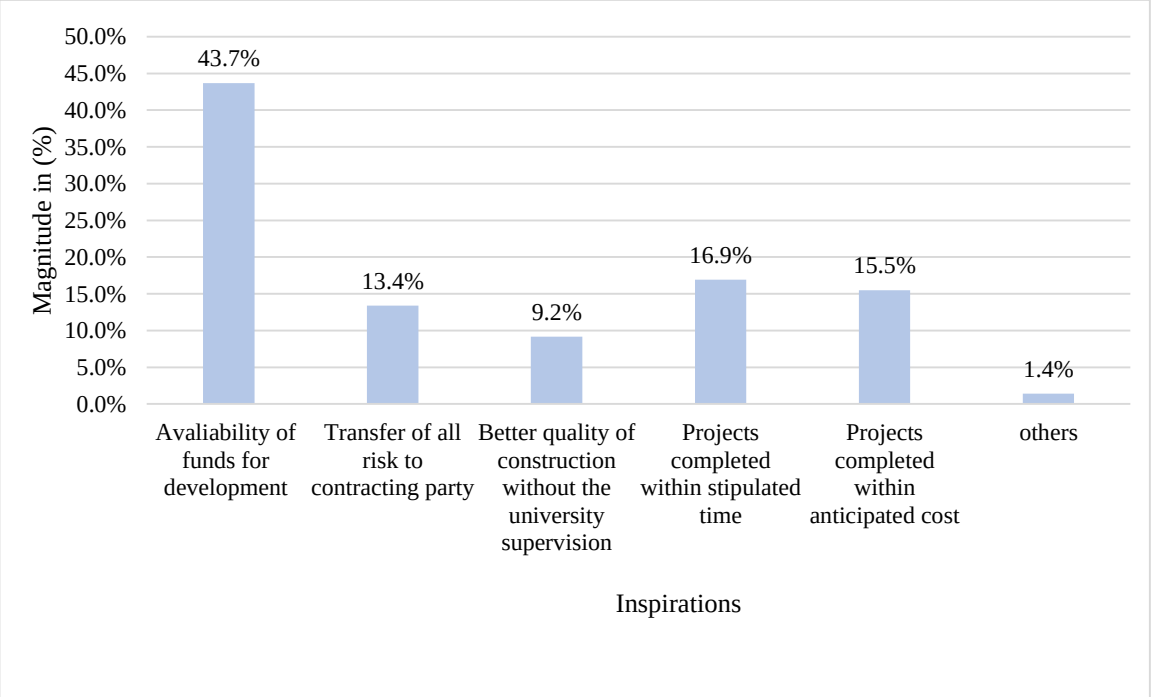

Figure 4.12: Inspirations for continuation to use PPPs

4.8.1 Availability of funds for development

The majority of respondents agreed to the greatest inspiration for continuation/starting to use PPPs being availability of funds for infrastructural development which is in agreement with a report by Brewer & Graham (2016), who established PPPs was a means of mobilizing private sector capital. More on availability of funds, Walker and Smith (1995), observed that the private sector has the ability to raise massive funds for large scale construction projects thus reducing the host government's financial burden. The World Bank Group researchers consider PPPs a possibility of bringing in sources of financing for funding public and service needs. This funding gap is not unique to developing countries OECD (2007). This is also in line with the World Bank report: closing infrastructure gap (UN, 2016) which clearly spells out how infrastructure investment is typically underfunded in most countries that's not injecting enough funds to meet strategic objectives such as universal access or poverty eradication. This is mostly prevalent in developing countries.

Indeed, several studies have identified and tried to quantify the funding gap like; the World Bank's diagnostic study of infrastructure in Africa (Foster & Bricano-Garmedia, 2010). Most governments turn to PPPs due to the need of infrastructure investment to meet their strategic objectives but face fiscal constraints that limit their ability to undertake traditional procurement method as established in our finding above.

An illustration

Given a scenario of a USD 1.5 Million Contract Sum with a Project duration of 4years, an institution with a targeted population of 12,000 students to pay for the developed infrastructure. Assume an additional fee of USD 10 per semester, 12,000x10x2= USD 250,000 is collected per year. (USD 1.8 Million/USD 250,000) is approx. 7.5 years, as the recovery period with a profit of 20%.

This implied that with such an asset constructed and operated by the private entity, then later transferred to the institution after the recovery period, is a relatively viable project for; the institution as the client, the private sector as a party in business not forgetting the users that will be charged while enjoying the facility. Categorically to note, is that obtaining additional private finance will always require increased funding over time to recover and remunerate that private finance. Therefore, PPPs may help generate the additional commercial revenue but user fees and public/client payments will always be the main source of funding. Furthermore, it would be most appropriate if funds are channeled the universally used facilities like; libraries, laboratories, hostels, stadiums and lecture rooms for easy collection and handling of the user fees paid to avoid any over payments on the side of the users and underpayment on the side of the private entity or service provider.

According to this research, PPPs are desired to be adopted in higher institutions of learning in Uganda, especially, due to limited funds from the individual Universities which need mobilization of private sector capital. This would hence in turn reduce the

strain on institution finances which is in line with (Cheung et. al., 2009) that emphasizes the reduction of strain on government finances.

4.8.2 Completion of projects within the stipulated time

Projects completed within stipulated time came second with 16.9% of the 138 respondents which is in agreement with Ndandiko (2006), who concluded that PPPs enable investments into public sector and provide timely provision of public services. Time is among the elements of the iron triangle which is conventionally used to assess the success of construction projects (Atkinson,1999; Lim & Mohammed, 1999; Chan et. al., 2002). According to Osei-Kyei, (2017) it is noted that adherence to time is essential in measuring the success of PPP projects because it has critical repercussion on investments returns. Projects completed on or before time offers investors the opportunity to recoup their investments costs earlier.

According to Kumaraswamy & Zhang (2001), Osei-Kyei & Chan (2015), many projects under PPPs including; Cross Harbour Tunnel (Hong Kong) and N4 Toll (South Africa) may have been completed before their anticipated time schedule due to a reason of recouping investments early as mentioned above. Researchers show that, several critical factors contribute in meeting time schedule in PPP projects. These include; detailed project planning, streamline of approval processes, good feasibility studies, political support, public support and clear project brief and design development (Cheung et. al., 2012; Babatunde et. al., 2012).

The implication is that the influence of completion of projects within the stipulated time is indeed a great inspiration for the continuation or starting to use the PPPs

arrangement of procurement because it later yields an outcome beneficial to all parties as follows; the private entity or the service provider manages to recoup the investment returns as early as possible hence saving funds that would be lost in incidences of inflation, change of management and the like, the client or institutions succeed in having the infrastructure in the shortest time possible and finally the end user gets to use the infrastructure early enough and hence the problem statement of lack of enough facilities is solved in a timely manner and yet with no finances incurred on the side of the client in a way.

4.8.3 Completion of projects within the anticipated cost

This inspiration emerged as the third in the rating of inspirations that would aid the continuation or starting the use of PPPs in the higher institutions of learning in Uganda. It can be called the adherence to budget. In most cases when the time factor is well handled to avoid any over runs, then cost is equally sorted alongside. Adherence to the budget can be achieved if other factors like; detailed project planning, streamline of approval processes, political support, public support, clear project brief and design development (Cheung et. al.,2012: Babatunde et. al., 2012) are well structured and a comprehensive contract or agreement reached at between the client and the private sector. This implies the service provider will have to work within the budget in order not to have a cost overrun that later reduces the profitability margin during the payment period. This, therefore, becomes an advantage and indeed an inspiration of using PPPs in a way that the institutions acquire the infrastructure within the anticipated cost without being cheated and the end user is inconvenienced with exorbitant charges.

4.8.4 Transfer of all risk to the contracting party

This inspiration emerged as the forth with 13.4% out of the 138 total respondents interviewed. It is an element that best explains the letting off responsibility to the contracting party. It clearly spells out the reduction in the public sector's administrative cost and time considering the fact that more of the project risks are transferred to the private partner. Critical factors including; selecting the right private partner, appropriate risk transfer and sharing plus detailed project planning contribute in achieving the success criterion. This in turn saves the client's resources that could later be put to other use in other sectors while infrastructure development goes on by the private partner.

However, to categorically note, with the fact that PPPs are dominated by foreign investors (Dulaimi et. al., 2010) there's need therefore for effective technology transfer and innovation. This refers to the appropriate transfer of technical knowledge and initiatives among project participants. Ahadzie et. al., (2008) also identified this success criterion in mass housing building projects in developing countries.

4.8.5 Better quality of the construction without the university supervision

The provision of reliable and quality service delivery for public facilities is mostly aimed towards the satisfaction of users. The general public and users are the ones who are commonly affected when services of public facilities are poorly delivered and unreliable (Meng et. al., 2011). Therefore, it is indeed necessary that private investors would employ proper measures including planned maintenance to enable a reliable and quality service delivery at the operational phase of PPP projects (Ng et. al., 2012).

Similarly, the anticipation of better quality in this scenario calls for consistent monitoring by the private sector and this doubles in the aspect of risk transfer as explained in the section above. This therefore, implies that when a project is implemented to best expected quality as per the rating of all the parties; the private sector will be able to comfortably collect the charges from the users who will equally be comfortable with the facility and finally the best quality product will have been achieved by the institution to own. With an aspect of operation of the infrastructure for a period of time before transfer, the private sector is predicted to inevitably produce a good quality to avoid any embarrassment during the operation period.

4.9 Relationship between inspirations and the continuation of the PPPs system

After the establishment of the inspirations affecting the applicability of PPPs, there was need to establish the significance of their effect on the continuity of the PPPs systems. This led the researcher to run a regression analysis in order to make conclusions from an informed view. After performing a regression model several times, the best fit model was obtained with significant values of the P-values as shown in table 4.5 and figure 4.13. The regression model reveals that at a point when all the independent variables are not taken in to consideration (X = 0), the Y value (dependent variable continuation of the system) is 1.158.

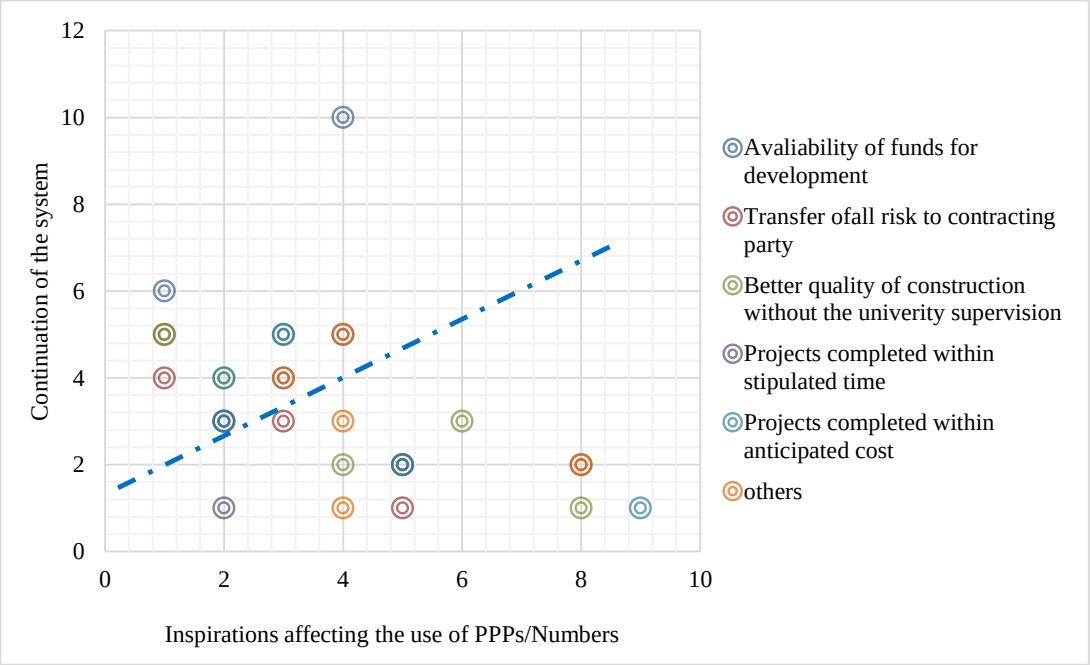

Figure 4.13: A relationship of Inspirations and continuation of the PPPs

$$Y_{PPPs} = 1.158 + 2.515X_A + 0.339X_B + 0.119X_C + 2.485X_D + 1.755X_E \ldots\ldots\ldots\ldots (4.2)$$

Subscripts; A, B, C, D and E denote the independent variables; availability of funds for development, transfer of all risk to contracting party, better quality of construction without the university supervision, projects completed within stipulated time and projects completed within anticipated cost respectively.

Table 4.5:Relationship between inspirations and continuation of the PPPs

Parameter Estimates	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
Intercept	1.158					Lower Bound	Upper Bound
Continuation of PPPs		0.286	16.405	1	0.000	1.018	2.598
Availability of funds for development	2.515	0.481	27.403	1	0.000	1.457	3.574
Transfer of all risk to contracting party	0.339	0.571	0.352	1	0.025	0.258	0.780
Better quality of construction without the university supervision	0.119	0.000		1	0.043	0.019	1.619
Projects completed within stipulated time	2.485	1.014	0.228	1	0.003	1.472	3.503
Projects completed within anticipated cost	1.755	0.868	0.756	1	0.008	0.457	2.947

The data summary revealed that availability of funds for development was the best reason why respondents were willing to continue/start the system of PPPs since it had the highest coefficient value of 2.515, followed by projects completed within stipulated time 2.485, Projects completed within anticipated cost of 1.755, transfer of all risk to contracting party of 0.339 and finally better quality of construction without the university supervision of 0.119.

4.10 Model fitting information

Model fitting information revealed how the alternate model relates to a model with no independent variables (vis a vis) model. The model with no independent variables is represented by the "Intercept only" model and the model with co variances is represented by "Final" model. The significance level of the model is determined from the (P-value) which is compared to the maximum probability value set at 0.05. The model represented by 0.001 in table 4.6 showed the model was good enough. Therefore, according to this finding, it was concluded that there was a high significant relationship between inspirations affecting the applicability of PPPs and continuation of the PPPs system.

Table 4.6: Model fitting for the relationship of inspirations and continuation of PPPs

Model	-2 Log Likelihood	Chi-Square	Degree of freedom	Sig.
Intercept Only	109.009			
Final	36.718	72.290	4	0.001
Link function: Logit.				

4.11 "Goodness of fit" information

The goodness of fit showed how well the data fit the model and how significant it was to assume that inspirations have influence on the continuation of the PPPs system. It was calculated by comparing the computed chi-square value and the table chi-square value and since the computed chi-square was greater than the chi-square critical value then alternate model was fit and valid.

Table 4.7: "Goodness of fit" relationship of inspirations and continuation of PPPs

	Chi-Square	df	Sig.
Pearson	21.981	4	0.002
Deviance	18.066	4	0.007
Link function: Logit.			

According to the findings, the computed chi-square value was 21.981 and the table chi-square value was 9.488 hence it was concluded that the alternate model was significant and the independent variables have influence on the continuation of the PPPs system.

4.12 Objective two summary

From the analysis, the majority of respondents showed willingness to continue or start using PPPs as a method of procurement and financing strategy. The factors that inspired them were found as follows; availability of funds for development, with the highest rating of 43.7% of the 138 respondents, followed by projects' completion within the stipulated time and cost then lastly, the transfer of all risk to the contracting party. The analysis further showed a significant relation between bio-data and the continuation of the PPPs with the Model in equation (4.2) with a P-value of 0.022 and also a strong significance relation was established between the inspirations affecting the PPPs applicability and the continuation of the PPPs system with a model equation (4.1) with a P-value of 0.001.

This finding clearly shows the expectation of reducing the sustained public debt given the financial deficit in the country as a whole presently and hence affecting the financial status in the higher institutions of learning as well. This further implies the

willingness to embrace the benefits of using PPPs that include; the alleviation of poverty in developing countries by Bhatia & Gupta (2006), the reduction of strain on government finances by Cheung et. al., (2009), Walker and Smith (1995) also indicated that governments are driven to use PPPs because the Private sector is better organized than the public sector. From such literature and given the present findings in this research, it is concluded that higher institutions of learning in Uganda are willing to embrace PPPs the more or start using them for those that had not embraced them yet.

4.13 Objective three: The barriers affecting the applicability of PPPs in infrastructure development in higher institutions of learning in Uganda

In this research, much as it was established in objective two, that the higher institutions of learning in Uganda were willing to continue or start using the PPPs, inspirations were as well established as clearly spelt out in detail above and they were all channeled towards the benefits of PPPs. However, it was also thought necessary to find out what barriers affected the applicability of the arrangement in question given the results that were obtained in objective one as 4% extent of use of PPPs in higher institutions of learning in Uganda.

4.13.1 Barriers that hinder the use of PPPs

In this research, there was need to go beyond benefits and inspirations but also to have an exploration to know the barriers that may have hindered the use of PPPs. As per the data collected from the different respondents for the continuation of use of PPPs. The barriers that were established as hindering the use of this arrangement in higher institutions of learning are shown in figure 4.14. With “PPPs being highly complex and risky” taking the highest percentage of 32% out of the total responses of 138

followed by “Lack of expertise on establishing and managing PPPs”, “others”, saying they had no experience with the method, some respondents believe the university is religious hence the need to highly weigh the terms and conditions before taking on the method, more factors that were barriers to the minimal extent included; lack of support legislation /compatibility with existent procurement ordinances.

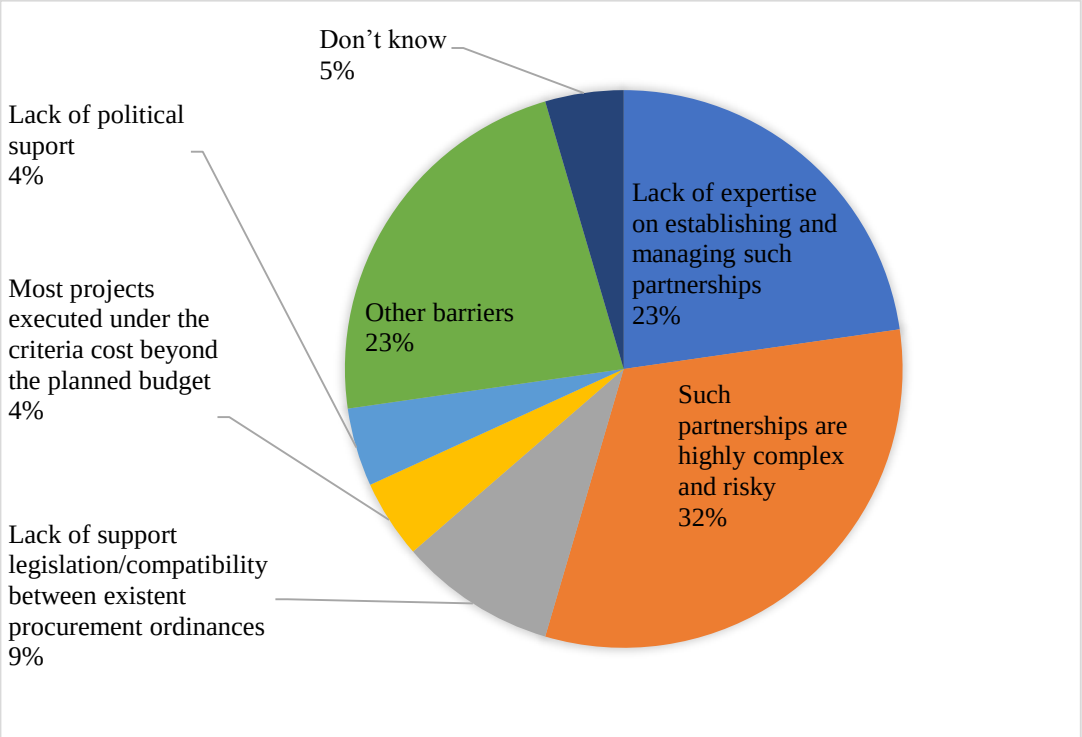

Figure 4.14: Barriers that hinder the use of PPPs in institutions

4.13.2 Public Private Partnerships being highly complex and risky

PPPs require more highly specialized resources and attention by clients especially in administrative issues to ensure fair achievement by all parties, that’s to mention; the client, the private sector and the user. PPPs arrangement is a new and merchantable procurement method attracting public scholars to study (Hodge & Greve, 2005) given

the hope of developing countries accessing funds to achieve the sustainable development goals (SDGs).

Even then, little systematic knowledge is available about the design, the control and particularly performance of PPPs. Some of the key areas include; their policy impact (McLaughlin & Osborne, 2000) and management details (Klijn & Teisman, 2000). PPPs have a range of forms that are highly contingent (Pollitt, 2003). PPPs being taken as complex and risky by the respondents in agreement with the research from (Karimi et. al., 2015) which stated that the management of PPP contracts is complex, demanding, prone to failure and subject to abuse by unscrupulous individuals, firms or politicians, unless controlled and disciplined, through highly transparent procedures, and professional contracts and conscientious monitoring processes.

The impact of risks from multiple sources including; political, social, technical, economic and environmental factors to the project objectives in completing a PPP project is usually significant (Koppenjan, 2005). Therefore, the PPPs arrangement being a highly complex and risky partnership is indeed an issue that needs training and sensitization to allow continuity and improve management that is when the benefits will be better realized and appreciated by the higher institutions of learning of Uganda and subsequently developing countries.

4.13.3 Lack of expertise on establishing and managing PPPs

From the establishment of the PPPs arrangement being complex and risky as elaborated above, there is need to use experts in the early stages and the management of the whole system to avoid the pitfalls during the execution of the contracts. This finding is in agreement with a study by Brewer and Graham (2016), conducted in Sri

Lanka which shows that, inadequate qualified personnel are a key factor hindering the performance of PPPs. PPPs often require extensive expertise input and take some time to deal negotiation (Li et. al., 2005). According to this research, it therefore concludes that; lack of expertise on establishing and managing projects is one of the main barriers affecting the use of PPPs in higher institutions of learning. This therefore calls for use of experts in establishing and managing the system right from the inception, through the execution to the completion stages to avoid pitfalls and information dissemination to the institutions of higher learning so that checks by the client are made from informed positions. There is need for documentation and record keeping in the archives being that it is a new novelty and experience, this way, future reference and consultation can be made and more improvement can be carried out to enhance the system's enactment.

4.13.4 Lack of support legislation/compatibility with the existent procurement ordinances

PPPs arrangement being a new system which gives chance to the private sectors to offer a full package of service provision without being prior proven to be excellent, is a challenge to the institutions due to the fear of non-performance. Such an arrangement getting support from the university administration could be a challenge in a way of lack of legislation back up. Success in finding financially strong partners in a PPP project is considered difficult especially where there is lack of mature financial engineering techniques (Grimsey & Lewis, 2004). Incorporation of the legal framework in the institutions' planning may be the solution to this barrier so that any fears are fully addressed from inception throughout the running of the system.

4.13.5 Most projects executed under the criteria cost beyond the planned budget

From the data collected during this research, it was established that 4% out of the 138 respondents showed that most projects executed under the PPPs criteria costed beyond the planned budget. In the view of PPP projects being termed as loan funded by the private sector, there is an element of interest charge and profit component as well. It is agreeable that the private sector's main objective is to remain in business by making profits. Other supplementary intentions of having a reputable appellation come as secondary to help them manage to have continuity of incoming contracts. In comparison with the projects executed by the government, it could be thought that PPPs are extensively costly.

However, with this perspective of; public sector's participation in public infrastructure provision reduces public money which is tied up in capital investments (Jones et. al., 1996). With the participation of the private sector, government can then free up some funds to develop and support other sectors of social and economic priority. This by no doubt enhances the of PPPs in the institutions. It is also assumed that public infrastructure is better maintained and operated by private sector (Boussabaine, 2007; So et. al., 2007). In a PPP project the private consortium is mostly responsible for maintaining the public infrastructure over the concession period. Since the maintenance and operating cost is borne by the private partner, it is motivated to ensure better design and construction, to reduce maintenance cost during operation. This therefore implies that the feared excessive cost that is thought to come with PPPs arrangement is actually by nature of its characteristics and execution otherwise, a lot

of resource is saved on the side of the client if the proper criteria is adhered to, right from the project inception to operation stage in general.

4.13.6 Lack of political support

In this research, the data collected brought out lack of political support as one of the barriers that are affecting the use of PPPs in higher institutions of learning in Uganda. Upon further inquiry, it was realized that since the PPP projects are long term, it is feared by institutions to take on the arrangement given the political situation in our country Uganda. It is agreed that the country is at peace but the shorter political terms and uncertainty of the future, does not guarantee successful completion of a long term project that may last 15-20 years.

4.14 Objective three summary

The research to established barriers that had hindered the use of the PPPs in the institutions and hence keeping the institutions from enjoying the benefits spelt out by several researchers that include; the alleviation of poverty in developing countries by Bhatia & Gupta (2006), the reduction of strain on government finances by Cheung et. al., (2009) among others.

Indeed, barriers were established as; PPPs projects feared to be complex and risky that was in similarity with several scholars including but not limited to; PPPs having a range of forms that are contingent (Pollitt, 2003) and a research paper by Karimi et. al., (2015) which stated that the management of PPP contracts is complex, demanding, prone to failure and subject to abuse by unscrupulous individuals, firms or politicians. Unless controlled and disciplined, through highly transparent procedures, and professional contracts and conscientious monitoring processes, then lack of expertise

on establishing and managing projects which is in agreement with a study by Brewer and Graham (2016) conducted in Sri Lanka. It was then followed by lack of legislation or compatibility with the existing procurement ordinances like where lack of mature financial engineering techniques (Grimsey & Lewis, 2004) is experienced, higher cost of PPPs projects was too one of the barriers and it was concluded that it is because of its characteristics and execution in as far as interest upon the loan and the profits are concerned. Then lastly of lack of political support that showed fear of the assurance of a safe future that would guarantee an ambient environment for execution of the long term contracts.

4.15 Objective four: Developing a framework to enhance the adoption of PPPs to develop infrastructure in higher institutions of learning in Uganda

This research in objective one, established the minimal extent of only 4% applicability of PPP system in higher institutions of learning. In objective two, it was established that there were inspirations that inspired these institutions to continue or start using the PPPs system and these included; the availability of funds for development, completion of projects within the stipulated time and anticipated cost, transfer of all risk to the contracting party and attaining better quality of construction without the university supervision.

However, upon inquiry of why they had not been embraced despite the inspirations, it was found that there were a number of barriers that hindered the institutions from exploring the benefits of PPPs and these were; that PPPs are highly complex and risky, lack of expertise on establishing and managing PPPs, lack of support legislation and compatibility with the existing procurement ordinances, most of the projects executed

under the criteria most beyond the planned budget and lack of political support. Some of the barriers were basically fears since most of the institutions had not yet embraced the PPP system. Nonetheless, there is need for them to be addressed in order to enhance the adoption of the system in these institutions. More details were ascertained as to which respondents were in support of the PPPs system basing on the bio-data and these were obtained as follows; the relationship between the continuation of the PPPs system and the Bio-data of respondents are significantly related to the continuation or starting to use the PPPs system.

Therefore, it was from the information above, with the help of literature, that a framework below was developed to enhance the adoption of the PPPs system as a strategy to develop infrastructure in higher institutions of learning in Uganda.

4.15.1 The developed framework as a solution to solve barriers

The developed framework in figure 4.15 will cross cut the three project phases of construction; the initial and planning, the procurement phase then finally the execution and contract management phase.

Initiation and Planning Phase			Procurement Phase		Execution and Contract Management Phase
Influences/Inspirations	Expose barriers	Tool to address barriers	Activity	Remedy	Ex-Post Evaluation
Availability of funds for development Projects constraints (cost, quality and time) Transfer of risks	PPPs are complex and risky Lack of expertise to manage projects Lack of legislation/compatibility in the existing ordinances Higher cost of projects under PPPS	Training by use of experts Training by use of experts Make use of the PPP Act by help of experts Carry out checks at all stages and evaluate.	Design and agreement Tendering and Negotiation Contracting and Financial close	Seek help of experts in PPPs Seek help of experts in PPPs Seek help of experts in PPPs	Checking on barriers Capitalizing on the Influences

Figure 4.15 A developed a frame work to enhance the adoption of PPPs

Source: Adopted from Liu et. al., (2014) and modified by Researcher, (2019)

During the first stage of initial and planning phase, inspirations will be capitalized upon. In this case, the focus of taking on PPPs system as procurement strategy need to be taken as a priority. The all the barriers both real and those that are threat need to be spelt out and exposed. Since they more like fears, training of the concerned parties will help to change the mindset and focus more on the inspirations and inspirations than the barriers.

During all the activities that take place in the second phase of procurement, expertise should be sought from experts in PPPs to improve capacity and confidence of the parties. Then finally during the last stage, there will need for ex-post evaluation to assess the project in order to prepare for the future implementations. This framework is geared towards achieving the outcome of improved infrastructure development in higher institutions of earning in Uganda. Where improved is measured by the three elements of the iron triangle; project cost, timely delivery and quality service.

4.16 Chapter four summary

From the obtained questionnaires' response rate of 66.03% out of 209 targeted respondents, that is considered as acceptable as per Richardson (2005), that qualifies 50% as representative data, with the Content Validity Index of 0.99 that is within an acceptable range of 0.7-.0.99 as per limits provided by Yaghmale (2009). It was further established that the institutions use formal methods of awarding contracts and most used are; the Traditional, Cost-plus, Lump sum and PPPs with only 4% extent of use out of the 138 population. Therefore, the use of PPPs in developing infrastructure in higher institutions of learning in Uganda has been embraced to a minimal extent thus to only 4% out of 138

respondents and that was further broken down to 2% for Public institutions and equally 2% for Private institutions.

From the analyzed data from the field, the majority of respondents showed willingness to continue or start using PPPs as a method of procurement and financing strategy. The factors that inspired them were found as follows; availability of funds for development, with the highest rating of 43.7% of the 138 respondents, followed by projects' completion within the stipulated time and cost then lastly, the transfer of all risk to the contracting party. This further implies the willingness to embrace the benefits of using PPPs that include; the alleviation of poverty in developing countries (Bhatia & Gupta, 2006), the reduction of strain on government finances (Cheung et. al., 2009). From such literature and given the present findings in this research, it is concluded that higher institutions of learning in Uganda are willing to embrace PPPs the more or start using them for those that had not embraced them yet.

The research to established barriers that had hindered the use of the PPPs in the institutions and hence keeping the institutions from enjoying the benefits. Indeed, barriers were established as; PPPs projects feared to be complex and risky that was in similarity with several scholars including but not limited to; PPPs having a range of that are contingent (Pollitt, 2003) and a research paper by Karimi et. al., (2015), which stated that the management of PPPs contracts is complex, demanding, prone to failure and subject to abuse by unscrupulous individuals, firms or politicians, unless controlled and disciplined,

through highly transparent procedures, and professional contracts and conscientious monitoring processes, then lack of expertise on establishing and managing projects which is in agreement with a study by Brewer and Graham (2016), conducted in Sri Lanka, followed by lack of legislation or compatibility with the existing procurement ordinances like where lack of mature financial engineering techniques (Grimsey & Lewis, 2004), is experienced, higher cost of PPPs projects was too one of the barriers and it was concluded that it is because of its characteristics and execution in as far as interest upon the loan and the profits are concerned and lastly of lack of political support that showed fear of the assurance of a safe future that would guarantee an ambient environment for execution of the long term contracts.

In conclusion, it was established that the Bio-data of respondents and the inspirations affecting the applicability of the PPPs were significantly related to the continuation of the PPPs system. From the above findings, a framework in figure 4.15 was develped to address the barriers right from the initial and plannin stage through procurement phase till the last phase of execution and contract management. This framework in figure 4.15 is expected to give an outcome of improved infrastructure development in higher institutions of learning in Uganda.

CHAPTER FIVE: CONLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The research investigated the Applicability of Public-Private Partnerships in Development of Infrastructure in Uganda with a focus on Higher Institutions of Learning. This was insinuated by the fact that PPPs benefits are not realized to full potential especially in the developing countries like Uganda. Yet by its description as a financial strategy, such developing countries expect to be relieved of the debt burden by such an arrangement and still be in position to attain infrastructure development. The following were the conclusions for the specific objectives;

(i) To determine the extent of use of PPPs in developing infrastructure in higher institutions of learning in Uganda.

In this research it was established that PPPs are embraced to a minimum of only 4% in higher institutions and 2% in both private and public higher institution of learning.

(ii) To determine the inspirations affecting the applicability of PPPs in higher institutions of learning in Uganda.

To be sure if the population had an idea of what they wished to continue with or start, inspirations affecting the applicability of the PPPs were established as follows; availability of funds for development, with the highest rating of 43.7% of the 138 respondents, followed by projects' completion within the stipulated time at rating of 16.9% and cost at a rating of 15.5% then lastly, the transfer of all risk to the contracting party at rating of 13.4%. This conclusion clearly

shows the expectation of reducing the sustained public debt given the financial deficit in the country as a whole presently and hence affecting the financial status in the higher institutions of learning as well. This further implies the willingness to embrace the benefits of using PPPs that include; the alleviation of poverty in developing countries (Bhatia & Gupta, 2006), the reduction of strain on government finances (Cheung et. al., 2009).

(iii) To identify the barriers affecting the applicability of PPPs in higher institutions of learning in Uganda.

To avoid the past mistakes being carried forward into the future, barriers affecting the applicability of PPPs were also established as follows; PPPs projects feared to be complex and risky at 32% out of 138 respondents, lack of expertise on establishing and managing projects at 23%, followed by lack of legislation or compatibility with the existing procurement ordinances at 9% and lastly of lack of political support at 4% that showed fear of the assurance of a safe future that would guarantee an ambient environment for execution of the long term contracts.

(iv) To develop framework to enhance he adoption of PPPs as a strategy to develop infrastructure in higher institutions of learning.

From all the above, a framework in Figure 4.15 was developed to enhance the adoption of PPPs in the infrastructure development in higher institutions of learning in Uganda and solve the barriers throughout the project cycle.

5.2 Limitations

There were a number of limitations to this research and these were found as follows;

- less or almost no record of information about PPPs in the selected institutions,
- meager information about past projects,
- employees in higher institutions of learning were hesitating to let out information to a researcher from another institution,
- some workers mistook the research to be an audit so they were hesitant to cooperate.

5.3 Recommendations

From the outcomes above, higher institutions of learning are surely ravening for infrastructure development in order to meet the SDGs in line with education enhancement although they are limited by funds to set them off and therefore these are the recommendations for a better future;

- it is therefore of great importance that the PPPs frameworks and guidelines are brought out for implementation rather than remaining in academic archives,
- more record keeping and management is called for in higher institutions of learning to enhance research and implementation of the such studies and
- more research should be conducted in depth to rank the inspirations, barriers that affect the PPPs and more detailed construction economics to guide on the recovery periods of the injected funds into the PPPs projects without strain on the end user of the infrastructure developed.

REFERENCES

ADB (Asian Development Bank). (2008) Annual Report by Board of Directors to Board of Governors Reviews, Operations, Projects, internal administration, financial management and funding., *ADB*, Vol. 1.

ADB (Asian Development Bank). (2010) Annual Report by Board of Directors to Board of Governors Reviews, Operations, Projects, internal administration/ financial management and funding., *ADB*, Vol. 1.

ADBG (African Development Bank Group). (2008), Nigeria: AfDB approves US$ 85 million for Lekki toll road project. Retrieved December 31, 2014, from http://www.afdb.org/en/news-and-events/article/nigeria-afdb-approves-us-85-million-for-lekki-toll-road.

Ahmadabadi, A. A. and Heravi, G. (2019), The effect of critical success factors on project success in Public-Private Partnership projects: A case study of highway projects in Iran', Transport Policy, 73, doi: 10.1016/j.tranpol.2018.07.004.

Ahadzie, D. K., Proverbs, D. G., and Olomolaiye, P. O. (2008), Critical success criteria for mass house building projects in developing countries, *International Journal of Project Management* Vol. 26: pp. 675–687. https://doi.org/10.1016/j.ijproman.2007.09.006

Atkinson, R., (1999), Project management: cost, time and quality, two best guesses and a phenomenon, it's time to accept other success criteria. *International Journal Project Management Vol. 17 (6),*

Akintoye, A., and Beck, M. (2009), Policy, management and finance for public-private partnerships. *West Sussex: John Wiley & Sons.*

Akintoye, A., and M. Beck (2003), Public Private Partnerships: Managing Risks and Opportunities, London: *Blackwell Publishers.*

Auditor General, (2019), Enhancing Public Accountability through audits focused on Fiscal Management, Productivity and Service Delivery, *Office of the Auditor General*-Uganda.

Authors, F. (2015), Cross-sectional comparison of public-private partnerships in transport infrastructure development in Nigeria.

Babatunde, S. O., Opawole, A., and Akinsiku, O. E. (2012), Critical success factors in public-private partnership (PPP) on infrastructure delivery in Nigeria, *Journal of facilities Management* Vol. 10(3): pp.212–225. https://doi.org/10.1108/14725961211246018

Belias, D., Koustelios A., Vairaktarakis, G., and Sdrolias, L., (2015), Organizational Culture and Job Satisfaction of Greek Banking Institutions. *Procedia Social and Behavioral Sciences 175.*

Bernadine J. Dykes and Carla D. Jones (2016), Public-Private Partnerships in Africa: Challenges and Opportunities for Future Management Research, Africa *Journal of Management.*

Bhatia B., and Gupta, N. (2006). Lifting constraints to Public-Private Partnerships in South Asia. *Washington, DC: World Bank.*

Biau, C., Dahou, K., and Homma, T. (2008), How to increase sound private investment in Africa's road infrastructure: Building on country successes and OECD policy tools. *NEPAD-OECD Africa investment initiative roundtable, Kampala, Uganda.*

Bing, L., Akintoye A., Edwards P. J., and C. Hardcastle, (2005), "The allocation of risk in PPP/PFI construction projects in the UK", *International Journal of Project Management,* Vol. 23 pp.20-40

Boussabaine A. (2007), Cost planning of PFI and PPP building projects. *Taylor & Francis: New York*

Boussabaine, A. (2006), Cost planning of PFI and PPP building projects. *Taylor and Francis, New York.*

Buckingham, J., Olexiuk, P., Nicolay, T. and Hurl, L. (2010), 'Tendering and purchasing law in upstream oil, gas, and oil sands: The competitive bidding process and obligations when contracting for work', *Alberta Law Review*, Vol. 47 (2),

Caines, K., Bataringaya, J., Lush, L., Murindwa, G., and N'jie, H. (2003), Impact of Public-Private Partnerships Addressing Access to Pharmaceuticals in Low Income Countries, Uganda Pilot Study, *The Initiative on Public-Private Partnerships for Health. IPPPH: Geneva*

Chan, A. P. C., Lam, P. T., Chan, D. W., Cheung, E., and Ke, Y. (2010). Potential obstacles to successful implementation of public-private partnerships in Beijing and the Hong Kong special administrative region, *Journal of Management in Engineering*Vol.26(1): pp.30–40. https://doi.org/10.1061/(ASCE)0742–597: 1(30).

Chan, A. P. C., and Chan, A. P. (2004). Key performance indicators for measuring construction success, Benchmarking: *An International Journal* Vol. 11(2): pp.203–221

Chan, A. P. C., Lam, P. T., Chan, D. W., Cheung, E., and Ke, Y. (2009), Drivers for adopting public private partnerships-empirical comparison between China and Hong Kong special administrative region, *Journal of Construction Engineering and Management* Vol. 135(11): pp.1110–1122. https://doi.org/10.1061/(ASCE)CO.1943–7862.0000088

Chan, A. P. C., Lam, P. T., Chan, D. W., Cheung, E. and Ke, Y. (2010), Potential obstacles to successful implementation of public-private partnerships in Beijing and the Hong Kong special administrative region, *Journal of Management in Engineering* Vol. 26(1): https://doi.org/10.1061/(ASCE)0742–597X(2010)26:1(30)

Chan, A. P. C., Scott, D., and Lam, E. W. (2002), Framework of success criteria for design/build projects, *Journal of Management in Engineering* Vol. 18(3): pp.118–139. https://doi.org/10.1061/(ASCE)0742–597X(2002) 18:3(120)

Chan, A. P. C., Yeung, J. F., Calvin, C. P., and Wang, S. Q.; Ke, Y. (2011). Empirical study of risk assessment and allocation of public-private partnership projects in China, *Journal of Management in Engineering* Vol. 27(3): pp.129–150. https://doi.org/10.1061/(ASCE)ME.1943– 5479.0000049

Cheung, E. and Chan, A. P. C. (2011), 'Evaluation Model for Assessing the Suitability of Public-Private Partnership Projects', *Journal of Management in Engineering*, Vol. 27(2), pp.78–85. doi: 10.1061/(ASCE)ME.1943-5479.0000044.

Cheung, E., Chan, A. P. C., and Kajewski, S. (2009), Reasons for implementing public private partnership projects: perspectives from Hong Kong, Australian and British practitioners, *Journal of Property Investment & Finance* Vol. 27(1): pp.81–95. https://doi.org/10.1108/14635780910926685

Cheung, E., Chan, A. P. C., and Kajewski, S. (2012), Factors contributing to successful public private partnership projects, comparing Hong Kong with Australia and the United Kingdom, *Journal of Facilities Management* Vol. 10(1): https://doi.org/10.1108/14725961211200397

Duffield, C.F., (2005), PPPs in Australia, Procurement Public Private Partnerships – Opportunities, Challenges, *Hong Kong: Hong Kong Convention and Exhibition Centre*, pp.5–14.

Dulaimi, M. F., Alhashemi, M., Ling, F. Y. Y., and Kumaraswamy, M. (2010), The execution of public–private partnership projects in the UAE, *Construction Management and Economics* Vol. 28(4): pp.393–402. https://doi.org/10.1080/01446191003702492

Farlam, P. (2005), Working together. Assessing public-private partnerships in Africa, Nepad Policy Focus Series, *the South African Institute of International Affairs (SAIIA), Pretoria, SA.*

Foster, V., and Bricen˜o-Garmendia, C. (2010), Africa's infrastructure: A time for transformation. Washington, DC: *World Bank publications*.

George, D.; Mallery, P. (2003), SPSS for windows step by step: A simple guide and reference. 11.0 update, 4th ed. *Allyn & Bacon, Boston, MA*.

Grimsey, D., and Lewis, M. K. (2004), Public private partnerships: The worldwide revolution in infrastructure provision and project finance, *Edward Elgar, Cheltenham, UK.*

Gillespie, A.M., Denison, D.R., Haaland, S., Smerek, R., and Neale, S.W., (2007), Linking organizational culture and customer satisfaction. *European Journal of Work and Organizational Psychology*

Hardcastle, C., Edwards, P. J., Akintoye, A., and Li, B. (2005), Critical success factors for PPP/PFI projects in the UK construction industry: A factor analysis approach. *Construction Management and Economics*, Vol. 23(5).

Hashim, Hasnan, Che-Ani, A., Ismail, and Kharizam. (2017), Review of Issues and Challenges for Public Private Partnership (PPP) Project Performance in Malaysia. *AIP Conference Proceedings.* 1891. 10.1063/1.5005384.

Hawkins, T., Powley, E. and Gravier, M. (2011), 'Public Versus Private Sector Procurement Ethics and Strategy: What Each Sector Can Learn from the Other', *Journal of Business Ethics*, Vol. 103 (4), pp. 567-586 16.

Hodge G., and Greve C. (2005), The challenge of public–private partnerships—Learning from international experience. *Cheltenham, UK: Edward Elgar*.

Howes, R., and Robinson, H. (2005), Infrastructure for the built environment: Global procurement strategies, 1st Ed., Butterworth-Heinemann, *Oxford, England.*

Ho,s & Tsui, Chun-Wei. (2009), the transaction costs of public-private partnerships: implications on PPP governance design, conference paper, South Lake Tahoe, CA

Huping S., Wenxuan Y. (2013), Assessing Chinese Managerial Competencies from Different Perspectives, Social Behavior & Personality: *An International Journal*, Vol. 41, no .9.

Iossa, Elisabetta, Spagnolo, Giancarlo, Vellez, and Mercedes. (2007), Best Practices on Contract Design in Public-Private Partnerships, *Report for World Bank*.

Jefferies, M. (2006), Critical success factors of public private sector partnerships: A case study of the Sydney super Dome. *Engineering, Construction and Architectural Management*, Vol. 13(5).

Jefferies, M., Gameson, R., and Rowlinson, S. (2002), Critical Success Factors of the BOOT Procurement System: Reflections from the Stadium Australia Case Study. *Engineering Construction Architectural Management*, Vol. 9.

Karimi, Sebghatullah, Piroozfar, and Poorang. (2015), Constraints in the Implementation of Public Private Partnerships in Afghanistan. 10.32738/CEPPM.201509.0017.

Klijn, E.-H., Edelenbos J., and M. Hughes (2007), Public Private Partnerships: a two headed reform; a comparison of PPP in England and the Netherlands, in: C. Pollitt, S. van Thiel, V. Homburg (eds.), New Public Management in Europe: Adaptation and Alternatives, Basingstoke: *Palgrave MacMillan*.

Koppenjan, J. F. M. (2005), The formation of public-private partnerships: *Lessons from nine transport infrastructure projects in the Netherlands*. Public Administration., Vol. 83(1), pp.135–157.

Koppenjan, J. (2008), Public-Private Partnership and mega-projects. Decision-Making on Mega-Projects: Cost-Benefit Analysis, Planning and Innovation.

Krishnan and Raman. (2014). What is a Public Private Partnership and Leadership Competencies, “Industrial and Commercial Training”, Vol. 46.

Kurniawan and Fredy. (2013), Public-Private Partnership projects implementation: *three case studies of seaport projects in India.*

Kumaraswamy, M. M., and Zhang, X. Q. (2001), Governmental role in BOT-led infrastructure development. *International Journal of Project Management*, Vol. 19(4), pp.195–205.

Kyei, R. O. and Chan, A. P. C. (2016), ‘Developing Transport Infrastructure in Sub-Saharan Africa through Public – Private Partnerships: Policy Practice and Implications Developing Transport Infrastructure in Sub-Saharan Africa through Public – Private Partnerships: Policy Practice and Implications’, *Transport Reviews. Taylor & Francis.* doi: 10.1080/01441647.2015.1077288.

Laforet, S. (2016), "Effects of organizational culture on organizational innovation performance in family firms", *Journal of Small Business and Enterprise Development*, Vol. 23 (2), pp.379-407

Li, B., Akintoye, A., Edwards, P. J., and Hardcastle, C. (2005a), The allocation of risk in PPP/PFI construction projects in the UK. *International Journal Project* Management, Vol. 23(1), pp. 24–39. behavioral sciences, McGraw-Hill, New York.

Lim, C. S.; Mohamed, M. Z. (1999), Criteria of project success: an exploratory re-examination, *International Journal of Project Management*. https://doi.org/10.1016/S0263–7863(98)00040–4

Liu, J. (2014), Life Cycle Critical Success Factors for Public-Private Partnership

Infrastructure Projects. doi: 10.1061/(ASCE)ME.1943-5479.0000307.

Liu, T.; Wilkinson, S. (2011), Adopting innovative procurement techniques: obstacles and drivers for adopting public private partnerships in New Zealand, *Construction Innovation: Information, Process, Management.* https://doi.org/10.1108/14714171111175918

Liu, T.; Wilkinson, S. (2015), Critical Factors Affecting the Viability of Using Public-Private Partnerships for Prison Development. *Journal Management*.

Matsiko G. M, (2017), Embracing Public Partnerships to Improve Learning Outcomes in Education. *CEPA Policy* Series Papers No. 15 of 2017. Kampala

Meng, X., Zhao, Q., and Shen, Q. (2011), Critical success factors for transfer-operate-transfer urban water supply projects in China, Journal of Management in Engineering https://doi.org/10.1061/ (ASCE)ME.1943–5479.0000058

Mohelska, H., and Sokolovab, M. (2015), Organizational culture and leadership – *joint vessels Procedia - Social and Behavioral Sciences*.

Ndandiko, C. (2006), Public Private Partnerships as modes of procuring public infrastructure and service delivery in developing countries: lessons from Uganda. *International public procurement conference proceedings* 21-23 September 2006.

Ng, S. T., Wong, Y. M., and Wong, J. M. (2012), Factors influencing the success of PPP at feasibility stage–a tripartite comparison study in Hong Kong, *Habitat International*. https://doi.org/10.1016/j. habitat International 2012.02.002

Nsasira, Rachael, Basheka, Benon, Oluka and Pross. (2013), Public Private Partnerships (PPPs) and Enhanced Service Delivery in Uganda: Implications from the Energy Sector. *International Journal of Business Administration.*

Norusis, M. J. (2008), SPSS 16.0 advanced statistical procedures companion. *Upper Saddle River, N.J.: Prentice-Hall.*

Nunnally, J. C. (1978), Psychometric theory. 2nd ed. *New York: McGraw-Hill*.

Osei-Kyei, R. and Chan, A. P. C. (2015), Review of studies on the critical success factors for public–private partnership (PPP) projects from 1990 to 2013, *International Journal of Project Management.* https://doi.org/10.1016/j.ijproman.2015.02.008

Osei-Kyei, R. and Chan, A. P. C. (2016), Developing transport infrastructure in Sub-Saharan Africa through public– private partnerships: policy practice and implications, *Transport Reviews*. https://doi.org/10.1080/01441647.2015.1077288

Osei–Kyei, R. and Chan, A. P. C. (2017), Perceptions of stakeholders on the critical success factors for operational management of public-private partnership projects, Facilities. http://dx.doi.org/10.1108/F-10-2015-0072

Osei-Kyei, R., Dansoh, A. and Ofori-Kuragu, J. K. (2014), Reasons for adopting public private partnership (PPP) for construction projects in Ghana, *International Journal of Construction Management* https://doi.org/10.1080/15623599.2014.967925

Panagiotis, M., Alexandros, S. and George, P., (2014), Organizational Culture and Motivation in the Public Sector. The case of the City of Zografou. *Procedia Economics and Finance.*

OECD. (2013), Better regulation of public-private partnerships for transport infrastructure. *OECD.*

Peter and Farlam (2005), Assessing Public Private Partnerships in Africa: *The South African Institute of International Affairs.*

Richardson J.T.E, Instruments for obtaining student feedback: a review of the literature, *Assessment & Evaluation in Higher Education* Vol. 30, (4): pp.387-415

Robert, O. – K., Dansoh, A. and Ofori – Kuragu, J. K. (2014) 'Reasons for adopting Public–Private Partnership (PPP) for construction projects in Ghana', *International Journal of Construction Management*, doi: 10.1080/15623599.2014.967925.

Shahzad, F., Iqbal, Z. and Gulzar, M., (2013). Impact of Organizational Culture on Employees Job Performance. *Journal of Business Studies Quarterly.*

So, U. (2007). "West Kowloon hub empowered to cover costs." *The Standard (Hong Kong)*, ⟨http://www.thestandard.com.hk/news print.asp.

Titus E.K., Samuel, A. and Edward B., (2016), A critical success model for PPP public housing delivery in Ghana, *Built Environment Project and Asset Management*.

Valdimarsson, Ó, (2007), 'PPP in Iceland from the Viewpoint of the Public Sector', *FM Conference in Iceland*

Walker C. and Smith A.J., (1995), Privatized infrastructure: the BOT approach. London, UK: Thomas Telford.

Weththasinghe, Kumudu, Gajendran, Thayaparan, Brewer and Graham. (2016), Barriers in Proper Implementation of Public Private Partnerships (PPP) In Sri Lanka.

World Bank. (2015), Private participation in infrastructure (PPI), Regional Snapshots [online]. Washington, DC. Available at: http://ppi.worldbank.org/explore/ppi_exploreRegion.

World Bank. (2012), Ghana – Public Private Partnership Project (PPP). Washington, DC: World Bank.

World Bank. (2014), Ghana private participation in infrastructure projects database; country snapshots; [cited 2014 Oct 11]. Available from: http://ppi.worldbank.org/snapshots/ country/Ghana

World Bank. (2015), Private participation in infrastructure(PPI), Regional Snapshots [online]. Washington, DC. Available at: http://ppi.worldbank.org/explore/ppi_exploreRegion.

Yaghmale F., (2009) "Content validity and its estimation'. J. med Education. Vol. 3.

Yeung, J. F., Chan, A. P. C., Chan, D. W. and Li, L. K. (2007), Development of a partnering performance index (PPI) for construction projects in Hong Kong: a Delphi study, *Construction Management and Economics*. https://doi.org/10.1080/01446190701598673

Yu, Y., (2018), Critical Risk Factors of Transnational Public–Private Partnership Projects: Literature Review, *Journal of Infrastructure Systems*. doi: 10.1061/(ASCE)IS.1943-555X.0000405

Yuan, J., Chan, A. P. C., Xiong, W., Skibniewski, M. J. and Li, Q. (2015), Perception of residual value risk in public private partnership projects: critical review, *Journal of*

Management in Engineering. https://doi.org/10.1061/(ASCE)ME.1943–5479.0000256

Yuan, J., (2013), 'Perception of Residual Value Risk in Public Private Partnership Projects: Critical Review', *Journal of Management in Engineering.*

Yuan, J., Wang, C., Skibniewski, M. and Li, Q. (2012). Developing key performance indicators for public-private partnership projects: questionnaire survey and analysis, *Journal of Management in Engineering*. https://doi.org/10.1061/(ASCE)ME.1943– 5479.0000113

Yuan, J., Zeng, A. Y., Skibniewski, M. J. and Li, Q. (2009), Selection of performance objectives and key performance Indicators in public-private partnerships projects to achieve value for money, *Construction Management and Economics.* https://doi.org/10.1080/01446190902748705

Zhang, X. 2006b. Public clients' best value perspectives of public private partnerships in infrastructure development, *Journal of Construction Engineering and Management* Vol. 132(2): pp.107–114. https://doi.org/10.1061/ (ASCE)0733–364 (2006) 132:2(107)

Zhang, X., (2005). Critical success factors for public–private partnerships in infrastructure development. *Journal Construction Engineering Management*.

APPENDICES

Appendix 1: Survey Questionnaire

Appendix 2: Work plan

ACTIVITY	PERIOD
Proposal - Literature Review - Topic Selection - Topic Approval - Proposal Writing - Approval by Supervisor - Submission	December, 2018- 31st May, 2019
Dissertation/Report - Data collection - Sorting and editing of data for completeness and accuracy	01st July – 31st August, 2019
- Data analysis - Interpretation - Typing - Editing - Printing - Discussion with the supervisors - Approval - submission	01th Sept – 31st October, 2019

Appendix 3: Budget Estimates

MATERIAL/SERVICE	QUANTITY	UNIT COST	TOTAL COST
A. **Proposal**	Item	700,000/=	700,000/=
SUB TOTAL			**700, 000/=**
B. **Dissertation**			
Data collection	Item	2,000,000/=	2,000,000/=
Analysis (SPSS)	Item	500,000/=	500,000/=
Compilation and Submission	Item	3, 000, 000/=	3, 000, 000/=
SUBTOTAL			**5, 500, 000/=**
GRAND TOTAL			**6, 200, 000/=**

Appendix 4: Krejcie & Morgan Table

Table 3.1

Table for Determining Sample Size of a Known Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

Note: N is Population Size; S is Sample Size *Source: Krejcie & Morgan, 1970*

Appendix 5: Chi-Square distribution table

Critical values of the Chi-square distribution with *d* degrees of freedom

	Probability of exceeding the critical value						
d	0.05	0.01	0.001	*d*	0.05	0.01	0.001
1	3.841	6.635	10.828	11	19.675	24.725	31.264
2	5.991	9.210	13.816	12	21.026	26.217	32.910
3	7.815	11.345	16.266	13	22.362	27.688	34.528
4	9.488	13.277	18.467	14	23.685	29.141	36.123
5	11.070	15.086	20.515	15	24.996	30.578	37.697
6	12.592	16.812	22.458	16	26.296	32.000	39.252
7	14.067	18.475	24.322	17	27.587	33.409	40.790
8	15.507	20.090	26.125	18	28.869	34.805	42.312
9	16.919	21.666	27.877	19	30.144	36.191	43.820
10	18.307	23.209	29.588	20	31.410	37.566	45.315

***INTRODUCTION TO POPULATION GENETICS*, Table D.1**

Appendix 6: Introduction letter from the department

Other appendices:

- **Academic Progress filled reports**