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Influence of Public Private Partnerships on Infrastructural Development in Public Universities in Kenya

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Abstract:

The main objective of this paper was to determine the Influence of private public partnerships on infrastructure development in public universities in Kenya. It seeks to generate solutions to the challenges facing Kenya's higher education system. The appetite for university education in Kenya has increased significantly. Most of those who qualify for admission into institutions of higher learning are not admitted since universities aren't able to accommodate the growing number of students due to limited enrolment capacities. Population of the study included all public universities where a representative sample of 45 respondents was selected. The study concludes that Public Private Partnerships do influence infrastructure development in public universities in Kenya. With 73% of the changes in infrastructure development (dependent variable) explained by changes in the four variables namely Risk Management, Resources, and Value for Money and Expertise. It has been determined that resources, risk management, value for money & expertise are very critical to infrastructural development.

Keywords: Private public partnerships, Infrastructure development, Higher education & Public universities

1. Introduction

For several decades, development agencies have placed great emphasis on primary and, more recently, secondary education. But they have neglected tertiary education as a means to improve economic growth and mitigate poverty. Recent evidence suggests higher education is a determinant as well as a result of income, and can produce public and private benefits. (Rosovsky, 2008). In a speech by the former UN Secretary General Kofi Annan argued that, the University must become a primary tool for Africa's development in the new century. Universities can help develop African expertise; they can enhance the analysis of African problems; strengthen domestic institutions; serve as a model environment for the practice of good governance, conflict resolution and respect for human rights, and enable African academics to play an active part in the global community of scholars.

The enrollment rates in higher education in Sub-Saharan Africa are by far the lowest in the world. Although the gross enrollment ratio has increased in the past 40 years – it was just 1 per cent in 1965– it still stands at only 5 per cent. The international development community has encouraged African governments' relative neglect of higher education. The World Bank, which exercises significant influence over developing country governments, has long believed that primary and secondary schooling are more important than tertiary education for poverty reduction. This belief stemmed from two important considerations: first, repeated studies appeared to show that the returns to investments in primary and secondary education were higher than those to higher education, and second, that equity considerations favored a strong emphasis on widespread access to basic education. (The Task Force on Higher Education and Society (TFHE) (2010),

The contribution of infrastructure to economic growth is well recognized both in academic and policy debates. They identify significant infrastructure expenditure needs in sub-Saharan Africa. Their estimate of annual needs range from 9 to 13 percent of GDP for at least the next 10 years. However, given the stringent budget constraints that many developing countries have faced in recent decades, very few can afford to allocate the necessary resources to infrastructure. Literature provides widespread evidence of a growing utilization of Public-Private-Partnerships in the delivery of public infrastructure facilities and services to meet the numerous needs of modern economies (Perrot and Chatelus, 2000; Akintoye *et al.*, 2013; Link, 2006).

This tremendous expansion of undergraduate education when combined with declining funding translates to more and more students being admitted to institutions that were originally designed to accommodate far fewer students. So severe is the crisis of overcrowding that it is not uncommon to find students standing inside or outside of lecture halls or even perched on windows during lectures. The period between the end of one lecture and the beginning of another is particularly chaotic as students simultaneously attempt to fill and vacate lecture halls or simply jump in or out through windows to guarantee themselves seats (Boit&Kipkoech, 2012; Mutula, 2002; Odhiambo, 2011; Teferra& Altbach, 2004).

To ensure quality education universities have to expand and the expansion need to go hand in hand with the growth of the necessary infrastructure and basic support systems. In regard to Higher education as an instrument of economic growth in Kenya, Nyangau, (2015) summaries the challenges currently facing the country's higher education system as overcrowding, ever-growing demand, insufficient/declining public funding, declining quality, lack of basic laboratory supplies and equipment as well as crumbling infrastructure.

The demand for university education in Kenya continues to increase and has outpaced supply. This is mainly due to the expanding number of KCSE candidates that obtain the required grade (C+ above) for admission to a university. The universities have been unable to admit all those who qualify for direct admission from school (Musembi 2014). Performance analysis of the 2015 K.C.S.E examination results, out of 165,766 candidates who scored grade C+ and above only 74,389 candidates will join Universities in 2016/2017, Implying only less than 50% of those who qualify to university will be admitted to universities due to lack of space.

The findings were analyzed according to specific objectives of the study which included: To establish the link between resources and infrastructural development in Public Universities in Kenya, To determine if expertise affects infrastructural development in Public Universities in Kenya, To explore how value for money affects infrastructural development in Public Universities in Kenya and To assess how risk management affects infrastructural development in Public Universities in Kenya.

2. Literature Review

Public-private partnership (PPP) describes a government service or private business venture which is funded and operated through a partnership of government and one or more private sector companies. PPP involves a contract between a public service and project and assumes substantial financial, technical and operational risk in the project. Odugbemi (2008) noted that collaborations between public and private sector can be a solution to the underinvestment and poor maintenance of infrastructure in the sector. PPP can be described as a contractual relationship between the public and private sectors that bring together the strength of both parties to provide services or infrastructure in a cost effective manner. The private sector brings in innovations, technology and its resources while the public sector provides sufficient control and monitoring of these contracts.

2.1. Infrastructure Development

Significant infrastructure expenditure needs in sub-Saharan Africa are estimated annually to range from 9 to 13 percent of GDP for at least the next 10 years. However, given the stringent budget constraints that many developing countries have faced in recent decades, very few can afford to allocate the necessary resources to infrastructure. Like many other developing countries, Kenya faces significant financing gaps in infrastructure and utilities to attain country's vision 2030. For example electricity and power generation vis a vis power consumption has a spare capacity of only 4%. Transport has financing gap of US\$0.14 billion per annum (Ruthia, 2010).

Public Private Partnerships (PPPs) have emerged as one of the major approaches for delivering infrastructure projects in recent years. Despite the well-documented link between high-caliber infrastructure and economic expansion, governments operating on razor-thin budgets, especially in countries experiencing rapid population growth and urbanization, may not be equipped to make the necessary investments. In response, many government organizations are tapping the private sector for capital, technology, and expertise to finance, develop, and manage public-sector infrastructure projects. Policymakers are also finding that, when coupled with the right sets of policies and institutional environments, these public-private partnerships (PPPs) can also become catalysts for economic growth. The opportunity to drive economic growth with infrastructure PPPs is particularly rich in the Middle East and North Africa (MENA) region.

Private sector involvement in the delivery of public goods is a long established practice in OECD countries. In the recent decades, faced with growing pressures to expand and improve infrastructure quality as well as enhancing competitiveness and economic growth, OECD governments have increasingly turned to public-private partnerships (PPPs) to provide public infrastructure services. In turn, PPPs are attractive to the private sector as the investment is recovered either by government transfers and/or by charges applied to the users of the facility (e.g. tolls). By reaping the benefits of private sector participation (pursuit of innovative solutions and better allocation of inputs), PPPs can be a superior solution to traditional public procurement, providing greater value for money. (Araújo & Sutherland, 2010) Even though Kenya also has some diversity of types of higher education institutions, this diversity is threatened as public universities systematically acquire mid-level colleges and convert them to constituent colleges or satellite campuses to cater to ever rising demand for higher education and to generate new revenues (MoE, 2014).

The worldwide experience has shown that the PPP, if properly formulated, can provide a variety of benefits to the government. a PPP can increase the value for money spent for infrastructure services by providing more-efficient, lower-cost, and reliable services; a PPP helps keep public sector budgets, and especially budget deficiencies, down; a PPP allow the public sector to avoid up-front capital costs and reduce public sector administration costs; the project life-cycle costs and project delivery time can be reduced by using a PPP; a PPP can improve the quality and efficiency of infrastructure services; a PPP facilitates innovation in infrastructure development; the public sector can transfer risks related to construction, finance, and operation of projects to the private sector; (Akintoye et al., 2011)

2.2. Resources

Government Budgetary Constraints limits the number of projects it can undertake, PPPs arrangements allow the public sector to consider otherwise unaffordable projects. In this respect, PPPs help fill the so-called infrastructure gap between what the government can afford and what people need. PPPs thus allow the public sector to leverage more financial resources by using the private sector as

an intermediary (Kopp, 1997). This has enabled the public sector to allocate limited public financial resources to worthy—albeit less commercially viable—projects (Williams, 2002). Governments with large deficits and a heavy debt burden are more likely to have PPPs and soft budget constraints of government provide a little motivation for them to engage in private firms in PPP projects. The Government benefits cost effective and quality services which are offered in shorter time, thus meeting public needs. Also, the private sector besides the business objective, specializes in a certain area and becomes more experienced and competitive offering the opportunity to export such experience in other countries.

This has forced a reduction of demand for Government resources to enable it to finance certain functions such as security, education and health. Another factor promoting the performance of Public-Private-Partnership is the inability of state corporations to mobilize adequate resources to fulfill their national mandates. All these have fostered and promoted Public- Private-Partnership to allow the private sector to work in collaboration with the Private sector in provision of social services (Ruitha, 2010).

Even though Kenya also has some diversity of types of higher education institutions, this diversity is threatened as public universities systematically acquire mid-level colleges and convert them to constituent colleges or satellite campuses to cater to ever rising demand for higher education and to generate new revenues (MoE, 2012; Oanda&Jowi, 2012). These acquisitions, lack of resources, and a host of other challenges have weakened the non-university subsector resulting in a public higher education system that is burgeoning at the top but lacking a strong network of mid-level institutions to offer meaningful vocational, industrial, and technological training to students whose terminal education would otherwise be high school. Urgent action is needed, however, to prepare Kenya's higher education system for an imminent explosion in demand when the first batch of students enrolled under the free, universal, primary education program introduced in 2003 graduates from high school in 2015 (Sifuna, 2008). Free primary education does not only mean there is going to be an even greater number of students seeking access to higher education, but also that there are going to be different types of students seeking different types of higher education and a robust, tiered system where different institutions cater to different types of students will be needed to meet increased demand.

Despite its rapid expansion, Kenya's public higher education system faces a number of serious challenges including: Massification; overcrowding; ever-growing demand; erosion of the non-university subsector due to acquisitions and takeovers by public universities in search of space; insufficient/declining public funding; curricula that are not responsive to modern-day needs of the labor market; declining quality; lack of basic laboratory supplies & equipment; crumbling infrastructure; poorly equipped/stocked libraries; poor governance; and rigid management structures. Lack of resources and increased enrollment comes at a time when public universities are receiving declining funding from the Ministry of Education, thus forcing them to explore alternative avenues for expanding their respective revenue bases (MoE, 2012). Sachs et al., 2014 identifies budget constraints that many developing countries have faced in recent decades, very few can afford to allocate the necessary resources to infrastructure development.

2.3. Expertise

Ethnically divided countries require a larger number of infrastructure projects or public goods and services. These are usually needed to respond to different individual preferences, which prevent the pooling of resources for common public projects (Alesina, Baqir, & Easterly, 2009). Hence, with a certain level of government accountability, various projects satisfy each group separately and reduce the likelihood of conflicts over common resources or public goods and services. But the larger number of infrastructure projects typically puts added financial pressure on the public sector and requires private financing. While the public sector brings significant expertise to projects; many private sector firms have access to technologies, materials, and management techniques that exceed the capabilities of an individual governmental agency or department. PPPs are one way to harness the ideas and breadth of experience the private sector brings to projects by fully incorporating them into the procurement process. Public and private sector collaboration from the outset of an infrastructure project can lead to a number of innovations. These may come in the form of new materials; faster project delivery, increased use of technology, operational efficiencies, or enhanced building techniques. An open PPP procurement process, at minimum, provides the possibility for new ideas that the public sector may have never considered.

Araújo& Sutherland, (2010) states that outside finance will bring in financial expertise that can contribute to a better evaluation of the risks entailed by a project and better monitoring of the private operator's efforts. PPPs can be defined as a 'cooperative venture between the public and private sectors, built on the expertise of each partner that best meets clearly defined public needs through the appropriate allocation of resources, risks and reward.

This synergy creates expert resources for capacity building, and combines complimentary capacities across both public and private sectors. More specifically, it allows the private sector to contribute its technical expertise, while taking advantage of the public sector's knowledge of local needs and close ties with local authorities and stakeholders. The public sector, specifically in infrastructure development lacks the expertise in in cost reduction. A culture of cost consciousness should pervade throughout every public sector, so that the entire workforce understand that cost control is the responsibility of all employees. The public sector should improve the financial literacy of policy and strategy teams at the highest levels by partnering with the private sector which is always well equipped with the necessary skills. (Cima, 2008)

While the public sector brings significant expertise to projects; many private sector firms have access to technologies, materials, and management techniques that exceed the capabilities of an individual governmental agency or department. PPPs are one way to harness the ideas and breadth of experience the private sector brings to projects by fully incorporating them into the procurement process. Public and private sector collaboration from the outset of an infrastructure project, whether Greenfield or brown field, can lead to a number of innovations. These may come in the form of new materials; faster project delivery, increased use of technology, operational efficiencies, or enhanced building techniques. An open PPP procurement process, at minimum, provides the possibility for new ideas that the public sector may have never considered. (Perrot, &Chatelus, 2000).

A well planned and adequately structured Public-Private-Partnership arrangement should efficiently and effectively achieve superior results than the traditional public sector infrastructure financing approaches. This is because the Public-Private-Partnership approach strives to harness a wide range of managerial, commercial and technical skills of the private sector while benefiting from the low risk, socio-political goodwill and the lower cost of capital of the public sector. This combination is expected to enhance time, quality and cost efficiency of resultant projects (McKee *et al.*, 2006). It should also lead to higher flexibility and better risk management among public infrastructure projects. The Public-Private-Partnership approach is expected to eliminate the decision making and managerial bureaucracy associated with the public sector (Perrot & Chatelus, 2000). It further positively draws from the good credit rating and general goodwill of the private sector to consolidate market based procurement of project finances while ensuring less resistance from the general public.

2.4. Risk Management

PPP leads to better risk management. The allocation of risk to those players that can manage it best is the underlying driver of PPPs. That is, the public sector bears risks related to politics and, to some extent, economics. The private sector typically bears commercial risks related to financing, developing, and managing a project. Commercial risks are often complicated and, as a result, are often shared between the public and private sector. The sharing of risk enables both public and private players to focus their strengths and resources for the project's benefit. However, risk allocation must be aligned with the political climate and government policies

The involvement of the private sector can also lead to better risk management. The risks attached to an investment can in principle be shared between private operators and the State, with each bearing the type of risks – and associated incentives – for which they are most suited. Generally, risk that is difficult to control or forecast should not be borne by the contractor, which is often the case for demand side risk. In some cases, governments have assumed this risk, by subsidizing the contractor if demand falls below a certain level. Instead, construction risk and availability risk are more appropriately borne by the private sector. (Araújo & Sutherland, 2010) The worldwide experience has shown that the PPP, if properly formulated, can provide a variety of benefits to the government the public sector can transfer risks related to construction, finance, and operation of projects to the private sector; (Akintoye *et al.*, 2011).

An important issue in PPP arrangements is the sharing of risk between the public and the private sector or, more concretely, the transfer of risk from the public to the private sector. As pointed out, much risk is exogenous. The private partner neither is better informed about this risk than the public partner, nor can more efficiently manage or bear it. On the contrary, one may argue that the public sector is less risk-averse than the private partner, so that the former should bear all the exogenous risk. The key to any successful PPP project includes the principles of risk sharing, value of money, consistency, transparency, accountability and a competitive process. Contributors to the public private partnership debate. Maszoro and Gosiorowski (2008) who argued that PPP is a revolutionary and rewarding approach to development.

The truth of a problem or risk in public sector is often obfuscated by wrong or incomplete analyses, fake targets, perceptual illusions, unclear focusing, altered mental states, and lack of good communication and confrontation of risk management solutions with reliable partners. Strategies to manage threats (uncertainties with negative consequences) typically include avoiding the threat, reducing the negative effect or probability of the threat, transferring all or part of the threat to another party, and even retaining some or all of the potential or actual consequences of a particular threat, and the opposites for opportunities (uncertain future states with benefits). The ability to transfer certain risks to the private sector has a value because it eliminates those risks for the institution and, by extension, for the taxpayer. Examples include design risk, construction/implementation risks (i.e., project cost risk, completion risk), and financing risks (i.e., interest rate, ownership, property, operating risks associated with inflation and/or maintenance).

2.5. Value for Money

PPP can increase the value for money spent for infrastructure services by providing more-efficient, lower-cost, and reliable services; a PPP helps keep public sector budgets, and especially budget deficiencies, down; a PPP allow the public sector to avoid up-front capital costs and reduce public sector administration costs; the project life-cycle costs and project delivery time can be reduced by using a PPP; a PPP can improve the quality and efficiency of infrastructure services. Akintoye *et al* (2013) in their extensive research on PPP projects delivered in UK had identified factors that impede the achievement of best value for money in PFI projects. These include: high cost of the PFI procurement process, lengthy and complex negotiations, difficulty in specifying the quality of service, pricing of facility management services, potential conflicts of interests among those involved in the procurement.

A well planned and adequately structured Public-Private-Partnership arrangement should efficiently and effectively achieve superior results than the traditional public sector infrastructure financing approaches. This is because the Public-Private-Partnership approach strives to harness a wide range of managerial, commercial and technical skills of the private sector while benefiting from the low risk, socio-political goodwill and the lower cost of capital of the public sector. This combination is expected to enhance time, quality and cost efficiency of resultant projects (McKee *et al.*, 2006). The Public-Private-Partnership approach is expected to eliminate the decision making and managerial bureaucracy associated with the public sector. It further positively draws from the good credit rating and general goodwill of the private sector to consolidate market based procurement of project finances while ensuring less resistance from the general public.

Value for money is the ultimate test for a project. When considering a public-private partnership approach and one proposal versus another, the comparison of future cash flows is the primary financial analysis required in evaluating value for money. Other factors to consider include a commitment to ensure that government's resources are managed with due regard for economy, efficiency and effectiveness. A public-private partnership arrangement will only be approved if it demonstrates the lowest cost alternative to the taxpayer. The project should demonstrate an economic advantage to the Province. A project must commence with a sound business

case, establishing reasonable estimates of costs and benefits. The business case must continue to be sound throughout the process. Anticipated efficiency and effectiveness of service delivery must meet or exceed identified standards. Quality service, which is responsive to the needs of the public, must be ensured.

2.6. Conceptual Framework

Conceptual frameworks attempt to connect to all aspects of inquiry. The conceptual framework shown below represents the conceptualized interaction among Resources, Expertise, and Value for money, Risk management and Infrastructure development.

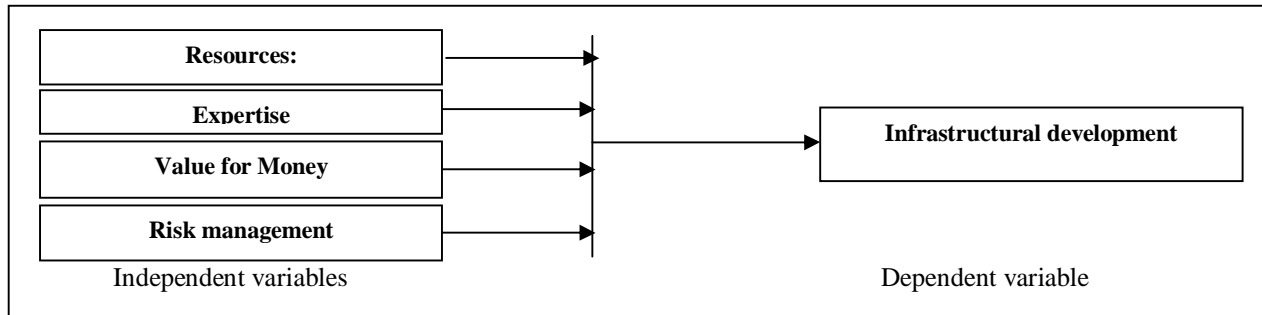


Figure 1: Conceptual Framework

3. Research Methodology

3.1. Research Design

This paper used a descriptive research design primarily using questionnaires to examine the influence of Public-Private-Partnerships in infrastructural Development in Kenyan Public Universities. Descriptive survey is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals (Mugenda&Mugenda, 2003). The advantages of descriptive studies is that it is a scientific method of investigation where data is collected and analyzed to describe the current conditions, terms or relationships concerning a problem. Descriptive studies are not only restricted to fact finding but may often result in the formation of important principles of knowledge and solutions to significant problems. The method was preferred in this study because it provides an in-depth analysis of variables showing how they inter relate.

3.2. Population, Sample Design and Sampling Procedure

The below respondents were selected because of their key role in the execution of public private-partnership agreements in Public Universities. The identified respondents have either had interest in the public-private-partnerships or are likely to enter in such arrangements. A schedule of the whole population is as shown in the Table 1below.

Population Category	Frequency (Population)
Deputy Vice Chancellors - DVCs	66
Registrars	66
Dean Of Faculties'	167
Total	299

Table 1: Population of the study
Source: Authors computations (2017)

For this paper, probability sampling was used. In probability sampling, each member of the population has a known non-zero probability of being selected and people, places or elements are randomly selected. This sampling gives every member of the population equal chances of being included in the study. Advantage of probability sampling is that sampling error can be calculated. This paper used stratified random sampling; **Stratified sampling** is commonly used probability method that is superior to random sampling because it reduces sampling error. A stratum is a subset of the population that shares at least one common characteristic. Gay (2007) recommends the following minimum sample sizes for the respective types of research: descriptive-10% to 20% of population; correlational-30 subjects; causal-comparative-30 subjects per group; and experimental-15 subjects per group. Proportionate sampling method was used.

A representative sample of 45 was selected. This is as shown in Table 2 below.

	Population	Sample inclusion	Sample Size
DVC	66	(66/299)*45	10
Registrars	66	(66/299)*45	10
Deans	167	(167/299)*45	25
Total	299		45

Table 2: Sample size
Source: Authors computations (2017)

3.3. Data Collection

The paper used questionnaires in data collection. A questionnaire is considered ideal for collecting data because the respondents individually record and interpret the instruments. It consisted of both structured and semi structured questions as well as closed and open ended questions. This is because closed ended questions ensure that the respondents are restricted to certain categories in their responses. The open ended questions will be used where the researcher wish to explore other possible responses that differ from respondent to respondent. Before the research tool was administered to participants, pre-testing was carried out to ensure that the questions are relevant and, clearly understandable. The pre-testing aims at determining the reliability of the research tools.

3.4. Data Analysis and Model Specification

Data collected was analyzed by means of Statistical Package for the Social Sciences (SPSS). The study used descriptive statistics techniques. Data from Open ended questions was analyzed using content analysis. To help establish the relationship between the variables, a correlation analysis was undertaken so as to determine the relationship between the independent variables and dependent variable. Linear regression model was used to determine the relationship between the dependent and independent variables as follows:

$$Y = a_1 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Whereby:
Y = Infrastructure Development in Public Universities

A_1 = constant

$\beta_1, \beta_2, \beta_3, \&\beta_4$ = Independent variables coefficients

X_1 = Resources

X_2 = Value for Money

X_3 = Expertise

X_4 = Risk Management

ε = Error term

3.5. Ethical Issues

The data collected was moved from the field in flash disk and CD ROMs and virus protection put up in place. Only authorized persons have the access to the raw data. Confidentiality is observed by moving the data in sealed envelopes and ensuring no unauthorized persons access the data. The names of persons are not put in the report through the data is available for academic verification. This will ensure that the researcher does not expose the respondents.

The researcher did not issue questionnaires to anyone outside the study and also established a mutual understanding with the target sample before giving them the questionnaires. The respondents were assured of confidentiality and protection it was further made clear that the information gathered will solely be used for this study. Confidentiality was also taken seriously by the researcher. Thus each participant's response was treated in confidence and not released to any other party for whatever reasons.

4. Results and Discussions

4.1. Response Rate Analysis

The study considered collecting data from senior university staff members working in public universities. It targeted a population of 299 respondents; a sample of 45 respondents was generated.

Respondents	Targeted Sample	Filled and Returned	Response rate
DVC	10	6	60%
Registrars	10	9	90%
Deans	25	17	53%
Total	45	32	71%

Table 3: Results for the response rate

Source: Authors computations (2017)

Out of the 45 Targeted respondents, 32 of them filled and returned the questionnaires constituting 71% response rate as indicated in the Table 3 Mugenda and Mugenda (2003) argue that a response rate of over 70% is very good for descriptive research. This response rate enabled the researcher to gather sufficient data to draw conclusion on the study. Each of the three categories are respondents plays a vital role in university management decision making. Vice Chancellors are tasked with developing the Objectives, Mission & Vision of the University; Registrars implement the decisions made by the DVCs while Dean of Faculties are in charge of Schools/Faculties. Of the data collected 19% was collected from DVCs, 28% From Registrars 53% was collected from Deans of faculties.

4.2. Success rate of PPPs in Education Sector

The study wanted to find out whether existing partnerships in the education sector have been successful in promoting accessibility of Education.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	18	56.3	56.3	56.3
	No	6	18.8	18.8	75.0
	Not Aware	8	25.0	25.0	100.0
	Total	32	100.0	100.0	

Table 4: Results for PPP Success Rate
Source: Authors computations (2017)

From Table 4 the results show that 25% aren't aware of the success rate of PPPs in the Education sector. Success rate of PPPs in the education sector stands at 56% this signifies a low success rate thus a lot needs to be done to improve on the success rate and achieve the desired results.

4.3. Collaborations between Public Universities & the Private sector

The researcher sought to determine if the respondents have participated in any publicly funded program me where the university has collaborated with private sector. The results are as shown in Table 5.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	43.8	43.8	43.8
	No	14	43.8	43.8	87.5
	Not Aware	4	12.5	12.5	100.0
	Total	32	100.0	100.0	

Table 5: Results for Collaborations between Public-Private Sectors
Source: Authors computations (2017)

Table 5 shows that, 43.8% of the respondents indicated that they have participated in a publicly funded program me where the university has collaborated with private sector. This indicates a low level of PPPs penetration in the Education sector and it calls for more to be done in building up partnerships in Universities.

4.4. Risk Management

Table 6 shows the results of whether the private sector manages risk better than the public sector.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	29	90.6	90.6	90.6
	No	3	9.4	9.4	100.0
	Total	32	100.0	100.0	

Table 6: Results for Risk management by the private sector
Source: Authors computations (2017)

Table 6 shows that 91% of the respondents agree that the private sector manages Risk better compared to the public sector indicating that the private sector is well suited to handle issues related with risk. Thus partnerships create an opportunity for the public sector to benefit from the private sector on risk management front. Table 7 shows the results of the level at which respondents agreed with the elements of risk affecting infrastructural development. A scale of 1-5 was used. Where; 5= Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree and 1 = Strongly Disagree on the continuous Likert scale.

	N	Minimum	Maximum	Mean	Std. Deviation
Appropriate risk allocation	32	1.00	5.00	4.0313	1.12119
Risk Transfer	32	1.00	5.00	3.6563	1.23417
Risk retention	32	1.00	5.00	3.5938	1.26642
Risk Reduction	32	1.00	5.00	4.0313	1.33161
Valid N (list wise)	32				

Table 7: Results for Risk management
Source: Authors computations (2017)

Results from Table 7 above shows that the elements of risk that affect PPPs. From the findings, the study established that majority of the respondents agreed that appropriate risk allocation affects Infrastructure development as expressed by a mean of 4.0313 and a standard deviation of 1.12119, respondents also agreed that risk transfer does affect infrastructure development in public universities with mean of 3.6563 and a standard deviation of 1.23417. Majority of the respondents also agreed that Risk management affects infrastructure development as shown by a mean of 3.5938 and a standard deviation of 1.26642, respondents also agreed that, risk retention affects infrastructural development as shown by a mean of 3.5938and standard deviation of 1.33161.Majority of the

respondents agreed that risk reduction is an important element in infrastructure development. The results show that risk management (Risk Reduction, Risk Transfer & Risk Retention) is an important element which must be managed properly for infrastructure development to be achieved.

4.5. Value For Money

The study sought out to find out the level of agreement of the respondents with the following statements on Value for Money and infrastructural development. Where; 5= Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree, 1 = strongly Disagree& 0 = No Response on the continuous Likert scale.

	N	Minimum	Maximum	Mean	Std. Deviation
Public-private-partnerships provide quality services & products and infrastructure on a very cost-effective basis.	32	1.00	5.00	4.1250	1.12880
The involvement of the private sector allows public entities to respond to market forces and become more competitive.	32	2.00	5.00	4.1250	1.00803
The need to avoid moral hazard and improve efficiency in infrastructure provision necessitates the use of Public-private-partnerships.	32	0.00	5.00	4.1563	1.08090
They offer value-for-money which results in 'a net benefit' to the institution in terms of cost, price, quality, quantity, or a combination thereof.	32	2.00	5.00	4.3125	.89578
Public-private-partnerships help derive value for money so long as they are established in an environment rooted in long term cooperative relations among stakeholders.	32	1.00	5.00	4.2500	1.10716
Public-private-partnerships reduces the time frame taken to complete a given project	32	1.00	5.00	3.8750	1.38541
Public-private-partnerships reduces the cost of acquiring goods & services	32	1.00	5.00	3.6563	1.47253
Does competitive procurement low cost of acquiring goods & services	32	1.00	5.00	3.9063	1.42239
Valid N (list wise)	32				

*Table 8: Results for Value for money
Source: Authors computations (2017)*

Table 8 above shows that, Majority of the respondents agree with the statement, PPPs provide high quality Infrastructure in a cost effective manner, this is evident from the mean of 4.1250 with a standard deviation of 1.1288. They also agreed that that the private sector enables the public sector to be competitive and dynamic in addressing the ever changing market dynamics with a mean of 4.1250 and a standard deviation of 1.00803. This shows that PPPs which brings together Public & Private sector do yield efficiency in the market environment. As observed PPPs leads to efficiency in provision of infrastructure with a mean of 4.1563 and a standard deviation of 1.08090. This shows that public sector on its own it can't achieve the desired efficiency needed to have the required infrastructure on its own. Thus, the need for partnering.

Majority agreed with the statement that PPPs yield benefit in terms of cost saving while achieving the highest possible results, with a mean of 4.3125 and a standard deviation of 0.89578 as shown in Table 8 above thus PPPs offer value-for-money which results in 'a net benefit' to the institution in terms of cost, price, quality, quantity, or a combination thereof. They agree that Public-private-partnerships help derive value for money so long as they are established in an environment rooted in long term cooperative relations among stakeholders with a mean of 4.2500 and a standard deviation of 1.10716. This shows the importance of partnering since it helps in realization of Value for Money. As shown in Table 8 Public-private-partnerships reduces the time frame taken to complete a given project with a mean of 3.8750 and a standard deviation of 1.38541. Thus, it will take a shorter time to build infrastructure through a partnership that it would have taken the individual entities to build on their own.

Public-private-partnerships reduces the cost of acquiring goods & services, thus PPPs will lead to better cost management compared to the public sector cost management abilities with a mean of 3.6563 and a standard deviation of 1.47253. majority agreed that Competitive procurement is a very important element of the Private sector thus when it partners with the public sector it leads to better procurement practices this is shown by a mean of 3.9063 with a standard deviation of 1.42239. Thus competitive procurement low cost of acquiring goods & services.

4.6. Resources

The study sought out to find out the level of agreement of the respondents with the following statements on Resources and infrastructural development. Where; 5= Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree, 1 = strongly Disagree& 0 = No Response on the continuous Likert scale.

	N	Minimum	Maximum	Mean	Std. Deviation
Public-Private-Partnerships provides opportunities for development corporations to harness private enterprise as a means towards economic and social development of their host countries	32	1.00	5.00	4.0625	1.16224
Public-Private-Partnerships ideally integrates the public sector, the private sectors and all community stakeholders in the provision of goods and services to the citizens in an economy in a way that they all benefit by pooling their resources and sharing	32	2.00	5.00	4.0875	1.05338
Public-Private-Partnerships involve design, construction, financing, operation and maintenance of public infrastructure and facilities, or the operation of services, to meet public needs	32	1.00	5.00	4.1563	1.13903
Public-Private Partnerships brings on board best procurement practices which prevents loss of public resources	32	0.00	5.00	3.9688	1.28225
Public-private-partnerships enable the public sector to leverage more financial resources by using the private sector as an intermediary	32	1.00	5.00	4.0625	1.07576
Public-private-partnerships are desirable in infrastructure financing because they promote technical efficiency among public projects	32	0.00	5.00	3.9688	1.20441
Public-private-partnerships allow the public sector to consider the implementation of the otherwise unaffordable infrastructure projects.	32	1.00	5.00	4.1563	1.05063
PPPs enables pooling of scarce resources together which would have otherwise not realized	32	2.00	5.00	4.3438	1.06587
Valid N (list wise)	32				

Table 9: Results for Resources
Source: Authors computations (2017)

Majority of the respondents with a mean of 4.0625 and a standard deviation of 1.16224 agree that Public-Private-Partnerships provides opportunities for development corporations to harness private enterprise as a means towards economic and social development of their host countries. This implies that PPPs lead to Economic development of the regions/Institutions they are implemented. The results show that PPPs lead to resource mobilization through sharing thus enabling Projects to be initiated and completed with a mean of 4.0875 and a standard deviation of 1.05338. Thus Public-Private-Partnerships ideally integrates the public sector, the private sectors and all community stakeholders in the provision of goods and services to the citizens in an economy in a way that they all benefit by pooling their resources and sharing.

As shown in Table 9 above, majority agree that Public Private Partnerships involve design, construction, financing, operation and maintenance of public infrastructure/facilities, or the operation of services to meet public needs. With a mean of 4.1563 and a standard deviation of 1.139.3 PPPs public needs can be easily meet due to the synergy created when the two come together. Also, they agreed that Public-Private Partnerships brings on board best procurement practices which prevents loss of public resources with a mean of 3.9688 and a standard deviation of 1.28225. The public sector is well known for flawed procurement process thus partnering with the private sector will help solve this problem.

As indicated in the Table 9 above majority agreed that Public-private-partnerships enable the public sector to leverage more financial resources by using the private sector as an intermediary with a mean of 4.0625 and a standard deviation of 1.07576. This shows the synergy created when the two come together as they exploit the strengths of each other. Technical efficiency is usually achieved through PPPs as shown by a mean of 3.9688 with a standard deviation of 1.20441. Thus Public-private-partnerships are desirable in infrastructure financing because they promote technical efficiency among public projects. According to the results in Table 9 above majority agree that Public-private-partnerships allow the public sector to consider the implementation of the otherwise unaffordable infrastructure project with a mean of 4.1563 and a standard deviation of 1.05063. This enable the public sector to implement projects they won't have implemented on their own.

4.7. Expertise

The study sought out to find out the level of agreement of the respondents with the following statements on Expertise and infrastructural development. Where; 5= Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree, 1 = strongly Disagree & 0 = No Response on the continuous Likert scale.

	N	Minimum	Maximum	Mean	Std. Deviation
Private sector have a superior technology compared to Public sector	32	1.00	5.00	3.9688	1.28225
Private sector have better management skills compared to Public sector	32	1.00	5.00	4.0313	1.28225
Private sector have superior ideas and breadth of experience compared to Public sector	32	2.00	5.00	3.9063	1.22762
Valid N (list wise)	32				

Table 10: Results for Expertise
Source: Authors computations (2017)

According to the results in Table 10 majority of the respondents agreed that the private sector has better Technology, Management skills & experience with a mean of 3.9688, 4.0313, and 3.9063 with standard deviation of 1.28225, 1.28225 & 1.22762 respectively. This shows that Majority of the respondents agree that the private sector is better placed to handle expertise issues in Infrastructure development compared to the public sector thus necessitating the need to partner.

4.8. Infrastructure Development

The study sought out to find out the level of agreement of the respondents with the following statements on infrastructural development. Where; 5= Strongly Agree; 4 = Agree; 3 = Neutral; 2 = Disagree, & 1 = Strongly Disagree on the continuous Likert scale.

	N	Minimum	Maximum	Mean	Std. Deviation
Upgrading of existing structures	32	2.00	5.00	4.0938	1.14608
Building new structures	32	1.00	5.00	4.6250	.83280
Increased Enrolment	32	2.00	5.00	4.0000	1.01600
Valid N (list wise)	32				

Table 11: Results for Infrastructure Development
Source: Authors computations (2017)

As summarized in Table 11, most of the respondents agreed that Upgrading of existing structures constitutes to infrastructure development with a mean of 4.0938 and a standard deviation of 1.14608. Thus if a university upgrades its structures it can be termed as infrastructure development. Majority agreed that Building new structures amounts to infrastructure development with a mean of 4.6250 and a standard deviation of 0.83280. Thus any partnership that seeks to bring about new structures it leads to Infrastructure development. Also results from the table shows that most of the respondent agreed with Increased Enrolment as an element of Infrastructure Development, with a mean of 4.000 and a standard deviation of 1. Thus if universities are able to enroll more students than they previously did it can be concluded that infrastructure development has taken place.

4.9. Correlation Analysis

Correlation is a term that refers to the relationship between two variables. It lies between -1 and +1, the value of -1.00 represents a perfect negative correlation while a value of +1.00 represents a perfect positive correlation. A value of 0.00 means that there is no relationship between variables being tested.

		Infrastructural Development	Risk Management	Resources	Value for Money	Expertise
Infrastructural Development	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	32				
Risk Management	Pearson Correlation	.570**	1			
	Sig. (2-tailed)	.001				
	N	32	32			
Resources	Pearson Correlation	.674**	.406*	1		
	Sig. (2-tailed)	.000	.021			
	N	32	32	32		
Value for Money	Pearson Correlation	.563**	.236**	.349*	1	
	Sig. (2-tailed)	.001	.014	.050		
	N	32	32	32	32	
Expertise	Pearson Correlation	.323**	.536**	.485**	.425*	1
	Sig. (2-tailed)	.041	.002	.005	.015	
	N	32	32	32	32	32
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

Table 12: Results for Correlation Analysis

From Table 12 the Pearson correlation coefficient for Risk Management is 0.570**, and it is statistically significant ($p < 0.05$), Resources is 0.674** and is statistically significant ($p < 0.05$), Value for Money is 0.563** and is statistically significant ($p < 0.05$) and

finally Expertise is 0.323 ** and is statistically significant ($p < 0.05$). From the study findings, Since the Sig (2-Tailed) value for all the independent variables that is; Risk Management, Resources, Value for Money and Resources were all less than 0.05 therefore they were all significant. Therefore, the study concluded that there is no statistically significant correlation between the four variables. Meaning, increases or decreases in one variable do not significantly relate to increases or decreases in other variables.

4.10. Regression Model Summary

This study applied the statistical package for social sciences (SPSS) to code, enter and compute the measurements of the multiple regressions for the study, a multiple linear regression model was implemented to identify the relationship between the independent and Dependent variable. The finding of the study is as shown in Table 13 below.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.853 ^a	.728	.688	.64035

a. Predictors: (Constant), Risk Management, Value for Money, Resources, Expertise

Table 13: Results for Regression Model

Source: Authors computations (2017)

With an (R Squared) R^2 of 73%, it means that 73% of the changes in the dependent variable are explained within the model (explained by the four variables namely: Risk Management, Resources, Value for Money, Expertise which are covered in this study). With only 27% of the changes being explained by the error term (factors not studied in this model). These factors include Corruption, good governance, high cost of capital, Bureaucracy etc.

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	29.648	4	7.412	18.076	.000 ^b
	Residual	11.071	27	.410		
	Total	40.719	31			

a. Dependent Variable: Infrastructural Development

b. Predictors: (Constant), Risk Management, Value for Money, Resources, Expertise

Table 14: Results for Analysis of Variance (ANOVA ^a)

Source: Authors computations (2017)

The study used ANOVA in an attempt to test the significant of the model,

Null hypothesis: All means of Independent variables are equal

Alternative Hypothesis: At least one of the means is different

The distribution is F (4, 27), and the probability of observing a value greater than or equal to 18.076 is less than 0.000 (P-value is 0000^b) these provides strong evidence against the Null Hypothesis thus we conclude they aren't equal. I.e. the average amount of variations between groups is greater than that within groups, which means that the F-ratio is large and the P-value is very small.

From Table 14 the P-value is 0000^b which is less than 0.05 thus the model is statistically significance in predicting the independent variable that affect Infrastructural development (Risk Management, Resources, Value for Money and Expertise) and their respective relationship with the dependent variable Infrastructural development. The F critical at 5% level of significance is 2.46. Since F calculated (18.076) is greater than the F critical, this shows that the overall model is significant.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.571	.736		-2.135	.042
	Expertise	.361	.138	.346	2.609	.015
	Value for Money	.616	.163	.426	3.782	.001
	Resources	.600	.140	.511	4.290	.000
	Risk Management	.449	.122	.448	3.691	.001

a. Dependent Variable: Infrastructural Development

Table 15: Results for Regression Coefficients

Source: Authors computations (2017)

From the results, the regression equation will be:

$$Y = -1.571 + 0.6X_1 + 0.616X_2 + 0.361X_3 + 0.449X_4 + \varepsilon$$

Where,

X_1 – Resources

X_2 – Value for Money

X_3 – Expertise

X_4 – Risk Management

From the study findings on table 15, the researcher established that from the Constant ($\beta_0 = -1.571$, $p = 0.042$) Infrastructural development can't take place in absence of the four variables namely: Risk Management, Resources, Value for Money and Expertise. The results further show that, Value for Money had the greatest influence on Infrastructure development at 62% followed by Resources at 60%, Risk Management at 45% and Expertise at 36%. All variables were significant at 95% confidence level since the p-values are less than 0.05 i.e. ($\beta_0 = -1.571$ and $p = 0.042$, $\beta_1 = 0.6$ and $p = 0.000$, $\beta_2 = 0.616$ and $p = 0.001$, $\beta_3 = 0.361$ and $p = 0.015$ & $\beta_4 = 0.449$ and $p = 0.001$). All independent variables are positively related to the dependent variable.

5. Summary of Findings, Conclusion and Recommendation

5.1. Summary of Findings

The research findings were analyzed according to specific objectives of the study which included: To establish the link between resources and infrastructural development in Public Universities in Kenya, To determine if expertise affects infrastructural development in Public Universities in Kenya, To explore how value for money affects infrastructural development in Public Universities in Kenya and To assess how risk management affects infrastructural development in Public Universities in Kenya.

5.1.1. Resources

The study shows that majority of the respondents agree that Public-Private-Partnerships provides opportunities for development corporations to harness private enterprise as a means towards economic and social development of their host countries. This implies that PPPs lead to Economic development of the regions/Institutions they are implemented. PPPs lead to resource mobilization through sharing thus enabling Projects to be initiated and completed. Only a few disagree with Public-Private-Partnerships ideally integrates the public sector, the private sectors and all community stakeholders in the provision of goods and services to the citizens in an economy in a way that they all benefit by pooling their resources and sharing. Majority agree that Public-Private-Partnerships involve design, construction, financing, operation and maintenance of public infrastructure and facilities, or the operation of services, to meet public needs. With PPPs public needs can be easily meet due to the synergy created when the two come together. Also from the results they indicate that Public-Private Partnerships brings on board best procurement practices which prevents loss of public resources. The public sector is well known for flawed procurement process thus partnering with the private sector will help solve this problem.

Public-private-partnerships enable the public sector to leverage more financial resources by using the private sector as an intermediary. This shows the synergy created when the two come together as they exploit the strengths of each other. Technical efficiency is usually achieved through PPPs with only a few disagree with Public-private-partnerships are desirable in infrastructure financing because they promote technical efficiency among public projects. Public-private-partnerships allow the public sector to consider the implementation of the otherwise unaffordable infrastructure project. Thus PPPs enable the public sector to implement projects they won't have implemented on their own. The results agree with the studies done by (MoE, 2012; Oanda & Jowi, 2012; and Ruithia, 2010) who highlighted lack of resources as the main cause of poor infrastructure in public institutions since most Governments' in developing nations are faced by huge budget deficit thus making them unable to meet all resources demand in different sectors of the economy. They further point out that the rationale for partnering with the private sector is to bridge the deficit and budget shortfall thus enabling the Government to meet the citizens' demand.

5.1.2. Expertise

Findings show that majority of the respondents agree that the private sector has better Technology, Management skills & experience respectively. With a minority disagreeing with the private sector having better technology, Management skills and Experience. This shows that Majority of the respondents agree that the private sector is better placed to handle expertise issues in Infrastructure development compared to the public sector thus necessitating the need to partner. Studies done by (Araujo & Sutherland, 2010; Muyldermans, 2012; and Cima, 2008) are in agreement with the findings. Whereby they state that PPPs yield financial expertise, Superior Technology and proper management techniques that exceed the capabilities of an individual government agency or department.

5.1.3. Value for Money

The study shows that PPPs provide high quality Infrastructure at a cost effective manner, majority agree that the private sector enables the public sector to be competitive and dynamic in addressing the ever changing market dynamics. This shows that PPPs which brings together Public & Private sector do yield efficiency in the market environment. PPPs lead to efficiency in provision of infrastructure. This shows that public sector on its own it can't achieve the desired efficiency needed to have the required infrastructure on its own. Thus, the need for partnering. PPPs yield benefit in terms of cost saving while achieving the highest possible results, Majority agree that PPPs offer value-for-money which results in 'a net benefit' to the institution in terms of cost, price, quality, quantity, or a combination thereof. Majority agree that Public-private-partnerships help derive value for money so long as they are established in an environment rooted in long term cooperative relations among stakeholders. This shows the importance of partnering since it helps in realization of Value for Money. Majority agree that Public-private-partnerships reduces the time frame taken to complete a given project. Thus, it will take a shorter time to build infrastructure through a partnership that it would have taken the individual entities to build on their own. Public-private-partnerships reduces the cost of acquiring goods & services, thus PPPs will lead to better cost management compared to the public sector cost management abilities. Majority agree that PPPs will lead to better cost management with only a minority disagreeing with this fact. Competitive procurement is a very important element of the Private sector thus when

it partners with the public sector it leads to better procurement practices. The findings of this study are in harmony with studies done by (Mckee et al., 2006) who argued that a well-planned and structured PPP arrangement should efficiently & effectively achieve superior results in terms of Value for money than traditional public sector infrastructure development. Thus there are so many benefits to be gained through PPPs.

5.1.4. Risk Management

Findings show that majority of the respondents agree that the private sector manages Risk better compared to the public sector indicating that the private sector is well suited to handle issues related with risk. majority agree that appropriate risk allocation between the private and public sector's affect the success of PPPs, Risk Reduction, Risk Transfer & Risk Retention does affect the success of PPPs. This shows Risk is a very important element which must be managed. The results are consistent with previously done studies which include: (Jennings, 2000; Araujo & Sutherland, 2010; and Akintoye et al., 2011) who argued that infrastructure development involves some level of uncertainty whereby the private is better placed to handle this uncertainty as compared to the public sector thus if PPP are properly formulated they are able to Manage Risk in a better way thus ensuring the desired results are achieved.

5.2. Conclusion

The main purpose of the study was to investigate the influence of PPPs on infrastructural development in Public Universities in Kenya. It is for this purpose that the following conclusions are made. Majority of the respondents are aware of PPPs, most respondents are aware of a university that has partnered with the private sector, some Universities have ventured into PPPs and they have benefitted from the collaboration. There has been a moderate success rate in the existing PPPs with only few universities having partnered with the private sector.

Assessing whether Risk management affects Infrastructure development in public Universities, the results show that Majority of the respondents agreed that Risk management affects infrastructure development, there exists a positive relationship between risk management and Infrastructural development in Public Universities. From the study Risk is a significant influencer of infrastructure development ($\beta_4 = 0.449$ and $p = 0.001$), it's the 3rd highest influencer of Infrastructure Development.

Exploring whether Value for Money affects Infrastructural Development. Results show that majority of respondents agreed that Value for money does affect infrastructural development in public Universities. Results further show that Value for money is the highest influencer of Infrastructure development ($\beta_2 = 0.616$ and $p = 0.001$), its positively related to Infrastructure development.

In determining whether Expertise affects Infrastructure development. Results from the study show that majority of the respondent's agreed that, Expertise does affect infrastructure development in public universities. Results indicate that Expertise is ranked number four on influencing Infrastructure development in Public universities ($\beta_3 = 0.361$ and $p = 0.015$), it affects Infrastructural development positively.

In establishing whether there exists any relationship between resources and Infrastructure development. The study found out that there does exist a positive relationship between resources and expertise. Majority of the respondents agreed that resources affects infrastructure development. It ranked as the 2nd highest influencer of Infrastructural development ($\beta_1 = 0.600$ and $p = 0.000$).

The study concludes that Public Private Partnerships do influence infrastructure development in public universities in Kenya. With 73% of the changes in infrastructure development (dependent variable) explained by changes in the four variables namely Risk Management, Resources, and Value for Money and Expertise. It has been determined that, Resources, Risk Management, Value for money & Expertise are very critical for infrastructural development.

5.3. Recommendation

Adoption of a proper framework with clear rules of engagement that will guide Private - Public engagement minimizing the mistrust amongst participants for better results. Creation of an independent PPP regulator who will create and manage an online database consisting of all the projects available for private funding, proper vetting of Private entities before entering into partnerships. As well as providing tax rebates/incentives. Legislation - Parliament to pass a clear legislation that crates conducive environment for PPPs eliminating the bureaucracies and the lengthy time-consuming process, ensuring existing laws are harmonized. Capacity building through continuous training and workshops aimed at promoting PPPs by educating the top management of universities and the private sector on the importance of them as well as the benefits that will accrue to the institutions.

5.4. Suggestions for Further Research

The study adopted a descriptive research design, it is therefore suggested that another different design or approach be used to explore on the topic. The study focused on resources, expertise, value for money and risk management as the main determinants of infrastructural development other determinants can be investigated and their influence on infrastructure development established.

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