

**EFFECT OF GOVERNMENT FUNDING ON OPERATIONAL  
EFFICIENCY OF PUBLIC UNIVERSITIES IN KENYA**

**BY**

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## **DECLARATION**

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

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## **DEDICATION**

*To my beloved parents, Mr. John Wachira and Mrs. Nancy Wachira, my cherished husband: John Kinyanjui and lovely daughter Wambui for their love and support I dedicate this research report.*

## TABLE OF CONTENTS

<b>DECLARATION</b> .....	<b>ii</b>
<b>ACKNOWLEDGEMENTS</b> .....	<b>iii</b>
<b>DEDICATION</b> .....	<b>iv</b>
<b>LIST OF TABLES</b> .....	<b>viii</b>
<b>LIST OF FIGURES</b> .....	<b>ix</b>
<b>LIST OF ABBREVIATIONS</b> .....	<b>x</b>
<b>ABSTRACT</b> .....	<b>xi</b>
<b>CHAPTER ONE</b> .....	<b>1</b>
<b>INTRODUCTION</b> .....	<b>1</b>
1.1 Background of the Study.....	1
1.1.1 Government Spending .....	2
1.1.2 Operational Efficiency .....	4
1.1.3 Government Spending and Operation Efficiency .....	5
1.1.4 Public Universities in Kenya .....	7
1.2 Research Problem .....	9
1.3 Objective of the Study.....	11
1.4 Value of the Study.....	11
<b>CHAPTER TWO</b> .....	<b>12</b>
<b>LITERATURE REVIEW</b> .....	<b>12</b>
2.1 Introduction.....	12
2.2 Theoretical Framework .....	12
2.2.1 The Wagner’s Law of Increased Government Activities.....	13
2.2.2 Keynesian Theory .....	14
2.2.3 Musgrave Rostov’s Theory .....	16
2.3 Determinants of Operational Efficiency .....	17
2.3.1 Government Spending .....	18

2.3.2 Liquidity .....	19
2.3.3 Management Efficiency.....	19
2.3.4 Capital Structure .....	20
2.3.5 Firm Size.....	20
2.3.6 Age of the Firm.....	21
2.3.7 Macro-Economic Factors .....	22
2.4 Empirical Review.....	22
2.4.1 Global Studies.....	22
2.4.2 Local Studies .....	25
2.5 Conceptual Framework .....	26
2.6 Summary of the Literature Review .....	28
<b>CHAPTER THREE .....</b>	<b>29</b>
<b>RESEARCH METHODOLOGY .....</b>	<b>29</b>
3.1 Introduction.....	29
3.2 Research Design.....	29
3.3 Population and Sampling .....	30
3.4 Data Collection .....	30
3.5 Diagnostic Tests .....	30
3.6 Data Analysis .....	31
3.6.1 Analytical Model .....	31
3.6.2 Tests of Significance.....	32
<b>CHAPTER FOUR.....</b>	<b>33</b>
<b>DATA ANALYSIS, FINDINGS AND INTERPRETATION .....</b>	<b>33</b>
4.1 Introduction.....	33
4.2 Diagnostic Tests.....	33
4.3 Descriptive Analysis .....	35
4.4 Correlation Analysis .....	36

4.5 Regression Analysis .....	38
4.6 Discussion of Research Findings .....	41
<b>CHAPTER FIVE .....</b>	<b>44</b>
<b>SUMMARY, CONCLUSION AND RECOMMENDATIONS .....</b>	<b>44</b>
5.1 Introduction .....	44
5.2 Summary of Findings .....	44
5.3 Conclusion .....	45
5.4 Recommendations .....	47
5.5 Limitations of the Study .....	48
5.6 Suggestions for Further Research .....	48
<b>REFERENCES.....</b>	<b>50</b>

## LIST OF TABLES

Table 4.1: Multicollinearity Test for Tolerance and VIF .....	33
Table 4.2: Normality Test .....	34
Table 4.3: Autocorrelation Test .....	35
Table 4.4: Descriptive Statistics .....	36
Table 4.5: Correlation Analysis .....	37
Table 4.6: Model Summary .....	38
Table 4.7: Analysis of Variance.....	39
Table 4.8: Model Coefficients .....	40



## LIST OF FIGURES

Figure 2.1: Conceptual Model .....	27
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## **LIST OF ABBREVIATIONS**

<b>ANOVA</b>	Analysis of Variance
<b>CHE</b>	Commission for Higher Education
<b>CUE</b>	Commission for University Education
<b>FDI</b>	Foreign Direct Investment
<b>GDP</b>	Gross Domestic Product
<b>GNP</b>	Gross National Product
<b>ICT</b>	Information Communication Technology
<b>MOE</b>	Ministry of Education
<b>OLS</b>	Ordinary Least Square
<b>SPSS</b>	Statistical Package for Social Sciences

## ABSTRACT

The causal nexus between government spending and operational efficiency in the economy has not received much attention in literature. The few available theories conflict on the actual effect of increased government expenditure. The Keynesian view postulates that government expenditure, even of a recurrent nature, can contribute positively to production efficiency. On the other hand, others opine that as government expenditures steadily increase, the principle of diminishing returns comes into play up to some point upon which further government expenditures increase results in economic stagnation and eventual decline. The aim of this study was to ascertain the effect of government funding on operational efficiency of public universities in Kenya. The population for the study was all 7 public universities in Kenya that were in operation between January 2008 and December 2017. The independent variable for the study was government funding as measured by the natural logarithm of government spending on public universities on an annual basis. The control variables for this study were debt structure as measured by debt ratio, liquidity as measured by current ratio and university size as measured by natural logarithm of total assets. Operational efficiency was the dependent variable and was measured by the ratio of total revenue to total assets. Secondary data was collected over a ten year time frame (January 2008 to December 2017) annually. Descriptive cross-sectional research design was employed for the study and the relationship between variables established using multiple linear regression analysis. Data analysis was undertaken using the SPSS software. The results of the study produced R-square value of 0.219 which means that about 21.9 percent of the variation in efficiency of public universities in Kenya can be explained by the four selected independent variables while 78.1 percent in the variation of operational efficiency of public universities in Kenya was associated with other factors not covered in this research. The study also found that the independent variables had a weak correlation with operational efficiency of public universities in Kenya ( $R=0.468$ ). ANOVA results show that the F statistic was significant at 5% level with a  $p=0.003$ . Therefore the model was fit to explain the association between the selected variables. The findings also showed that university size produced negative and statistically significant values for this study. Government funding, liquidity and debt structure produced statistically insignificant values for this study. This study recommends that university management should ensure efficient utilization of their assets to improve operational efficiency as this study has found that large firms are less operational efficient due to underutilization of assets.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

Investing in education is recognized as a key component for a country's development. Improved quality of education is associated with many benefits such as increased productivity, reduced income inequality and reduced poverty and improved economic growth and health (Onsando, 2007). Education and training equips people with knowledge, skills and attitudes that are vital for accelerating economic growth. Education and training imparts citizens develop skills and mind-sets conducive to the creation of a cohesive knowledge-based economy. Education makes citizens active voters and more involved which has positive effects on other citizens as it improves the quality of the democratic process. It is also important for political growth as it increases their tolerance levels and upholds democratic values. It is for these reasons that government in developing countries pays some part of the cost of utilizing education services (World Bank, 2013).

This study was based on three theories namely; the Wagner's law of increased government activities, Keynesian theory and Musgrave Rostov's theory. The Wagner hypothesis seeks to come up with either a direct association with regard to government spending and performance in the economy but it also determines whether there exists an indirect cause- effect relationship occasioned through spending by the government to the growth of the economy. The Musgrave theory opines that that expenditure by the government, particularly on human capital and physical infrastructure, can promote growth even though the foundation of financing of such expenditures can translate to derailed growth of the economy. Musgrave and Musgrave (1989) opine that the growth

retardation is experienced because of disincentive effects associated with taxation. Keynes (1930) regards public expenditures as an exogenous factor which can be utilized as a policy instruments promote economic growth. Keynesian strongly points out public expenditure can contribute immensely and with good effects to economic growth.

Despite the role of public universities in teaching, training of skilled manpower and undertaking research for economic development, they help many countries in Africa in the fight against financing crises. These institutions have in the past few years experienced financial crises due to reduced financial allocations from their governments which do meet their estimated expenditure. The prevalence of unfavorable economic conditions across most developing nations had made the provision of public services such as education by government difficult. Therefore, this underfunding of public education is expected to persist since the government is experiencing a serious shortage of funds. Inadequate government funding has forced most public universities in Kenya to diversify their revenue sources by undertaking various revenue diversification initiatives to augment government funds. The importance of these initiatives in boosting public universities' performance in Kenya however remains undocumented. Therefore, these self-financing initiatives' potential in improving the performance of public universities remains a speculation.

### **1.1.1 Government Spending**

Government spending can be described as any expenditure advanced by local, regional, and national governments contributing to a significant proportion of Gross National Product (GNP). The spending emerge as future investments, transfer payments and acquisitions. Future investments look into the long term survival of the country and

hence funds are directed toward infrastructure development example roads, airports and railways (Landau, 1985). Other examples of future investments include technological and medical research or government-subsidized housing construction. Acquisitions mean expenditures on goods and services for individual or public consumption. It is commonly referred to as general government spending or final consumption expenditure. It may also include importation of goods, government salaries, education expenditure, military acquisitions, administrative costs and funding for defense (Mitchel, 2005). Government spending may be current in nature. Current spending on state provided goods & services that are provided on weekly, monthly and annual basis such as resources and salaries for state defense and education. The other aspect of government spending is capital spending which entails infrastructural spending such as new roads and motorways, hospitals, prisons and schools.

The smooth running of every economy requires adequate government expenditure. Government expenditure is vital since the provision of some goods cannot be left to the forces of free market economy as this will either lead to lack or under- provision of public services. It is expenditure on merit goods such as education, health, defense and police, among others that accounts for a significant proportion of government expenditure (M' Amanja & Morrisey, 2005). Other government spending seeks to provide safety net the disadvantaged in society and assuring them survive in case they have insufficient income or become jobless. Other forms of government expenditure touch on other areas that are vital for economic development such as provision of transport and infrastructure, servicing pending debts and supporting the work of local government. Other purposes of government include the reduction of the negative impacts of externalities, such as subsidize industries, pollution controls that require financial support that cannot be offered by the private sector, to help attain higher

economic activity and aggregate demand and inject more funds into the macro-economy (Rebelo, 2011).

There are three distinct ways in which government spending can be measured. First is government consumption expenditures and gross investment. This entails measuring government expenditure on goods and services that are incorporated in the GDP (Brunner, 1992). Second is government current expenditure which is the total spending of a government and is usually higher than the amount indicated in the GDP. Current expenditures measures amounts spent by the government on current-period activities (Gorodnichenko, 2010). The final measurement of government spending is total government expenditures. Other than the transactions included in current expenditures, this includes gross investment and other capital expenditures that affect future activities, such as net purchases of non-produced assets and capital transfer payments. Total expenditures however exclude consumption of fixed capital (Rebelo, 2011).

### **1.1.2 Operational Efficiency**

This is the firm's ability to minimize waste and maximize resource capabilities so as to deliver quality products and services to the clients (Kalluru & Bhat, 2009). It involves the identification of wasteful resources and processes that affects productivity and growth of organizations profits. The main concern of operational efficiency is redesigning new work processes that improve productivity and quality (Darrab & Khan, 2010). Charnes, Rhodes and Coopers (1978) define operational efficiency as the ratio of weighted outputs to the weighted inputs.

The real measurement of operations efficiency is ratio of the actual productivity to the maximum productivity that can be attained. The highest possible attainable productivity is described as the desired productivity. According to Hackman (2008), the process of

analyzing productivity and efficiency is linked with economies of production which answers basic question such as what is the firm's efficiency in the utilization of resources during the production process and its efficiency during scaling operations.

There are several ratios of measuring operational efficiency. To begin with, we can use the total asset turnover ratio which measures the ability of the company to produce sales considering its investment in total assets. The formula for the ratio is dividing net sales by average total assets. Secondly we can use the fixed-asset turnover ratio which is analogous to total asset turnover ratio except that the only factor taken into account is the fixed assets turnover. Fixed-asset turnover is derived by dividing net sales by average net fixed assets. Another ratio for measuring operational efficiency is revenue turnover. This ratio measures the ability of a company to spend given its investment in generating revenue. It is derived as the ratio of total expenditure to average total revenue. These ratios shows whether the firm is managing operational cost efficiently which will ultimately have an influence upon its performance (Rao & Lakew, 2012). The current study will use revenue turnover as a measure of operational efficiency.

### **1.1.3 Government Spending and Operation Efficiency**

Keynesian analysis endorses government involvement in the economy based on the idea of market failures. A common argument by Keynesian economics is that decisions by the private sector often lead to unproductive macroeconomic outcomes and hence, they advocates dynamic policy responses by the government, especially the monetary policy and fiscal policy in order to stabilize output in an economy (Kimani, 2005). The central role of university education on growth revival has necessitated governments' attempts to influence the level of investment in developing countries (Narayan, 2004). Where university education is low, the government has to undertake serious monetary



and fiscal policies to gear it up. Monadjemi (1995) argues that government expenditure has direct effects on various private sectors' production, for instance, education and infrastructural development. Moreover, government expenditure at times indirectly influences the effectiveness in allocation of inputs and productive activities. Thus, government expenditure corrects market failures, enhances property rights and contracts enforcement. More importantly, it ensures essential public goods are provided.

Serven (1998) indicates that the government spending heterogeneity should be considered when analyzing the effect of government spending on an economy. The author distinguished between infrastructure investment by the government and non-infrastructure capital spending. The author revealed that an elevation of public infrastructure increase long-run private capital stock through reduction of the cost of capital in the private sector. Conversely, a rise in non-infrastructure capital spending can lower or increase private investment. This depends on the similarity between the substitutes and the final goods produced by the private and public sectors. In case the extent of substitutability is higher, growth in public non-infrastructure expenditure might lead to crowding-out of private investment. Fundamentally, Serven significantly focused on the contest between government investment and private investment, especially in factor and output markets.

Baldaci et al., (2008) used a non-linear model to estimate the effect of government spending on health care and education outcome. They used panel data from 118 developing countries for the period between 1971 and 2000. To find the effect of government spending in education and health, fixed effects model was used to control for governance. The findings revealed that public expenditure on education has a direct

positive impact on educational outcomes. However, poor governance impedes these positive impacts thus limiting spending on education. They concluded that, spending more in education alone is not adequate but must be combined with good policy interventions for instance improvement of governance structures.

#### **1.1.4 Public Universities in Kenya**

In Kenya, higher learning institutions are created through Acts of Parliament such as universities Act of year 2016 which provides for establishment, accreditation, and improvement of university education and production of governance policies for these institutions (Onsongo, 2007). There are 31 public universities in Kenya whose existence has either directly or indirectly affected the research outputs and quality of workforce hence development of new ideas, knowledge and utilization for socio-economic benefit of the societies this playing a vital role in the creation of employment opportunities and growth of economies (Omollo, 2016). The core functions of public institutions include operating as exploration hubs, training and offering knowledge within a configuration combining research and teaching, responsibility of conducting research in a variety of disciplines and nurturing the social and intellectual progress of the society (Martin & Tairo 2006).

In the quest to improve efficiency in the running of public universities and to enhance the relevance and impact of University education to national development goals, the Commission for University Education (CUE) (formerly CHE in 1985 by an act of parliament) was established under University Act CAP 210B as a body corporate to make better provision for the advancement and quality assurance of university education in Kenya for connected purposes (CUE, 2017). CUE is mandated to accredit, regulate, inspect, promote, set standards and assure quality and relevance of university

programs (University Act, 2012). However, even with the presence of CUE, University funding has been on the decline and this has coincided with inefficiencies in the public universities to a point the universities are unable to raise staff salaries and to settle debts.

Literature of funding University education in Kenya shows that there is inadequate funding of public universities (Republic of Kenya, 2016). This could influence the input-output relationships and reduce University output in terms of research, teaching and provision of fundamental services to the society. The Government of Kenya in its capacity has ensured that the quality of education in public Universities in Kenya is fully achieved (Republic of Kenya, 2016). To effect, the government has hired and paid salaries for qualified lecturers to teach in the public universities, provision of resources/materials as well building of infrastructures in public universities with goal of achieving quality education in these institutions.

Despite these efforts by the Kenyan government, there has been inadequate teaching staff, little research funds availed, inadequate teaching-learning materials, lack of enough libraries and working spaces as well as inadequate ICT infrastructure. This has been caused by the fact that there has been limited financial resource. Public Universities are reportedly conducting several revenue diversification initiatives to backup government funds. It is therefore arguable that government funding even in the University of Nairobi is still not enough and this leads to inadequate staff, teaching/learning resources, infrastructure (lecture rooms, tutorial and office space), hence lack of financial resources remains a key challenge to effective delivery of its programs.

## **1.2 Research Problem**

The causal nexus between government spending and operational efficiency in the economy has not received much attention in literature. The few available theories conflict on the actual effect of increased government expenditure. The Keynesian view postulates that government overcome economic challenges by borrowing money from the private sector and initiating various programs to transfer the money back to the private sector (Keynes, 1953). High levels of government consumption are likely to escalate employment, profitability and investment through multiplier effects on aggregate demand. Government expenditure therefore, even of a recurrent nature, can contribute positively to production efficiency. Conversely, endogenous growth models for instance Barro (1990), argue that productive government expenditures have a positive influence on long term productive efficiency. On the other hand, Gallaway and Veder (1998) opine that as government expenditures steadily increase, the principle of diminishing returns comes into play up to some point upon which further government expenditures increase results in economic stagnation and eventual decline.

The Government through the ministry of education (MOE) has, over time, shown alot of commitment in developing education and training continuous allocation of resources to the education sector. However, despite the sustained resource allocations and notable success factors, major challenges are still being experienced in the sector. Over the years, public universities continue to receive inadequate financial allocations from the government than their estimated expenditure. Given the prevailing unbearable economic conditions in Kenya such as increased public debt and high recurrent expenditure, the government lacks the capacity to finance the public services' provision such as education. This implies that trend the challenge of underfunding public institutions is likely to persist into the near future. Inadequate funding has compelled

public universities to diversify into other income generating activities such as offering consultation and even farming. The current study investigates the effect of government spending on operational efficiency of public universities in Kenya.

Empirical evidence on the international scene have not focused much on government spending on operational efficiency but rather on related variables. Roberts (2003) in an attempt to find out the determinants of educational outcomes carried out a global survey and found out that, developing countries not only need to commit more resources to primary education but also to focus on how to improve educational quality. Erhijakpor and Anyanwu (2007) explored the effect of education expenditure on school enrolment in Africa using panel data of African nations from 1990-2002. The findings showed that government expenditure on education positively and directly influences the enrolment rates of primary and secondary education. Iyer (2009) investigated public spending effectiveness on primary education in India. Results showed that private primary schools had better outcomes and per capita income is associated with education outcomes, but teacher- student ratio had no effect on education outcomes due to teachers' absenteeism and lack of teachers' motivation.

Locally, Otieno and Colclough (2010) examined how internal financing and international aid affects education outcomes like enrolment, gender parity, primary completion rates, repetition rates, dropout's rates and transition to secondary school in Kenya using descriptive statistics. The study showed a positive relationship between internal spending of both parents and government financing and education outcomes. Maathai (2011) carried out an econometric analysis of the effect of public educational spending and macroeconomic uncertainties on education outcome. The results showed that public educational spending has a positive impact on schooling outcome while

macroeconomic instability impacts education outcomes negatively. Mbaya (2016) conducted a study on the effect of public expenditures on education outcomes in Kenya from 1980 to 2013. The research finding revealed that public education expenditure has positive and significant relationship with both primary completion rate and secondary transition rate. None of these available studies have focused on the effect of government spending on operational efficiency of public universities and this is the gap the current study leveraged on. The study sought to answer the research question: What is the effect of government spending on operational efficiency of public universities in Kenya?

### **1.3 Objective of the Study**

The objective of this study was to determine the effect of government spending on operational efficiency of public universities in Kenya.

### **1.4 Value of the Study**

The study's findings will be used for future reference by researchers, students and scholars who seek to undertake correlated or similar studies. The study will also benefit researchers and scholars in the identification of other fields of research by citing related topics that require further studies and empirical studies to determine study gaps.

The results of this study will help education policy makers such as Commission for University Education (CUE) and other policy makers from different ministries such as the Ministry of Education, Finance among others and other government agencies and stakeholders interested in developing the education sector. The findings of this study will inform them on the necessary policy actions to take.

The findings of this study will also be useful to public universities' management as they will understand some of the factors that influence their operational efficiency. An understanding of the determinants of their institutions operational efficiency will enable

them to undertake the necessary steps to improve their operational efficiency. Management of private universities and other public institutions will also benefit from this study.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The chapter reviews theories that form the foundation of this study. In addition, previous empirical studies that have been carried before on this research topic and related areas are also discussed. The other sections of this chapter include determinants of operational efficiency, conceptual framework showing the relationship between study variables and a literature review summary.

#### **2.2 Theoretical Framework**

This presents review of the relevant theories that explains the concept of government spending. The theoretical reviews covered are; the Wagner's law of increased government activities, Keynesian theory and Musgrave Rostov's theory.

### **2.2.1 The Wagner's Law of Increased Government Activities**

Wagner's law of increased government spending is a law, which derives its name from the founder who was called Adolph Wagner and lived from 1835 to 1917. Wagner advanced his law of rising public expenditures analyzing trends in the growth of public expenditure and in the size of public sector. Wagner's law postulates that the extension of the functions of the states precipitates an up surge in public expenditure on administration and regulation of the economy. Wagner (1883) observes that the development of modern industrial society would give rise to increasing political pressure for social progress and call for increased allowance for social consideration in the conduct of industry. In relation to Wagner's law, the increase in public expenditure, which is not in parallel to the income of a country leads to an increase in the public sector.

The focus of Wagner (1883)'s law on the connection between the economy size and that of public-sector bearing in mind that goods and services are the major determiners of the public-sector expansion rate to the former in the process of urbanization and industrialization. This indicates the rising of the activities of the government, which supplement for activities, which are private. To this end, Wagner (1883) proposes that progress and success of the public sector can be achieved by coming up with rules and regulations that are more clear and growth enhancing. The management of natural monopolies is also so vital and income elasticity is equally essential as this will lead to good investment, infrastructure, welfare initiatives and also socio cultural programs.

In light of the above, the tenets of Wagner's law are that as progressive nations industrialize, the share of the public sector in the national economy grows continually. This necessitates an increase in state expenditure because of the demand for social



activities of the state, administrative and protective actions, and welfare functions. From socio-political viewpoint as postulated by Wagner (1883) the state social functions expand over time: retirement insurance, natural disaster aid (either internal or external), and environmental protection programs, among others. Economically it is marked by advancement in science and technology and consequently the increase of state assignments into science, technology and various investment projects. To conclude, the Wagner's theory, the state resorts to government's loans for covering unforeseen events and consequently sum of government debt and rise of interest rates in the form of rise in debt service expenditure. Another implication of this is that the increased division of labour would be accompanied by the development of new technological processes that would lead to the growth of monopolies in the private sector.

In Wagner's view, private sector monopolies would not adequately take into account the social needs of society as a whole and would therefore need to be replaced by public corporations. Further, if private sector companies became too large, the economy would become unstable because problems for individual companies would become problems for society as a whole. Accordingly, Wagner (1883) infers that government would need to expand to provide social benefits and services which Wagner saw as not open to economic evaluation.

### **2.2.2 Keynesian Theory**

The renowned economists who deliberated the relationship between the growth of the economy and public expenditures, Keynes (1930) regards public expenditures as an exogenous factor which can be utilized as a policy instruments promote economic growth Keynesian strongly points out public expenditure can contribute immensely and

with good effects to economic growth. He therefore believed that as the government spends more an equal effect will be reciprocated in full employment, profitability and massive gains will be notable in the investment made by the citizens which will be as a result of multiplier effects on aggregate demand. Due to the increase in aggregate demand the supply will be triggered to increase and hence causing an increase in output.

According to Keynes (1930), the economy is subject to fluctuations, and supply and demand could well balance out at an equilibrium that did not deliver full employment. The solution to this conundrum was seemingly simple: Replace the missing private investment with public investment, financed by deliberate deficits. Generally the government borrows so as to be able to undertake its crucial work which are majorly seen to be provide by the government due to the high investment needed to be able to offer the goods and services which on normal circumstances would cripple the private sector if let to provide the goods and services. The borrowing of funds creates a pool of public debt toward the country because the normal budget is not sufficient to cater for all the public needs that ought to be meet by the government. The government in return will offer or create new jobs in the public sector to be able to serve its citizens well, and the result of people having money for disposal created an aggregate demand occasioned by the multiplier effect. Therefore as more money is received from the government through public works new opportunities is created.

Knack and Keefer (1995) infers that Keynes's analysis laid the basis for the field of macroeconomics, which treats the economy as a whole and focuses on government's use of fiscal policy spending, deficits, and tax. These tools could be used to manage aggregate demand and thus ensure full employment. Therefore, the government generally reduces the level of expenditure in the periods when the economy is either

expanding or recovery. According to the theory of Keynes, it is the responsibility of the government to ensure that the economy is going in the right direction as it is the duty of the government to put in place measures, which will intervene when there is market failure. Moreover, the Keynesian theory postulates that governments play an essential role in terms of market intervention when there are imperfect markets. In many economies in both emerging and industrialized nations, Keynesian theory provided intellectual basis for a welfare oriented method of self-determination. Knack and Keefer (1995) infers that the widespread absorption of the Keynesian message has in large measure been responsible for the generally high levels of employment achieved by most developed countries and for a significant reorientation in attitudes toward the role of the state in economic life.

### **2.2.3 Musgrave Rostov's Theory**

Musgrave propounded this theory as he observed changes in the income elasticity of demand for public services in three ranges of per capita income. Musgrave (1969) observes that “at the high levels of per capita income, typical of developed economics, the rate of public sector growth tends to fall as the more basic wants are being satisfied”. Musgrave (1969) posits that “at low levels of per capita income, demand for public services tends to be very low, this is so because according to him such income is devoted to satisfying primary needs and that when per capita income starts to rise above these levels of low income, the demand for services supplied by the public sector such as health, education and transport starts to rise, thereby forcing government to increase expenditure on them”.

Musgrave (1969) contends that “there exist a functional association between the economic growth and the growth of the government activities; so that the government

sector grows faster than the economy. Thus, all kinds of government, irrespective of their level of intentions (Peaceful or war), and size, indicate the same tendency of increasing public expenditure”. When the economy progresses, there is a rise of urban centres, with the allied social vices such as crime that need government intervention as a means of reducing the said occurrences. Large urban centres need security as a means to upholding order and law. For the government to undertake these functions there are costs incurred by the government, which translates to added public expenditure. Musgrave and Musgrave (1989) opined that “as progressive nations industrialize, the share of the public sector in national economy grows continually”.

Accordingly, the theory postulates that when government-spending increases, there is more development and it increases when governments upsurge recurrent expenditure. However, it is of equal importance to note that increase in recurrent expenditure does not automatically translate to enormous economic growth. Therefore, the causal effect of growth of the economy on capital expenditure by the government is more substantial when juxtaposed with recurrent expenditure by the government.

### **2.3 Determinants of Operational Efficiency**

The operational efficiency of firms can be influenced by elements either external or internal to the organizations that define the level of output. The internal factors are different for each organization and determine its operational efficiency. These factors result from managerial decisions together with the Board. The internal factors include firm size, liquidity, management efficiency, capital, market power among others. External factors are not within the control of management. They are factors that the firm does not have control over them but rather they need to develop strategies to deal with them. The presence of many government agencies intensifies the competition for

funding and thus forces public universities to cut cost in order to improve efficiency (Athanasoglou, Brissimis & Delis, 2005).

### **2.3.1 Government Spending**

The Keynesian view opines that the government could overcome its economic downfalls by advancing funds from the private sector and initiating various programs that could be used to channel the money back to the private sector (Keynes, 1953). High government consumption levels often escalate employment, investment and profitability through variations in aggregate demand since it exhibits a multiplier effect. Therefore, government expenditure including that of recurrent nature positively contributes to production efficiency. Conversely, Barro (1990) proposed an endogenous growth model which postulates that positive long-term production efficiency can only be attained by employing productive government expenditures. According to Solow's (1956) neoclassical growth model, productive government expenditure influence the capacity to invest in physical or human capital, but only affect equilibrium factor ratios in the long run and not efficiency. However, the overall effects will be transitional development.

According to Vedder and Gallaway (1998), as government expenditures grow simultaneously, diminishing returns begin to emerge upon which an increase exceeding some level becomes detrimental and result in economic stagnation and eventual decline. Rostow – A study by Musgrave model (1999) on growth of public expenditure concluded that at the initial stages of economic development, high rates of government expenditure will be encountered since the offers basic infrastructural facilities at these stage and undertake projects that are capital intensive thus government spending will steadily increase. Investment in health, education, electricity, roads, water supply are

necessities that could escalate the economy from the practitioner stage to take a level of economic development forcing the government to spend more time so as to develop a prosperous society.

### **2.3.2 Liquidity**

Liquidity is defined as the degree in which an entity is able to honor debt obligations falling due in the next twelve months through cash or cash equivalents for example assets that are short term can be quickly converted into cash. Liquidity results from the managers' ability to fulfill their commitments that fall due to creditors without having to liquidate financial assets (Adam & Buckle, 2003).

According to Liargovas and Skandalis (2008), liquid assets can be used by firms for purposes of financing their activities and investments in instances where the external finance is not forthcoming. Firms with higher liquidity are able to deal with unexpected or unforeseen contingencies as well as cope with its obligations that fall. Almajali et al., (2012) noted that firm's liquidity may have high impact on efficiency of firms; therefore firms should aim at increasing their current assets while decreasing their current liabilities as per his recommendation. However, Jovanovic (1982) noted that an abundance of liquidity may at times result to more harm.

### **2.3.3 Management Efficiency**

Management efficiency is a key internal factor that qualitatively measures and determines the operational efficiency of a firm. The ability of the management to efficiently utilize the resources of the firm, their ability to maximize funding and their ability to efficiently allocate those funds are some of the ways of assessing the management efficiency.

Management efficiency is a qualitative measure and determinant of operational efficiency and it can be assessed by looking at the quality of the staff, the effectiveness and efficiency of the internal controls, the discipline within the organization and the effectiveness of the management systems (Athanasoglou, Sophocles & Matthaios, 2009). The quality of the management has an influence on the level of operating expenses which affects the bottom line of a firm hence management efficiency significantly affects the operational efficiency of firms (Kusa & Ongore, 2013).

#### **2.3.4 Capital Structure**

The international prudential regulation defines capital ratio as a vital tool for the assessment of capital adequacy and must examine the firms' safety and soundness. This compels the high capitalized firms to reduce their funding costs which have a positive implication on their safety. Alternatively, highly capitalized firms are less concerned with the external funds, which positively affect its efficiency. According to the conventional risk return hypothesis, firms operating under low capital ratios have higher efficiency compared to those operating under large sums of capital. According to Bourke (1989), a positive and significant association exists between capital structure and efficiency.

#### **2.3.5 Firm Size**

The firm policy is mainly seeks to ascertain the firm size that maximizes the firm's efficiency. The impact of increasing the size of the firm on efficiency has been observed to bring a positive impact. This effect of could however be negative for large firms as a result of bureaucracy among other reasons. Hence, the size efficiency association could be non-linear. We use the firms' assets (logarithm) and their square in order to capture this possible non-linear correlation (Yuqi, 2007).

Burca and Batrinca (2014) asserts that the relationship existing between size and financial performance is positive in the sense that more resources are available in larger firms, better risk diversification strategies, complex information systems and are able to manage expenses well compared to small firms. This may have an impact on the financial performance of insurance companies in different ways for example large firms may be advantaged compared to smaller firms as they can be able to exploit economies of scale and scope; as such they are more efficient in their operations and as a result reap higher level of profits.

### **2.3.6 Age of the Firm**

According to Sorensen and Stuart (2000), company's age may have an effect on firms' efficiency. They further noted that older firms may have organizational inertia which tends to make them inflexible which may result to their inability to appreciate the changes that occur in changing environment. However, Liargovas and Skandalis (2008), noted that older firms may have more skills because they have been in operation longer thus have more experience having enjoyed the benefits that come from learning and aren't easily prone to the liabilities that result from newness, therefore they tend to have performance that is superior as compared to newer firms.

According to Loderer, Neusser, and Waelchli (2009), the relationship that exists between the age of a company and efficiency is positive. However, it has also been observed that a firm's efficiency may at times decline as companies grow older due to the fact that old age may lead to knowledge, abilities and skills being obsolete thereby resulting to decay in organizations. Agarwal and Gort (2002) this may explain why some older companies are usually taken over.



### **2.3.7 Macro-Economic Factors**

Several of studies have been conducted to ascertain the effect of macroeconomic factors on efficiency of companies. The factors are monetary aggregates, rate of interest, investment level in the economy, consumer price index, producer price index, GDP growth, inflation, financial depth and the degree of market efficiency. Kwon and Song (2011) carried out a research on mergers in the Korean market. He found out that the global financial crisis has a significant negative impact on the cumulative abnormal returns of the acquiring company when a merger announcement is made. He also stated that it may be possible that investors are more averse to large cash outflows during a period of crisis. Flannery and Protopapadakis (2002) pointed out that inflation and money supply are well documented as the two macro-economic factors that have a significant effect on firm efficiency.

## **2.4 Empirical Review**

This section discusses both global and local studies conducted in the area of government expenditure and operational efficiency of firms. There are no exact studies on the study variables but related studies have been discussed.

### **2.4.1 Global Studies**

Roberts (2003) in an attempt to find out the determinants of educational outcomes carried out a global survey and found out that, developing countries should not only channel more resources to primary education but also to focus on how to improve educational quality. The study found out that even though developing nations have had more expenditure (compared with GDP) since 1970 on education, there is no strong relationship between expenditure levels and primary school completion and enrolment rates. Thus, increasing public investment is not sufficient to improving the quality and

quantity of primary education, implying that other factors are involved which were not captured in the study.

Erhijakpor and Anyanwu (2007) explored the effect of education expenditure on school enrolment in Africa using panel data of countries in African from 1990-2002. They used education expenditures, ethno fractionalization, democracy, urban population and GDP per capita in dollars as variables. The results showed that government spending on education has positive and direct effects on the enrolment rates of both primary and secondary education. They also revealed that other policy initiatives, such as sustaining democracy and national income acceleration improves school enrolment.

Baldaci et al., (2008) used a non-linear model to estimate the effect of government spending on health care and education outcome. They used panel data from 118 developing countries for the period between 1971-2000. To find the effect of government spending in education and health, fixed effects model was used to control for governance. They found that higher educational outcomes are attained when public expenditure is increased. They concluded that, higher spending in education without other policy interventions such as improvement of necessary governance cannot lead to economic prosperity.

Rajkumar and Swaroop (2008) used a sample of 101 observations from annual data for 1990, 1997 and 2003 from 57 countries to determine if public spending on education is effective in improving the benefits of education in well governed countries. The effect of governance on academic outcomes was measured using the governance indices, measured index of corruption as an independent variable together with other variables such as per capita GDP, public primary education share spending and vector of non-education related country specific factors. 2SLS and OLS were used to explore the

effect of spending on outcomes including controlling for the level of corruption, the primary school completion rate, and the government's bureaucratic behaviors. The results indicated that the primary education spending coefficient is only significant when there is a good interaction between spending and good governance. This implies that as the corruption level falls, funding of primary education will be enhanced resulting to a higher primary education completion rate.

Amin and Ntilivamunda (2009) carried out a study to determine the effect of education spending and education outcome in Senegal using time series data and OLS. They used per capita income, GDP growth rate, ratio of education expenditure over GDP, pupil teacher ratio, literacy rate (adults), current education expenditure divided by total number of primary pupil to give unit cost in education, and education expenditure divided by total public budget as variables for their study with the dependent variables being GER and completion rates. Their study revealed that per capita GDP, adult literacy rate, the growth rate of GDP, educational expenditure as a ratio of total public budget and education expenditure as a ratio of GDP all exhibit a positive effect on gross enrolment rate, while a rise in the unit cost per pupil tends to reduce primary school gross enrolment.

Iyer (2009) investigated the public spending effectiveness on primary education in India. The following factors were controlled: primary education spending, student - teacher ratio, per capita income and government to private primary schools ratio. The independent variables were enrolment rate, primary school transition rate and performance of student exams. Results showed that private primary schools had better outcomes and per capita income is associated with education outcomes, but teacher-

student ratio had no effect on education outcomes due to teachers' absenteeism and lack of teachers' motivation.

#### **2.4.2 Local Studies**

Mariara (2006) investigated the determinants of demand for schooling in Kenya. The study used household survey and the method of analysis was ordered probit. Impact of household characteristics, household welfare indicators and community variables on a school child were the variables. It was found that household characteristics, quality and cost of schooling are important determinants of demand of schooling in Kenya. The results further showed that regional and gender differences also affect demand of schooling.

Otieno and Colclough (2010) carried a study on financing education in Kenya by looking at how different sources of education financing affects education outcomes like enrolment, gender parity, completion rates, repetition rates, dropout's rates and transition to secondary school in Kenya. This was not an econometric paper though it analysed educational expenditures in the country for past two decades and making a comparison between them and how often changes were introduced to the education system. The results showed a direct association between public financing and positive outcomes in the sector which are not directly associated with external aid.

Maathai (2011) carried out an econometric analysis of the impact macroeconomic uncertainty and public educational spending on schooling outcome proxied by illiteracy levels in Kenya. The study used co- integration and vector error correction model in its analysis. Inflation, GDP per capita, urbanisation and public education expenditures were the explanatory variables and education attainment was measured by adult literacy as the dependent variable. The results showed that public educational spending has a

positive impact on schooling outcome while macroeconomic instability impacts education outcomes negatively. Therefore, stable macroeconomic conditions and adequate public investment must prevail for higher schooling outcomes to be attained.

Mbote (2012) investigated the effect of public expenditure and management on education outcomes in primary schools in Kenya. The study used Cross-sectional data from 175 public primary schools and OLS estimation method was used. The results were that there is no significant relationship between public spending and education outcomes. It was also found that repetition rates are strongly accelerated by poverty indicators at the district level while dropouts are strongly steered by school inefficiency.

Mbaya (2016) explored the effect of public expenditures on education outcomes in Kenya from 1980 to 2013. To achieve the objective, time series data from economic surveys and World Bank indicators was used. Stationarity test was carried on all the variables. Longitudinal research design was adopted and Ordinary Least Squares multiple regression technique was applied. The findings of the study were that public expenditure in education affects education outcome positively. The research finding revealed that public education expenditure has positive and significant relationship with both primary completion rate and secondary transition rate though with the primary completion rate it was in the long run but with the secondary transition rate it was in short run.

## **2.5 Conceptual Framework**

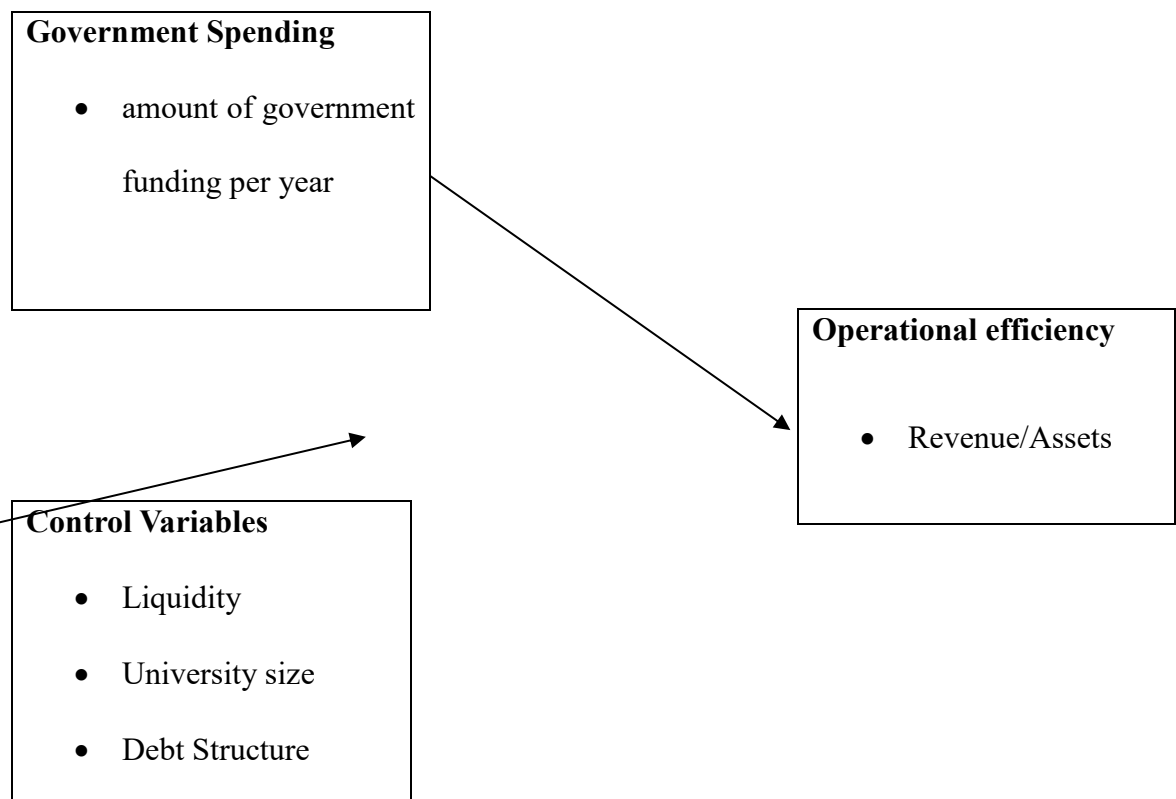
The conceptual framework is a diagrammatic representation of how the factors identified are related to each other. The elements given consideration here are operational efficiency and government spending. The independent variable is government spending as measured by the annual amount of government funding

received by a public university. The control variables are liquidity as measured by the current ratio, firm size as measured by natural logarithm of total assets and debt structure as measured by debt ratio. Operational efficiency is the explained variable and it will be measured by the ratio of total revenue to total assets.

**Figure 2.1: Conceptual Model**

**Independent variable**

**Dependent variable**



**Source: Researcher (2018)**

## **2.6 Summary of the Literature Review**

This section examined the different theories proposed for government spending such as the Wagner's law of increased government activities, Keynesian theory and Musgrave Rostov's theory. This also discusses the different determinants of operational efficiency. The chapter also presents the empirical studies undertaken by other researchers in the field of government spending and operational efficiency both at the global and local scene.

Although there are several studies on the correlation between government expenditure and performance of various sectors in the society including education, none has been done on the context of university education. In addition, none of the available local or international studies have related government spending with operational efficiency of public institutions and this is the gap that the current study leveraged on. The aim of this study was to determine the effect of government spending on operational performance of public universities in Kenya.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

In order to determine the effect of government spending on operational efficiency of public universities in Kenya, a research methodology is necessary to outline how the research was carried out. This chapter has four sections namely; research design, data collection, diagnostic tests and data analysis.

#### **3.2 Research Design**

A descriptive research design was employed in this study to investigate the relationship between government spending and operational efficiency of public universities in Kenya. Descriptive design was utilized as the researcher is interested in finding out the state of affairs as they exist (Khan, 2008). This research design was appropriate for the study as the researcher is familiar with the phenomenon under investigation but want to know more in terms of the nature of relationships between the study variables. In addition, a descriptive research aims at providing a valid and accurate representation of the study variables and this helps in responding to the research question (Cooper & Schindler, 2008).



### **3.3 Population and Sampling**

According to Burns and Burns (2008), population refers to the characters of interest upon which the study seeks to draw deductions. The study population of interest comprised of all 31 public universities in Kenya. The sample for the study was the seven public universities that were in operation between 1<sup>st</sup> of January 2008 and 31<sup>st</sup> December 2017.

### **3.4 Data Collection**

Data was exclusively collected from a secondary source. Annual data for ten years (January 2008 to December 2017) was collected and analyzed. Audited financial statements for the public universities selected for the study were used, thus increasing the reliability and validity of the findings and conclusion. The specific data collected include annual government funding received, value of equity, total fixed assets, total assets, revenue, operating expenses and total debts.

### **3.5 Diagnostic Tests**

Linearity show that two variables X and Y are related by a mathematical equation  $Y=c+bX$  where c is a constant number. The linearity test was obtained through the scatterplot testing or F-statistic in ANOVA. Stationarity test is a process where the statistical properties such as mean, variance and autocorrelation structure do not change with time. Stationarity was obtained from the run sequence plot. Normality is a test for the assumption that the residual of the response variable are normally distributed around the mean. This was determined by Shapiro-walk test or Kolmogorov-Smirnov test. Autocorrelation is the measurement of the similarity between a certain time series and a lagged value of the same time series over successive time intervals. It was tested using Durbin-Watson statistic (Khan, 2008).

Multicollinearity is said to occur when there is a nearly exact or exact linear relation among two or more of the independent variables. This was tested by the determinant of the correlation matrices, which varies from zero to one. Orthogonal independent variable is an indication that the determinant is one while it is zero if there is a complete linear dependence between them and as it approaches to zero then the multicollinearity becomes more intense. Variance Inflation Factors (VIF) and tolerance levels were also carried out to show the degree of multicollinearity (Burns & Burns, 2008).

### **3.6 Data Analysis**

The data collected from the different sources were organized in a manner that can help address the research objective. Statistical Package for Social Sciences (SPSS) version 22 was utilized for data analysis purposes. Both descriptive and inferential statistics were carried out. In descriptive statistics, the minimum, maximum, mean, standard deviation, skewness and kurtosis were computed for each variable. In inferential statistics, both regression and correlation analysis were carried out. Correlation analysis involved determining the extent of relationship between the study variables while regression analysis involved establishing the cause and effect between the independent and dependent variables.

#### **3.6.1 Analytical Model**

Using the collected data, the researcher conducted a regression analysis to establish the extent of the association between government spending and operational efficiency of public universities in Kenya. The study applied the following regression model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon.$$

Where: Y = Operational efficiency of public revenues as measured by the ratio of total revenue to total assets on an annual basis

$\beta_0$  =y intercept of the regression equation.

$\beta_1, \beta_2, \beta_3$  and  $\beta_4$ , =are the slope of the regression

$X_1$  = Government spending as measured by the annual percentage change in the amount of government funds allocated to a given university.

$X_2$  = University size as measured by natural logarithm of total assets on an annual basis

$X_3$  = Liquidity, as given by current assets divided by current liabilities on an annual basis

$X_4$  = Debt Structure as given by total debts divided by book value of total assets on an annual basis

$\varepsilon$  =error term

### **3.6.2 Tests of Significance**

The researcher carried out parametric tests to establish the statistical significance of both the overall model and individual parameters. The F-test was used to determine the significance of the overall model and it was obtained from Analysis of Variance (ANOVA) while a t-test was used to establish statistical significance of individual variables.

## **CHAPTER FOUR**

### **DATA ANALYSIS, FINDINGS AND INTERPRETATION**

#### **4.1 Introduction**

This section represents study's findings established on the objectives of research. This chapter focused on collected data analysis from financial reports of public universities to determine the impact of government funding on efficiency of public universities in Kenya. Using descriptive statistics, correlation analysis and regression analysis, the results of the study were presented in form of tables for easy interpretation.

#### **4.2 Diagnostic Tests**

The researcher carried out diagnostic tests on the collected data. A test of Multicollinearity was undertaken. Tolerance of the variable and the VIF value were used where values more than 0.2 for Tolerance and values less than 10 for VIF implies that Multicollinearity doesn't exist. For multiple regressions to be applicable there should not be strong relationship among variables. From the findings, the all the variables had a tolerance values  $>0.2$  and VIF values  $<10$  as shown in table 4.1 showing that no Multicollinearity exists among the independent variables.

**Table 4.1: Multicollinearity Test for Tolerance and VIF**

<b>Variable</b>	<b>Collinearity Statistics</b>	
	<b>Tolerance</b>	<b>VIF</b>
Government funding	0.368	1.372
Debt structure	0.310	1.326
University size	0.380	1.367
Liquidity	0.706	1.627

**Source: Research Findings (2018)**

Shapiro-walk test and Kolmogorov-Smirnov test was used in normality test. The null hypothesis for the test was that the secondary data wasn't normal. If the p-value recorded was more than 0.05, the researcher would reject it. The test findings are as illustrated in table 4.2.

**Table 4.2: Normality Test**

Efficiency	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Government funding	.165	70	.300	.880	70	.784
Debt structure	.149	70	.300	.857	70	.853
Firm size	.156	70	.300	.906	70	.822
Firm Liquidity	.172	70	.300	.869	70	.723
a. Lilliefors Significance Correction						

**Source: Research Findings (2018)**

Both Kolmogorov-Smirnova and Shapiro-Wilk tests recorded o-values greater than 0.05 implying that the data used in research was distributed normally and therefore the null hypothesis was rejected. This data was therefore appropriate for use to conduct parametric tests such as Pearson's correlation, regression analysis and analysis of variance.

Autocorrelation tests were executed so as to check for correlation of error terms across time periods. Autocorrelation was tested by use of the Durbin Watson test. A durbin-watson statistic of 1.902 indicated that the variable residuals were not serially correlated since the value was within the acceptable range of between 1.5 and 2.5.

**Table 4.3: Autocorrelation Test**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.468 <sup>a</sup>	.219	.171	.075715	1.902

a. Predictors: (Constant), Debt structure, Government funding, University size, Liquidity

b. Dependent Variable: Operational efficiency

**Source: Research Findings (2018)**

### 4.3 Descriptive Analysis

Descriptive statistics gives a presentation of the mean, maximum and minimum values of variables applied together with their standard deviations in this study. Table 4.4 below shows the descriptive statistics for the variables applied for the research. An analysis of all the variables was obtained using SPSS software for the period of ten years (2008 to 2017) on an annual basis. Operational efficiency had 0.1379 as mean with a 0.0832 standard deviation. Government funding had a mean of 13.9830 and a standard deviation of 0.8137. Debt structure had a 0.4961 mean and 0.2398 as standard deviation. University size had a mean of 16.3323 and a standard deviation of 1.3077 while liquidity recorded a 2.1084 mean with a 2.2262 standard deviation.

**Table 4.4: Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
Operational efficiency	70	.000	.390	.13786	.083160
Government funding	70	12.275	15.543	13.98304	.813695
Liquidity	70	.110	10.090	2.10843	2.226243
University size	70	13.560	18.020	16.33229	1.307682
Debt structure	70	.120	.970	.49614	.239821
Valid N (listwise)	70				

**Source: Research Findings (2018)**

#### **4.4 Correlation Analysis**

Correlation analysis are used to test whether a relationship exists between two variables and often range between (-) strong negative correlation and (+) perfect positive correlation. The study employed the Pearson correlation to analyze the level of correlation between the operational efficiency of public universities and the independent variables for this study (government funding, debt structure, firm size and liquidity).

The study found out that there was a negative and statistically significant correlation ( $r = -.474$ ,  $p = .000$ ) between university size and operational efficiency. The rest of the variables were found to have insignificant correlations with efficiency of public universities as shown by p values that were more than 0.05.

**Table 4.5: Correlation Analysis**

		Operational efficiency	Government funding	University size	Liquidity	Debt structure
Operational efficiency	Pearson Correlation Sig. (2- tailed)	1				
Government funding	Pearson Correlation Sig. (2- tailed)	.056	1			
University size	Pearson Correlation Sig. (2- tailed)	-.387**	-.103	1		
Liquidity	Pearson Correlation Sig. (2- tailed)	.001	.397	-.544**	1	
Debt structure	Pearson Correlation	.966	.190	.000	-.753**	1
		-.102	.079	.627**		



Sig. (2-tailed)	.399	.517	.000	.000	
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\*\* . Correlation is significant at the 0.01 level (2-tailed).

b. Listwise N=70

**Source: Research Findings (2018)**

#### 4.5 Regression Analysis

Operational efficiency of public universities in Kenya was regressed against four predictor variables; government funding, debt structure, firm size and liquidity. The regression analysis was executed at 5% significance level. The study obtained the model summary statistics as illustrated in table 4.6 below.

**Table 4.6: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.468 <sup>a</sup>	.219	.171	.075715	1.902

a. Predictors: (Constant), Debt structure, Government funding, University size, Liquidity

b. Dependent Variable: Operational efficiency

**Source: Research Findings (2018)**

R squared is the coefficient of determination and depicts the variations in the response variable that is brought about by the changes in the predictor variables. From the outcome in table 4.6 above, the value of R square was 0.219, a discovery that 21.9 percent of the deviations in efficiency of public universities in Kenya are caused by changes in government funding, debt structure, liquidity and size of the universities.

Other variables not included in the model justify for 78.1 percent of the variations in efficiency of public universities. Also, the results revealed that there exists a weak relationship among the selected independent variables and the efficiency of public universities in Kenya as shown by the correlation coefficient (R) equal to 0.468.

**Table 4.7: Analysis of Variance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.105	4	.026	4.559	.003 <sup>b</sup>
	Residual	.373	65	.006		
	Total	.477	69			

a. Dependent Variable: Operational efficiency

b. Predictors: (Constant), Debt structure, Government funding, University size, Liquidity

**Source: Research findings (2018)**

The significance value is 0.003 which is less than  $p=0.05$ . This implies that the model was statistically significant in predicting how government funding, debt structure, liquidity and size affect efficiency of public universities in Kenya.

The researcher used t-test to determine the significance of each individual variable used in this study as a predictor of efficiency of public universities in Kenya. The p-value under sig. column was used as an indicator of the significance of the association between the dependent and the independent variables. At 95% level of confidence, a p-value of less than 0.05 was interpreted as a statistical significance measure. As such, a

p-value above 0.05 shows that a statistically insignificant association between the dependent and the independent variables. The findings are as indicated in table 4.8.

**Table 4.8: Model Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.836	.244		3.420	.001
1 Government funding	-.006	.012	-.055	-.478	.634
Liquidity	.011	.006	.299	1.748	.085
University size	-.037	.009	-.581	-3.986	.000
Debt structure	-.014	.063	-.041	-.225	.823

a. Dependent Variable: Operational efficiency

**Source: Research Findings (2018)**

Based on the above results, it is evident that university size produced negative and statistically significant values for this study (high t-value (-3.986),  $p < 0.05$ ). Government funding and debt structure produced negative but statistically insignificant values for this study as shown by p values that are more than 5%. Firm liquidity produced positive but insignificant values for this study as shown by a high p value.

The following regression equation was estimated:

$$Y = 0.836 - 0.037X_1$$

Where,

Y = Operational efficiency

X<sub>1</sub> = University size

On the estimated regression model above, the constant = 0.836 shows that if selected dependent variables (government funding, debt structure, firm size and liquidity) were rated zero, efficiency of public universities in Kenya would be 0.836. A unit increase in university size would result to a decrease in operational efficiency of public universities in Kenya by 0.037. The other selected independent variables (government funding, debt structure and liquidity) were found to be insignificant determiners of efficiency of public universities.

#### **4.6 Discussion of Research Findings**

The research purposed to explore the effect of government funding on efficiency of public universities in Kenya. Government funding as measured by natural logarithm of total government spending in public universities was the independent variable for this study. Debt structure as measured by debt ratio, liquidity as measured by current ratio and university size as measured by the natural logarithm of total assets were the control variables while efficiency of public universities in Kenya as measured by total expenditure divided by total revenue on an annual basis was the dependent variable. The effect of each of the independent variable on the dependent variable was analyzed in terms of strength and direction.

The Pearson correlation coefficients between the variables revealed that a negative and significant correlation exists between university size and operational efficiency. The association between liquidity and debt structure with efficiency of public universities

was found to be weak, negative and insignificant. Government funding exhibited a weak positive and insignificant association with efficiency of public universities in Kenya.

The model summary revealed that the independent variables: government funding, debt structure, firm size and liquidity explains 21.9% of variation in the dependent variable as depicted by an  $R^2$  value implying that other factors were not included in the model that account for 78.1% of changes efficiency of public universities. The model is fit at 95% confidence level as the F-value was 4.559. Therefore, the overall multiple regression model is statistically significant and suitable in predicting how the independent variables selected affects efficiency of public universities in Kenya.

The findings of this study agree with Baldaci et al., (2008) who used a non-linear model to estimate the effect of government spending on health care and education outcome. They used panel data from 118 developing countries for the period between 1971-2000. To find the effect of government spending in education and health, fixed effects model was used to control for governance. They found that higher educational outcomes are attained when public expenditure is increased. They concluded that, higher spending in education without other policy interventions such as improvement of necessary governance cannot lead to economic prosperity.

The findings also concur with Rajkumar and Swaroop (2008) who used a sample of 101 observations from annual data for 1990, 1997 and 2003 from 57 countries to determine if public spending on education is effective in improving the benefits of education in well governed countries. The effect of governance on academic outcomes was measured using the governance indices, measured index of corruption as an independent variable together with other variables such as per capita GDP, public

primary education share spending and vector of non-education related country specific factors. 2SLS and OLS were used to explore the effect of spending on outcomes including controlling for the level of corruption, the primary school completion rate, and the government's bureaucratic behaviors. The results indicated that the primary education spending coefficient is only significant when there is a good interaction between spending and good governance.

This study differs with Mbaya (2016) who explored the effect of public expenditures on education outcomes in Kenya from 1980 to 2013. To achieve the objective, time series data from economic surveys and World Bank indicators was used. Stationarity test was carried on all the variables. Longitudinal research design was adopted and Ordinary Least Squares multiple regression technique was applied. The findings of the study were that public expenditure in education affects education outcome positively. The research finding revealed that public education expenditure has positive and significant relationship with both primary completion rate and secondary transition rate though with the primary completion rate it was in the long run but with the secondary transition rate it was in short run.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This section summarizes the previous chapter's findings, conclusion and study limitations. The section also elucidates the policy recommendations that policy makers can implement to achieve the expected operational efficiency of public universities in Kenya. Suggestions for further research that can be useful to future researchers are as well presented.

#### **5.2 Summary of Findings**

The study sought to investigate the effect of government funding on efficiency of public universities in Kenya. The independent variables for the study were government funding, debt structure, university size and liquidity. The study adopted a descriptive cross-sectional research design. Universities financial reports were used to retrieve secondary data which were analyzed using SPSS software version 22. The study used annual data for 7 public universities in Kenya covering a ten year time frame as from January 2007 to December 2017.

From the results of correlation analysis, a weak negative and significant correlation exists between university size and efficiency of public universities in Kenya. The association between liquidity and debt structure with efficiency of public universities in Kenya was found to be weak, negative and insignificant. The study also showed that there exist a weak positive and insignificant association between government funding and operational efficiency of public universities in Kenya.

The co-efficient of determination R-square value was 0.219 implying that the predictor variables selected for this study explains 21.9% of changes in the dependent variable. This means that there are other factors not included in this model that account for 78.1% of changes in operational efficiency of public universities in Kenya. The model is fit at 95% confidence level and F-value of 4.559. Therefore, the overall multiple regression model was statistically significant and thus suitable in explaining how the operational efficiency of the public universities in Kenya is affected by the selected independent variables.

The regression results show that when all the independent variables selected for the study have zero value, efficiency of public universities in Kenya would be 0.836. A unit increase in university size would result to a decrease in operational efficiency of public universities in Kenya by 0.037. The other selected independent variables (government funding, debt structure and liquidity) were found to be insignificant determiners of efficiency of public universities.

### **5.3 Conclusion**

From the findings of the study, it can be concluded from the study that operational efficiency of public universities in Kenya is significantly affected by government funding, debt structure, firm size and liquidity of the universities. University size was found to have a negative and significant effect on operational efficiency of public universities in Kenya and this implies that an increase in the size of a public university significantly reduces its operational efficiency.

The study found that government funding had a negative but insignificant impact on operational efficiency of public universities in Kenya. The study therefore concludes



that an increase in government spending on public universities will not have a significant influence on its operational efficiency.

Debt structure was noted to have a negative but statistically insignificant association with efficiency of public universities in Kenya and this means an increase in leverage leads to a decrease in efficiency though not to a significant extent. The study established that liquidity had a positive but insignificant impact on efficiency of public universities in Kenya and therefore it is concluded that higher levels of liquidity leads to an increase in efficiency of public universities but not significantly.

This study concludes that independent variables chosen for this study government funding, debt structure, firm size and liquidity affect to a large extent operational efficiency of public universities in Kenya. It could be therefore concluded that these variables significantly affect operational efficiency as depicted by the p value of ANOVA summary. Since the four independent variables explain 21.9% of changes in efficiency of public universities in Kenya imply that the variables not included in the model explain 78.1% of changes in efficiency.

This finding concurs with Baldaci et al., (2008) who used a non-linear model to estimate the effect of government spending on health care and education outcome. They used panel data from 118 developing countries for the period between 1971-2000. To find the effect of government spending in education and health, fixed effects model was used to control for governance. They found that higher educational outcomes are attained when public expenditure is increased. They concluded that, higher spending in education without other policy interventions such as improvement of necessary governance cannot lead to economic prosperity.

#### **5.4 Recommendations**

The study established that there was a negative influence of firm size on efficiency of public universities in Kenya to a significant extent. This study recommends adequate measures should be put in place by management of public universities to efficiently utilize their assets as it has been established that firms with more assets are more likely to underutilize them leading to low operational efficiency.

Government funding was found to have a positive association with operational efficiency of public universities in Kenya. Specifically, when government funding is increasing, operational efficiency is also increasing though not significantly. This study recommends that policy makers should work towards managing government spending on public universities and do so in a manner that will not negatively influence operational efficiency.

Debt structure was found to have an insignificant negative impact on efficiency of public universities in Kenya. The research therefore recommends that when firms are setting their debt structure they should strike a balance between the tax savings benefit of debt and bankruptcy costs linked with borrowing. High levels of debt has been found to reduce efficiency of public universities from the findings of this study and so university management should maintain debt in levels that do not impact negatively on efficiency to ensure the goal of maximizing shareholders' wealth is attained.

The study found out that a positive relationship exists between efficiency and liquidity position. This study recommends that a comprehensive assessment of public universities immediate liquidity position should be undertaken to ensure the company is operating at sufficient levels of liquidity that will lead to improved efficiency of

firms. This is because a firm's liquidity position is of high importance since it influences the firm's current operations.

### **5.5 Limitations of the Study**

The scope of this study was for five years 2013-2017. It has not been determined if the results would hold for a longer study period. Furthermore it is uncertain whether similar findings would result beyond 2017. A longer study period is more reliable as it will take into account major happenings not accounted for in this study.

One of the study's limitations of was the quality of the data. It is difficult to derive conclusions from the study since the legitimacy of the situation cannot be ascertained. The data that has been used is only assumed to be accurate. The measures used may keep on deviating from one year to another subject to prevailing condition. Secondary data that had already been retrieved was utilized for the study, unlike the primary data which is first-hand information. The study also considered selected determinants and not all the factors affecting efficiency of public universities mainly due to limitation of data availability.

For data analysis purposes, the researcher applied a multiple linear regression model. Due to the shortcomings involved when using regression models such as erroneous and misleading results when the variable values change, the researcher cannot be able to generalize the findings with certainty. If more and more data is added to the functional regression model, the hypothesized relationship between two or more variables may not hold.

### **5.6 Suggestions for Further Research**

This study focused on government funding and efficiency of public universities and relied on secondary data. A research study where data collection relies on primary data

i.e. in depth questionnaires and interviews covering all the public universities in Kenya is recommended so as to compliment this research.

The study was not exhaustive of the independent variables affecting operational efficiency of public universities in Kenya and this study recommends that further studies be conducted to incorporate other variables like management efficiency, growth opportunities, corporate governance, industry practices, age of the firm, political stability and other macro-economic variables. Establishing the impact of each variable on operational efficiency of public universities will enable policy makers know what tool to use when maximizing shareholder's wealth.

The study concentrated on the last ten years since it was the most recent data available. Future studies may use a range of many years e.g. from 1970 to date and this can be helpful to confirm or disapprove the findings of this study. The study limited itself by focusing on 7 public universities. The recommendations of this study are that further studies be conducted on other universities operating in Kenya. Finally, due to the shortcomings of regression models, other models such as the Vector Error Correction Model (VECM) can be used to explain the various relationships between the variables.

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