

THE EFFICIENCY OF COUNTY GOVERNMENTS' EXPENDITURE IN KENYA

NALO ANNE

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF ARTS IN
ECONOMICS, UNIVERSITY OF NAIROBI**

2020

DECLARATION

I declare that this project is solely my original work and has not been presented to any other university for the award of any degree

Signature..... **Date**.....

Nalo Anne

X50/85307/2016

SUPERVISOR’S DECLARATION

This research project has been submitted for examination with approval from me as the University Supervisor.

Signature..... **Date**.....

Prof. Wafula Masai

School of Economics

University of Nairobi

ACKNOWLEDGMENT

It is with great humility that I express my gratitude to my supervisor, for his patience, guidance, encouragement and support throughout the process of this study despite the challenges presented by the covid pandemic. I remain indebted to the University of Nairobi for the assistance and the vast and rich knowledge shared in executing this project. I wish to also recognize my employer for support and encouraging my personal development as well as classmates who remained a sounding board for extending support in various ways. Lastly, I thank God for His unending mercies in the course of the study.

DEDICATION

This project is dedicated to my family, friends and classmates for their support and to my current bosses at work, Mr. Luke Ombara and Mr. Wilberforce Ongondo for playing a big role in the undertaking and finalization of this study. Your support was immeasurable.

TABLE OF CONTENTS

DECLARATION.....	2
ACKNOWLEDGMENT	3
DEDICATION.....	3
LIST OF TABLES	5
ACRONYMS AND ABBREVIATIONS.....	6
CHAPTER ONE	7
INTRODUCTION.....	7
1.1 Background	7
1.2 Statement of the Problem.....	8
1.3 Research questions.....	9
1.4 Research objective	10
1.5 Significance of the study.....	10
1.6 Organization of the Study	10
CHAPTER TWO	12
LITERATURE REVIEW	12
2.1 Introduction.....	12
2.2 Theoretical Literature.....	12
2.3 Empirical Literature	17
2.5 Overview of Literature.....	19
CHAPTER THREE	20
RESEARCH METHODOLOGY	20
3.1 Introduction.....	20
3.2 Theoretical Model.....	20
3.3 Determinant of inefficiency	21
3.4 Measurement of variables	21
3.5 Data Type and Source.....	22
CHAPTER FOUR.....	23
RESULTS AND DISCUSSION	23

4.1 Introduction.....	23
4.2 Descriptive statistics	23
4.3 Empirical result.....	24
CHAPTER FIVE	27
CONCLUSIONS AND POLICY IMPLICATIONS.....	27
5.1 Introduction.....	27
5.2 Summary of findings.....	27
5.3 Conclusions.....	27
5.4 Policy implications.....	27
REFERENCES.....	29

LIST OF TABLES

Table 1: Summary of the Variables	21
Table 2: Summary of Descriptive Statistics.....	23
Table 3: Constant Return To Scale Efficiency Scores (2015 - 2019).....	24
Table 4: Determinants of Efficiency.....	26

ACRONYMS AND ABBREVIATIONS

DEA : Data Envelopment Analysis

DMU : Decision making Units

FGLS : Feasible Generalized Least Squares

GRP : Gross Regional Product

HDI : Human Capital Index

ICT : Information and communications technology

OECD: Organization for Economic Co-operation and Development

PSE : Public Sector Efficiency

VIF : Variance Inflation Factors

VRS : Variable Returns To Scale

CHAPTER ONE

INTRODUCTION

1.1 Background

Efficiency of government spending has a great influence on the economic growth rates of any nation (Lewis, 2018). Maphalla (2015) established that the efficiency of the government's expenditure is critical in achieving economic development and realizing its vision. The effectiveness of the county government's spending can be viewed as the mechanism the county puts in place to make sure the expenditure does not exceed the revenue (Sihaloho, 2018). According to Lowndes and Gardner (2016), the efficiency of the government is determined by the ratio between the output and input. The efficiency of county government expenditure determines the extent to which the county will provide goods and services to the locals (Lerno, 2016).

The national and county government spends its revenue in the recurrent expenditure, development expenditure and transfer expenditure (Wardhani, Rossieta & Martani, 2017). "Recurrent expenditure constitutes of wages and salaries, administration, debt repayment and welfare services, among the others" (Olanubi & Osode, 2017). The development expenditure aims at expanding economic development by increasing production and real income of the country, such as road construction, railway lines and technology development, among others (Mogues & Olofinbiyi, 2016). The transfer payments refer to the money paid to an individual who has not performed any service or rendered any goods for it such as money paid to the elderly, scholarships and disasters, among others (Odhiambo, 2015).

The members of the county assembly have the responsibility to scrutinize the estimated budgets by the different departments of the county to avoid the over pricing of goods and services (Muhammed, 2014). The Public Finance Management Act (PFMA) was enacted in 2012 to regulate the management of the finances in both the national and county governments. The Act lays out procedures for the reliable and efficient management of all the revenue (Musya, 2014). The act establishes that the national government should create a national treasury for introducing uniform treasury norms, standards, controlling spending in all government spheres and overseeing different funds accounts within the county governments (Kenya & Muthusi, 2017).

Nevertheless, the massive squandering of public resources has been reported in many counties in Kenya (Hanshi, 2017). There has been high misappropriation of the funds in different departments within the counties and for instance, Tana River County failed to explain the missing of Sh596 million in the 2017/18 financial year to the auditor general (Mwikairi, 2018). The majority of the infrastructural development projects in the counties have stalled and others have not gone beyond 10% completion (Madhowe, 2018). According to Njeri (2014), the finance management within counties has been so ineffective with extensive corruption and fraud-related cases from corrupt individuals who have never been convicted.

The poor performance in county governments has directly impacted their ability to execute and deliver their constitutional mandate of delivery of essential public services and goods to local communities (Rotich & Okello, 2015). The inadequate service delivery by the county governments has resulted in protests from the locals and its employees, which often turn violent (Benard & Waruguru, 2015). The effective financial management in county governments not only enhances the service delivery to communities but also facilitate development to the communities (Abass, Munga & Were, 2017). Therefore, the current study is worthy of being examined to establish the efficiency of the county government's expenditure in Kenya.

Furthermore, the DEA approach, a non-parametric technique, will be used to estimate public expenditure's efficiency score. DEA is a form of measurement analysis that is used to evaluate the relative efficiency of a set of decision-making units (DMU) in managing resources (inputs) to produce the maximum result (output) (Chen & Jia, 2017). The decision-making units in the study will entail the 47 counties in Kenya. Therefore, DEA will help to calculate the efficiency of the counties in Kenya.

1.2 Statement of the Problem

The knowledge about the efficiency of county governments' expenditure in Kenya is inadequate (Hanshi, 2017). According to the Public Finance Management Act, County Governments shall ensure that recurrent expenditure does not exceed total revenue and 30% of the county budget to be allocated to development functions. However, according to the report released by the controller of budget, in the financial year 2015/2016, the County Governments spent a total of Kshs.295.30 billion in which recurrent expenditure consisted of 75% and development expenditure was 25%. "During the financial year 2016/2017, the total expenditure during the period was Kshs.389.06

billion, of which Kshs.145.71 billion was for recurrent expenditure and Kshs.103.34 billion for development expenditure” (CBK, 2018). This indicates that the counties are not efficient; however, the information to establish the reasons for inefficiency is scanty.

Besides, there exists the pending bills to the counties that have exceeded the balance of funds and expected inflow. Furthermore, the majority of the infrastructural development projects in the counties have stalled and others have not gone beyond 10% completion despite the allocation of funds (Madhowe, 2018). According to Transparency International Survey conducted in 2014 on County Governments Performance in Kenya, 41% of the Kenya populations from the 47 counties were unsatisfied with the performance of their Counties and they were not producing what was expected from them (Muhunyo, 2018). For instance, Tana River County failed to explain the missing of Sh596 million in the 2017/18 financial year to the auditor general (Mwikairi, 2018).

However, the literature reviewed cannot be used to give a broad overview of the efficiency of county governments’ expenditure in Kenya. The findings of the studies reviewed were not alike and presented the knowledge gap: contextual, methodological and conceptual gap. Some studies that presented the contextual gap included: Sihaloho, 2018; Afonso & Kazemi, 2017; Maphalla, 2015; Ouertani Naifar & Haddad, 2018; Monkam, 2014. Further, Abdallah, (2018), Adenya and Muturi (2017) and Muli and Rotich (2016) presented the conceptual gap. Furthermore, other studies (Kathungu, 2016; Lerno, 2016; Matata & Namusonge, 2015) presented the methodological gap.

Therefore, the literature reviewed cannot be used to make inferences about the efficiency of county government’s expenditure in Kenya and factors that influence the efficiency to draw policy implications. Thus, a knowledge gap exists that need to be ascertained through examining the efficiency of county government’s expenditure in Kenya and establishing factors that influence the efficiency of county government’s expenditure in Kenya.

1.3 Research questions

- i. Do County Governments in Kenya spend their resources efficiently?
- ii. What are the factors that influence the efficiency of county government’s expenditure in Kenya?
- iii. What are the policy implications based on the study findings?

1.4 Research Objective

This study seeks to examine the efficiency of county governments' expenditure in Kenya.

1.4.1 Specific Objectives

- i. To examine the efficiency of county government's expenditure in Kenya
- ii. To establish the factors that influence the efficiency of county government's expenditure in Kenya
- iii. To draw policy implications based on the study findings.

1.5 Significance of the study

The research findings are significant to the management of the counties, particularly the executive, in establishing ways to enhance the efficiency of county government expenditure. Furthermore, the study findings will help to instill and develop systematic and logical thinking among the governors in the counties on techniques to increase the efficiency in spending the available revenue to improve the living standard of the locals.

The community members are the primary beneficiaries of any project started in a County. The findings herein on the study will help the communities with the information on how they can directly participate and get involved in the county affairs, thus enhance efficiency. Participation of the community members in the county projects is significant in enhancing the efficiency of the county executives. Therefore, the rationale of the community participation in the county projects may be deduced based on the findings of the study.

The findings of the study are expected to enhance knowledge on the efficiency of the county governments. The research recommendations will be of value to academicians as well as future researchers in understanding the factors that enhance the efficiency of the county governments in Kenya. The findings of the survey will add knowledge to the entire literature on factors that influence efficiency to the county governments.

1.6 Organization of the Study

Chapter one of the study presents the background of the study, statement of the problem, research questions, objectives and the significance. Chapter two presents both the theoretical and empirical literature review and concludes with an overview of the literature. Chapter three elucidates the research methodology to be adopted. In particular, the chapter presents both the theoretical and

empirical models, data analysis diagnostic tests and concludes with the sources of data. Chapter four presents the empirical findings and discussions, whereas chapter five contains the summary of the results, conclusions and recommendations.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter comprises of four sub-sections with section 2.2, presenting the theories upon which the study is based. In section 2.3, a review of the empirical literature and lastly, a summary of the literature and research gap is provided in section 2.4.

2.2 Theoretical Literature

In this section, the study presents the DEA Approach, allocation of resource theory and agency theory upon which the study is based.

2.2.1 Data Envelopment Analysis Approach

The proponents of Data Envelopment Analysis (DEA) were Charnes, Cooper and Rhodes in 1978 and further developed by Charnes, Cooper, Lewin and Seiford in 1997. The DEA is a performance analysis technique that is used by organizations to measure the efficiencies of the Decision-Making Units (DMU). The decision-making units are compared in terms of their efficiency determined by the ratio of output and input.

The efficient DMU is used as a reference benchmark for inefficient DMU (Cooper, Seiford & Zhu, 2011). In the current study, the decision-making units will be all the 47 County Governments in Kenya. The weighted output per county will be the Gross County Product while the weighted input will be the County revenue share allocated to each county for expenditure purposes by the National Treasury as provided for in the Constitution of Kenya and the Public Finance Management Act 2012. The data envelopment analysis will be significant to calculate the efficiency of the counties in Kenya as shown in equation (i)

$$\text{Efficiency } (\theta) = \frac{\sum_{j=1}^n \lambda Y_{ij}}{\sum_{j=1}^n \lambda X_{rj}} \dots \dots \dots (i)$$

$$\sum_{j=1}^n \lambda Y_{ij} \text{ where } i = 1, 2 \dots n$$

$$\sum_{j=1}^n \lambda X_{rj} \text{ where } r = 1, 2 \dots s$$

$$\sum_{j=1}^n \lambda = 1 \text{ where } j = 1, 2 \dots 47$$

Where;

θ_{County1} = weighted output/weighted input

θ_{County2} = weighted output/weighted input

θ_{County3} = weighted output/weighted input

.
. .
.

θ_{County47} = weighted output/weighted input

Furthermore;

Weighted output ≥ 0

Weighted input ≥ 0

Weighted output is the total output per county (Gross County product)

Weighted input is the total input per county (County Revenue Share)

θ_{County1} is the efficiency of County 1

θ_{County2} is the efficiency of county 2

θ_{County3} is the efficiency of County 3

θ_{County47} is the efficiency of County 47

$1 \geq \theta_{47} \geq 0$

The importance of the DEA model in the study is that it is possible to examine the sources of inefficiency and efficiency levels. By determining the possible areas that are inefficient, it is possible to identify solutions that mitigate the situation and enhance efficiency. This makes DEA a potentially helpful tool for benchmarking as well as modification execution programs among the counties. Therefore, the model will be significant in examining the efficiency of county governments' expenditure in Kenya.

However, the model had some weaknesses. The DEA only measures efficiency relative to best practice within the sample (Yang & Pollitt, 2010). Hence, it is not purposeful to compare the scores in between two various research studies because differences in the best method between the samples are unknown. Similarly, a DEA only consists of observations from within the state or nation hence ends up being hard to tell just how those observations compare to the national or

international ideal approach (Alirezaee & Khalili, 2006). Another weakness is that it is possible to produce results that are particularly sensitive to measurement error (Sueyoshi & Goto, 2012).

Despite the criticism, DEA identifies a benchmark that other units can use to target efficiency. Using the DEA model, inefficient units can benefit from learning from efficient unit; thus, inefficient units can make reliable turnaround strategies to increase their efficiency. Therefore, the model will help the researcher to examine the efficiency of county governments' expenditure in Kenya using gross county products as the outputs and revenue as the inputs.

Thereafter, to achieve the second objective which is determining factors influencing efficiency of county government's expenditure in Kenya, we apply a truncated tobit model. The dependent variable in the Tobit regression is censored. This is because a county's efficiency score ranges from 0 to 1. Following previous studies, the following empirical model will be employed and estimated using panel data.

$$y_{it} = \beta_1 Z_{it} + \mu_{it} \quad (3)$$

Where i and t denote each 47 counties in Kenya and year respectively. y_{it} (Dependent variable) is the efficiency estimated in the first stage and it ranges from 0 to 1 while Z_{it} is a vector of environmental variables considered to influence the efficiency of county government expenditure.

2.2.2 Allocation of Resource Theory

The proponent of the allocation of resource theory was Peteraf and Barney in 2003. The theory reports that a reliable allotment of resources occurs when an organization generates maximum output while minimizing input. More allocation of the resources needs to be channelled to the more efficient sectors (Liefner, 2003). Sectors that are producing maximum output with minimum inputs need to be allocated more resources. On the other hand, the sectors that are inefficient and the production and input is almost the same need not to be allocated more resources. Allocation of more resources to the most efficient sectors will maximize the efficiency of the organization and enable it to gain a competitive advantage (Hartman & Boyd, 2008).

Besides, the theory establishes that the dynamic allocation of the funds enables institutions to plan and allocate sufficient time to the factors of production for the optimal output. The theory assumes that the optimal production of the output depends on the efficiency of the inputs and the extent on

how the scarce resources are utilized (Alvarez & Barney, 2005). Thus, it is vital for the management of various sectors in an organization to develop ways to maximize the efficiency of the factors of production such as the introduction of new technology and training of the employees, among others.

The theory, however, had some weaknesses. One of the limitations of the theory is that the excess allocation of resources in one sector may make the other sectors worse off or underproduce (Setiawan, 2011). The challenges of over-allocation of the resources in one sector may make the company worse off when the demand for the goods or services produced in a particular sector of the business goes down unexpectedly. Another limitation of the allocation of resource theory is that the available resources in a society are limited in supply (Pardalos, Migdalas & Pitsoulis, 2008). This makes some of the counties in our case, to allocate resources in sectors that are not efficient due to the public demand.

The theory remains applicable to the study despite the weaknesses it portrays. Scarce resources can be utilized efficiently to achieve a higher output. The county executives can identify the most efficient sectors and use it as the benchmark for those sectors that are inefficient. Besides, those programs initiated by the county governments need to be guided by the strategic allocation of the available resources. Counties have limited resources and thus, efficient allocations will maximize service delivery (outputs) to the people. The economic development and the increase of the gross county products are enhanced when the available revenue is used in such a way that minimizes the wastages and maximizes the output. Therefore, the theory applies to the current study that is examining the efficiency of county governments' expenditure in Kenya. The efficiency to the counties can only be achieved through efficient allocation of resource to various departments.

2.2.3 Agency Theory

Jensen and Meckling established the theory in 1976. The theory is relied upon by the organization in the process of efficient administration of the resources. The theory establishes the principal delegates duties and responsibilities to the agents to work on their behalf (Safieddine, 2009). The agent is expected to work based on the interest of the principal demands and requests. The representatives are anticipated to work out in due diligence to maintain a good relationship with the Principal (Shi, Connelly & Hoskisson, 2017). The concept likewise reports that the actions of

the company representatives need to be inspected routinely to lessen the embezzlement of the funds and maximize their self-involvement of the expenses of the Principal.

However, scholars slammed the theory. For example, the concept was prejudiced because it adversely defines a representative's behavior as self-seeking as well as overlooked representative commitment, satisfaction, as well as professionalism in lining up with the Principal's goals (Davis, Donaldson, & Schoorman, 1997; Kayode et al., 2013). As a result, this makes it challenging to assess several principals as well as representatives, especially if they are of various management levels. Regardless of the objections, the concept is relevant to the present research study. Political leaders function as the locals' representative and need to act in good faith to satisfy the electorates' demands and expectations.

Without resolving the principal-agent issues, low administration techniques such as mismanagement of incomes may increase (Lafontaine, 2002). The Principal-Agent concept has become an extensively used paradigm for examining public accountability. Investigators embrace the Principal-Agent concept to comprehend the accountability techniques between residents and political leaders. The principals are the residents or individuals, while politicians as representatives in decision-making body organs are representatives. As a result, the theory is relevant in examining the efficiency of county governments' expenditure in Kenya.

2.2.4 Human Capital Theory

Schultz proposed the human capital theory in 1961 and Becker further developed the theory in 1964. The theory reports that the competency of the employees impacts the efficiency of the organization. The efficiency of the employees is improved by factors such as team building activities, training, the delegation of responsibility, appropriate management style and defining roles and tasks clearly. The efficiency of the employees is also enhanced by technology advancement. The availability of sufficient capital is what enables the organization to achieve its objectives (Sweetland, 2006). The theory further postulates that maintaining employees sometimes is costly in some situations such as the provision of education and determining motivation factors. However, the benefits surpass the expenses eventually (Lauder, 2015).

The efficiency of employees minimizes the cost of production. The theory also articulates that those Organization that maintains very motivated personnel and talented workforce increase the overall performance (Schultz,1961). Based on the approach of the theory, the efficiency of the

counties can be improved when the employees are efficient. In the advanced countries, the increase of gross domestic product has been enhanced by emphasizing much on the training of the employees (Nafukho, Hairston & Brooks, 2004).

However, there are several criticisms to the theory. The theory does not clearly outline the capabilities of each of the employee, noting that each employee has a different working capability in terms of production and efficiency (Bratton & Gold, 2007). Another weakness of the theory is that it did not establish remedies to those employees who, after receiving training, shift to other companies or counties that are paying well. Training of the employees in an organization to sharpen their skills is essential, however, there is no guarantee that they will stick with the principles of the organization and thus may decide to move, which becomes like a waste to the previous organization since a lot of resources were used during training and other costs needed to increase the efficiency of the employees.

The theory is applicable to the study despite the weaknesses it poses. The theory shows that the efficiency of the counties can be improved when employees are efficient. The accumulation of knowledge and human capital by the county has a direct effect on efficiency. The theory reports that the growth of gross domestic product is raised by employees training. Therefore, the theory is relevant to the current study and informs the variable of capital and labor in the present study as a factor that enhances efficiency within the counties.

2.3 Empirical Literature

Sihaloho (2018) conducted a study on the Efficiency analysis of local government spending in West Java, Indonesian. Specifically, the researcher wanted to establish the technical efficiency scores for local government expenditure in regencies and cities in West Java and also to analyze the other environmental factors that influence technical efficiency scores of domestic government expenditure in the same regencies and cities. Data Envelopment Analysis (DEA) method was used to estimate technical efficiency scores. The results showed that many regions have high spending but cannot achieve the maximum score of efficiency. The total of investment credit funding and total labor had a positive effect on creating optimal technical efficiency scores . However, the results of the study cannot be used for making the general inference since it presents a contextual gap. The study was conducted in Indonesia.

Njahi (2017) sought to examine the effect of financial management practices on the financial performance of county governments in Kenya. The study found that a positive and significant relationship existed between efficient financial management practices and financial performance. The study recommended that Counties should strive to achieve their budgeted revenues since a decrease in actual revenues from the targeted revenue affects the overall financial performance of the counties and attempt to allocate more of the funds to development expenditure as opposed to recurrent expenditure . The study presents a conceptual gap because the study notably examined the effect of financial management practices on financial performance while the current seeks to establish the efficiency of county governments.

Abdallah (2018) conducted a study to examine the effect of budgeting process on the financial performance of the county government of Kwale. The descriptive research design was adopted. The findings of the study indicated that the budgeting process had a positive impact on financial performance at the county. The study presents a conceptual gap. This is because the study examined the effect of budgeting process on financial performance while the current research examines the efficiency of county governments in Kenya.

Adenya and Muturi (2017) examined the Factors Affecting Revenue Collection Efficiency in Kiambu County. The research employed a descriptive and survey research design from April-July 2017. The findings of the study established that revenue collection personnel capacity, technology and internal controls were found to be positively related to revenue collection efficiency . The study presents a conceptual and methodological gap. This is because the study particularly examined the factors affecting revenue collection efficiency in Kiambu County and did not use the DEA analysis.

In addition, Kathungu (2016) investigated the effect of budget use on county governments' financial standing in Kenya. The study relied upon primary data. The findings of the examination revealed that joint budget use had a favorable influence on the counties' financial standing. The study also found some counties were putting high budgets on projects that seemed not valuable to the community. This led to protest hence the stalling of those projects. The study concluded that effective budget allocation was key in enhancing the counties' efficiency and thus achieving high performance. The study presents a methodological gap because the study used primary data, while the current study will use secondary data.

Lerno (2016) examined the relationship between internal controls and the county government's performance in Kenya. Primary data was obtained through the administering of questionnaires. The findings of the study established that the system of accounting sufficiently recognizes the receipt and expenditure of grand contracts, they were neither sure if the adoption of internal control practices has led to the adequacy of the levies collected by county to cover the cost of running the courses. The study presents both a conceptual and methodological gap. Data were obtained from the primary sources and internal controls were the main focus of the study.

2.4 Overview of Literature

The literature reviewed was based on a global perspective, regional perspective and local perspective. Reviewing studies from different contexts was essential for making comparisons and having a comprehensive understanding of the verdicts of other scholars. However, the literature reviewed cannot be used to give a broad overview of the efficiency of county governments' expenditure in Kenya. The findings of the studies reviewed were not alike. The results of the reviewed studies present the knowledge gap: contextual, methodological and conceptual gap.

Some studies (Sihaloho, 2018; Afonso & Kazemi, 2017; Maphalla, 2015; Ouertani Naifar & Haddad, 2018; Monkam, 2014) present the contextual gap. Further, (Abdallah, 2018, Adenya & Muturi, 2017; Muli & Rotich, 2016) presents the conceptual gap. Lastly, other studies (Kathungu, 2016; Lerno, 2016; Matata & Namusonge, 2015) present the methodological gap. Moreover, most of the reviewed literature were not examining the efficiency of the county governments in Kenya. Therefore, the literature reviewed cannot be used to make inferences about the efficiency of county government's expenditure in Kenya and factors that influence the efficiency to draw policy implications. Thus, a knowledge gap exists that needs to be ascertained through examining the efficiency of county government's expenditure in Kenya and establishing factors that influence the efficiency of county governments' expenditure in Kenya.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

The chapter is organized in five sub-sections. In section 3.1, the theoretical model is presented, and Section 3.2 discusses the empirical model. Section 3.3 discusses the data analysis, 3.4 presents the diagnostic tests, and finally, section 3.5 depicts the data type and source.

3.2 Theoretical Model

The theoretical model presented in this section is based on DEA approach. The DEA approach is used to measure the efficiency of decision-making units (counties). Besides, in this approach, there are two methods used to measure the effectiveness of decision-making units. These two methods are constant returns to scale (CRS) and variable returns to scale (VRS) . This study will use CRS because of the various inputs (County Revenue Share) over the entire counties. The DEA approach will be as shown in equation (2)

$$\text{Efficiency } (\theta) = \frac{\sum_{j=1}^n \lambda Y_{ij}}{\sum_{j=1}^n \lambda X_{rj}} \dots \dots \dots (2)$$

$$\sum_{j=1}^n \lambda Y_{ij} \text{ where } i = 1, 2 \dots n$$

$$\sum_{j=1}^n \lambda X_{rj} \text{ where } r = 1, 2 \dots s$$

$$\sum_{j=1}^n \lambda = 1 \text{ where } j = 1, 2 \dots 47$$

Where;

$1 \geq \theta \geq 0$ (that is efficiency ranges between 0% and 100%)

i = categories of the inputs in the county (County revenue share)

r = categories of the outputs in the county (Gross County Product)

j =number of counties

$\sum_{j=1}^n \lambda Y_{ij}$ =Gross County product

$\sum_{j=1}^n \lambda X_{rj}$ = County revenue share

3. 3 Determinant of inefficiency

The second objective is to determine factors that influence the efficiency of county governments' expenditure in Kenya. This is achieved by applying truncated tobit model. The dependent variable in the Tobit regression is censored. This is because a county's efficiency score ranges from 0 to 1. Following previous studies, the following empirical model is employed and estimated using panel data.

$$y_{it} = \beta_1 Z_{it} + \mu_{it} \quad (3)$$

Where i and t denote each 47 counties in Kenya and year respectively. y_{it} (Dependent variable) is the efficiency estimated in the first stage and it ranges from 0 to 1 while Z_{it} is a vector of environmental variables considered to influence the efficiency of county government expenditure.

3.4 Measurements of variables

Table 1: Summary of the Variables

	Variable Name	Measurement	Source of data
Input	County revenue share	Funds allocated to each county for expenditure purposes by National Treasury	Counties, Commission on Revenue Allocation and the ministry of finance
Output	Gross County Product	The monetary value of all economic activities in each county	KNBS
Environmental variables	Adult proficiency	“The ability of adults to understand, evaluate, use and engage with written texts in order to participate in society, achieve one's goals, and develop one's knowledge and potential”	KNBS
	Enrolment in Primary Schools	“This references the no. of children of official primary school age enrolled in primary education in each county”	KNBS
	Secondary school enrollment	“References no. of children of official secondary school age enrolled in secondary education in each county”	KNBS
	County grant	Financial aid advanced to each county to fund development projects and programs	KNBS

3.5 Data Type and Source

The data that is used in the study is drawn from the counties, the Commission on Revenue Allocation, the Kenya National Bureau of Statistics and the Ministry of Finance. Besides, the collected data by the researcher is between 2015 and 2019. The use of panel data is to control for heterogeneity among the cross-sections arising from the inherent varying nature of their characteristics. Additionally, it discounts for time effects, which may occur due to changes in policy and macroeconomic environment. Similarly, panel data overcome the endogeneity of the regressors (Baltagi, 2013). Moreover, panel data circumvents errors in model specification.

CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 Introduction

This section entails both descriptive and regression estimates for the model adopted in the study.

4.2 Descriptive statistics

Table 2 presents the description of the variables in terms of mean, standard deviation, skewness and kurtosis.

Table 2: Summary of Descriptive Statistics

variable	N	mean	p50	min	max	sd	cv	skewness	kurtosis
lnGCP	235	10.91	10.86	8.939	15.20	1.025	0.0939	1.605	7.915
Lnrcounty_revenue	235	7.077	6.779	3.311	10.16	1.556	0.220	-0.0649	1.700
Lnadult_proficiency	231	4.337	4.369	0.693	9.578	1.496	0.345	0.491	4.034
lnprimary	235	11.01	11.09	8.441	14.83	1.172	0.106	0.212	4.147
lnsecondary	235	20.02	22.28	8.304	23.52	4.818	0.241	-1.504	3.345
Lncounty_grant	235	3.360	2.459	2.345	9.078	1.938	0.577	1.875	4.980

The natural logarithms of all the variables are not dispersed significantly from their mean values (Table 2). Kurtosis measures the peakedness or flatness of the distribution of the series and the kurtosis statistic shows that the distribution of county revenue share and county development expenditure are flatter than a normal distribution except for development expenditure. Gross county product (GCP), adult proficiency, county primary school enrollment, county secondary school enrollment, county revenue share and county grant are leptokurtic since their distributions are peaked sharper than a normal distribution.

Skewness statistics shows that, adult proficiency and primary enrollment are symmetrical. However, gross county product, secondary school enrollment, county revenue share and county grant are skewed.

4.3 Empirical result

The study analyzed output-oriented efficiency scores with CRS for 47 counties for the period 2015 to 2019. Output-oriented DEA model maximizes output given a fixed level of inputs. This study considered 47 counties in Kenya in order to analyze their efficiency across the periods 2015-2019 and their relative efficiency in terms of output variable.

Table 3: Constant Return To Scale Efficiency Scores (2015 - 2019)

County	2015	2016	2017	2018	2019	Average
Baringo	0.015941	0.006594	0.009964	0.010543	0.019199	0.012448
Bomet	0.011855	0.000948	0.01111	0.37149	0.057802	0.090641
Bungoma	0.01421	0.013514	0.012731	0.012613	0.024031	0.01542
Busia	0.01737	0.008241	0.007835	0.008313	0.010746	0.010501
Elgeyo- Marakwet	0.055537	0.013708	0.018845	0.015776	0.063031	0.033379
Embu	0.018286	0.007256	0.015161	0.014799	0.012635	0.013627
Garissa	0.039308	0.002557	0.004483	0.004668	0.018537	0.013911
Homa Bay	0.045012	0.011103	0.008435	0.011843	0.051026	0.025484
Isiolo	0.014096	0.003068	0.003163	0.003832	0.009575	0.006747
Kajiado	0.013582	0.01073	0.016556	0.018035	0.013683	0.014517
Kakamega	0.02505	0.006679	0.011564	0.012346	0.021423	0.015412
Kericho	1	1	1	1	1	1
Kiambu	0.004618	0.006211	0.010077	0.010271	0.004549	0.007145
Kilifi	0.050032	0.023881	0.030376	0.031561	0.055674	0.038305
Kirinyaga	0.028233	0.021879	0.018066	0.023917	0.025286	0.023476
Kisii	0.02361	0.004772	0.007485	0.009585	0.013206	0.011732
Kisumu	0.009593	0.008165	0.012576	0.01409	0.012107	0.011306
Kitui	0.046046	0.018451	0.016405	0.02101	0.036907	0.027764
Kwale	0.034215	0.008397	0.011912	0.011899	0.013412	0.015967
Laikipia	0.011588	0.011207	0.01336	0.016195	0.012661	0.013002
Lamu	0.073003	0.00852	0.021371	0.020762	0.071799	0.039091
Machakos	0.001483	0.001231	0.002161	0.001974	0.002081	0.001786
Makueni	0.073965	0.030716	0.0242	0.030278	0.058214	0.043475
Mandera	0.118619	0.010919	0.006778	0.008281	0.047621	0.038444
Marsabit	0.020492	0.006121	0.004141	0.005216	0.030759	0.013346
Meru	0.004583	0.000575	0.00265	0.002647	0.004293	0.00295
Migori	0.04608	0.014516	0.019016	0.023166	0.043825	0.029321
Mombasa	0.002379	0.004532	0.008614	0.007749	0.002975	0.00525
Murang'a	0.05395	0.052645	0.033793	0.04179	0.035211	0.043478
Nairobi	0.001097	0.006703	0.0062	0.00456	0.000887	0.003889
Nakuru	0.078035	0.088447	0.122806	0.113039	0.086498	0.097765
Nandi	0.122121	0.045119	0.044555	0.049332	0.118287	0.075883
Narok	0.005699	0.011148	0.012697	0.011458	0.002957	0.008792

Nyamira	0.104029	0.018488	0.021488	0.024635	0.060076	0.045743
Nyandarua	0.022126	0.014285	0.013254	0.012842	0.032391	0.018979
Nyeri	0.018472	0.007199	0.01943	0.018014	0.013228	0.015268
Samburu	0.061978	0.026749	0.021976	0.025973	0.047075	0.03675
Siaya	0.010867	0.00247	0.002569	0.00304	0.01095	0.005979
Taita-Taveta	0.027443	0.013434	0.012303	0.016035	0.030449	0.019933
Tana River	0.120239	0.005264	0.007184	0.006843	0.09941	0.047788
Tharaka-Nithi	0.029295	0.005778	0.006927	0.006523	0.022501	0.014205
Trans Nzoia	0.019179	0.00806	0.005622	0.009115	0.010308	0.010457
Turkana	0.046731	0.010142	0.006119	0.007989	0.072419	0.02868
Uasin Gishu	0.008014	0.012925	0.009087	0.010359	0.008868	0.009851
Vihiga	0.129912	0.027989	0.023842	0.026136	0.095513	0.060678
Wajir	0.047068	0.005871	0.004719	0.005478	0.036118	0.019851
West Pokot	0.03403	0.004799	0.005469	0.00628	0.039451	0.018006
Average	0.058704	0.034723	0.036363	0.045155	0.054461	0.045881

The average efficiency score for the 47 counties is 4.58% illustrating that on average the 47 counties could have increased their output level by 94.42% using the same revenue share. The average efficiency score in 2015 was 0.058. There were 7 counties (Vihiga, Tana River, Samburu, Nyamira, Nandi, Mandera, and Lamu) with efficiency scores above the average. The average efficiency score decreased to 0.034 in 2016 and only Nakuru and Murang'a had efficiency score above the 2016 average. However, there was slight improvement in efficiency score for the 47 counties in the year 2017, 2018 and 2019. Individual county efficiency score illustrates that the 47 counties have an average score of more than 90% technical inefficiency.

Determinants of efficiency

The other aim of the study was to investigate factors that influence efficiency of county government's expenditure in Kenya. There are other environmental factors that can affect the efficiency level of county government spending. The use of Tobit analysis was applied to analyze these factors.

Table 4: Determinants of Efficiency

VARIABLES	theta
Ln(adult proficiency)	0.0245** (0.0113)
Ln(primary school enrollment)	0.0115 (0.0170)
Ln(Secondary school enrollment)	0.0577* (0.0299)
Ln(County grant)	0.113* (0.0578)
Constant	2.440*** (0.794)
Observations	235

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

There are 4 variables to estimate the Tobit with one dependent variable (efficiency score) and four independent variables (adult proficiency, primary school enrollment, secondary school enrollment and county grant). The coefficient of adult proficiency is positive and significant at 5% level implying that a 10% increase in adult proficiency will result to an increase in county government spending efficiency by a factor of 0.245%.

Secondary school enrollment is statistically significant in influencing the county expenditure efficiency. The result illustrates that 10% increasing in secondary school enrollment will result in an increase in county government spending efficiency by 0.577%. County grant positively influences the efficiency of county government expenditure. Increasing county grants by 1% will lead to an improvement in efficiency of county government spending by 0.113%,

CHAPTER FIVE

CONCLUSIONS AND POLICY IMPLICATIONS

5.1 Introduction

The chapter provides a summary of the study, conclusions and policy recommendations.

5.2 Brief on Findings

The study analyzed the efficiency of county government expenditure for the 47 county government between the year 2015 and 2019. Efficiency score was analyzed by applying output-oriented DEA while tobit regression was used to estimate the determinant of efficiency for county government expenditure. DEA was performed under the assumption of constant returns to scale. The average efficiency score for the 47 counties was 0.0458. The average efficiency score in 2015 was 0.058 while the efficiency score decreased to 0.034 in 2016 and only Nakuru and Murang'a had efficiency score above the 2016 average. However, there was slight improvement in efficiency score for the 47 counties in the year 2017, 2018 and 2019. Individual county efficiency score illustrates that the 47 counties had an average score of more than 90% technical inefficiency. Adult proficiency positively and significantly influence the efficiency of county government expenditure. Secondary school enrollment positively impacts the county expenditure efficiency. County grant positively has positive and significant effect on county government expenditure.

5.3 Conclusions

In conclusion, the average efficiency score for the 47 counties for the period 2015-2019 demonstrates the county government are inefficient and thus can realize the same output level by 95.42% by employing the same level of county expenditure. Education significantly influences the efficiency of county government expenditure. Both adult proficiency and secondary school enrollment positively influence the efficiency of county government expenditure. County grant funds improve the efficiency of county government expenditure.

5.4 Policy implications

For budget allocations that are not fully effective, the national government must ensure that county governments allocate more of their budget to capital expenditure if the national government grants funding to counties.

County government should allocate funding for adult literacy programs. Equally, there is need to mobilize funds to improve secondary school enrollment at the county level. The government should also encourage the banks and the private sector to use more credit funding for investment.

More credit funding for investment will increase the building of infrastructure by the private sector and this, in turn, will boost economic growth in the counties.

Further, policy makers involved in making recommendations on the allocation of resources to the County Governments should endeavour to incorporate efficiency as a parameter in the assessment of equitable share allocations to County Governments.

REFERENCES

- Abass, M. K., Munga, J., & Were, E. (2017). The relationship between strategy implementation and performance in county governments of Kenya: A case study of Wajir County government. *International Academic Journal of Human Resource and Business Administration*, 2(3), 381-401.
- Abdallah, S. S. (2018). *Effect of Budgeting Process on Financial Performance of County Government of Kwale in Kenya*. (Doctoral Dissertation, University Of Nairobi).
- Adenya, P. K., & Muturi, W. (2017) Factors Affecting Revenue Collection Efficiency By County Governments In Kenya-A Case Of Kiambu County. *International Journal of Social Sciences and Information Technology*. Vol 3 Issue 8 pp: 2371, 2384.
- Afonso, A., & Aubyn, M. (2004). Relative efficiency of health provision: a DEA approach with non-discretionary inputs. *ISEG-UTL economics working paper*, (33).
- Afonso, A., & Aubyn, M. S. (2006). Cross-country efficiency of secondary education provision: A semi-parametric analysis with non-discretionary inputs. *Economic modelling*, 23(3), 476-491.
- Afonso, A., & Fernandes, S. (2008). Assessing and explaining the relative efficiency of local government. *The Journal of Socio-Economics*, 37(5), 1946-1979.
- Afonso, A., & Kazemi, M. (2017). Assessing public spending efficiency in 20 OECD countries. In *Inequality and Finance in Macrodynamics* (pp. 7-42). Springer, Cham.
- Ajibade, P. (2018). Technology Acceptance Model Limitations and Criticisms: Exploring the Practical Applications and Use in Technology-related Studies, Mixed-method, and Qualitative Researches. *International Journal of Science and Technology*, 3(2), 173-181
- Akello, S., Turyahabwe, N., Sseguya, H., Okullo, P., & Agea, J. G. (2017). Local community participation in restoration of watersheds in Uganda. *American Journal of Environmental Protection*, 2017, Vol. 5, No. 2, 25-32
- Alirezaee, M. R., & Khalili, M. (2006). Recognizing the efficiency, weak efficiency and inefficiency of DMUs with an epsilon independent linear program. *Applied Mathematics and Computation*, 183(2), 1323-1327.
- Alvarez, S. A., & Barney, J. B. (2005). How do entrepreneurs organize firms under conditions of uncertainty?. *Journal of management*, 31(5), 776-793.
- Ananga, E. O., Njoh, A. J., Anchang, J. Y., & Akiwumi, F. A. (2016). Participation-related factors influencing performance in four urban-based community-operated water schemes in Kisumu, Kenya. *Community Development Journal*, 52(2), 319-336.
- Benard, M., & Waruguru, E. (2015). Relationship between E-tendering and procurement performance among County Governments in Kenya. *Science Innovation*, 3(5), 46-51.

- Cetin, V. R., & Bahce, S. (2016). Measuring the efficiency of health systems of OECD countries by data envelopment analysis. *Applied Economics*, 48(37), 3497-3507.
- Charnes, A., Cooper, W., Lewin, A. Y., & Seiford, L. M. (1997). Data envelopment analysis theory, methodology and applications. *Journal of the Operational Research society*, 48(3), 332-333.
- Chen, L., & Jia, G. (2017). Environmental efficiency analysis of China's regional industry: a data envelopment analysis (DEA) based approach. *Journal of Cleaner Production*, 142, 846-853.
- Cheruiyot, M. P., Namusonge, G. S., & Sakwa, M (2018). Influence of Internal Control Practices on Performance of County Governments in Kenya. *International Journal of Social Sciences and Information Technology*, 4(8), 224 -234
- Cooper, W. W., Seiford, L. M., & Zhu, J. (2004). Data envelopment analysis. In *Handbook on data envelopment analysis* (pp. 1-39). Springer, Boston, MA.
- Cooper, W. W., Seiford, L. M., & Zhu, J. (2011). Data envelopment analysis: History, models, and interpretations. In *Handbook on data envelopment analysis* (pp. 1-39). Springer, Boston, MA.
- Cui, Q., & Li, Y. (2015). Evaluating energy efficiency for airlines: An application of VFB-DEA. *Journal of Air Transport Management*, 44, 34-41.
- Daluwatte, D. (2019). Basic Assessment of Community Based Water Projects in Sri Lanka to Analyze Impacts of it for Health and Social Development and Sustainable Community Development Approaches. *GSI*, 7(1).
- Gitau, R. (2018). *Effect of Internal Control Practices on Financial Performance of Supermarket Chains in Nairobi Central Business District* (Doctoral dissertation, Kca University).
- Gupta, S., & Verhoeven, M. (2001). The efficiency of government expenditure: experiences from Africa. *Journal of policy modeling*, 23(4), 433-467.
- Hartman, W. T., & Boyd, W. L. (2008). *Resource allocation and productivity in education: theory and practice*. Greenwood Publishing Group.
- Hassenforder, E., Pittock, J., Barreteau, O., Daniell, K. A., & Ferrand, N. (2016). The MEPPP framework: a framework for monitoring and evaluating participatory planning processes. *Environmental management*, 57(1), 79-96.
- Kathungu, R. (2016). *The Effect of Budget Utilization On the Performance of County Governments: A Case Study of Eastern Kenya Region* (Doctoral dissertation, University of Nairobi).
- Kayode, A., Adagba, S. O., & Anyio, S. F. (2013). Corruption and service delivery: the case of Nigerian public service. *Wudpecker Journal of Public Administration*, 1(1), 001-006.
- Kiogora, M. N. (2013). *Influence of Local Community Involvement in Project Planning on The Sustainability of Projects in Embu County, Kenya* (Doctoral dissertation, Doctoral dissertation, University of Nairobi).

- Kitana, A. (2016). Overview of the managerial thoughts and theories from the history: Classical management theory to modern management theory. *Indian Journal of Management Science*, 6(1), 16 -29
- Lafontaine, F. (2002). Agency theory and franchising: some empirical results. *The rand journal of economics*, 263-283.
- Lerno, D. L. (2016). *Relationship between Internal Controls and Performance of County Government in Kenya*. (Unpublished MBA Project. School of Business. University of Nairobi. Nairobi).
- Lerno, D. L. (2016). *Relationship between internal controls and performance of county government in Kenya*. (MBA Project. School of Business. University of Nairobi. Nairobi)
- Lewis, B. D. (2018). Local government form in Indonesia: tax, expenditure, and efficiency effects. *Studies in Comparative International Development*, 53(1), 25-46.
- Liefner, I. (2003). Funding, resource allocation, and performance in higher education systems. *Higher education*, 46(4), 469-489.
- Lowndes, V., & Gardner, A. (2016). Local governance under the conservatives: Super-austerity, devolution and the ‘smarter state’. *Local government studies*, 42(3), 357-375.
- Madhowe, A. S. (2018). *Women empowerment and its influence on the community development projects in marginalized regions in Kenya: a case study of Tana river county* (Doctoral dissertation, University of Nairobi).
- Mansuri, G., & Rao, V. (2014). Community-based and-driven development: A critical review. *The World Bank Research Observer*, 19(1), 1-39.
- Maphalla, S. T. (2015). *Financial performance of local government: evidence from South Africa* (Doctoral dissertation, Stellenbosch University).
- Martínez, M. R., Toral Marín, S. L., Garcia, F. B., Vazquez, S. G., Oliva, M. A., & Torres, T. (2008). A technological acceptance of e-learning tools used in practical and laboratory teaching, according to the European higher education area. *Behaviour & Information Technology*, 27(6), 495-505
- Mary, M., Albert, O., & Byaruhanga, J. (2014). Effects of internal control systems on financial performance of sugarcane out grower companies in Kenya. *IOSR Journal of Business and Management*, 16(12), 2319-7668.
- Matata, L., & Namusonge, G. S. (2015). Role of information and communication technology in governance of micro and small enterprises in Makueni county, Kenya. *International journal of scientific & technology research*, 4(6), 111-117.
- Mbui, J. N., & Wanjohi, J. M. (2018). Influence of community participation on project performance of Ruiru water projects, Meru County, Kenya. *International Academic Journal of Information Sciences and Project Management*, 3(2), 331-344.
- Miruka, S. (2016). *Factors Influencing Community Participation in Rural Water Supply Projects Funded by the County Government in Gesusu Ward, Kisii County, Kenya* (Doctoral dissertation, University of Nairobi).

- Modibbo, S. A. (2015). An assessment of the effectiveness of internal audit unit at local government level in Adamawa State. *International Journal of Humanities and Social Science*, 54(1), 59-65.
- Mogues, T., & Olofinbiyi, T. (2016). *Institutions and public agricultural investments: A qualitative study of state and local government spending in Nigeria. Business and economics journal*, 10(4), 1-11.
- Moloi, T. (2016). Key mechanisms of risk management in South Africa's national government departments: The public sector risk management framework and the King III benchmark. *International Public Administration Review*, 14(2-3).
- Monkam, N. F. (2014). Local municipality productive efficiency and its determinants in South Africa. *Development Southern Africa*, 31(2), 275-298.
- Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification strategies for establishing reliability and validity in qualitative research. *International journal of qualitative methods*, 1(2), 13-22.
- Mugambi, F. K., & Wanjohi, J. M. (2018). Factors affecting implementation of revenue collection systems in county governments in Kenya case of Meru county. *International Journal For Research In Business, Management And Accounting*, 4(11), 525.
- Muhammed, A. (2014). A Critical Analysis of Public Financial Management Reform in Ethiopia and Tanzania. *International journal of management*, 4(9), 130-141.
- Muli, B. M., & Rotich, G. (2016). Effect of financial management practices on budget implementation of county governments: a case of Machakos county. *Strategic journal of business & change management*, 3(4), 47-54
- Murungi, M. N. (2015). *Influence of project management practices on implementation of donor funded education projects in Kajiado County, Kenya.* (master's thesis, University of Nairobi).
- Musya, F. M. (2014). The effect of internal controls on revenue collection by county governments in Kenya. *International journal of management*, 5(3), 76 -85
- Mwazo, E., M., Weda, C., Omondi, M M. & Njenga A., N. (2017). Role of Internal Control Systems on Service Delivery In The National Treasury Of Taita-Taveta County, Kenya. *International Journal of Economics, Commerce and Management*, 5 (8),431 -447
- Mwikairi, M. N. (2018). *An assessment of the state of public healthcare governance in Tana river County, Kenya* (Doctoral dissertation, Strathmore University).
- Mwobobia, N. (2013). *Influence of Local Community Involvement in Project Planning on the Sustainability of Projects in Embu County, Kenya.* (Doctoral dissertation, University of Nairobi)
- Nafukho, F. M., Hairston, N., & Brooks, K. (2004). Human capital theory: Implications for human resource development. *Human Resource Development International*, 7(4), 545-551.
- Njahi, J. T. (2017). *Effect of Financial Management Practices On Financial Performance of County Governments in Kenya.* (MBA Project, University of Nairobi Nairobi).
- Njeri, C. K. (2014). *Effect of internal controls on the financial performance of manufacturing firms in Kenya.* (Unpublished Doctorate Thesis, University of Nairobi)

- Njeru, D. K., & Kimutai, G. (2018). Participatory project management and success of slum upgrading projects in Korogocho informal settlements Nairobi City County, Kenya. *International Academic Journal of Information Sciences and Project Management*, 3(1), 74-92.
- Obando, J. A., Luwesi, C. N., Förch, N., Opiyo, A. O., Shisanya, C., & Förch, G. (2018). Kenya Success Story in Water Resources Management: Participatory Capacity Building in Integrated Watershed Management. In *Hydrology and Best Practices for Managing Water Resources in Arid and Semi-Arid Lands* 12(36), 185-208).
- Odhiambo, N. M. (2015). Government expenditure and economic growth in South Africa: An empirical investigation. *Atlantic Economic Journal*, 43(3), 393-406.
- Olanubi, S. O., & Osode, O. E. (2017). The efficiency of government spending on health: A comparison of different administrations in Nigeria. *Journal of Policy Modeling*, 39(1), 79-98.
- onso, A., & Kazemi, M. (2017). Assessing public spending efficiency in 20 OECD countries. In B. Bökemeier & A. Greiner (Eds.), *Inequality and finance in macrodynamics. Dynamic modeling and econometrics in economics and finance* (Vol. 23). Cham: Springer.
- Origa, P. O., & Finance, I. (2015). *Effect of internal controls on the financial performance of manufacturing firms in Kenya*. (Unpublished MSc Project, The University of Nairobi, Nairobi).
- Osiuru, N. M., Rotich, D. G. & Anyango, M. W. (2017). Effect of Auditing on Management of The Public Finances in Kenya: The Case of Government Ministries. *The Strategic Journal of Business & Change Management*. 4, (2), 49 – 69.
- Ouertani, M. N., Naifar, N., & Ben Haddad, H. (2018). Assessing government spending efficiency and explaining inefficiency scores: DEA-bootstrap analysis in the case of Saudi Arabia. *Cogent Economics & Finance*, 6(1), 149-166.
- Pardalos, P. M., Migdalas, A., & Pitsoulis, T. M. (2008). *Pareto optimality, game theory and equilibria* (Vol. 17). Springer Science & Business Media.
- Peteraf, M. A., & Barney, J. B. (2003). Unraveling the resource-based tangle. *Managerial and decision economics*, 24(4), 309-323.
- Ramadan, B. M., Dahiyat, S. E., Bontis, N., & Al-Dalahmeh, M. A. (2017). Intellectual capital, knowledge management and social capital within the ICT sector in Jordan. *Journal of Intellectual Capital*.
- Rotich, G. K., & Okello, B. (2015). Analysis of use of e-procurement on performance of the procurement functions of County Governments in Kenya. *International Journal of Economics, Commerce and Management*, 3(6), 1381-1398.
- Safieddine, A. (2009). Islamic financial institutions and corporate governance: New insights for agency theory. *Corporate Governance: An International Review*, 17(2), 142-158.
- Setiawan, I. (2011). Maqashid Shariah's Criticism of the Pareto Optimum Theory. *Muqtasid: Jurnal Ekonomi dan Perbankan Syariah*, 11(1), 14-28.

- Shi, W., Connelly, B. L., & Hoskisson, R. E. (2017). External corporate governance and financial fraud: Cognitive evaluation theory insights on agency theory prescriptions. *Strategic Management Journal*, 38(6), 1268-1286.
- Sihaloho, E. D. (2018). Efficiency analysis of local government spending of regencies and cities in West Java, 2001-2010. *Review of Indonesian Economic and Business Studies*, 6(2), 111-126.
- Sueyoshi, T., & Goto, M. (2012). Weak and strong disposability vs. natural and managerial disposability in DEA environmental assessment: comparison between Japanese electric power industry and manufacturing industries. *Energy Economics*, 34(3), 686-699.
- Sweetland, S. R. (2006). Human capital theory: Foundations of a field of inquiry. *Review of educational research*, 66(3), 341-359.
- Tripp, T. M., & Sondak, H. (2002). An evaluation of dependent variables in experimental negotiation studies: Impasse rates and Pareto efficiency. *Organizational Behavior and Human Decision Processes*, 51(2), 273-295.
- Wagana, D. M., & Iravo, M. A. (2017). Analysis of the relationship between devolved governance, political decentralization, and service delivery: A critical review of literature.
- Wardhani, R., Rossieta, H., & Martani, D. (2017). Good governance and the impact of government spending on performance of local government in Indonesia. *International Journal of Public Sector Performance Management*, 3(1), 77-102.
- Yang, H., & Pollitt, M. (2010). The necessity of distinguishing weak and strong disposability among undesirable outputs in DEA: Environmental performance of Chinese coal-fired power plants. *Energy Policy*, 3(8), 59-71