

---

**Electronic Theses and Dissertations**

---

2019

# Assessing the efficacy of price regulation on fuel pump prices in Kenya

---

Beryl A. Miswa  
*Strathmore Business School (SBS)*  
*Strathmore University*

Follow this and additional works at <https://su-plus.strathmore.edu/handle/11071/6573>

## Recommended Citation

Miswa, B. A. (2019). *Assessing the efficacy of price regulation on fuel pump prices in Kenya*

(Thesis, Strathmore University). Retrieved from <http://su-plus.strathmore.edu/handle/11071/6573>

**ASSESSING THE EFFICACY OF PRICE REGULATION ON FUEL PUMP PRICES  
IN KENYA**

**BY**

**BERYL MISWA**

**007892**

**SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE  
DEGREE OF MASTER OF COMMERCE AT STRATHMORE UNIVERSITY**



**SCHOOL OF MANAGEMENT AND COMMERCE  
STRATHMORE UNIVERSITY  
NAIROBI, KENYA**

**JUNE 2019**

## DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

© No part of this thesis may be reproduced without the permission of the author and Strathmore University  
Beryl Anyango Miswa

7th June 2019

### Approval

The thesis of Beryl Anyango Miswa was reviewed and approved by the following:

Professor Ruth Kiraka  
Senior Lecturer, Strathmore University Business School,  
Strathmore University

Dr. George Njenga,  
Dean, Strathmore University Business School,  
Strathmore University

Professor Ruth Kiraka,  
Dean, School of Graduate Studies,  
Strathmore University



## **ABSTRACT**

The government through the Energy Regulatory Commission (ERC) sets the fuel price using a formula that takes into consideration the importation cost of crude or refined product, freight, local transportation costs, insurance, refinery processing fees (for crude oil), taxes and a profit margin. Oil Marketing Companies (OMCs) have been critical of the ERC's pricing formula since it does not cover financing costs and the rising cost of doing business due to inflationary pressures. Margins in the sector are also negatively impacted by low margins and high finance costs due to the capital- intensive nature of the business. This study aimed to examine the efficacy of price regulation on the pricing of fuel in Kenya. It sought to assess the appropriateness of components of the pricing formulae, determine the various perspectives of the oil marketers in relation to the pricing of fuel, and examine the success and challenges of the pricing formulae/regulation. The study used descriptive research design, secondary data from the websites of ERC and the oil marketers and conducted in depth interview with top 7 OMC managers. The scope of the study was the ERC and the top seven OMCs based on their market share in Kenya. The findings of the study showed that; the introduction of oil price controls in Kenya had greatly affected the pump prices; the pricing regulation was not beneficial to OMC's and the changes in oil prices due to the pricing formulae had led to increased and uncontrolled economic fluctuations. The study recommended that since the demurrage costs tend to be significant due to clearance delays experienced and the operations should be closely monitored to avoid such unnecessary delays and increased costs. The ERC should still consider changes in international crude oil prices and the changes in the US dollar-Kenya shilling exchange rate in setting maximum oil retail prices for the four products. The study recommends a structure that establishes a clear link between retail prices and import prices based on import costs, distribution margins, demurrage costs, landed costs and tax levels.

**Key Words; Fuel price regulation; Demurrage costs: International crude oil prices: Dealer/Retailer margin in Kenya.**

## **TABLE OF CONTENTS**

<b>DECLARATION.....</b>	<b>i</b>
<b>ABSTRACT.....</b>	<b>ii</b>
<b>LIST OF FIGURES .....</b>	<b>v</b>
<b>LIST OF TABLES .....</b>	<b>vi</b>
<b>ABBREVIATIONS .....</b>	<b>vii</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>viii</b>
<b>DEDICATION.....</b>	<b>ix</b>
<b>CHAPTER ONE: .....</b>	<b>1</b>
<b>INTRODUCTION.....</b>	<b>1</b>
1.1 Background .....	1
1.1.1 Fuel Price Regulation.....	3
1.1.2 Perspectives of the Oil Marketer.....	4
1.1.3 Successes of Fuel Price Regulation .....	4
1.1.4 Challenges of Fuel Price Regulation.....	4
1.2 Problem Statement .....	5
1.3 Research Objectives.....	5
1.4 Research Questions.....	6
1.5 Scope of the Study .....	6
1.6 Justification of the Study.....	6
<b>CHAPTER TWO .....</b>	<b>7</b>
<b>LITERATURE REVIEW .....</b>	<b>7</b>
2.1 Introduction .....	7
2.2 Theoretical Foundation of Oil Price influences.....	7
2.2.1 Hubbert's Peak Oil Theory .....	7
2.2.2 Hotelling's Theory on Price.....	8
2.2.3 The Informal Approach Theory .....	10
2.3 Empirical Review .....	11
2.3.1 Fuel Pricing Regulation .....	11
2.3.2 Perspectives of the Oil Marketer.....	15
2.3.3 Successes of Fuel Price Regulation .....	17
2.3.4 Challenges of Fuel Price Regulation.....	17
2.4 Research Gap .....	19
2.5 Conceptual framework .....	21
2.6 Operationalization of Variable Measurements.....	21
<b>CHAPTER THREE .....</b>	<b>23</b>
<b>RESEARCH METHODOLOGY .....</b>	<b>23</b>
3.1 The Research Design .....	23

3.2 The Population and Sampling Methods.....	23
3.3 Data Collection Methods .....	24
3.4 Data Validity and Reliability .....	24
3.4.1 Validity .....	24
3.4.2 Reliability.....	24
3.4 Data Analysis .....	25
3.6 Ethical Issues .....	26
<b>CHAPTER FOUR.....</b>	<b>27</b>
<b>DATA ANALYSIS AND PRESENTATION .....</b>	<b>27</b>
4.1 Introduction .....	27
4.2 Company information .....	27
4.2.1 Company history .....	27
4.2.2 Company market share.....	28
4.3 Trends in pump prices.....	30
4.4 Components of the pricing formulae on the pump price .....	32
4.4.1: Relationship between Pump Prices and their Determinants .....	33
4.5 Perspectives of the oil marketers to the pricing of fuel .....	34
4.6 Success of the pricing formulae/regulation.....	38
4.7 Challenges of the pricing formulae/regulation .....	40
4.8 Summary .....	42
<b>CHAPTER FIVE .....</b>	<b>43</b>
<b>DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>43</b>
5.1 Introduction .....	43
5.2 Discussion of findings.....	43
5.2.1 Appropriateness of components of the pricing formulae on the pump prices.....	43
5.2.2 Perspectives of the oil marketers in relation to the pricing of fuel in Kenya. ....	44
5.2.3 Successes of the pricing formulae/regulation .....	45
5.2.4 Challenges of the pricing formulae/regulation.....	45
5.3 Conclusion .....	46
5.4 Recommendations .....	47
5.5 Limitations of the study .....	49
5.6 Recommendation for Further Research .....	49
<b>REFERENCES.....</b>	<b>50</b>
<b>APPENDIX.....</b>	<b>54</b>
Appendix I: Ethics Review Approval.....	54
Appendix II: Introductory Letter .....	55
Appendix III: Interview Guide .....	56
Appendix IV: List of Organizations .....	58

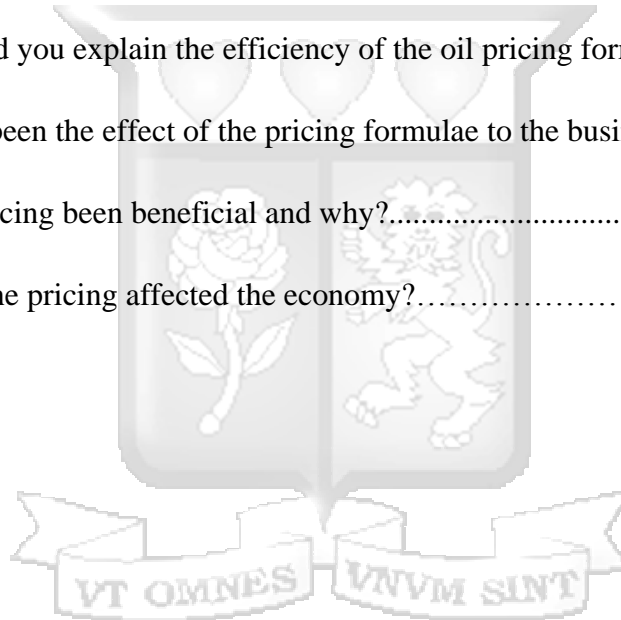
## LIST OF FIGURES

<b>Figure 2.1</b> Conceptual Framework.....	21
<b>Figure 4.1:</b> Company history.....	27
<b>Figure 4.2</b> Trends in Super petrol prices (2011-2017) .....	30
<b>Figure 4.3</b> Trends in Automotive diesel prices (2011-2017) .....	31
<b>Figure 4.4</b> Trends in Kerosene prices (2011-2017) .....	31
<b>Figure 4.5</b> Pump Prices and their Determinants (2011-2017) .....	33



## LIST OF TABLES

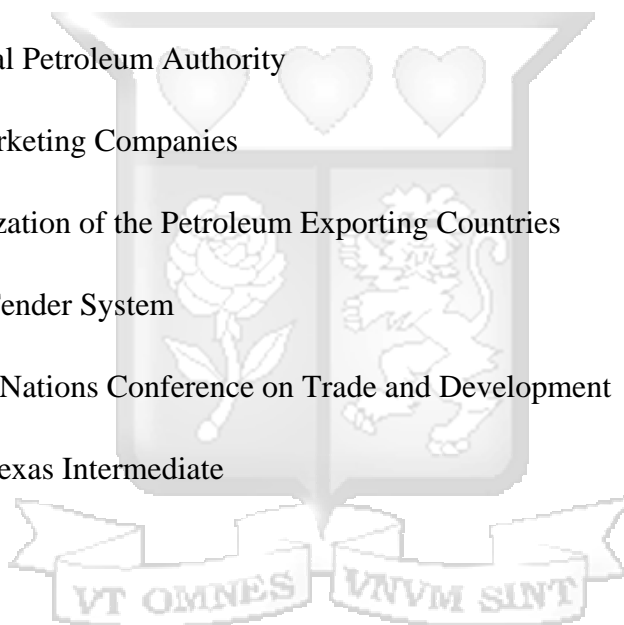
<b>Table 2.1:</b> Operationalization of Variables.....	21
<b>Table 4.1:</b> Petroleum market share.....	28
<b>Table 4.2:</b> Retail market share.....	29
<b>Table 4.3:</b> Reseller market share.....	29
<b>Table 4.4:</b> Components of the pricing formulae on the pump price.....	32
<b>Table 4.5:</b> How would you compare the oil pricing in Kenya before and after regulation to the international pricing?.....	34
<b>Table 4.6:</b> How would you explain the efficiency of the oil pricing formulae in Kenya?.....	36
<b>Table 4.7:</b> What has been the effect of the pricing formulae to the business?.....	37
<b>Table 4.8:</b> Has the pricing been beneficial and why?.....	39
<b>Table 4.9:</b> How has the pricing affected the economy?.....	40





## ABBREVIATIONS

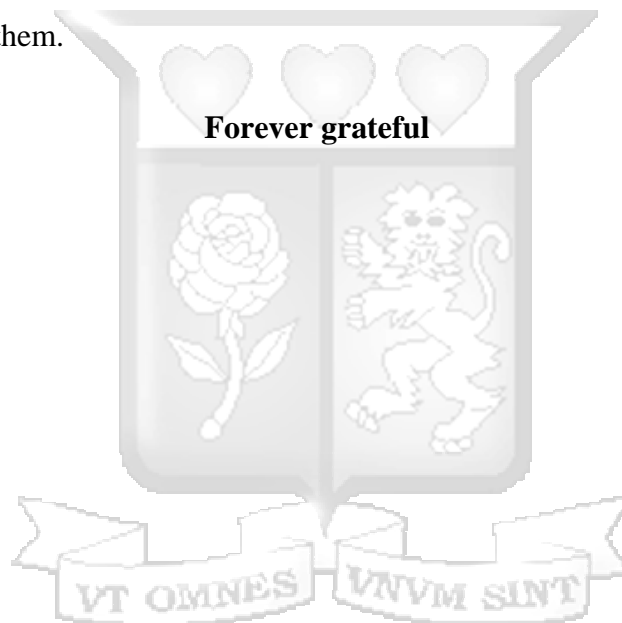
<b>CERA:</b>	Cambridge Energy Research Associates
<b>CIF:</b>	Cost, Insurance and Freight
<b>ERC:</b>	Energy Regulatory Commission
<b>EWURA:</b>	Energy and Water Utilities Regulatory Authority
<b>KPC:</b>	Kenya Pipeline
<b>NOCK:</b>	National Oil Company of Kenya
<b>NPA:</b>	National Petroleum Authority
<b>OMC:</b>	Oil Marketing Companies
<b>OPEC:</b>	Organization of the Petroleum Exporting Countries
<b>OTS:</b>	Open Tender System
<b>UNCTAD:</b>	United Nations Conference on Trade and Development
<b>WTI:</b>	West Texas Intermediate



## ACKNOWLEDGEMENTS

I offer my sincerest gratitude to God for giving me the wisdom, strength and courage and for guidance throughout. Special thanks go to my supervisor Prof. Ruth Kiraka for providing invaluable and active guidance throughout the study. Her immense command and knowledge enabled me to shape this research project to the product that it is now. I also owe my gratitude to several people who in one way or another contributed towards completion of this project especially my fellow colleagues at work and friends. I also wish to thank all the respondents who took their valuable time to provide me with the information sought for this study.

Finally, and most importantly, I offer all my love and my deepest thanks to my family, especially my husband Kabiru Mwangi, for their unconditional love and support. They gave me the opportunity to study and nurtured my desire to learn. I will always have the greatest and most sincere love for them.



## **DEDICATION**

This work is dedicated to my family especially my parents, my husband Kabiru Mwangi and my late cousin Patricia Miswa, all who have always encouraged me to be better.



## CHAPTER ONE:

### INTRODUCTION

#### 1.1 Background

Crude oil is the raw oil from which refined petroleum products such as gasoline, diesel and gas are derived. The price of crude oil is influenced by several factors that are beyond the traditional supply and demand dynamics. The most notable influence is from geopolitics. As a result, there is more than one price for crude oil. World crude oil prices are established in accordance with three market traded benchmarks; West Texas Intermediate (WTI), Brent, and Dubai, and are quoted at premiums or discounts to these benchmark prices (*Energy Act of Kenya, 2006*). The price of a barrel of oil depends on both its grade and location of production. Grade is determined by the oil's specific gravity and sulphur content (OPEC 2010).

Research by Fattouh (2011) and Mabro (2005) showed that the impact of crude oil price changes on refined products is mainly due to its price change. Crude oil is the primary source of refined petroleum product. It is therefore expected that any change in crude oil prices will result in a corresponding change in the price of refined products. Fattouh (2011) found that little attention has been devoted to the process of price discovery in the oil markets. However, in a study on international oil price regime origins, rationale, and assessment, Mabro (2005) observes that petroleum prices do not always move at the same rate – be it up or down – as crude oil prices. The prices paid by consumers for a petroleum product may differ significantly from the ex-refinery price because of excise and value-added taxes, which, in many countries, amount to a large percentage of the price (Fullerton Jr, Jimenez, & Walke, 2015).

Critics of price regulation like Rockoff (2008) hold the view that price controls do not accomplish what they were intended to and are generally to be avoided. Martin (2002), on the other hand, states that the primary criticism levelled against price controls is that, by keeping prices artificially low, demand is increased to the point where supply cannot keep up, thus leading to shortages in the price-controlled product. He further concluded that the shortages created lead to black markets where prices for the same good exceed those of an uncontrolled market. The absence of these controls would lead to an immediate price increase, which could temporarily shock the economic system. These views are significant to this study since at the global level, OPEC's efforts to control prices of oil have been unsuccessful and currently market factors mainly determine world oil prices (OPEC, 2015).

There are two factors that are used to determine oil prices. These are the international elements and the domestic elements. International elements include cost per barrel of crude oil, international petrol spot prices, freight cost, insurance cost and storage costs. Domestic elements include transport and delivery costs, wholesale or marketing margin, retail margin among others (GPP, 2017). Countries such as Kenya, South Africa, Ghana, China, Mexico, Algeria, Egypt, Zambia, Belgium, Kuwait and Costa Rica regulate pump prices by either setting a ceiling or fixed price.

The Kenyan oil market consists of various players: Kenya Pipeline Company, National Oil Company of Kenya, Energy Regulatory Commission and Oil Marketing Companies. The Kenya Pipeline Company (KPC) was incorporated in 1973. It is a state corporation under the Ministry of Energy with 100% government shareholding. The Kenya Pipeline Company Limited, Kenya Railways Corporation and private transporters are involved in the transportation of petroleum products from the Port of Mombasa to various parts of the country and neighbouring countries as exports. National Oil Corporation of Kenya Limited (NOCK) was incorporated in 1981 under the Companies Act (Cap 486). The company's main objective then was to coordinate oil exploration (upstream) activities. Kenya solely relies on oil imports to satisfy its oil energy needs. According to Kojima et al. (2010), Kenya has an Open Tender System, whereby petroleum products are purchased by a single company for the entire market based on a public tender and shared among all oil marketing companies in proportion to their share of the market.

According to the United Nations Conference on Trade and Development (2005), most developing country governments face heavy exposure to oil price volatility, either on the export or the import side – and sometimes, both. Kenya is no exception, being a net importer of oil products. Instability of pump prices of oil products forced the Government of Kenya to re-introduce price regulation in December 2010. Universal price subsidies and petroleum products tax reduction are the two most commonly used methods of partially offsetting higher oil prices on the international market (Kojima, 2010). Prior to reintroduction of price regulation, Kenya had tried to use the National Oil Corporation of Kenya (NOCK) to stabilize prices of oil products. This was however not successful (Kojima, 2010).

It is not clear what causes instability of oil prices whether under regulated or deregulated oil pricing mechanisms. According to Consumer Federation of Kenya (Cofek, 2015), the consumers were generally of the view that Oil Marketing Companies (OMCs) in Kenya

colluded to set high prices so that they could cash in on high margins. The OMCs, on their part, blamed the largely government-controlled oil supply process along with inefficiencies in the Government administered Open Tender System, (PIEA, 2015). There was also an inefficient refining system. This resulted from usage of a technologically outdated refinery as well as a capacity constrained storage and distribution network operated by KPC. It also resulted from a tax system that demanded payment of excise and import duties prior to receipt of products by oil companies. Pressure from Parliament, consumer groups and trade unions put the Ministry of Energy on the spot as to what it was doing to control rising oil prices owing to the resultant and persistent increase in the cost of living (Cofek, 2015). This led to the *Energy (Petroleum Pricing) Regulations, 2010* that introduced petroleum price regulation for four specified petroleum products, super petrol (gasoline), regular petrol, kerosene and automotive diesel (gas and oil). The price regulations allowed ERC to set the maximum monthly prices of these products at both retail and wholesale levels (ERC 2011).

### 1.1.1 Fuel Price Regulation

Regulation is the sustained and focused control, normally exercised by a public agency, over activities that are valued by a community. It can either prevent undesirable behaviour, actions and activities or enable and facilitate desirable ones (Njoroge, 2010). There are two primary forms of price control, a price ceiling, the maximum price that can be charged, and a price floor, the minimum price that can be charged (Selnick, 1985). Kenya exercises the price ceiling form of price control in the energy sector. Majumdar (2003) argued that whether externally mandated by regulatory authorities or internally mandated because of top management vision, price caps are mechanisms that provide firms with incentives to be competitive.

The simplified pricing formulae according to ERC (2010), the price for Super Petrol, Regular Petrol, Kerosene, and Automotive Diesel is set in accordance with the following formula:

$$RPr = A + B + C + D$$

Where:

RPr = the maximum retail price of Super Petrol, Kerosene, or Automotive Diesel

A= the landed costs (cost of refined crude oil product)

B = the storage and distribution charges (transportation)

C= the Oil marketing Company's margin (both importers and dealers)

D = the taxes and levies charged

### **1.1.2 Perspectives of the Oil Marketer**

Oil Marketing Companies (OMCs) have been critical of the ERC's pricing formula since it does not cover financing costs and the rising cost of doing business due to inflationary pressures. Margins in the sector are also negatively impacted by high finance costs due to the capital-intensive nature of the business. The introduction of price regulation received strong resistance from the oil marketing companies who felt that retail prices of petroleum would not reflect changes in the international oil prices thereby affecting their profitability (Lardic, 2008).

### **1.1.3 Successes of Fuel Price Regulation**

For many industries, regulation has the capacity to affect decisions on capital expenditure, corporate image and risk management. This means that regulation can trigger a shift in economic value of industries and hence determines the behaviour and framework of industries, for example, marginal revisions in prices can have a significant impact on overall profits, (McKinsey, 2005). However, companies in the oil industry usually record high levels of profits in some cases and experience increasing cash flows and revenues in these periods of high oil prices, (Pirog, 2010).

### **1.1.4 Challenges of Fuel Price Regulation**

According to Njeri (2013) the study done by African Globe in Kenya in 2011 showed a reduction in profit margins, and an increase in competition because of the official price caps. Thirteen big oil-marketing firms divested out of Africa and shifted focus to the more profitable exploration and production activities. In 2010 Shell divested from 21 markets in Africa, becoming the latest oil marketer to exit Kenya. This following in the footsteps of five international majors that have left the country between 1998 and 2008 over dwindling margins. Other companies that have exited the Kenya oil market are Caltex (Chevron), Beyond Petroleum plc. (BP), Mobil, Agip and Esso. Shell withdrew from all African operating markets except Egypt and South Africa.

A study by Namiba (2014) concluded that the introduction of petroleum price regulation has had a negative effect on the financial performance of oil firms in Kenya. According to Njoroge (2005), he found out that price regulation had attracted previous resistance from oil marketers who opted for markets to be controlled by forces of demand and supply.

## 1.2 Problem Statement

The ERC sets the price using a formula that takes into consideration the importation cost of crude or refined product, freight, local transportation costs, insurance, refinery processing fees (for crude oil), taxes and a profit margin. This has worked on limiting the maximum pump prices that oil marketers can charge (ERC, 2011). The Kenyan downstream industry operates on very small profit margins, which leaves little room for errors in pricing (Mika, 2013).

Oil Marketing Companies (OMCs) have been critical of the ERC's pricing formula since it does not cover financing costs and the rising cost of doing business due to inflationary pressures. Margins in the sector are also negatively impacted by high finance costs due to the capital-intensive nature of the business, (PIEA 2015). The introduction of price regulation received strong resistance from the oil marketing companies who felt that retail prices of petroleum would not reflect changes in the international oil prices thereby affecting their profitability (Lardic, 2008).

Lardic (2008) argued that in a liberalized economy, the market forces of demand and supply should determine prices. Kenya operates in a free market system. In such a market, forces of demand and supply determine prices of goods. Given that price controls have been introduced in a free market, there is need to investigate their efficiency. Therefore, this research project aims at assessing the efficacy of price regulation on pump prices in Kenya by answering the question; What is the efficacy of price regulation on fuel pump prices in Kenya?

## 1.3 Research Objectives

The main objective of this study is to assess the efficacy of price regulation on fuel pump prices in Kenya. The specific research objectives are to:

1. Assess the appropriateness of components of the pricing formulae on the pump price.
2. Determine the perspectives of the oil marketers in relation to the pricing of fuel in Kenya.
3. Examine the successes of the pricing formulae/regulation during the period of study.
4. Examine the challenges of the pricing formulae/regulation during the period of study.



## **1.4 Research Questions**

1. How appropriate are the components that make up the pricing formula with regards to the final pump price in Kenya?
2. What are the perspectives of the oil marketers in relation to the pricing of fuel in Kenya?
3. What are the successes of the pricing regulation/formulae?
4. What are the challenges of the pricing regulation/formulae?

## **1.5 Scope of the Study**

The scope of the study was the ERC as well as the top tier registered oil marketing companies in Kenya. The top tier is made of seven companies, which command up to 55% of the market share. The reason for selecting this group is that they are the major players in the oil industry on price regulation. The Oil Marketing Companies purchase and sell petroleum products in Kenya. The ERC is not only the regulating body but also the one that sets the monthly fuel pump prices based on the formula. The study will cover a period 72 months comprising of six years (January 2011 to January 2017).

## **1.6 Justification of the Study**

This study will be important in providing an update of the knowledge concerning the relationship between crude oil prices and the final pump price.

To the OMCs and the regulator, this study will not only determine the weighting of the current formula components but also identify other components and their impact on the final pump price. This may improve the predictability of price movement of the refined products to the consumer and other market stakeholders.

To policy makers, this study will highlight the successes and drawbacks to pricing regulation in a free market economy. This study will also provide the motivation to planners and policy makers to decide whether to review fuel price regulation in Kenya.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

In this chapter a theoretical review and a conceptual framework of the study is covered. This research uses three primary theories that explain volatility in world oil prices. These are the Hubbert's Peak Oil Theory, Hotelling's theory and the Informal Approach Theory in respect to oil cartels and their influences on world oil prices. Empirical literature on regulation of oil prices is also reviewed. The chapter concludes with a conceptual framework of the factors that affect the final pump price to the consumer.

#### **2.2 Theoretical Foundation of Oil Price influences**

Three theories are discussed. These are the Hubbert's Peak Oil Theory, Hotelling's Theory and the Informal Approach Theory in respect to oil cartels and their influences on oil prices.

##### **2.2.1 Hubbert's Peak Oil Theory**

Peak oil, an event based on M. King Hubbert's theory, is the point in time when the maximum rate of extraction of petroleum is reached, after which it is expected to enter terminal decline (Hirsch, 2005). The Peak Oil theory is based on the observed rise, peak, fall, and depletion of aggregate production rate in oil fields over time. By observing past discoveries and production levels, and predicting future discovery trends, Hubbert used statistical modeling in 1956 to accurately predict that the United States oil production would peak between 1965 and 1971. Hubbert used a semi-logistical curved model. This theory assumes that the production rate of a limited resource would follow a roughly symmetrical distribution. Depending on the limits of exploitability and market pressures, the rise or decline of resource production over time might be sharper or more stable, appear linear or curved (Hirsch, 2006).

During the initial phases, production rate increases because of the discovery rate and the addition of infrastructure. In the last phase production declines because of resource depletion. The Hubbert peak theory is based on the assumption that the amounts of oil in wells are finite. Therefore, the rate of discovery, which initially increases quickly, must reach a maximum and decline. In the US, oil extraction followed the discovery curve after a time lag of 32 to 35 years (Wood, 2013)

This theory has also been used to predict supply of other natural resources. In his study of natural gas, Reynolds (2005) predicted that the North American peak would occur in 2007. Bentley (2002) predicted a world "decline in conventional gas production from about 2020". Heinberg (2009) applied the theory to coal and noted that the date of peak annual energetic extraction from coal is likely to come earlier than the date of peak in quantity of coal (tons per year) extracted as the most energy-dense types of coal have been mined most extensively.

Economist Michael Lynch (2013), a critic of this theory, argues that the theory behind the Hubbert curve is too simplistic and relies on an overly Malthusian point of view. Cambridge Energy Research Associates, CERA (2005) criticized the Hubbert-influenced predictions. CERA does not believe there will be an endless abundance of oil, but instead believes that global production will eventually follow an "undulating plateau" for one or more decades before declining slowly. Cavallo, (2004) while predicting a conventional oil supply shortage by no later than 2015, does not think Hubbert's peak is the correct theory to apply to world production (Cavallo, 2004).

Opponents to the theory of peak oil often cite new oil reserves that have been found, which continue to forestall a peak oil event. In particular, some contend that oil production from these new oil reserves as well as from existing fields will continue to increase at a rate that outpaces demand; until alternate energy sources for our current fossil fuel dependence are found (Mark 2013).

This theory is about a finite resource that undergoes different phases; a rise in extraction, peak, decline and depletion and whose pricing affects the sales. These stages may affect oil pricing in different ways. Industry players often employ different tactics to get the product moving during these phases. Hubbert's Peak Oil Theory needs evaluation to establish the effect of these phases; rise, peak, fall and depletion, on the pricing of fuel in Kenya.

### **2.2.2 Hotelling's Theory on Price**

Harold Hotelling, in 1931, wrote a paper titled "The Economics of Exhaustible Resources" that suggests that the deposits of exhaustible resources should be viewed as an asset, just like any other income-producing investment (Hotelling, 1931). His argument was that because non-renewable resources must compete with other assets, there is a systematic way to forecast their future prices. As the world's supply of oil diminishes, supporters of this theory suggest that there is increasing rationale in evaluating Hotelling's insights into future oil prices.

The theory proposes and assumes that markets are efficient and that, as the owners of non-renewable resources are motivated by profit, they will produce a limited supply of their product if it will yield more profit. Although short-term market volatility is still a function of short-term supply and demand forces, according to Hotelling, long-term prices should increase year after year at the prevailing interest rate. Hotelling's theory is considered the pillar in the theory of non-renewable resource economics through its rich insight on the long-run behaviour of resource price and scarcity of extraction (Gaitan et al. 2007).

Conversely, if the expectations were that prices would increase faster than the prevailing rate, they would be better off keeping the oil in the ground. However, because oil continues to be produced and there is no evidence of massive inventories of oil, the assumption is that oil prices will increase at the prevailing interest rate. This theory holds for all exhaustible resources and leads to a situation where increasing prices lead to the gradual reduction in demand and production levels until there is no supply and the resource is completely consumed (Stammers 2000).

A contradiction to this theory is the strong backwardation (Stammers 2000). Dynamics in the oil futures markets have led to periods where future prices were below spot prices. The suggestion is that expected future prices in real terms were falling and were not growing by the prevailing rate. In determining future prices, one also must consider that they include a risk component and the expectation of the volatility of spot prices. Chakravorty et al. (2009) indicates that the Hotelling model is the market price of non-renewable resources and must increase with time, if costs remain time-invariant. This is however not the case, as such an increase in the price of non-renewable sources may not be sustainable. Factors such as regulation and speculation in commodity markets may come into play resulting in the upward and downward price movements (Chakravorty et al. 2009).

The Hotelling's Theory on Price has been criticised for several reasons. Opponents of the theory, such as Stammers (2000), suggests that the impact of alternative energy sources and other energy-related market factors cause the model to fail. Using oil as an example, the theory does not take into consideration the changes in production costs due to the cost of extraction, technological change or market view on supply limitations. The theory assumes that the marginal cost of production increases irrespective of the stock being produced. Hence, it does not take into consideration the cumulative effect of oil already produced. Oil producers have

suggested that the cost of production, specifically extraction costs, increases as wells are drilled deeper to reach ever-diminishing supply, Stammers (2000).

Krautkraemer (1998) on the other hand argues that economic indicators show that there has been growth in non-renewable resource supply as new deposits continue to be discovered and the extraction technology continues to progress, mitigating the scarcity effect. A disregarded fact is that oil and other resources, vary in quality. Real-world experience suggests that less expensive grades are produced first, once again leading to increasing extraction costs with the reduction of stock supply. In both cases, the cost and future price of the resource would not follow a gradual and predictable path, Stammers (2000). Another trend that has not been taken into consideration is the rate of technological change and its effect on production costs and price. It also does not take into consideration the advent of new renewable energy sources, their cost of production and prices, and their effect on non-renewable resources. Innovation and technological progress should improve the extraction capacity of producers and decrease extraction costs and prices over the long term. Technological progress in the production of solar, wind and other substitutes for oil tend to also affect prices if they significantly reduce demand or provide these resources profitably and competitively with petroleum products, Stammers (2000).

The effects of innovation, technological advancements and alternative sources of energy in respect to crude oil prices is a factor to consider in this study as crude is the primary component in the pricing of refined fuels. This study shall determine the extent to which crude oil influences the fuel pump prices in Kenya.

### **2.2.3 The Informal Approach Theory**

This theory postulates that changes in prices are due to speculation of oil derivatives over the past decade. The unprecedented surge in the spot price of crude oil during 2003-08 and 2010-2011 sparked a heated public debate about the determinants of the price of oil. The popular view was that the surge in the price of oil during 2003-08 and 2010-2011 could not be explained by economic fundamentals. Instead, it was caused by what has been called the "financialization" of oil futures markets, with speculation becoming a major determinant of prices. This interpretation led to calls from politicians to regulate oil futures markets (OPEC, 2014).

In theory, prices on futures markets could raise prices on spot markets, where real oil is bought and sold. Some studies (Kaufmann & Ullman, 2009) indicate that the change in the relationship between spot and futures markets, observed over several years, and the long-term uptrend in prices triggered by fundamental market developments have been exacerbated by speculation. Triulzi, D'Ecclesia, and Bencivenga, (2010) confirm the worries expressed by consumers about the extreme volatility of the oil price induced by speculation. Moreover, Stevans and Sessions (2008) and Acharya et al. (2009) provided evidence that, crude oil inventory holdings and futures prices did show a positive correlation and thus influence prices on the spot market.

The four determinants of oil prices, supply, demand, OPEC powers and oil derivatives complement one another as shown by Hamilton (2008) and Dees et al. (2008). Hamilton (2008) used the major factors to explain the causation for oil pricing as follows: Whenever rate of increase in supply is far less than the rate of increase in demand speculation about future supply shortage will occur. Fattouh (2007) Hamilton (2008) and Dees et al. (2008) show that all four determinants do not necessarily contradict, but rather complement one.

It is apparent that this theory supports the idea that speculation of oil derivatives has affected the pricing of oil. This is what led to the regulation of oil futures market (OPEC, 2014). It is therefore important to establish if the oil derivatives are a component of the formula for pump prices in Kenya. This study shall also determine whether the informal approach theory should be a concern is to oil marketers in relation to the pricing of fuel in Kenya.

## **2.3 Empirical Review**

### **2.3.1 Fuel Pricing Regulation**

Various countries across the world control fuel prices. Out of 97 countries reviewed by Global Petroleum Price (GPP), 40% practice either a price ceiling or a fixed price regime. They base their pricing on different factors; both domestic and global. Some of the countries only set the ceiling price. These countries include Belgium, Cape Verde, China, Honduras, Israel, Kenya, Luxembourg and Mexico. There are other countries that set a fixed price for fuel pump prices. Some of these countries are Angola, Bolivia, Egypt, Ghana, South Africa, Jordan and Pakistan (GPP, 2017).

Stability of macroeconomic variables for example, interest rates, inflation, Gross Domestic Product growth rate and strength of the local currency in comparison with foreign currencies is another critical factor in the management of OMC's. High interest rates regime coupled with

volatile local currency translates to high financing costs and foreign exchange losses and vice versa. High inflation on the other hand, translates to an increase in fixed costs while low and stable inflationary measures reduce volatility of fixed expenses while enhancing accurate forecasts and budgeting, (Energy Regulation Commission, 2012).

Kolla (2014) explored fuel price regulations, he mentioned two factors that the South African government used to determine pump prices on the first Wednesday of every month. These are international elements and domestic elements. The international elements are, Basic Fuel Price; which is the cost a South African would incur to import a litre of oil, International Petrol Spot Prices, Freight Cost, Insurance Cost, Storage Costs and Stock Financing Cost at 2% points below the rate of the Standard Bank of South Africa. He further stated the domestic determinants as transport and delivery costs, wholesale or marketing margin, retail margin, equalization fund levy, fuel tax, customs duty, excise levy and the road accident fund. These are used to calculate the pump prices.

In Ghana, the National Petroleum Authority (NPA) regulates fuel prices. This body was established by the *NPA Act 2005, Act 691*. As a regulator, the authority is tasked with ensuring that the industry remains profitable, fair and efficient. The NPA licenses oil marketing companies and bulk oil distribution companies. It also has the powers to impose sanctions and penalties on those companies that do not adhere to its regulations (NPA, 2017). The authority considers both domestic and external factors when setting the prices. The pump price; this is the sum of the refinery price, an external factor, and the taxes and profit margin, domestic factors. The refinery price is the sum of Cost, Insurance and Freight (CIF) and related charges, this is also a major factor. The other domestic factors are a sum of off-loading costs, in-transit losses, inspection, financial and storage costs, in-plant losses, rack loading costs and the margin. Similarly related costs play a big role in determining oil prices in Kenya (Amin, 2009).

Blackmon (2013) presents both sides of the argument for and against oil and gas price controls. He argues that regulation is critical to hedge the consumers from increased costs. According to his analysis, if oil prices go up, then the producers of other goods who use oil will incur increased costs. Such producers will therefore be forced to increase the price of goods, shifting the burden to the consumers and thus reducing their bargaining power; it results in inflation. In his analysis, Blackmon (2013) also exposes the other side of the argument; why pump prices should be controlled. In his view, controlling the price of fuel defeats the purpose of a free

market. The argues that governments should allow economic agents to freely influence the price and availability of fuel in any particular economy.

In the United States of America, the rise in oil prices is as a result of soaring global prices. The tension between USA and Iran makes it impossible to predict what the relationship with other Arab oil exporters will be(Cafferty, 2012). According to Cafferty (2012) the administrations of Presidents Nixon and Ford imposed price controls in the 1970s. This was a reaction to the rising oil prices caused by cuts by the OPEC. The state moved in to control gas prices because it was no longer a luxury but a necessity. The controls did not hold for long and were abolished in 1981.

In Tanzania, the price of fuel is regulated by the Energy and Water Utilities Regulatory Authority (EWURA). This is an independent multi-sectoral regulatory authority that was established by the *EWURA Act Cap 414* of the laws of Tanzania. It is responsible for the technical and economic regulation of electricity, petroleum, natural gas and water in Tanzania. Its aim is to promote effective competition and economic efficiency and protect the interest of consumers through setting up price regulations and licensing (EWURA, 2016).

The Department of Energy of South Africa is responsible for setting the prices of fuel in the country. It was formed under the Energy Act of 2008 in South Africa. It is responsible for exploration, development, utilisation and management of South Africa's energy sources. This department is tasked with regulation of petroleum and petroleum products in South Africa. The department aims at ensuring there is optimum and orderly functioning of the petroleum industry to achieve the goals of the government through price controls (Department of Energy, 2016).

A study carried out by Bhattacharjee (2013) on the impact of crude oil prices on Indian economy showed that crude oil price plays a significant role in rising the Whole sale price index (WPI); crude oil prices have positive impact on Whole sale price index (WPI) Similarly, this study conquered with the findings of Kilian (2008) that a rise in the price of energy relative to output leads to decline in the productivity of existing capital and labour as well as the role of inflation is significant in declining GDP growth an economy. Angelier (1991) indicates that, in the short-run, supply and demand interaction results to oil price fluctuations whose magnitude and frequency depend on marketing arrangements for crude oil available at a given time periods.



Asplund et al, (2000) on their part analysed the pass-through of costs to retail petroleum prices in the Swedish petroleum market. The study used daily data to examine price responses in the Swedish petroleum market to changes in the Rotterdam Spot price, exchange rate and taxes. The study tested various symmetries such as downward and upward flexibility of prices, symmetry in response to exchange rates, spot market prices and taxes. The results showed that the relationship between prices and costs in the Swedish petroleum market portray a pattern regarded as typical for many products; the price remains fixed for some period, and when adjusted is in the direction motivated by the underlying cost.

After the enactment of the Restrictive Trade Practices, Monopolies and Price Control Act of 1989, the petroleum sub-sector in Kenya was regulated. The Price Control Act of 1989 was also enacted and aimed at promoting competition and reducing direct control of prices in the entire economy. Other laws that were enacted are the Petroleum (Exploration & Production) Act 1994 and the Petroleum Development Fund Act No. 4 of 1991. The Energy Act 2006 consolidated all laws relating to energy and provided for the establishment of the Energy Regulatory Commission (ERC) as a single sector regulatory agency with responsibility for economic and technical regulation of electric power, renewable energy, and petroleum sub-sectors. More recently the Competition Act 2009, which seeks to promote and safeguard competition in the economy; protect consumers from unfair and misleading market conduct; and provide for the establishment, powers, and functions of the competition tribunal and connected purposes (Njoroge, 2010).

The simplified pricing formulae according to ERC (2010), the price for Super Petrol, Regular Petrol, Kerosene, and Automotive Diesel is set in accordance with the following formula:

$$RPr = A + B + C + D$$

Where:

RPr = the maximum retail price of Super Petrol, Kerosene, or Automotive Diesel

A= the landed costs (cost of refined crude oil product)

B = the storage and distribution charges (transportation)

C= the Oil marketing Company's margin (both importers and dealers)

D = the taxes and levies charged

This formula's efficiency is questionable. It still remains unknown why the price of crude oil keeps falling and yet the price of fuel keeps increasing in Kenya. This then questions the effectiveness of the current formula and regulation as whole. This research aims at assessing the efficacy of the price regulation on fuel pump price.

### **2.3.2 Perspectives of the Oil Marketer**

Aress (2011) argues that excessive price competition reduces the profitability of the company while low price competition enables oil companies adjust prices in line with their operational strategies. Movement in international oil prices and exchange rates between local currency and the American dollar impacts on the product cost. The reflection of these costs on the prices of the product determines the level at which oil companies are able pass them to consumers.

Carranza et al., (2011) studied the effect of price regulations on the organization and performance of gasoline market in Quebec and other parts of Canada. The goal of the research was to demonstrate that price regulations could have important unintended consequences on prices and productivity in the longer run by distorting the structure of markets. They argued that price control policies crowded markets hence creating an endogenous barrier to entry for low-cost retailers. The study was based on a sample of gasoline stations before and after the implementation of price control policy. The study showed that because of the price regulation policy, prices were lower, and competition was higher. The results therefore highlighted that price regulation affected the market structure and can therefore have unintended consequences on profitability. While this analysis may be correct in the short run, it did not consider the dynamic equilibrium consequences of price controls.

Misoi (2012) studied the impact of oil price regulation on financial performance of OMC's in Kenya. The research covered a period of twenty-four months between the year July 2010 and June 2012. The study used data from published audited semi-annual reports. The performance of the industry was analysed using ratios for the period before and after introduction of price regulation. He found that gross profit margin reduced tremendously thus shrinking the company's gross profit after introduction of oil price regulation. The main limitation of the study was that data was historical and therefore the findings could not be fully applicable at the time of the study due to the dynamic operating environment in the Kenyan market.

Wabwoba (2011) studied the impact of oil price regulation on the financial performance of National Oil Corporation of Kenya and found out that price caps had significant impact on

revenues generated by the company. The period of study was between July 2010 and June 2011 being six months before introduction of price controls and six months after. The study showed that gross profit margin for the first six months before introduction of price regulation showed growth in the profitability of the company and decline after introduction of controls.

In the United States, proposals to control gasoline prices and tax producers' windfall profits were popular ideas during the oil shocks of the 1970s and 1980s. This era of price controls was however not successful as it is mostly remembered for long lines at gas stations (Barlett, 2010). A classic example of how price controls cause shortages was during the Arab oil embargo between 1973 and 1974. Long lines of cars and trucks quickly appeared at retail gas stations in the U.S. and some stations closed because of fuel shortage at the low price. The fixed price was below what the market would otherwise bear and, as a result, the inventory disappeared. There was no difference between involuntary and voluntary posted prices as scarcity resulted in either case.

Killick (1973) in the journal titled *Price Controls in Africa: The Ghanaian experience* concluded that the controls were largely ineffective, with the controlled prices tending to increase almost as fast as the real prices. Kilian (2008) studied the impact of the regulation of petroleum prices on the financial performance of Total South Africa Limited. Ratio analysis was used to measure the performance three years pre and post introduction of price caps. He observed existence of a notable impact negatively on the financial performance of the company for three years succeeding introduction of price regulation. Seo and Shin (2010) studied the impact of price cap regulation on productivity growth in the US telecommunications industry. They found pronounced positive effect of price cap regulation on productivity growth.

Wanjogu (2013) in her study sought to analyse the impact of price regulation on the profitability of oil marketing companies in Kenya. The research targeted all oil marketing companies that were in existence in January 2010. The financial performance of the oil companies for a period of three years from January 2010 to December 2012 was analysed. This covered period was before and after the introduction of price regulation. Trend analysis and regression model were used in the analysis of the factors. The study results showed that indeed price regulation on oil pump prices had a negative impact on the profitability of oil marketing companies. A survey carried out by Namiba (2014) in Kenya sought to find out the effect of petroleum price regulation on the financial performance of oil firms. The study findings

revealed that the introduction of petroleum price regulation has had a negative effect on the financial performance of oil firms in Kenya.

### **2.3.3 Successes of Fuel Price Regulation**

According to Arrow (1985) price regulations serves as prudential measures that mitigates the effects of economic crises on the stability of the oil industry and subsequent accompanying macroeconomic results. On the other hand, excessive regulations might increase the cost of intermediation and reduced the profitability of OMCs (Pirog, 2012). For many industries, regulation has the capacity to affect decisions on capital expenditure, corporate image and risk management. This means that regulation can trigger a shift in economic value of industries and hence determines the behaviour and framework of industries, for example, marginal revisions in prices can have a significant impact on overall profits, (McKinsey, 2005). However, companies in the oil industry usually record high levels of profits in some cases and experience increasing cash flows and revenues in these periods of high oil prices, (Pirog, 2010).

Sappington and Weisman (2010) studied the impact of price cap regulation on productivity growth in the US telecommunications industry between 1988 and 1998. The authors identify a “pronounced positive effect of price cap regulation on growth.” They find that 24 of the 25 firms in the sample “experienced an increase in mean technological change” and that 23 of the 25 firms “experienced an increase in annual productivity growth following the implementation of regulation” which in turn translated to higher profits. In her study of exchange markets in the US between 1991 and 2002, Eckenrod (2006), corroborated earlier findings that price cap regulation was indeed associated with higher earnings for regulated suppliers.

### **2.3.4 Challenges of Fuel Price Regulation**

Earle (2006) explored the issue of price caps under uncertainty. The purpose of the study was to focus on the theoretical properties of price caps that underlie the justification of the use of price caps in a variety of contexts. Their findings gave some weight to the argument that a regulatory price-setting process, balances the risk of regulatory failure against the greater incentives for efficient behaviour. Pure price-cap plans might be better suited for industries with significant investment needs and subject to important demand or technological progress uncertainty.

According to Njeri (2013) the study done by African Globe in Kenya in 2011 showed a reduction in profit margins, and an increase in competition because of the official price caps.

Thirteen big oil-marketing firms divested out of Africa and shifted focus to the more profitable exploration and production activities. In 2010 Shell divested from 21 markets in Africa, becoming the latest oil marketer to exit Kenya. This following in the footsteps of five international majors that have left the country between 1998 and 2008 over dwindling margins. Other companies that have exited the Kenya oil market are Caltex (Chevron), Beyond Petroleum plc. (BP), Mobil, Agip and Esso. Shell withdrew from all African operating markets except Egypt and South Africa.

Oduor (2010) points out that the high fuel and food prices sparked debates in Kenya with consumers turning to protests as the issue was being discussed in parliament. He noted that these prompted response from treasury in form of tax reduction on kerosene and diesel. However, with the looming battle on minimum wages and the seeming failure of long rains, the measures by the government were unlikely to end the rising inflation problem. A study by Namiba (2014) concluded that the introduction of petroleum price regulation has had a negative effect on the financial performance of oil firms in Kenya. According to Njoroge (2005), he found out that price regulation had attracted previous resistance from oil marketers who opted for markets to be controlled by forces of demand and supply. In the 4 -5 years prior to re-introduction of price regulation, most multinationals had restructured and relocated their business to regions with the highest market growth, high returns on investment and low political and business risks.

According to Semgomba, (2013), an impact of the oil price regulation on company accounts was the increased risk of impairment of assets that had been invested by the shareholders. Lower oil price forecasts meant that oil marketing companies should have expected lower future profits from assets like storage facility tanks. According to Motta (2004), a barrier to entry is something that blocks or impedes the ability of a company (competitor) to enter an industry. They include the existence of high start-up costs or other obstacles that prevent new competitors from easily entering an industry or area of business. According to Langenfeld and Scheffman (1989), new entrants were attracted into the market if they could provide an improved service for the same or lower cost, due to the homogeneity of products offered by OMC's. This had seen more than 30 new entrants since the introduction of the price regulation in the oil industry in Kenya. Thus, translating to a reduction of profitability for the oil marketing companies that were the initial entrants of that market.

According to Scott (2011), his study concluded that when governments adopted a price control, it defined the market price of a product and forces all, or a large percentage of transactions to take place at that price instead of the equilibrium set through supply and demand. As supply and demand shifted constantly in responses to costs, the government's price would change only after a lengthy political process as it is never at an equilibrium, it will either be too high or low resulting in dead weight losses because of failure to rate consumer or producer surplus.

Ye et al, (2005) document that petroleum products change hands severally on the supply chain from the point of production to the ultimate consumer. Each firm participating in the supply and marketing chain incurs some costs and wishes to make some mark-up; hence petroleum price usually increases with each intermediate sale. Consequently, any change in price at any intermediate point of sale is expected to affect prices at each successive sale hence the process of pass-through.

Borenstein and Shepard (2000) undertook a study to test an explanation for lagged adjustments of wholesale petroleum prices to changes in crude oil prices. The study examined the response of petroleum prices to cost shocks and how that response is influenced by market power. The study regressed estimated adjustment rates on indicators of market power (i.e. price-cost margin) and found evidence of faster adjustment in markets that were considered more competitive, hence giving credibility to the claim by politicians that market power induces price stickiness. In addition, the study tested and confirmed that supply adjustment costs caused price stickiness.

## **2.4 Research Gap**

Based on the above literature review, several the studies have identified the effects the price regulations on the profitability of the OMCs. Price regulation has resulted in challenges across the board, both to consumers and producers. In the long-term, price controls have not yielded the desired results. Price controls fail to achieve their proximate aim, which is to reduce prices paid by retail consumers, but such controls do manage to reduce supply (Sowell, 2008).

The formulas are largely similar in their components, taking into consideration the importation cost of crude or refined product, freight, local transportation costs, insurance, refinery processing fees (for crude oil) and taxes. The main differentiating factors in the different countries are the taxes and subsidies given by the different governments.

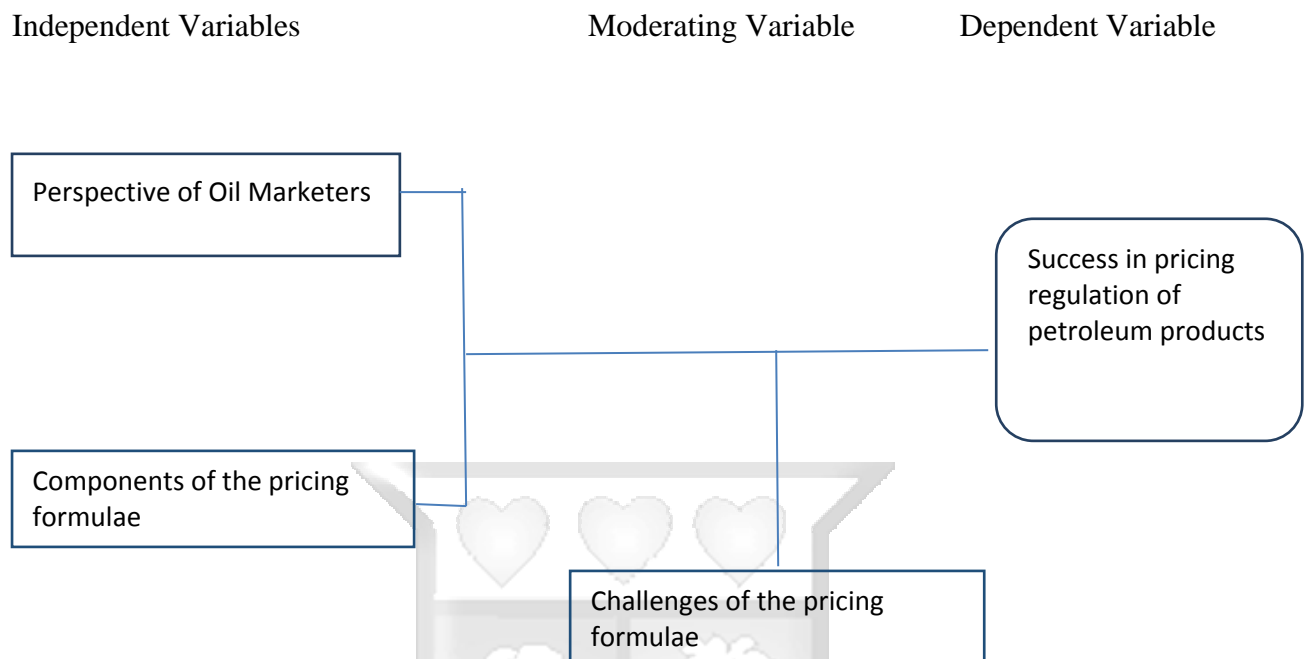
There is limited study on the efficacy of price regulation on the fuel pump prices. Given the challenges of price regulation that have been discussed including increased competition (Carranza et al. 2011), shutting down of non-performing gas stations (Barlett 2010), departure of OMCs from the market (Njeri 2013) and reduced profitability (Misoï 2012; Wabwoba 2011) is it worthwhile to continue with price regulations? Do the benefits outweigh the costs? In Kenya OMCs have been critical of the ERC's pricing formula since it does not cover financing costs and the rising cost of doing business due to inflationary pressures. They felt that retail prices of petroleum would not reflect changes in the international oil prices thereby affecting their profitability (Lardic, 2008).

Therefore, this research project aims at answering the question; 'What is the efficacy of price regulation on fuel pump prices in Kenya?'



## 2.5 Conceptual framework

**Figure 2.1 Conceptual Framework**



Source: Author 2018

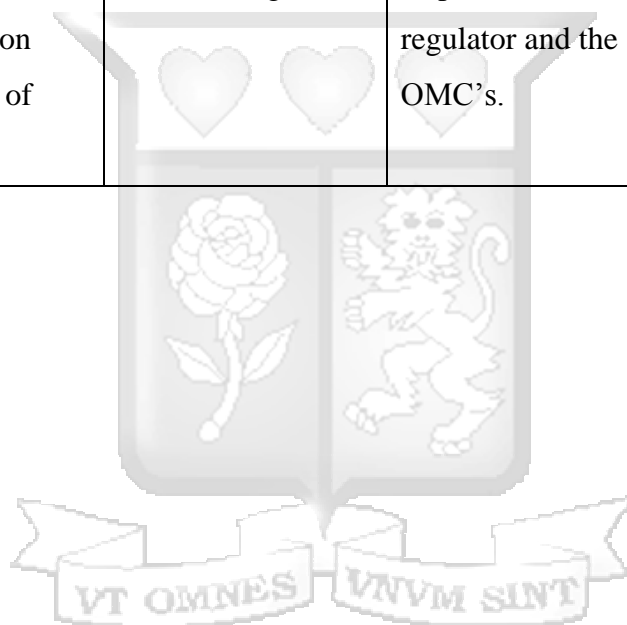
## 2.6 Operationalization of Variable Measurements

**Table 2.1: Operationalization of Variables**

Research Objective	Variable	Operationalization of the variable	The measurement question that measured that variable.
1. Assessing the appropriateness of the components of the pricing formulae on the pump price	Components of the pricing formulae Crude oil, Exchange rate, Transport cost and retailer margin	Preparing a trend analysis of the prices spanning six years (2011 to 2017) – to determine components and weighting of each.	This was measured from secondary data collected from the ERC website.
2. Determine the perspectives of the oil marketers in relation to	Perspectives of the oil marketers	It was an in-depth interview where the	Questions C 1, 2, 3



the pricing of fuel in Kenya.		respondents will be asked their opinion.	B 3, 4 (Interview guide Appendix 2)
3. Examine the success of the pricing formulae/regulation during the period of study.	Success of the pricing formulae/regulation	It was an in-depth interview with the respondent, both the regulator and the OMC's.	Questions D 8, 10 (Interview guide Appendix 2)
4. Examine the challenges of the pricing formulae/regulation during the period of study.	Challenges of the pricing formulae/regulation	It was an in-depth interview with the respondent, both the regulator and the OMC's.	Questions D 8, 10 (Interview guide Appendix 2)



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

This section outlines the research design, population of the study, data collection and data analysis methods.

#### **3.1 The Research Design**

The research was conducted in three steps to systematically address the three objectives. The research used qualitative study designs. Qualitative design helped to give an in-depth understanding of the factors currently incorporated in the pricing formulae for refined products in Kenya. The qualitative research design involves obtaining information concerning the status of the study– in this case current pricing regulations – to describe, “What exists” with respect to variables or conditions in a situation (Shields, 2013). This design is appropriate for this study, as it gave the relevant information in determining the efficacy of the pricing regulations. This was done by carrying out in-depth interviews with the top tier oil marketers, based on market share, and the regulatory body.

The secondary data collected from ERC were the monthly prices for the period 2011-2017. This was used to determine the components of the pricing formula and their corresponding weightings.

#### **3.2 The Population and Sampling Methods**

The population for the descriptive study design was the total number of OMCs licensed to purchase and sell fuel products. According to Alushula (2016), there are 572 licensed oil marketers in Kenya. The top tier OMCs, seven in number, based on their local market share together with the regulator will be the respondents. The focus was on them as they control over 55 per cent of the market. The top tier OMCs are also the ones the ERC engages with on issues of price regulation. (PIEA, 2016). They therefore were best placed to address the questions raised in this study.

The secondary data covered the last six years, January 2011 to January 2017.

### **3.3 Data Collection Methods**

The secondary data was collected from the ERC website. This was the monthly price data for the sample period –January 2011 to January 2017 (72 months). Qualitative data was collected through in-depth interviews with the supply managers of the selected OMCs. The interview guide is as attached in Appendix 2.

### **3.4 Data Validity and Reliability**

#### **3.4.1 Validity**

Validity is often defined as the extent to which an instrument measures what it asserts to measure (Blumberg et al., 2005). Validity as noted by Orodho and Kombo (2002) is the degree to which an instrument measures what it is required to measure. Validity of a research instrument assesses the extent to which the instrument measures what it is designed to measure (Robson, 2011). It is the degree to which the results are truthful. So that it requires research instrument (questionnaire) to correctly measure the concepts under the study (Pallant 2011).

In qualitative research it is when a researcher uses certain procedures to check for the accuracy of the research findings (Creswell, 2014). In qualitative research three common threats to validity namely: researcher bias, reactivity and respondent bias (Lincoln & Guba, 1985). Researcher bias refers to any kind of negative influence of the researcher's knowledge, or assumptions, of the study. Respondent bias refers to a situation where respondents do not provide honest response for any reason. Reactivity refers to the possible influence of the researcher on the studied situation and people. The research focused on content validity, which is the accuracy with which the instrument measures the factor under study. To ensure validity of the qualitative data, clarifying questions were asked, as well as exploring responses from various angles and cross checking of interview questions to ensure that they conform to the research objectives

#### **3.4.2 Reliability**

According to Robson (2002) in qualitative studies reliability is mainly a matter of being thorough, careful and honest in carrying out the research. In qualitative interviews, the issue of reliability relates to several practical aspects of the process of interviewing, including the wording of interview questions, establishing rapport with the interviewees and considering power relationships between the interviewer and the participants (Silverman, 1993).

The concern for reliability is based on bias, which may result from interviewer's tonal variation, and the interviewee's bias (Saunders, Lewis, & Thornhill, 2016). To avoid forms of bias that would affect the reliability of the interviewer the researcher ensured proper approach to questioning, accurate approach to recording data, demonstrating attentive listening skills and appropriate use of different types of questions. To ensure credibility the researcher provided relevant information to the interviewee before commencing the interview. A list of interview questions was given to the interviewees one week prior to the interview period. This enabled interviewees to be prepared with relevant information and supporting documents where necessary. Access to organizational material enabled comparison of the responses with the supplied copies of such material. The interviewee supplied managers in the respective OMCs. This gave reliability and confidence in the answers obtained during the interview.

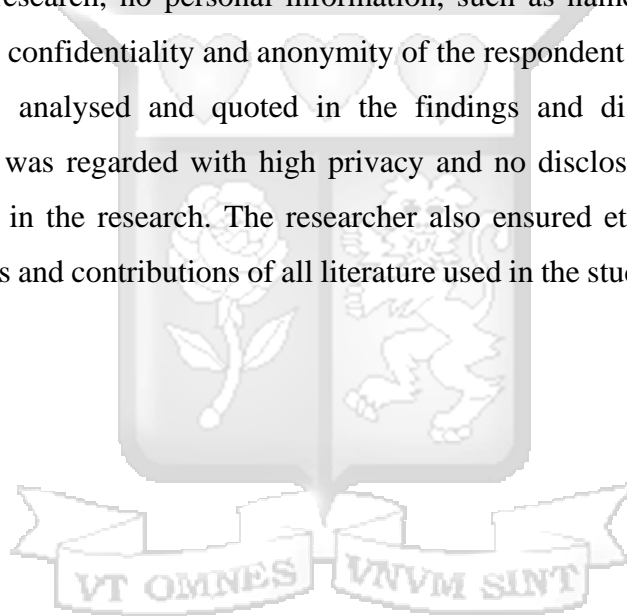
### **3.4 Data Analysis**

The collected data, from the ERC site was summarized, coded and entered in a computer aided tool for analysis. Objective 1 was analysed using trend analysis to show how the pump prices changed with each of the components of the pricing formulae. The analysis had 24 observations based on quarterly data collected from the ERC website over the six-year period (January 2011 to January 2017). The trend analysis was meant to show the fluctuation in fuel prices and the effects of price regulation between the set time frame used in the study.

Objective two, three and four were addressed by content analysis to determine issues and perspectives of both the oil marketers and the regulator. Explanations based on the common themes and deviations that emerged from the responses were made. According to Saunders et al., (2016) content analysis is an analytical technique that codes and categorises qualitative data in order to analyse them quantitatively. Berelson (1952) defines content analysis as a research technique for the objective, systematic and quantitative description of the manifest content of communication. Content analysis is used to analyse qualitative data you generate through conducting interviews or including open ended questions in questionnaires as done in this study. Content analysis provides a means to analyse large amounts of qualitative data where the main aim is to describe these qualitatively. It helps examine relationships between variables data and allows one to observe patterns, shifts and trends in documentary forms of data over time (Saunders et al., 2016). This study employed classical content analysis which comprises of techniques for reducing texts to a unit-by-variable matrix and analysing that matrix qualitatively by testing the objectives.

### 3.6 Ethical Issues

Before the survey, permission was sought from Strathmore University -School of Business by getting ethical clearance through the Institutional Ethics Review Committee, the letter of Ethical Approval is in Appendix 1. Ethics is a way of conducting oneself in accordance to the principles of conduct that are considered correct especially those in a certain profession or group (Kumar, 2005). Ethical issues concerning research subjects are informed consent, voluntary, anonymity, confidentiality, privacy and plagiarism. The respondents' consent was acquired before proceeding on with the data collection. The participants participated voluntarily and at no one time where they coerced. A researcher provides anonymity by separating the identity of individuals from the information they give (Nachmia & Nachmia, 1996), hence in this research, no personal information, such as names, was collected. The researcher ensured the confidentiality and anonymity of the respondent by use of pseudonyms in the data gathered, analysed and quoted in the findings and discussion section. The information collected was regarded with high privacy and no disclosure was made beyond using the information in the research. The researcher also ensured ethical consideration by acknowledging authors and contributions of all literature used in the study to negate charges of plagiarism.



## CHAPTER FOUR

### DATA ANALYSIS AND PRESENTATION

#### 4.1 Introduction

This chapter represents the results of the data collected. Descriptive statistics and model results were presented. The data was gathered from historical data and interviews with the stakeholders. The interview guide was designed in line with the objectives of the study.

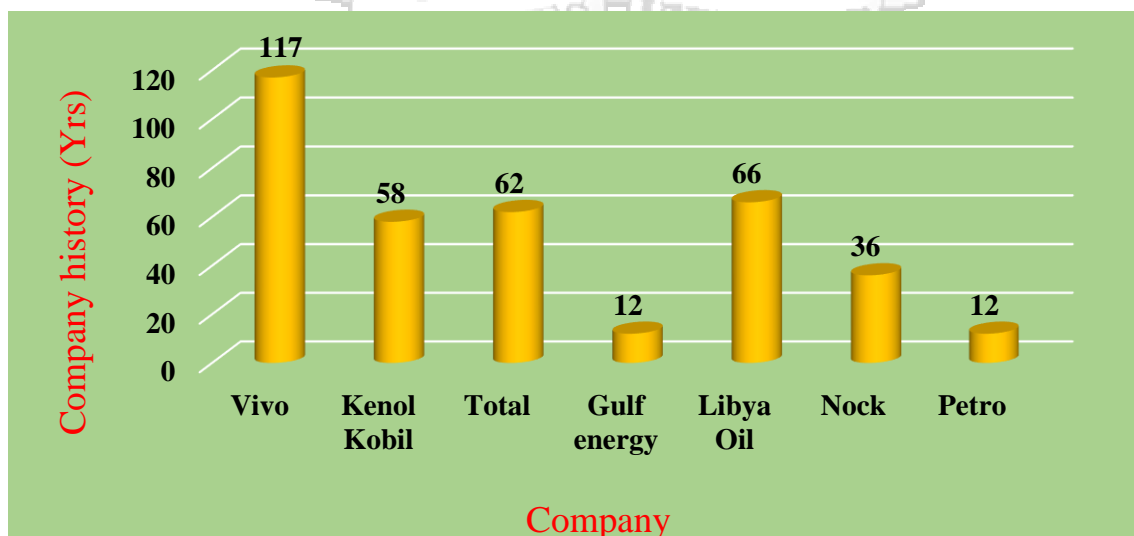
#### 4.2 Company information

The study sought to determine the Company information of the respondents as they are considered as categorical variables which give some basic insight about the respondents. The information considered in the study was Company history and Market share of the top tier OMC's namely Vivo Energy, Total, Kenol-Kobil, Gulf Energy, Libya Oil, NOCK and Petro

##### 4.2.1 Company history

An understanding of an organization's history is important because it provides information on how long an organization has been in operation therefore helping one understand when an organization succeeded or failed. Organization history can help an organization in its change efforts towards the future.

**Figure 4.1: Company history**



*Source: Research Data, 2018*

The results from figure 4.1 indicated that Vivo energy has been in the oil market industry for a longer period than the rest of the oil marketing companies, 117 years, while Gulf Energy and Petro had the least number of years, 12 years in the oil industry.

#### 4.2.2 Company market share

The respondents were asked to indicate the percentage of the market share the organization commands in the local market.

**Table 4.1: Petroleum market share**

<b>Kenya Petroleum Market Share (2011-2017)</b>								
<b>Company</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>Average market Share</b>
<b>Total</b>	19.9%	18.1%	17.1%	16.3%	14.2%	13.8%	17.6%	<b>16.7%</b>
<b>Vivo</b>	14.4%	14.0%	12.3%	14.4%	12.1%	12.6%	16.5%	<b>13.7%</b>
<b>Kenol Kobil</b>	19.7%	19.1%	6.2%	9.8%	12.0%	4.4%	15.9%	<b>13.5%</b>
<b>Oil Libya</b>	.1%	6.3%	12.1%	4.7%	4.3%	13.4%	8.1%	<b>7.1%</b>
<b>NOCK</b>	3.7%	4.0%	3.7%	2.6%	4.3%	4.4%	6.4%	<b>4.2%</b>
<b>Gulf energy</b>	4.2%	4.1%	3.6%	3.8%	4.1%	4.5%	4.3%	<b>4.1%</b>
<b>Petro</b>	3.1%	3.4%	4.0%	2.4%	3.5%	3.9%	3.7%	<b>3.4%</b>

*Source: Research data, 2018*

From table 4.1, on average from 2011-2017, Total and Vivo had the largest percentage in the industry's overall petroleum market share at 16.7%. Vivo followed closely with 13.7% and Kenol Kobil with 13.5%. However, Gulf energy and Petro had the least market share which stood at 4.1% and 3.4% respectively.

**Table 4.2: Retail market share**

<b>Retail Outlets Market Share (2011-2017)</b>								
<b>Company</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>Average market Share</b>
<b>Total</b>	25.2%	29.1%	26.6%	26.6%	25.7%	22.2%	22.0%	<b>25.3%</b>
<b>Vivo</b>	23.1%	22.5%	21.8%	23.5%	23.8%	24.8%	27.9%	<b>23.9%</b>
<b>Kenol Kobil</b>	7.9%	15.3%	6.2%	11.3%	10.5%	11.0%	11.1%	<b>10.5%</b>
<b>Oil Libya</b>	12.2%	12.2%	11.8%	10.0%	7.9%	7.2%	7.6%	<b>9.8%</b>
<b>NOCK</b>	9.4%	7.4%	7.8%	7.6%	8.5%	7.1%	7.4%	<b>7.9%</b>
<b>Petro</b>	2.1%	2.6%	2.9%	3.4%	3.8%	4.2%	4.5%	<b>3.4%</b>
<b>Gulf energy</b>	1.2%	1.6%	1.7%	1.9%	2.4%	2.6%	2.8%	<b>2.0%</b>

*Source: Research data, 2018*

From table 4.2, on average from 2011-2017, Total had the largest percentage in the industry's retail outlets market share at 25.3%, followed closely by Vivo at 23.9 while Gulf energy and Petro had the least market share which stood at 3.4% and 2.0% respectively.

**Table 4.3: Reseller market share**

<b>Reseller Market Share (2011-2017)</b>								
<b>Company</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>Average market Share</b>
<b>Total</b>	45.6%	48.2%	54.0%	26.6%	25.7%	22.2%	22.0%	<b>25.3%</b>
<b>Oil Libya</b>	25.8%	32.5%	31.6%	22.8%	18.7%	17.7%	16.6%	<b>23.7%</b>
<b>Vivo</b>	13.5%	15.7%	17.3%	16.8%	27.3%	28.3%	30.8%	<b>21.4%</b>
<b>Kenol Kobil</b>	6.2%	7.4%	8.5%	4.4%	4.3%	3.5%	4.9%	<b>5.6%</b>
<b>Petro</b>	4.0%	3.9%	2.3%	2.6%	3.8%	3.5%	3.7%	<b>3.4%</b>
<b>Gulf energy</b>	1.4%	2.0%	1.9%	2.2%	2.3%	1.8%	1.7%	<b>1.9%</b>
<b>Nock</b>	0.4%	0.7%	1.1%	0.8%	0.5%	0.4%	0.3%	<b>0.6%</b>

*Source: Research data, 2018*

From table 4.3, on average from 2011-2017, Total and Libya Oil had the largest percentage in the industry's resellers market share at 25.3% and 23.7% respectively while Gulf and Nock had the least market share which stood at 1.9% and 0.6% respectively.



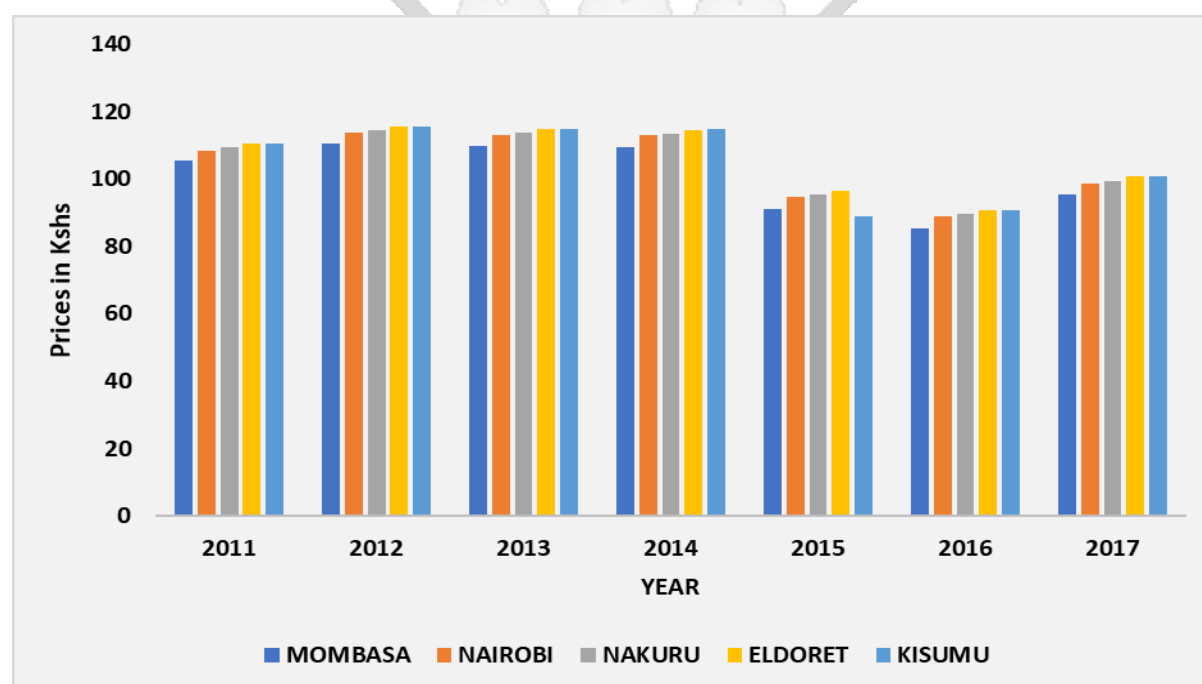
Before addressing the objectives of the study, the trend analysis of pump prices for the last seven years is presented. This provides a backdrop against which data on fuel pricing is presented.

### 4.3 Trends in pump prices

In order to determine the trends in the pump prices of various petroleum products over time, a trend analysis was carried out. Such an analysis is important because it provides information about the movement of prices of the various products over the period under analysis.

Figures 4.2, 4.3 and 4.4 report the trends for Super petrol, Automotive diesel and Kerosene respectively.

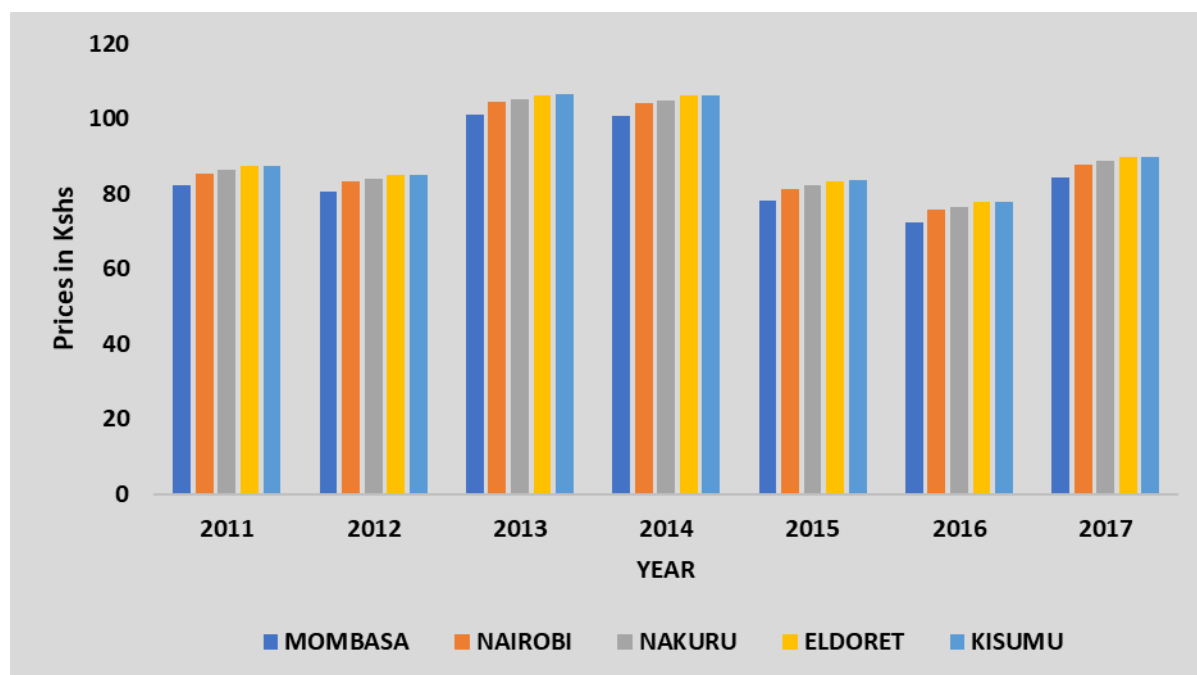
**Figure 4.2 Trends in Super petrol prices (2011-2017)**



*Source: ERC, 2011-2017*

From figure 4.2, the trends in super petrol prices show a relatively consistent rise in prices that reach a high in 2014, before dipping in 2015 and 2016 and starting to pick up again in 2017.

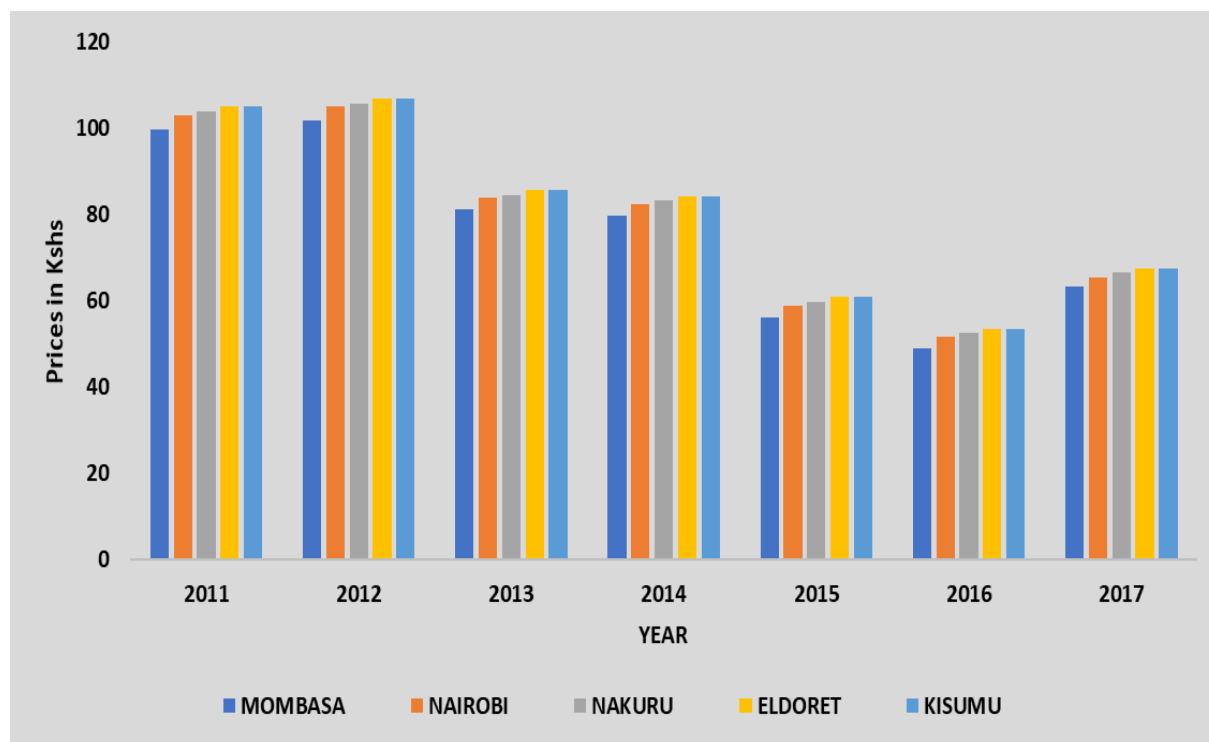
**Figure 4.3 Trends in Automotive diesel prices (2011-2017)**



*Source: ERC, 2011-2017*

From figure 4.3, the trends in Automotive diesel prices show a relatively stable prices that reach a high in 2014, before dipping in 2016 and starting to pick up again in 2017.

**Figure 4.4 Trends in Kerosene prices (2011-2017)**



*Source: ERC, 2011-2017*

From figure 4.4, the trends in Kerosene prices show a relatively consistent decline in prices that have a high in 2012, the prices then dipping from 2013-2016 before starting to pick up again in 2017.

#### 4.4 Components of the pricing formulae on the pump price

The study sought to assess the appropriateness of components of the pricing formulae on the pump price. This objective was measured by asking the respondents to state the extent to which they thought that the components of the pricing formulae affected the pump prices in Kenya. These components of pricing were; Crude oil price, Exchange rate, Transportation, Oil marketer's margin and Dealer/Retailer margin. The status of this variables was rated on a scale ranging from; Small extent, Some extent, Moderate extent, Great extent to Very great extent. These results were presented in Table 4.4

**Table 4.4: Components of the pricing formulae on the pump price**

<b>Statements</b>	To what extent do you think <b>crude oil affects pump prices</b>	To what extent do you think <b>oil marketers' margin affects pump prices</b>	To what extent do you think <b>Retailer/Dealer margin affects pump prices</b>	To what extent do you think <b>exchange rate affects pump prices</b>	To what extent do you think <b>transportation costs affects pump prices</b>
<b>Respondent 1</b>	To a very great extent	To a very great extent	To a great extent	To a moderate extent	To a great extent
<b>Respondent 2</b>	To a very great extent	To a great extent	To a very great extent	To a great extent	To some extent
<b>Respondent 3</b>	To a very great extent	To a very great extent	To a moderate extent	To a moderate extent	To a great extent
<b>Respondent 4</b>	To a very great extent	To a great extent	To a great extent	To a great extent	To a great extent
<b>Respondent 5</b>	To a very great extent	To a very great extent	To a very great extent	To a great extent	To a moderate extent
<b>Respondent 6</b>	To a very great extent	To a very great extent	To a great extent	To a very great extent	To some extent
<b>Respondent 7</b>	To a very great extent	To a very great extent	To a very great extent	To a great extent	To a moderate extent

*Source: Research data, 2017*

The study established that crude oil does affect the pump prices of all the OMCs to a very great extent. This is closely followed by oil marketers' margins. According to the OMCs, other important components that determined pump prices were retailer margins, exchange rates and transportation costs in that order. This implies that the current components of the pricing formula have a bearing on the final pump price.

#### 4.4.1: Relationship between Pump Prices and their Determinants

Figure 4.5 demonstrates the trend relationship between each of the components of the pricing formulae, crude oil prices, exchange rates, transportation costs, oil marketers' margin, dealer/retailer margin, and the trends of the average pump prices of the three petroleum grades under study.

**Figure 4.5 Pump Prices and their Determinants (2011-2017)**

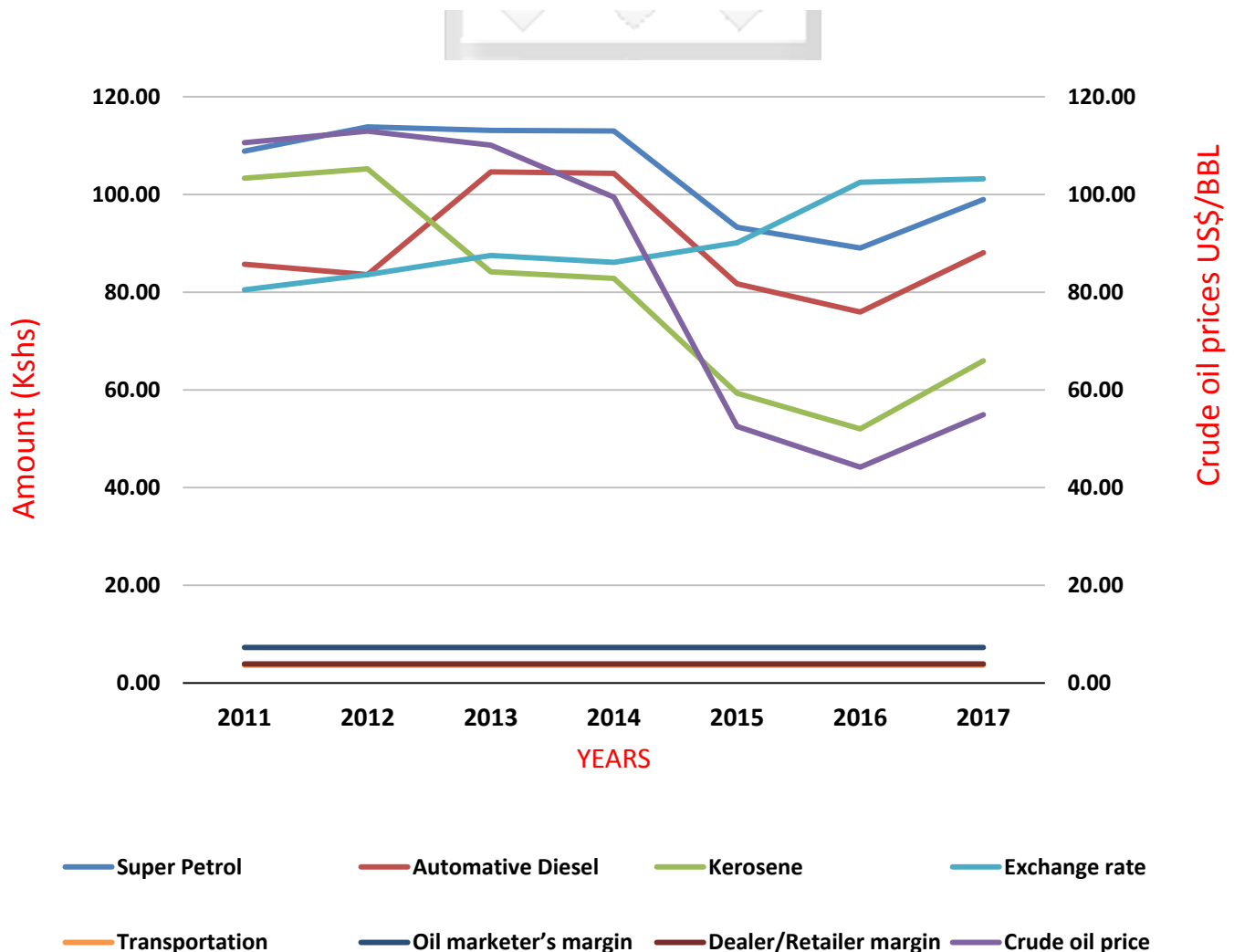


Figure 4.5 shows that the trend between crude oil prices and pump prices is similar though pump prices display a lag effect in responding to changes in crude oil prices. However, the trend of pump prices compared to exchange rate trends is not direct and it appears there are times when falling pump prices contradict the rising exchange rates. Thus, a strong and direct trend with a visible lag is evident for crude oil prices and pump prices but a more complex relationship between exchange rate trends and pump prices is displayed, transportation costs, oil marketers' margin and dealer/retailer margin indicate a more stable trend over the period of study.

#### 4.5 Perspectives of the oil marketers to the pricing of fuel

The respondents were asked to indicate the perspectives that oil marketers had regarding the pricing of fuel in Kenya. This objective was measured by asking the respondents to respond to different questions: Question 1. How would you compare the oil pricing in Kenya before and after regulation to the international pricing? Question 2. How would you explain the efficiency of the oil pricing formulae in Kenya? Question 3. What has been the effect of the pricing formulae to the business? The responses were presented in cross-case matrix tables i.e. Table 4.5, Table 4.6 and Table 4.7 respectively.

**Table 4.5: How would you compare the oil pricing in Kenya before and after regulation to the international pricing?**

Respondents	Before Regulation	After Regulation
<b>Respondent 1</b>	Kenyan oil prices were more in line with the crude oil price movement prior to regulation.  Oil marketers are the ones who made the decision on how much to sell.	The current formula takes into consideration a three-month lag in crude oil prices therefore they are behind with regards to the international price changes.  Regulations has been able to give consumers a relatively stable pricing regime.  The price of each commodity is known.  Everyone knows the price of each commodity.

<b>Respondent 2</b>	The oil marketing companies used to make abnormal profits.	No abnormal profits.  Regulations has been able to give consumers a relatively stable pricing regime.
<b>Respondent 3</b>	Kenyan oil prices were more in line with crude oil price movement prior to regulation.  Oil marketing is categorized by oligopoly with only a few firms controlling the market, besides the sector is associated with high barriers to entry and exit and the high volume of threshold that the firms are required to maintain.	The current formula takes into consideration a three-month lag in crude oil prices therefore they are behind with regards to the price changes.  Price controls brought about fair competition in the market in the short run.
<b>Respondent 4</b>	There was no protection of the general public against exorbitant prices by retailers and oil marketers.	Price controls have failed to compensate retail marketers resulting in large welfare losses at a global scale. This is seen by the increased number of mergers and acquisitions and exit of various international players like Shell.
<b>Respondent 5</b>	There was no barrier to entry and exit of low-cost retailers and dealers.	Price controls have crowded markets hence creating endogenous barriers to entry for low-cost retailers.
<b>Respondent 6</b>	The oil marketing companies used to pass on the cost to consumers if international crude oil prices increased and the firms did not reciprocate to reduce retail prices if the crude oil prices reduced.  Liberation market driven prices beneficial to the economy than price regulated setup	The regulations have encouraged firms to come up with other means to recover losses.

<b>Respondent 7</b>	There was commercial malpractices-black marketing diversion to eligible consumers who are otherwise required to pay high prices, fuel smuggling, fuel adulteration and short-shelling and fuel shortages.	Price regulations have attracted resistance from oil marketers.
---------------------	---	---

**Table 4.6: How would you explain the efficiency of the oil pricing formulae in Kenya?**

<b>Respondents</b>	<b>Responses</b>
<b>Respondent 1</b>	It has been effective, cost reflective, and responsive to changes in the world market, with a lag of roughly 1.5 months to 3 months. Financing costs not adequate to level of financing outlay by O M C's
<b>Respondent 2</b>	It is working but needs improvement, following their mandate It is quite efficient as it considers all the costs incurred while importing the product. It also regulates the marketers/dealer's margins. This helps in protecting the customers and promotes healthy competition among the oil marketers Doesn't consider different taxes in the region and products e.g. 1K low taxes and high on P M S & A G O
<b>Respondent 3</b>	70% it's a compensation thing. Not futuristic Demurrage- This is an inefficiency of the system that the consumer should not be made to pay
<b>Respondent 4</b>	Requirements to pay taxes upfront by the government negatively affects the oil marketers' financial position
<b>Respondent 5</b>	The oil marketing business has been infiltrated by unscrupulous dealers the so-called briefcase companies
<b>Respondent 6</b>	Inefficient Return on capital for oil marketers and retail dealers is low
<b>Respondent 7</b>	Price controls resulting into hoarding by dealers resulting in artificial shortages

**Table 4.7: What has been the effect of the pricing formulae to the business?**

<b>Respondents</b>	<b>Responses</b>
<b>Respondent 1</b>	<p>We have seen significant entry of small traders in the retail and wholesale market because prices are stable and predictable for a month</p> <p>The OMC's must find more efficient ways to work and grow their business as their margins are now capped. There is more cost cutting measures across the board</p> <p>Financing costs not adequate to level of financing outlay by OMC's</p>
<b>Respondent 2</b>	<p>Reduced sales when prices are decreasing and vice versa</p> <p>Low ROI (Return on Investment) for marketers-selling below cost value</p> <p>Delayed benefits to consumers when prices are decreasing</p> <p>The pricing formula has improved the business. Most if not all marketers have to stick to the regulated price. This has capped unhealthy competition and protects the consumers.</p> <p>Doesn't consider different taxes in the region and products e.g. 1K low taxes and high on PMS &amp; AGO</p>
<b>Respondent 3</b>	<p>Brought about competition-match each other with range. Eat into your own margin.</p> <p>Sellers meeting targets and profitability</p> <p>Uniformity within the industry</p> <p>Industry has grown market opened initially only had a few players</p> <p>Demurrage- This is an inefficiency of the system that the consumer should not be made to pay</p>
<b>Respondent 4</b>	<p>The OMC's must find more efficient ways to work and grow their business as their margins are now capped. There is more cost cutting measures across the board</p> <p>Requirements to pay taxes upfront by the government negatively affects the oil marketers' financial position</p>
<b>Respondent 5</b>	<p>The oil marketing business has been infiltrated by unscrupulous dealers the so-called briefcase companies</p>
<b>Respondent 6</b>	<p>High costs of running business/ growth and constraint on degree of choice to the consumer.</p> <p>Led to market cartels which control significant market segment</p>



	Return on capital for oil marketers and retail dealers is low
<b>Respondent 7</b>	Price controls resulting into hoarding by dealers resulting in artificial shortages

According to Table 4.5, Table 4.6 and Table 4.7, the theme emerging from the responses was that regulations have been able to give consumers a relatively stable pricing regime. Similarly, the oil marketing business had been infiltrated by unscrupulous dealers; the so-called briefcase companies. According to the respondents, these illegal marketers were able to sell at a lower price creating a non-level playing field in the business. The participants recommended a stringent licensing system and emphasis on the implementation on the Energy act.

The respondents also indicated reduced sales when prices are decreasing and vice versa and low ROI for marketers-selling below cost value. The respondents also raised concern on taxation. The participants felt that the taxes for oil marketers were very high. Majority of the respondents felt that the requirement to pay taxes upfront negatively affected the oil marketers' financial position. The respondents recommended that the taxes be reduced, and that the government provide incentives and tax breaks for the players in the oil marketing business.

The oil marketers have shared concern that price controls would result in hoarding, and subsequent shortage of petroleum products in the country. They have also expressed concerns about the country's oil supply and distribution infrastructure, citing its inefficient nature as partly to blame from the high pump prices. This is caused by decreased capacity and inefficiency at Kenya Pipeline Company (KPC), Kenya Ports Authority and Kenya Petroleum Refineries Limited (KPRL) in Mombasa. Studies that have been conducted by various scholars suggest that due to the presence of storage facilities within various points of supply it becomes difficult to stock other products at that specific interval and if the product available at that time is not consumed quickly then the other products cannot be made available to the suppliers.

#### **4.6 Success of the pricing formulae/regulation**

The study sought to determine the success of the pricing formula/regulation in the petroleum sector. This objective was realized by asking the respondents the question; Question 1. Has the pricing been beneficial and why? The results were presented with the use of cross-case matrix tables' in Table 4.8.

**Table 4.8: Has the pricing been beneficial and why?**

<b>Respondents</b>	<b>Responses</b>	<b>Why</b>
<b>Respondent 1</b>	Yes	Yes, to government, citizens and to investors. The pricing has facilitated predictability of petroleum prices; has saved citizens from unnecessary costs; has enabled KRA collect taxes more effectively  There is extra limitation to flexibility to pricing and volume strategies to OMC's
<b>Respondent 2</b>	No	Extra limitation to flexibility to pricing and volume strategies to OMC's  There is undue advantage to importers versus other OMC's
<b>Respondent 3</b>	No	The ERC price formula does not fully recognize all elements of the costs in the supply chain and inflammatory adjustments, thus results in constrained revenue margins among oil marketers. Other elements such as taxation and financing costs need to be included.
<b>Respondent 4</b>	No	Adopting of pricing formulae with full pass through of international price changes to domestic prices means that volatility in international prices is directly reflected in domestic fuel price volatility. This is not the case as exhibited by the up to 3-month lag in prices.
<b>Respondent 5</b>	No	Price regulation ignores a fundamental practice in pricing dynamics where regions with relatively lower economic activity and predominantly rural regions enjoy subsidized rates (lower prices) compared to urban regions.
<b>Respondent 6</b>	Yes	Significantly beneficial to exchequer for consistent collection mechanism  Price controls have to thinner margins in the retail market. OMC's have recorded losses and those that recorded profits did not witness a sharp increase or decline in their profits.
<b>Respondent 7</b>	No	Retail prices of petroleum will not reflect changes in the international oil prices thereby affecting OMC's profitability and margins.

		There is up to a 3-month lag in the prices (local prices vs international crude prices)
--	--	---

From Table 4.8 the pricing formula has also contained the volatility of fuel tax revenues. Excessive volatility of tax revenues creates cash management and financing problems, especially when financial markets are underdeveloped. However, lowering fiscal volatility comes at the cost of increasing retail price volatility.

The pricing formula determines domestic prices as the sum of the import price of fuel products, domestic wholesale and retail distribution margins, and fuel taxes. Domestic fuel prices are changed at pre-specified regular intervals (monthly) to fully reflect changes in international prices. In addition to protecting fuel tax revenues, this approach also protects the margins of distributors, thus avoiding the disruption of fuel markets that often results from distributors incurring subsidy arrears due to lack of full pass-through of international fuel price changes.

#### 4.7 Challenges of the pricing formulae/regulation

The study sought to determine the challenges of the pricing formula/regulation in the petroleum sector. This objective was realized by asking the respondents the questions; Question 2. How has the pricing affected the economy? The results were presented with the use of cross-case matrix tables' in Table 4.9.

**Table 4.9: How has the pricing affected the economy?**

<b>Respondents</b>	<b>Responses</b>
<b>Respondent 1</b>	<p>The pricing has facilitated predictability of petroleum prices; has saved citizens from unnecessary costs; has enabled KRA collect her taxes more effectively</p> <p>The pricing has shifted the growth of the economy through their effects on the supply and demand for goods other than oil.</p>
<b>Respondent 2</b>	<p>The pricing formula has also contained the volatility of fuel tax revenues. Excessive volatility of fuel tax revenues creates cash management and financing problems, especially when financial markets are underdeveloped thus negatively affecting the economy.</p>

<b>Respondent 3</b>	Depreciation of the Kenyan shilling against the hard currencies like US dollars is leading to inflationary pressures that render regulations untenable.
<b>Respondent 4</b>	Changes in oil prices have create a spillover effect on customer inflation in the country.
<b>Respondent 5</b>	Oil price fluctuations as a result of the pricing formulae tend to generally increase inflation and reduce economic growth. In terms of inflation, oil prices directly affect the prices of goods made with petroleum products. Increase in oil prices can depress the supply of other goods because they increase the costs of producing them.
<b>Respondent 6</b>	Not very positively Wide fluctuations in oil prices due to the pricing formulae plays an important role in driving economic recessions and even to an extent of making regimes collapse.
<b>Respondent 7</b>	Changes in oil prices due to the pricing formulae have led to increased and uncontrolled economic fluctuations.

OMCs have argued that price capping ignores a fundamental practice in pricing dynamics where regions with relatively lower economic activity and predominantly rural enjoy subsidized rates (lower prices) compared to urban regions. The delivery transport costs set out in the pricing regulations when added up have ensured that rural regions experience real costs and increased pump prices hence taking away the advantage the less economically empowered folk enjoyed under the unregulated regime. The pricing has facilitated predictability of petroleum prices; has saved citizens from unnecessary costs; has enabled KRA collect her taxes more effectively

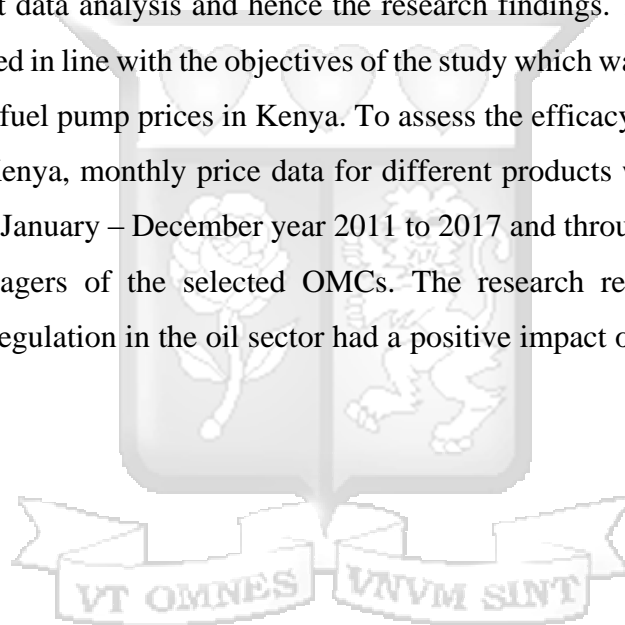
The impact of Price controls is more on oil marketers whom have diversified across the region since the ERC price formula does not fully recognize all elements of the costs in the supply chain and inflationary adjustments, thus results in constrained revenue margins among oil marketers. Smaller players have also found it difficult to operate in the Kenyan market under this price controls due to thinner margins in the retail end. Note that all the downstream oil marketers are relatively well diversified with segments such as fuel oil, LPG aviation and

commercial increasingly accounting for a higher share of profits. However, there is concern about the volatility in profitability of these segments as experienced over the years.

The adoption of the pricing formulae with full pass-through of international price changes to domestic prices means that volatility in international prices is directly reflected in domestic fuel price volatility. However, for political and social reasons, the government is often reluctant to pass-through large increases in international price changes instantaneously to domestic consumers. This is often reinforced by a belief that such large price increases may turn out to be transitory.

#### **4.8 Summary**

This chapter looked at data analysis and hence the research findings. The data collected was analysed and interpreted in line with the objectives of the study which was to assess the efficacy of price regulation on fuel pump prices in Kenya. To assess the efficacy of price regulation on fuel pump prices in Kenya, monthly price data for different products was collected from the ERC for the month of January – December year 2011 to 2017 and through in-depth interviews with the supply managers of the selected OMCs. The research results showed that the introduction of price regulation in the oil sector had a positive impact on the fuel pump prices in Kenya.



## CHAPTER FIVE

### DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter summarizes and concludes on the research findings as carried out. It presents the summary of the findings and the conclusions drawn from them, and lastly the recommendations. The implications of the research are discussed, and suggestions made on areas of further study. Some useful recommendations for all the stakeholders are proposed by this study at the end of the chapter to enlighten and enable them to craft viable solutions regarding the problem statement based on the research findings. The overall objective of this study was to assess the efficacy of price regulation on fuel pump prices in Kenya. The specific objectives of the study were to: Assess the appropriateness of components of the pricing formulae on the pump price, determine the perspectives of the oil marketers in relation to the pricing of fuel in Kenya and examine the success and challenges of the pricing formulae/regulation during the period of study.

#### 5.2 Discussion of findings

This section provides the discussion of findings according to the study objectives.

##### 5.2.1 Appropriateness of components of the pricing formulae on the pump prices

The survey revealed that trends in super petrol prices showed a fairly consistent rise in prices that reach

a crescendo in 2014, before dipping sharply in 2016 and starting to pick up again immediately thereafter in 2017. Similarly, the trends in Automotive diesel prices showed a fairly consistent rise in prices that reach a crescendo in 2014, before dipping sharply in 2016 and starting to pick up again immediately thereafter in 2017. An analysis of the trend of pump prices after price regulation showed decline in pump prices from the year 2011 to 2016 and accompanied by upward trend in the year 2017 for all the fuel products. The study results showed that price regulation on oil pump prices had a great impact on the oil marketing companies. This finding concurs with the works of (Carranza et al., 2011; Wanjogu, 2013; Killan, 2008 & Shem 2011).

The study revealed that the domestic determinants such as transport and delivery costs, wholesale or retail margin, exchange rate, oil marketers equalization fund levy are used to calculate the pump prices and have a direct effect on the final pump fuel price. This finding

concur with the work of Kolla (2014). The lowest pump price for super petrol was recorded in 2016, at an average of Sh89.03 per litre, while it was Sh75.95 per litre for diesel in 2016 and Sh52.00 per litre for kerosene in 2016 — aggregate reductions of 31.4 per cent, 38.8 per cent and 55.3 per cent, respectively. However, after January 2017, crude oil prices have been on an upward trend. This has been accompanied by a corresponding increase in pump prices over the subsequent months

Kenya competitively procures all its petroleum from the international markets of the Arabian Gulf and the Mediterranean areas. The lead time for these products is between 30 and 45 days. This means the price during the month is derived from the prevailing crude oil prices in the international market the previous month. The cost of crude oil in the international market plays a critical role in the determination of the final prices for refined products in Kenya.

### **5.2.2 Perspectives of the oil marketers in relation to the pricing of fuel in Kenya.**

The study revealed that there was a difference before and after the price regulation was introduced. The respondents agreed that regulations have been able to give consumers a relatively stable pricing regime. From the findings it was evident that before regulation oil marketing firms used to make abnormal profits which changed when the regulations were introduced. This study agrees with the finds of Carranza et al., (2011) that as a result of price regulation policy, prices were lower, and competition was higher. The results therefore highlighted that price regulation affected the market structure and can therefore have unintended consequences on profitability. The study further revealed that with the introduction of price regulation return on capital for oil marketers and retail dealers is low as well as financing costs are not adequate to level of financing outlay by O M C's. These findings concur with the work of Misoi (2012) that concluded that gross profit margin reduce tremendously thus shrinking the company's gross profit after introduction of oil price regulation.

Among the benefits of the regulation as highlighted by a respondent is that the pricing has facilitated predictability of petroleum prices; has saved citizens from unnecessary costs; has enabled KRA collect her taxes more effectively. However, some majority of the respondents believed that the pricing was not beneficial. Similarly, majority of the respondents felt that the requirement to pay taxes upfront negatively affected the oil marketers' financial position, Wanjogu, (2013) and Killan (2008) concur with this finding. The respondents recommended that the taxes be reduced, and that the government provide incentives and tax breaks for the players in the oil marketing business. The oil marketers have shared concern that price controls

would result in hoarding, and subsequent shortage of petroleum products in the country. This finding is supported by a study carried out by Shem (2011).

### **5.2.3 Successes of the pricing formulae/regulation**

The survey revealed that challenges of the pricing regulation outweigh the successes. Only a few respondents believed that the pricing regulation was beneficial. The study showed that most of the respondents believe that the pricing regulation is not beneficial to them as OMC's. The findings revealed that the pricing formula has contained the volatility of fuel tax revenues. As a result, excessive volatility of tax revenues creates cash management and financing problems. A similar conclusion was made by Shem (2011). The findings established that the ERC price formula does not fully recognize all elements of the costs in the supply chain and inflammatory adjustments, thus results in constrained revenue margins among oil marketers. Wide fluctuations in oil prices due to the pricing formulae play an important role in driving economic recessions and even to an extent of making regimes collapse. Changes in oil prices due to the pricing formulae have led to increased and uncontrolled economic fluctuations. In addition, there is extra limitation to flexibility to pricing and volume strategies to OMC's. This conclusion concurs with the findings of Namiba (2014). Similarly, the study revealed that the pricing formula determines domestic prices as the sum of the import price of fuel products, domestic wholesale and retail distribution margins, and fuel taxes. However, the respondents who believed that the regulation was significantly beneficial stated that it was beneficial to the government, citizens and to investors. As the pricing has facilitated predictability of petroleum prices; has saved citizens from unnecessary costs; has enabled KRA collect her taxes more effectively.

### **5.2.4 Challenges of the pricing formulae/regulation**

The study concluded that Oil price fluctuations experienced in the country is as a result of the pricing formulae. It generally increases inflation and reduces economic growth. In terms of inflation, oil prices directly affect the prices of goods made with petroleum products. As a result, increase in oil prices can depress the supply of other goods because they increase the costs of producing them. This finding concurs with the finding of Oduor (2012) that increase in oil prices lead to high priced fuel and high food prices. Similarly, wide fluctuations in oil prices due to the pricing formulae play an important role in driving economic recessions and even to an extent of making regimes collapse.



The study revealed that the pricing formula has also contained the volatility of fuel tax revenues. Similarly, changes in oil prices due to the pricing formulae have led to increased and uncontrolled economic fluctuations which have ultimately affected the Kenyan economy at large. In addition, the depreciation of the Kenyan shilling against the hard currencies like US dollars is leading to inflationary pressures that render regulations untenable. The finding of this study concurs with the work of Namiba (2014) and Njoroge (2005), that the introduction of petroleum price regulation has a negative effect on the financial performance of oil firms in Kenya which in turn affects the Kenya economy. The study revealed that oil price fluctuations as a result of the pricing formulae tend to generally increase inflation and reduce economic growth. In terms of inflation, oil prices directly affect the prices of goods made with petroleum products. Increase in oil prices can depress the supply of other goods because they increase the costs of producing them.

### **5.3 Conclusion**

Conclusions of the study findings are based on the different research objectives. Firstly, international crude oil prices and the US dollar-Kenya shilling exchange rates have a significant effect on monthly retail prices for Super, Diesel, Kerosene and Regular products in Kenya; secondly, the introduction of oil price controls in Kenya in the latter part of year 2010 brought about some effects on retail pricing of the four products considering the reduced predictive power of international crude oil prices and exchange rates in the period after introduction of the controls; international crude oil prices and exchange rates have an individual and joint effect on the retail pricing of the four oil products; lastly, there is some consistency (for Super and Diesel) as well as inconsistency (for Kerosene and Regular) in oil retail prices in Kenya considering the positive and negative correlations of the individual product prices over the period before and after introduction of price controls in Kenya.

From the foregoing summary, it can be concluded that there may be nothing evil about price regulation and in fact it could be of mutual satisfaction for investors, consumers and the economy if only it can be done with a lot of transparency and full engagement of all the stakeholders. While the regulation of the industry is clearly essential, government has a responsibility to ensure that it is also rational, co-ordinated, and it does not discourage investors with strict regulation and controls that make it even more difficult to operate in these controlled industries.

Industry regulations can end up suffocating the margins of the investors even if this was never the initial intention. To avoid this, the investors, the consumers and the regulating agency must therefore work closely to ensure there is balance on sacrifices and compromise on each one of them.

The Ministry of Energy controls key sector players in the supply chain of Kenya and regulatory institutions, as such, ERC and OMCs should consult further to improve suitability and applicability of ERC formula in order to protect the profitability of the sector. The formula has been criticized as not capturing all elements of supply chain such as financing costs for imports, depot costs and demurrage. The study showed that oil marketers should move to reduce operational costs to increase their operating profits. The companies should use derivatives to cushion them against rising international oil prices as this constitutes a large proportion of their direct costs.

#### **5.4 Recommendations**

The research found out that it's with no doubt oil marketers are being negatively affected by the regulations in the oil industry. The researcher recommends that oil marketers should have detailed understanding of the issues on regulatory areas that could affect their business, both today and within years to come as well as the positions of the major stakeholders, the level of uncertainty in each area of regulation, and the impact on the company itself and on other stakeholders.

The price controls agency should consider the variables in the supply chain. The price regulation will eat into the marketers' profit margins if they do not afford enough headroom for the companies to meet the high infrastructure costs incurred in moving the oil products upcountry.

Demurrage costs tend to be significant due to clearance delays arising due to the congestion at the Port of Mombasa. The operations at the Mombasa port should be closely monitored to avoid such unnecessary delays and increased costs.

The ERC should still consider changes in international crude oil prices and the changes in the US dollar-Kenya shilling exchange rate in setting maximum oil retail prices for the four products. Also, ERC should similarly consider the effect of other factors on oil retail prices after the introduction of oil price controls while the Government of Kenya through the central

bank, should regularly manage the US dollar-Kenya shilling exchange rate to avoid an adverse effect of the same on oil retail prices considering the strategic nature of the oil sector in industrial production and transportation. ERC should consider introducing more price controls in the pricing of oil products since the controls currently in place leave much of the oil retail prices unexplained.

The study recommends a need for a specification of a timeline for updating the components of the price structure. The different components of the price structure should be updated according to an explicit and agreed timeline. For example, the import cost could be updated on a monthly basis. Distribution costs could be updated semi-annually based on a simple rule linked to validated changes in costs such as wages, transport costs, and financing costs. More rigorous updates could be undertaken on a 3–5-year cycle based on a detailed market study. Once the government sets a desired tax level for fuel products, the implementation of the formula determines any tax changes. Deviations from these should be interpreted as a deviation from the mechanism

The study recommends a structure that establishes a clear link between retail prices and import prices based on import costs, distribution margins, demurrage costs, landed costs and tax levels. Import prices reflect both international fuel prices and the exchange rate. Import and distribution costs, including wholesaler and retailer margins, should be based on efficient operations by suppliers. The level and structure of taxes should reflect revenue, efficiency, and distributional objectives.

The adoption of an automatic price formula mechanism should also be viewed as the first stage of a transition to a fully liberalized pricing and supply regime, which has typically been a more effective approach to avoiding subsidies and protecting the budget (Baig, 2007).

Finally, the government should wake up to the realization that price controls in a liberalized economy cannot serve to tame the prices of petroleum products. Focus should be directed at addressing the real issues perceived to be behind the increase in prices of petroleum products. Already the government has formulated policies meant to address the inefficiencies and challenges brought about by the outdated technology being used at the KPRL refinery. The government has also formulated policies to address alleged constraints at KPC facilities as well as constraints in the transportation of petroleum products. The implementation of these policies should be fast tracked. With the Competition Act, 2010 in force and the same having addressed the weaknesses of the Restrictive Trade Practices, Monopolies and Price Control Act, the

government should strongly consider doing away with price controls in the petroleum subsector and allow the Act to play the role of guaranteeing fair competition among the players in the subsector. Any weaknesses that present themselves during the application of the Act to the subsector can be addressed through amendments to the Act.

### **5.5 Limitations of the study**

The study is based on data that is historical. Therefore, the findings of the study may not be fully applicable at the time of the study due to the dynamic operating environment in the Kenyan market. The study only focused on the period of 2011- 2017, so the findings can only be generalized from this period and not any time frame. Furthermore, the study only focused on 7 oil marketers.

### **5.6 Recommendation for Further Research**

The study recommends that a study to be carried out to determine the relationship between international oil price and the local pump price. This is because the changes in the local prices of petroleum products as set by the ERC are based on the international oil price quotation.

The study further recommends that another study be done on the effects of oil price regulation on the individual share price of oil companies listed on the Nairobi stock exchange to measure the reaction of share prices because of oil price regulation in Kenya. The study recommends that another study be carried out to establish the relationship between price regulation and the product supply in the oil sector.

The study also recommends a similar study to be carried out using measures of financial performance for an organization that includes profitability ratios, liquidity ratios, gearing ratios, market value and growth ratios.

## REFERENCES

- Alushula, P. (2016, April 16). *Kenya\_How Indian Tycoon Ambani Controls Kenya's Oil Import Trade*. Retrieved January 24, 2017, from Standard Media: <https://www.standardmedia.co.ke/business/article/2000196960/how-indian-tycoon-ambani-controls-kenya-s-oil-import-trade>
- Amin, M. A. (2009, October 30). *Petroleum Products Pricing in Ghana\_ Economics or Politics*. Retrieved January 5, 2017, from GhanaWeb: <http://www.ghanaweb.com/GhanaHomePage/features/Petroleum-Products-Pricing-In-Ghana-Economics-Or-Politics171021>
- Aress, A. (2011). Rising fuel prices, can it be controlled? "The Accountant" *Journal of Institute of Certified Accountants of Kenya*, June-July issue page 18-23.
- Arrow, Kenneth J. (1985). 'The Potentials and Limits of the Market in Resource Allocation', in feiwel, G.R. (ed.), *Issues in Contemporary Microeconomics and Welfare*, London, The Macmillan Press, 107- 124.
- Barlett, B. (2010). *The Futility of Price Controls*. Forbes.
- Benner, K. (2005, December 7). *Lawmakers: Will we run out of oil?* Retrieved from CNN Money: [http://money.cnn.com/2005/12/07/markets/peak\\_oil/](http://money.cnn.com/2005/12/07/markets/peak_oil/)
- Benner, K. (2004, November 3 ). *Oil: Is the end at hand?* Retrieved from CNN Money: [http://money.cnn.com/2004/11/02/markets/peak\\_oil/](http://money.cnn.com/2004/11/02/markets/peak_oil/)
- Bentley, R. (2002). Viewpoint - Global oil & gas depletion: an overview. . *Energy Policy* 30 (3): , 189–205.
- Blackmon, D. (2013, October). *Why Oil and Gas Should be Regulated by State*. Retrieved February 25, 2017, from Fobes: <https://www.forbes.com/sites/davidblackmon/2013/10/5/why-oil-gas-should-be-regulated-by-the-states/#1da3ad381b8c>
- Borenstein, S. and Shcpard, A. (2000), *Sticky Prices, Inventories and Market Power in Wholesale Gasoline Markets*, National Bureau of Economic Research, Working Paper No. 037
- Cafferty, J. (2012, February 29). *Should price controls be imposed on gasoline?* Retrieved February 25, 2017, from CNN: <http://caffertyfile.blogs.cnn.com/2012/02/29/should-price-controls-be-imposed-on-gasoline/>
- Carranza, J., & et al. (2011, December). *Effects of Price Controls\_ Evidence from Quebec's Retail Gasoline Market*. Retrieved January 5, 2017, from Centre sur la Productive et la Prosperite.
- Cavallo, A. J. (December 2004). Hubbert's Petroleum Production Model: An Evaluation and Implications for World Oil Production Forecasts . *Natural Resources Research*, Vol. 13, No. 4 .
- Chakravorty, U., Leach, A., & and Moreaux, M. (2009). *"Twin peaks" in Energy prices: a hotelling model with pollution and learning*. Alberta: School of Business and Department of Economics.

- Department of Energy. (2016). *Department of Energy Republic of South Africa*. Retrieved January 5, 2017, from Department of Energy: [http://www.energy.gov.za/files/au\\_frame.ml](http://www.energy.gov.za/files/au_frame.ml)
- Earle, R. (2006, February). *Research Paper on Price Caps Under Uncertainty*. Retrieved 15, 2017, from Kellogg School of Management\_ Northwestern University: <https://www.kellogg.northwestern.edu/research/math/papers/1340.pdf>
- ERC (2010). Energy Regulation Commission, Accessed from, <http://www.erc.go.ke/>
- ERC. (2006). Retrieved from The Energy Act of Kenya: <http://www.erc.go.ke>
- ERC. (2006). *Energy Act of Kenya*. Retrieved January 24, 2017, from Energy Regulation Commission: <http://www.erc.go.ke/>
- EWURA. (2016). *Energy and Water Utilities Regulatory Authority*. Retrieved January 5, 2017, from EWURA: [http://www.ewura.go.tz/?page\\_id=891](http://www.ewura.go.tz/?page_id=891)
- Gaitan Beatriz S, Tol Richard S.J., T., & Hakan, Y. I. (2007). The Hotelling's Rule Revisited in a Dynamic General Equilibrium Model. *Conference on Human and Economic Resources*. Hamburg.
- Golden, M. (2013, July 9 ). *Stanford researchers say 'peak oil' concerns should ease".* . Retrieved from Standford News: <http://news.stanford.edu/news/2013/july/peak-oil-supply-070913.html>
- GPP. (2017). *Fuel Market Regulations Round the World*. Retrieved February 25, 2017, from Global Petrol Prices: <http://www.globalpetrolprices.com/articles/42/>
- Hotelling, H. (1931). The Economics of Exhaustible Resources. *Journal of Political Economy* 39 , 137-175.
- Kilian, L. (2008a). "A comparison of the effects of exogenous oil supply shocks on output and inflation in the G7 countries", *Journal of the European Economic Association*, 6(1), 78-121.
- Killick, T. (1973). "Price Controls in Africa: The Ghanaian experience", *Journal of Modern African Studies*, 11-3:405-26.
- Kojima, M. (2010). *Petroleum product pricing and complementary policies: Experience of developing countries since 2009*.
- Kolla, E. M. (2014). *Fuel Price Regulation; A Critique of the Energy (Petroleum Pricing) Regulation 2010*. University of Nairobi. Nairobi: Unpublished.
- Kumar, R. 2005. *Research methodology*. A step by step guide for beginners. 2<sup>nd</sup> edition. London: Sage Publication.
- Krautkraemer, J. A. (1998). Nonrenewable Resource Scarcity. *Journal of Economic Literature* , 2065-2107.
- Krippendorff, K. (2004). *Content Analysis: An Introduction to It's Methodology*. Thousand Oaks, CA: Sage.

- Langenfeld, J., & Scheffman, D. (1989). Innovation and US competition policy. *Antitrust Bull.*, 34,1.
- Lynch, M. (n.d.). Retrieved November 03, 2013, from Hubbert Peak of Oil Production: [www.hubbertpeak.com](http://www.hubbertpeak.com)
- Lynch., M. C. *The New Pessimism about Petroleum Resources: Debunking the Hubbert Model (and Hubbert Modelers)*. Strategic Energy & Economic Research, Inc.
- Mabro, R. (2005). The international oil price regime, origins, rationale and assessment. . *The Journal of Energy Literature, Volume XI, No1* .
- Majumdar, S. (2003). *Incentive Compatible Mechanism Design and Firm Growth:Experiences from Telecommunications Sector Regulation, Telecommunications Policy*.
- Misoi, S. (2012). *The Effect of Oil Price Regulation on the Financial Performance of Oil Companies in Kenya*. University of Nairobi. Nairobi: Unpublished.
- Namiba, M. K. (2014). The Effect of Petroleum Price Regulation on the Financial Performance of Oil Firms in Kenya. University of Nairobi. Nairobi: Unpublished.
- Njeri, T. W. (2013). The Impact of Price Regulation on The Profitability of Oil Marketing Companies in Kenya. University of Nairobi. Nairobi: Unpublished.
- NPA. (2017). *National Petroleum Authority*. Retrieved January 5, 2017, from National Petroleum Authority of Ghana: <http://www.npa.gov.gh/>
- Oduor, J. (2010, October 15). The Revolution of Petroleum Prices in Kenya. *Daily Nation* , p. 23.
- OPEC. (2014). *Annual Statistical Bulletin*. OPEC.
- OPEC. (2007, November 18). OPEC Summit Roundup Production hike prospects fade as Abu Dhabi summit looms, Retrieved 29 July 2009. *Forbes* .
- Orodho, A., & Kombo, D. (2002). *Research Methods*. Nairobi: Kenyatta University Institute of Open Learning.
- PIEA. (2015). *Petroleum Insight* .
- PIEA. (2016). *Petroleum Insight* , 38.
- Pirog. R (2012). Financial Performance of the Major Oil Companies, 2007-2011, Congressional Research Service report, USA.
- Saunders, M., Thornhill, A., & Lewis, P. (2009). *Research Methods for Business Students*(5<sup>th</sup> ed.). Harlow, England: Pearson Education Publishers.
- Saunders, M., Thornhill, A., & Lewis, P. (2016). *Research Methods for Business Students* (7<sup>th</sup> ed.). Harlow, England: Pearson Education Publishers.

- Sappington, D. E., & Weisman, D. L. (2010). Price cap regulation: what have we learned from 25 years of experience in the telecommunications industry?. *Journal of Regulatory Economics*, 38(3), 227-257.
- Seo D. & Shin J. (2010). Impact of Incentive Regulation on Productivity in the US Telecommunications Industry.
- Semgomba, G. A. (2013). *Credit Risk Management in Financial Institution a case study of NMB Public Limited (NMB PLC)* (Doctoral dissertation, The Open University of Tanzania).
- Shields, P. a. (2013). *A Playbook for Research Methods: Integrating Conceptual Frameworks and Project Management*. Stillwater, Oklahoma: New Forums Press.
- Smith, M., Thorpe, R., & Lowe, A. (2012). *Management Research: An Introduction*. London: Sage Publishers.
- Sowell, T. (2008). *Applied Economics: Thinking Beyond Stage One*. New York: Basic Books.
- Total Kenya. (2012). *ERC FUEL PRICES: RECOMMENDED FUEL PRICES*. Retrieved February 25, 2017, from Total Kenya: <http://www.total.co.ke/service-stations/our-network/erc-fuel-prices.html>
- UNCTAD. (2005). *The Exposure of African governments to the volatility of International Oil Prices, and what to Do About It*. Geneva: UNCTAD.
- Wabwoba, A. (2011). The Impact of Oil Price Regulation on the Financial Performance of National Oil Corporation. University of Nairobi. Nairobi: Unpublished.
- Wanjiku, M. (2011). Oil industry in Kenya. Petroleum Insight, 3rd Quarter. *Petroleum Institute of East Africa*.
- Wanjogu, M. K. (2015). The Relationship Between the Introduction of Price Regulation and Profitability of Oil Marketing Firms in Kenya. University of Nairobi. Nairobi: Unpublished.
- Wood., J. *Peak Oil: The Looming Energy Crisis* . Michigan Technological University. .



## APPENDIX

### Appendix I: Ethics Review Approval



## Appendix II: Introductory Letter

Beryl Miswa  
P.O. Box 64783 00620  
Nairobi, Kenya

To .....[Organization]

Address

Dear sir/madam,

### RE: REQUEST TO PARTICIPATE IN AN INTERVIEW

My name is Beryl Miswa, currently a master's student, specialization marketing, at Strathmore University. I am undertaking a research project for the master's course, *"Assessing the Efficacy of the pricing regulation on fuel pump prices in Kenya"*.

The purpose of this study is to assess the appropriateness of components of the pricing formulae, determine the different perspectives of the oil marketers in relation to the pricing of fuel, and examine the success and challenges of the pricing formulae/regulation. This will give credence to the current pricing formula and provide the motivation to planners and policy makers to improve or review the fuel price regulation in Kenya.

I shall be conducting an in-depth interview with the market majors and would request your participation in this study. The interview will be face to face and should take 45 minutes to an hour.

With this letter, I have attached an interview guide. I assure you that your responses to this study will be treated with confidentiality and used for academic purposes only. My contact details are provided below.

Sincerely,

Beryl Miswa  
0720875731/0717714220  
brmiswa@gmail.com

### Appendix III: Interview Guide

#### Section A: Information about the Organization (prefilled)

1. Name of the organization (prefilled)

2. How long has the organization been operating in Kenya?

0 – 5 [], 6– 10 [], 11 – 15 [], 16 – 20 [], above 20 [] years

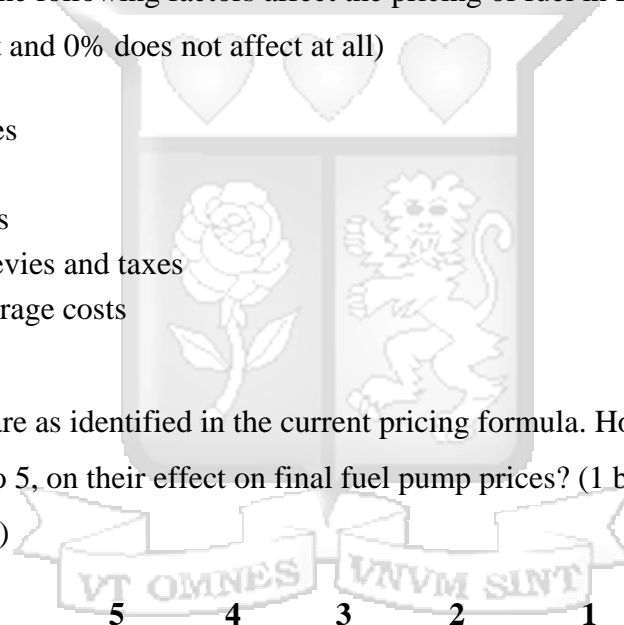
3. What percentage of the market share does the organization commands in the local market?

#### SECTION B: Oil Marketers

1. To what extent do the following factors affect the pricing of fuel in Kenya if at all? (100% being to a large extent and 0% does not affect at all)

- Crude oil prices
- Inflation
- Insurance costs
- Government levies and taxes
- Import and storage costs
- Loss in transit

2. The factors below are as identified in the current pricing formula. How would you rate them on a scale of 1 to 5, on their effect on final fuel pump prices? (1 being no effect and 5 being very high effect)



Crude oil price

Exchange rate

Transportation

Oil marketer's margin

Dealer/Retailer margin

Other, please specify

3. (a) Do you think there are other factors/items that should be considered/added/removed to the pricing formula?

(b). If yes, please state them

---

---

---

### **Section C**

1. How would you compare the oil pricing in Kenya before and after regulation to the international pricing?

2. How would you explain the efficiency of the oil pricing formulae in Kenya?

3. Which is preferred, a regulated market or a deregulated market and Why?

4. What has been the effect of the pricing formulae to the business?

### **Section D: ERC Interview Guide**

1. What is the mandate for the commission in relation to fuel pricing?
2. What was the objective of the pricing regulation?
3. Have the objectives of the pricing regulation been achieved?
4. Why was the pricing formulae set up?
5. What informed the pricing formulae?
6. How does the commission confirm the implementation of the set prices?
7. What are the strengths and limitation of the pricing regulation/formulae?
8. How has the pricing regulation affected the economy?
9. Is there a likelihood of the pricing formula being amended or abolished and what would replace it?
10. Has the formula been beneficial and why?

THANK YOU

## Appendix IV: List of Organizations

### Target Population

<b>Total</b>
<b>Vivo</b>
<b>Kenol Kobil</b>
<b>Oil Libya</b>
<b>NOCK</b>
<b>Petro</b>
<b>Gulf energy</b>

