AN ANALYSIS OF THE IMPACT OF SECURITY OF OIL SUPPLY ON THE PRICE OF PETROLEUM PRODUCTS IN UGANDA.

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A DISSERTATION SUBMITTED TO THE FACULTY OF BUSINESS AND ADMINISTRATION IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN OIL AND GAS MANAGEMENT AT THE INSTITUTE OF PETROLEUM STUDIES KAMPALA IN AFFILIATION TO UCU.

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Declaration

I hereby declare that this study has not once been presented for any academic award in any institution or university. All sources used in this research have been rightfully acknowledged.

…… ……

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Approval

I acknowledge that this dissertation titled: has been supervision and is ready for submission.

....

Mr. Patrick Ruharuza Date

Dedication

I wish to dedicate this work my parents, siblings and my supervisor who have given moral support throughout my years of studies. They inculcated in me a desire to learn and made sacrifices so I would have entree to high quality education.

May God bless them.

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ABSTRACT

This study analyses the impact of security of oil supply on the price of petroleum products in Uganda. This task was accomplished by analyzing the oil flow in Uganda, oil price determination, oil price cycles, factors that disrupt the supply of oil in Uganda. The study also looked at the security of oil supply in the country. Once the results were in, the research examined the country's oil and gas dynamics through private oil companies and government companies.

The area of study was mainly a private owned oil company which was Meru Petroleum (U) Limited with a sample size of 153 respondents who were selected using purposive sampling.

The study revealed that there are many factors that disrupt the supply of oil and they include OPEC decisions, logistics, geo-political tensions, natural disasters, technical accidents and others. In addition, the study discovered that oil flow disruption is in relation to many challenges for example high cost of oil truck maintenance, stringent technical and legal requirements, and lack of working capital.

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction

This chapter defines the introduction to the study. The chapter covers the background, problem statement, objectives, and research questions of the study. It also covers the purpose, significance, scope, conceptual framework, and definitions.

1.2 Background of study

In 1973, during Yom Kippur war, the Organization of Arab Petroleum Exporting Countries established the ban of oil on the United States (Corbett, 2022). The impediment stopped U.S. oil imports from contributing nations under OAPEC, hence initiated a sequence of production cuts that changed the global price of oil (Corbett, 2022). The price of a barrel of oil went from $ 2.90 to $ 11.65 US dollars (Corbett, 2022). Mid way of 1973, lack of excess production capacity in the oil industry in the United States made it difficult to bring oil on to the market therefore prices rose when OAPEC cut production and the United States could not increase supply (Corbett, 2022).

In 1974, the embargo terminated U.S. oil imports from participating OAPEC nations and started a sequences of production cuts that altered the world price of oil. These cuts nearly multiplied the price of oil from $2.90 a barrel before the embargo to $11.65 a barrel in January 1974 (Corbett, Federal Reserve History , n.d.). In March 1974, amid disagreements within OAPEC on how long to continue the punishment, the embargo was officially lifted. The higher oil prices, on the other hand, remained (Merrill 2007). The manipulation of oil prices and supplies by the oil exporting countries came at a most inopportune time for the United States (Corbett, Federal Reserve History , n.d.).

Additionally, non-Organization of the Petroleum Exporting Countries (OPEC) oil sources were dropping as a percentage of the world oil industry, and OPEC was therefore gaining a larger percentage of the world oil market. These market dynamic contrast, coordinated with the effect of OPEC nations' greater participation rights in the industry, allowed OPEC to wield a much larger influence over the price setting mechanism in the oil market since their formation in 1960. (Merrill 2007

In 1978 to 1979, for the period of the revolution, the workers of the oil sector had been aggressively protesting which ground Iranian oil production to a halt. The loss of production amounted to 2.5 million barrels per day. (Energy Education, n.d.) The forfeiture in production left a large hole in the export of oil and the other OPEC countries made an effort to increase their production in order to keep prices realistic and the supply flowing.

Prices rose as the level of production were lowered, even when the new government had tried to facelift production, it was still not enough to counterweight the original loss.

Succeeding the Iranian Revolution in January 1979, the bordering country of Iraq under its leader Saddam Hussein attacked Iran in September of 1980 in fear that the revolution might spread into Iraq. (Energy Education, n.d.) The war had an overwhelming effect on both countries, with regards to the effects on oil, the production of both countries was vastly decreased. The oil output of Iran declined by 7% of world production which led to the oil supply disruption, but it did not lead to the prices shooting up by January 1979. Rather the surging demand led to high prices.

The Iranian Revolution (1979) and the subsequent Iran-Iraq War (1980-1988) constrained the supply of oil from Iran, their production had misshapen. Production increases from other OPEC members persevered the hole left by Iranian production. By July 1980 the oil market price was $30 (over $100.00 today), more than double the $12.70 market price in December 1978. By the 1990s the price of OPEC oil had increased almost 40% since 1980. (Energy Education, n.d.)

In 2019, Africa contributes approximately 9.6% of the world output (investopedia, n.d.) With Nigeria being the biggest producer. During this year, Abqaiq-Khurais attack caused the loss of 5% of the world' oil supply. Oil prices rose more than 20% in this year but there were no severe spikes and crude stocks barely sniffed $70 a barrel regardless of attacks on the world's biggest oil producer, authorizations that crippled crude exports of two OPEC members and enormous supply cuts from big oil producing countries.

The price gains in crude oil benchmarks were all in the first quarter of 2019, even as the next number of months featured supply shocks that in the past would probably have drove crude past the $100 mark (Devika Krishna Kumar, 2019).

Prices were determined to remain variety bound in 2020 as swelling supplies, predominantly from the United States, offset cuts from the Organization of the Petroleum Exporting Countries and wearying worldwide demand, dealers and analysts said (Devika Krishna Kumar, 2019).

As of 2020, Africa imported 108.8 million metric tons of oil. A barrel of oil was much less than $100 US dollars, yet the demand was low since most countries in Africa were still developing. The COVID-19 pandemic activated an unparalleled demand shock in the oil industry, leading to a downfall in oil prices. Governments around the world closed businesses, issued stay-at-home mandates, and restricted travel happened as demand for oil was cratered. Due to the reduced economic activity, by April, there was a dramatically oversupply and prices plunged (Johnston, 2022).

In addition to the free fall in oil prices was an oil price war between Saudi Arabia and Russia, started in March after both the countries botched to agree on oil production levels. The price war ended within a month in April when the Organization of the Petroleum Exporting Countries (OPEC) and its associates arranged to cut overall crude oil production by 9.7 million barrels per day for an initial period of two months, starting on May 1. This signified the solitary largest output cut in history.

Oil production was to be limited to 7.7 million barrels per day by July throughout to (Johnston, 2022)December.3OPEC's failure to hurriedly cut oil production to respond to lower demand only added to the instability and price declines that the oil industry experienced during the early part of the year (Johnston, 2022). Despite the OPEC agreement to reduce production levels, crude oil prices reached some of their lowest levels in more than 20 years by May 2020. (Johnston, 2022)4

Since Uganda is not an oil producer yet, 90% of oil is imported through Kenya and 10% through Tanzania and has an annual growth of consumption of about 7%. In 2008, Uganda experienced the oil crisis that affected its economy since the exportation of coffee. In 2021, a barrel of oil was about $70 US dollars.

There are factors such as supply and demand, cost of production, and market sentiment that cause the prices of oil to change. The concept of supply and demand is fairly straightforward. The price should go up as the demand increases and price should go down as demand decreases. As simple as it seems it is not quite in the oil market.

The price of oil as we know it is actually set in the oil futures market. An oil futures contract is a compulsory agreement that gives one the right to purchase oil by the barrel at a predefined price on a predefined date in the future.

Under a futures contract, both the buyer and the seller are obligated to fulfill their side of the transaction on the specified date. For example, during the pandemic in 2020 and 2021, the supply of oil was moderate but the demand was low because of the lockdowns that were ongoing. As of today since the economy was opened, the citizens are ensuring to run businesses as usual causing the increase of demand of oil. Therefore, the increase of demand came along with the increase of oil prices.

During wars the price of oil tend to go up and this is because there is a large amount of utilization of weapons, the demand for the raw material oil is hugely increased, and meanwhile the supply of oil is trapped in shortage. The Russia Ukraine war led the big importers which are the United States and the United Kingdom to ban oil and gas imports from Russia since it declared war (India Today, 2022).

The problem at hand is that Russia is one of the world's biggest oil suppliers for as of December 2021, Russia sent nearly 8 million barrels of oil and other petroleum products to global markets. This invasion has led Russia to pull 3 million barrels of the world supply causing low supply globally (Journal, 2022) causing prices to reach their highest nearly in a decade. The OPEC wheels 40% of the global oil and the world marketplace determines the price of oil (Nrcan, 2022).

For the past 10 years, the prices have been varying according to different factors affecting the industry. In 2013, experts and politicians in the Ministry of Energy and mineral development determined that the oil prices were too low as a barrel went for $ 88 US dollars which was about Uganda shillings 2,000 per litre excluding the taxes and distribution costs. In 2014 the price of oil stabilized but they dropped towards the end of the year and entering 2015 where a litre was going for about 2,225 Uganda shillings.

Uganda being a net importer of oil, the prices between 2016 and 2019 were varying due to factors such as OPEC cutting production. The prices during these years were between $52.4 and $54.1 per barrel.

In 2020 and 2021, the global pandemic, COVID-19 disrupted on the oil supply chain which caused oversupply and low demand. The prices of a litre of fuel during that time were between 3500 Uganda Shillings and 3700 Uganda Shillings.

Before 2022, the highest oil prices had shoot was in July 2008 where a barrel cost $147 yet the average price between 2005 and 2010 was $67 but kept on falling throughout the year (Musisi, 2013).

1.3 Problem statement

During COVID-19 in 2020 and 2021, the prices of gasoline were between 3,200 and 3,700 Uganda shillings yet the demand was low due to the lockdowns that were ongoing. In the oil and gas industry, when the production is high, the higher the supply and vice-visa which determines the price of petroleum products.

The producing countries are expected to supply 99.4 million barrels per day (Oil Market , 2022) to meet the expectation of consumption of oil surpassing 100 million barrels per day in 2022 (Lawler, 2022). However, as of 2022 since March, the supply of oil has been low leading to the drastic increase of the prices of petroleum products where a lite of gasoline is approximately 5700 Uganda shillings. The sudden cause of the high prices of petroleum products and low oil supply is due to the OPEC AND non OPEC cutting supply by 660,000 barrels per day (Lawler, 2022) and the Russian invasion in Ukraine.

Factually, extremely high oil prices have been predominantly influenced by geopolitical tensions or war in an energy producing country. For example, Uganda being a net importer, Kenya is experiencing political conflicts supply of oil to Uganda becomes difficult causing oil prices to hike in Uganda. An increase in oil prices can depress the supply of other goods because they increase the costs of producing them and cause inflation. These high prices can shift up the supply curve for the goods and services for which oil is an input.

When supply exceeds demand, oil prices fall which causes production and transportation costs fall. It also leads to significant real income shifts from oil exporters and oil importers. Falling prices are not sufficient to increase economic growth because other factors keep growth low.

In the financial year 2021/2022, the government of Uganda increased excise duty on fuel by sh100 Ugx which explains why even when the supply of oil stabilizes the prices remain high because of increase of tax.

The research study is therefore to fill the gap by analyzing the impact of security of oil supply on the price of petroleum products. It will assist in considering the effective and resourceful strategic ways to overcome the problem.

1.4 Objectives

1.4.1 General Objective

To analyze the impact of security of oil supply on the price of petroleum products in Uganda.

1.4.2 Specific Objectives

1. To analyze the security of oil supply in Uganda.
2. To analyze the factors of oil supply disruption.
3. To analyze the relationship between oil supply and the price petroleum products.

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1.5 Research Questions

What is the oil supply flow in Uganda?

What is the context of security of oil supply in Uganda as a net importer?

What is the relation between the security of oil supply and the demand of oil products?

1.6 Purpose of the study

The research heightens and explains the impact of security of oil supply on petroleum products. The purpose seeks to establish the extent to which change in supply dynamics impacts the price of petroleum products in Uganda.

1.7 Significance of the study

1. Oil companies and petrol stations can use the study to construct possible solutions to over the lack of security of oil supply.

2. This study also throws light on how supply of oil has an impact on the price of petroleum products.

3. It will help in the updating of the policies in the government of Uganda.

1.8 Justification of the study

Since March 2022, when the Russia -Ukraine war began and the non OPEC and OPEC nations cut production it led to the low oil supply globally. The lack of security of supply has impacted on the prices of petroleum products most especially in the downstream sector of the industry in specific petrol stations.

Petrol stations have hiked the prices of fuel and others have temporary closed because of the shortage of oil supply and thus there is a need to address the security of oil supply in Uganda. According to Peter Lokeris, the state minister of energy in charge of minerals said as of December 2021, petrol was going for sh4, 450 Ugx per litre and by June 2022 a litre was going for 6000 and this was witnessed in petrol stations like Total, Shell and others.

As of 2022, Fuelex Busega and Marino were closed due to impromptu quality assurance. It is believed that Fuelex adulterated their fuel by mixing it with another chemical and it was done because of the sacristy of oil supply to the petrol station.

1.9 Scope of the study

1.9.1 Geographical scope

Geographically, the study was conducted in Kampala Uganda where there are 101 oil companies and 1047 licensed petrol stations and over 2000 that are unlicensed engaged in downstream as of 2011.

1.9.2 Time scope

The study considered a period of 10 years from 2013 TO 2023. As of 2022 the supply of oil is low because of Russia cut supply lead to lack of security of oil supply in Uganda.

1.10 Definitions

Oil

This is a viscous liquid derived from petroleum especially for the use as a fuel or lubricant.

Security of oil supply

This is the uninterrupted and guaranteed availability of oil at an affordable price to the market.

Petroleum

This is a liquid mixture of hydrocarbons which are existing in suitable rock layers and can be extracted and refined to produce fuels including petrol, paraffin, and diesel oil.

Demand

This is a persistent and authoritative request, made as right.

Oil reserves

These are estimate of the amount of crude oil located in a particular region and can be recovered at a cost.

Price fluctuation

This is a frequent rise and fall of commodity prices in the market during certain seasons of the year and it determines the supply and demand.

1.11 Conceptual framework

The figure below shows the conceptual model of the study's variables and they are related**.**

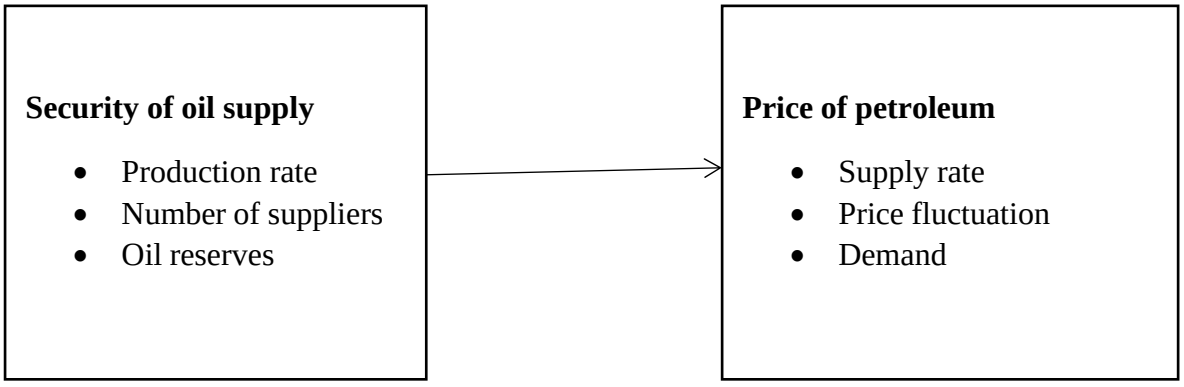

Figure 1.1: conceptual framework

Source; secondary data, Adapted from (Team, 2022), (Young, 2021)

The security of supply was considered as the independent variable with components like production rate, number of suppliers, geopolitics, and oil reserves. The price of petroleum products

was considered as the dependent variable with components like supply rate, price fluctuations and demand.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides an analyzed overview of the research topic and knowledge on oil supply to Uganda, what disrupts the flow, local supply dynamics, and price determination and cycles. It covers the answers of the research questions and critically analyzes of the specific objectives.

2.2 Oil supply to Uganda

Oil is an essential to the development of different countries and a secure and accessible supply of oil is crucial for the sustainability of modern societies especially the transport sector. East Africa is mainly supplied with oil from the Middle East countries which include Saudi Arabia, United Arab Emirates, Kuwait, and others. The General Manager of Mount Meru Petroleum (U) limited Daniel Mushabe explains how oil is supplied into Uganda. Uganda being a net importer, it imports its oil from Kenya through the Kenyan pipeline that goes all the way to western Kenya in depos that are in Kisumu, Nakuru, Eldoret and Nairobi.

Before the fuel is transported into Uganda, Kenya has a system called the Open Tender System which is used during the process. Every now and then oil companies bid for tenders and the winners are permitted to bring and supply oil in the region. Thereafter, ships badge and dispense fuel in both government and private depos. Ugandan oil companies can therefore get fuel from the depos in western Kenya according to their allocated capacity and those that do not have allocations are able to be supplied fuel from companies that do not only deal in petrol stations but trading as well according to agreed payment plans.

On an international level, the international energy agency has designed emergency response measures to overcome the sudden shortages of oil (IEA, 2022). Some of the measures include fuel specification in that the quality standards are temporarily lowered by governments to increase the elasticity of the supply, surge production where there is rapid production of oil, fuel switching where substation of another form of fuel is used for example natural gas, demand restraint measures and emergency oil stocks (IEA, 2022).

2.3 Security of oil supply in Uganda as a net importer

Being a net importer of oil, Uganda encounters security issues with regard to the availability and cost of oil. To fulfill the rising energy needs of its economy and population, the nation imports a lot of oil. As a result, any supply chain disruptions could have a big impact on the economy and energy security of the nation.

Currently, Kenya and Tanzania, which are close by, provide the majority of the oil imported into Uganda. As the country's transportation infrastructure is still being built, it is still susceptible to disruptions caused by pipeline breaks, road closures, and other logistical problems.
Additionally, it may be difficult to control the budget for energy supply because imported oil prices are susceptible to changes in the worldwide market. High oil import prices can also raise operational expenses for initiatives, which can result in inflation and decrease Ugandan industries' competitiveness in global markets.

The Ugandan government is implementing a number of policies to strengthen its energy security and independence in order to address these issues. These comprise developing local oil resources, investing in alternative energy sources like solar and wind, and forming regional alliances to enhance the infrastructure for the trade and transportation of oil.

Overall, Uganda confronts substantial difficulties in securing the security of its oil supply because it is a net importer of oil. However, the nation can strengthen its energy security and accelerate economic growth in the long run by pursuing a variety of policies to cut its reliance on imports and secure domestic oil resources.

2.4 Oil flow disruption

Today the oil market worldwide remains vulnerable to a wide range of risk factors which a few include OPEC decisions, logistics, geo-political tensions, natural disasters, technical accidents and others (IEA, 2022).

The Organization of the Petroleum Exporting Countries (OPEC) is principally responsible for regulating the supply of oil reserves, so they have a significant influence over oil prices and how much oil is accessible to consumers.

There are many ways OPEC can disrupt oil supply but the major one is by adjusting their production levels. At times, OPEC members cooperatively agree to cut production, this decreases the general supply of oil in the market and determination of prices. In opposition, prices may fall if supply of oil becomes abundant.

OPEC can also implement an embargo to cause oil disruption. Over the years, OPEC members have repeatedly used oil embargoes as a way of political influence. For example, in1973, During the Yom Kippur War, an oil embargo was imposed by OPEC on countries that supported Israel. This embargo caused extensive shortages and prices spikes, emphasizing OPEC's capability to control global oil supply.

Political instability is also a major disruptor of oil supply. For example, in April, 2023 when Kenya opposition put days for striking, trucks were parked at depos till the end of the day when the strikes have ended which caused delays. The most recent conflict that has disrupted the oil supply has been the Russian-Ukraine war. Russia was supplying to a big percentage of oil to Europe and 80% to the United States of America.

After sanctions were put on Russia, the United States of America opted to get oil supply from the Middle East countries which caused East Africa to experience shortage of supply of oil. The Middle East countries prioritized to supply to the United States of America because of their high purchasing power and political influence unlike East Africa.

Logistically, Uganda has had a terminal depo of a capacity of 30 million litres in Jinja that has been hardly used for storage. Due to this unreliable storage facilities, Uganda tends to run out of fuel very fast in case Kenya is facing a bottle neck. Fortunately, a new private player has opened a gigantic depo with a capacity of 70 million litres in Kawuku along Entebbe road. He has gone ahead and built two ships which have a capacity of 4.5 million litres that go Kisumu to bring fuel into Uganda.

To polish off the new depo, the government of Uganda plans to build depos in Mpigi in preparation of the oil to come from Hoima. He adds to say that Uganda has also adapted to emphasis on the

Tanzania corridor where by when they are local disruptions they anticipate and stock more than usual. At times at the border during clearing, the URA system breaks down which also disrupts because there are delays. Usually clearing marking agents for liquid stamping are a times over worked and due to the exhaustion they delay trucks from reaching their destination.

Uganda being a net import it is dependent on Kenya. It takes only three days for disruption to occur because of the use of one pipeline where by one product is sent a time and washing of the pipe to flash out the previous product is also involved in between sending another product.

2.5 Price determination and cycles

There are two major theories on the price determination of oil and they were come up by Harold Hotelling and Morris Adelman. The theories argue the following;

According to Harold Hotelling, over a sequence of years, prices reflect on demand until the supply is drained. There are factors that determine the present and future periods of allocation of oil and these include interest rate, annual demand, production costs, total resources and alternative energy costs. Producers will cease activity at wells and trade the oil far ahead when prices approach alternative costs if at all present price is too low (Vactor, 2009). Producers will incline production rates to capitalize on a better return on investment, bring prices back to earth if at all the prices move too high. The dynamic interaction of these key variables governs what every person pays at the petrol station (Vactor, 2009).

On the other hand, Morris Adelman argues against the concept that oil supplies are a fixed quantity. He contends that present production rates and level of reserves that support the flexible; they hinge on up-to-date technology and the inducement to explore (Vactor, 2009). Drillers will get off their duff and explore if at all oil prices rise and exploration capitals dry until the market in due course turns around if at all prices go down. Oil prices will upsurge if reserves become harder to find until capitalists formulate alternatives. He further explains that the variables that govern prices in the Hotelling theory are fundamentally “unknown and unknowable” and have a slight bearing on day-to-day oil prices (Vactor, 2009).

An important amount of the world's oil output is under the control of the multinational oil cartel known as OPEC. Despite not directly setting prices, they have a substantial impact on global oil prices.

Instead, in order to preserve steady prices and avoid an oversupply, OPEC members agree to restrict oil production. When demand for oil increases, OPEC can boost oil output to satisfy that need and maintain stable prices. In contrast, when demand declines, OPEC can cut oil output to maintain a balance between supply and demand and stop prices from falling too much.

OPEC also keeps an eye on regional oil supply and demand trends to assess how the general state of the market is affecting oil prices. Even if demand for oil is not necessarily increasing, OPEC may decide to reduce output in order to raise prices if they believe that increased supply in non-OPEC nations may cause prices to fall.

The effect of some OPEC members over oil prices is higher than that of others. Since Saudi Arabia is the largest producer and exporter of oil in the world, any policies it adopts could have a significant effect on oil prices. Even if other OPEC members individually may not have as much impact over pricing, working together they can more successfully accomplish their objectives.

If the method used to determine crude oil prices in Venezuela and the Middle East in the early post-war period can be considered a decision, it was one of the most significant economic decisions ever made in the global oil sector. As we'll show, the various calculations used had a phony economic justification that included a bonanza profit share in the production of crude (PARRA, 2010).

Where the big oil firms had the closest control and the best for rental. It was a "decision" that could not have been made without significant restrictions on upstream competition, and it allowed the major oil producers to capture a portion of the resource rent from oil due to the significant disparity in supply costs between the Middle East and Venezuela one side, and all other energy sources on the other. The majors utilized these rents to maintain and strengthen their hegemonic positions in the global product markets as well as transportation and refining along the route (PARRA, 2010).

However, they soon realized it was essential or advantageous to give the host governments a bigger portion of the swelling gold torrent so they could keep the remainder for themselves. Unsurprisingly, the governments developed and expanded in both economic political terms until the inevitable occurred: they assumed control, with serious economic repercussions for all parties involved (PARRA, 2010).

But all of that happened much later here, we examine the process used to create the price structure as well as some of its immediate effects. It must be remembered that the crude price being set was, or rather was intended to be, the true market price, the price that unaffiliated purchasers would pay in transactions conducted on an arm's-length basis, the price that everyone would pay, and a price that was to be transparent, being published or " posted". Since there were so few independent refiners in the world, its principal purpose was, of course, for transfers between affiliates (PARRA, 2010).

In conclusion, OPEC does not directly set prices; rather, they work to maintain stable and lucrative oil prices for their member nations through agreements on production limitations and market trend monitoring. Sudden supply reductions have because oil price shocks (Brookings, 2022). Oil price shocks have caused consequences for example, unemployment, idle fixed capital, high price of commodities (Brookings, 2022)

2.5.1 Price cycles

In the past, unanticipated spikes in demand have caused oil prices to cycle up and down. Price cycles are a result of demand that is inelastic in the near run. It is well known that oil prices are very cyclical and unstable. This is influenced by a number of variables, including as supply and demand dynamics, geopolitical tensions, currency fluctuations, and financial market speculation.

The OPEC (Organization of the Petroleum Exporting Countries) cartel is a significant factor in oil price cycles. Since OPEC members control a considerable amount of the world's oil output, their decisions to either boost or decrease supply can have a significant effect on pricing.

The state of the world economy can also have an impact on oil prices. Demand for oil typically rises in times of economic expansion, which may result in higher prices. On the other hand, when the economy is contracting, there is less demand for oil, which might result in lower prices.

The price of oil can also be impacted by geopolitical events and tensions. For instance, a crisis in the Middle East may impede oil supply and drive up prices. Similar to this, severe weather events like hurricanes can halt oil production and shipping, which raises prices. Last but not least, price volatility in the oil market may also be influenced by financial speculation. Depending on their

projections of future supply and demand dynamics, traders who buy and sell oil futures contracts can affect prices.

Mr. Daniel Mushabe explains in Uganda there are cycles whereby during the festive seasons there is a lot of traveling and consumption is high which means a lot of stoke is kept for that period. The peak for Uganda oil companies is between October and January and fall in March. Because these cycles are planned during this peak of demand meaning prices are not affected during this period. He further says, Uganda has a free market meaning any station can set its own price and influence other stations that is it does not have price control.

Overall, a complex interaction of supply and demand forces, geopolitical events, and financial market dynamics, rather than one single reason, drives oil price cycles.

2.6 The relationship between the securities of oil supply and demand of oil products.

The demand for oil products may be ominously impacted by the supply security of oil. Energy demands must be fulfilled with a dependable oil supply, and any interruption in the supply chain may have a detrimental influence on the market for oil-derived products. The demand for oil products and the security of the oil supply are narrowly related in the following ways:

1. Market confidence: instability in politics or other circumstances that create uncertainty in the oil market may have an adverse impact on consumer demand for oil-related goods. If consumers and businesses are skeptical of the stability of the oil supply chain, they may be reluctant to invest in and utilize more oil-based products.

2. Oil availability is guaranteed by a safe supply chain, which can lead to an amplified demand for oil-based products to fulfill rising energy needs. On the other hand, a hazy or unsafe supply chain might result in oil product shortages or rationing, which would reduce demand.

3. Oil price: Any interruption in the oil supply could result in price hikes, particularly if it lasts a long time. As buyers and businesses hunt for less expensive alternatives, high oil prices could cause a decline in the demand for oil-based products.

4. Dependence on oil: The higher the nation's reliance on oil as its main source of energy, the more an unstable oil supply would affect consumer demand for oil-related goods. Oil products continue to be vital for many businesses and nations, even as alternatives like renewable energy sources are created.

In general, the demand for oil products and the security of the oil supply are intertwined. Without safe and consistent oil supply, there could be substantial negative effects on the economy and society as demand for oil products declines.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter shows the methodology that will be commissioned when performing this study. It elaborates the research design, the sampling procedure, sample size, the measurement instrument, and the data collection method that will be adopted. The chapter also shows how data will be analyzed and the measures that will be taken to ensure that research ethics are observed.

3.2 Research Design

This study will adopt the descriptive study research design. The descriptive study research design is a research design that aims to obtain information to systematically describe a phenomenon, situation, or population (voxco, 2021). Descriptive design will be used because the studies are relatively quick, easy, and cheap to conduct due to the limited time that will be spent to carry out the research. With the descriptive design, the researcher will be able to collect appropriate data quickly and cheaply (Gravlee, Kennedy, Godoy & Leonard, 2009). Both the quantitative and qualitative research methods will be used to carry out the research.

3.3 Area of study

The study will be conducted in Kampala Capital City of Kampala district. The choice of Kampala City, in Kampala District as a study area will be funneled by two reasons. Firstly, in relations to oil companies that deal in downstream, the biggest percentage of oil companies are located in Kampala. Certainly, this makes Kampala City a favorable location for this study. Secondly, a large number of Kampala City oil companies are facing challenges oil supply. Kampala City comprises of oil companies like; VIVO Energy (U) Ltd-Shell, Total Energies, HASS, Stabex International Limited, Nile Energy Limited t/a GAZ, OIL Energy (U) Limited and others.

3.4 Study Population

The population of the study will have approximately 100 people comprising management staff, marketing and sales staff. The population will be selected from two oil companies in Kampala City, and these include: Ministry of Energy and Mineral Development and Total Energies. This population category will comprise personnel who are directly involved with oil supply and distribution and consequently provide the appropriate sample study.

3.5 Sample Size and Selection

The sample size will comprise 153 respondents which will be drawn from population of 250 people determining by the small Sample Technique according to Krejcie and Morgan 1970. The sample from each category for the questionnaire survey will determine by proportionate sampling.

3.6 Sampling Techniques

The study will adopt two sampling methods, namely simple random and purposive sampling. Simple random sampling is a sampling technique by which each individual is selected randomly and wholly by chance, giving each individual accessible in population an equivalent chance of being included in the sample (Clark & Creswell, 2008). With regard to purposive sampling, this will be used to sample specific people to provide detailed views since the study will be both quantitative and qualitative. The method of purposive sampling that will be used is intensity purposive sampling. Positive sampling will allow the researcher to select a small number of key respondents that will provide detailed information and knowledge of a phenomenon of interest (Palinkas et al., 2015).

3.7 Data Collection Methods

The collection of data for this study will involve use of interview survey and secondary data collection by borrowing material from websites and journals. An interview survey is a data collection method by which the participants have a face to face interaction with the research whereby questions are asked directly about the study. The interview survey will be very useful because it is fast to use in data collection. Secondary data collection will be done by researching through the internet for material concerning the study.

3.8 Data Collection Instruments

The researcher will use different search engines to borrow material from other scholars. For example, Google Scholar, Google, Bing and others. The search engines will have websites and journals. A questionnaire will be used during the interviews with the respondents. The questionnaire will have closed-ended questions. The closed-ended questions will be selected because the respondents will easily administer and analyze data. The questions will be used to avoid irrelevant responses.

3.9 Research Procedure

The researcher will acquire preliminary letter from the Institute of Petroleum Studies, Kampala. The researcher will present the letter to the oil companies' human resource managers who will

then acquaint with the researcher to the respondents. The researcher will personally carry out interviews with the selected staff after presenting the purpose of the study. Search engines will be selected to carry out the other part of the research.

3.10 Data Quality Control

3.10.1 Validity of the Instrument

The researcher will recognize content validity of the instruments by making sure that the items on the both independent and dependent variables imitate to the conceptual framework of the study. Validation of the instrument will concentrate on clarity, completeness and significance of the questions in relation to the study hypotheses.

3.10.2 Reliability of the Instruments

To achieve the reliability of the instruments, the researcher will make consultations with the supervisor that will be assigned to. The researcher will ensure careful record keeping, appropriate interpretations of data, clear discussion trail, and transparency in the data collection and will avoid biases. Clarity in terms of thought processes during data analysis and subsequent interpretations will as well be demonstrated (Simmons, 2016).

3.11 Measurement of Variables

The results will be presented by using SPSS software by way of graphs and charts for easy of understanding. This will provide for both the interpretation and recommendations of the findings that will generated. The variables were measured using questions developed basing on the nominal and ordinal scales. The nominal scale will be used to measure questions on contextual characteristics and will help to label in order to identify study terms. The ordinal scale, this is a ranking scale that possesses the characteristic of order that is used to measure the items of the independent and dependent variables. The ranking will be a five- point Likert Scale (Where I strongly disagree 2 - disagree 3= undecided 4 = agree 5- strongly agree).

3.12 Ethical Considerations

Respect for others will be a major key while this research is being carried out. For example, material borrowed from other sources such as journal articles will be accredited at the respective spots in the study. The respondents that will be assigned by the organizations will provide the data for the study, will be informed the drive of the study and why they will be chosen before carrying out the data collection. Further on, the researcher and the respondents will agree to remain

anonymous for confidentiality purposes. Honesty will also be maintained by ensuring that data presentation, analysis and interpretation are strictly based on the data that will be collected.

3.13 Limitation of the study

The research will be carried out for only two months which limited the time to both collect and analyze data. Due to confidentiality, respondents may not able to provide the researcher with detailed data but with relevant data to analyze the study. Secondary data collection will mainly be carried out.

The researcher will conduct the study only with two downstream companies in Kampala. Consequently, any attempts to take a broad view on the results of this research to other regions needs to be treated with cautiousness.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSIONS

4.0 Introduction

This chapter analyzes the data collected from the respondents, presents and interprets and discusses it. The chapter comprises the questionnaire response rate and objective specific themes. The chapter found out results on analysis of the security of oil supply on the price of petroleum products in Uganda. The subsections here include: Demographic information, *to analyze the scarcity of oil supply in Uganda, examine the factors that disrupt oil supply, and lastly to examine the sustainability of oil supply and the price of petroleum products.*

4.1 Demographic Information

This section analyses, presents and interprets the findings on the respondent's age in completed years, their gender, level of education, name of and position in the sector working with, how long they have worked for the organization, how long, how often and in what program areas the organization has engaged with petroleum industry in Uganda.

4.1.1 Age of the respondents

The respondents were asked to state their age in completed years. The results are as shown in table.

Table 1: Showing the age of respondents

Category	Frequency	Percent
18-27	22	14.4
28-37	82	53.6
38-47	24	15.7
48-57	18	11.8
58 and above	7	4.6
Total	153	100.0

Source: *Primary Data, 2023*

The average age of the respondents was 28-37; the oldest respondent had 58 years with the youngest respondent having 27 years. Most of the respondents at 82(53.6%), were between ages 28-37 closely followed by 24(15.7%) falling between 38-47 years, 22(14.4%) falling between 18-

27 years, 18(11.8%) between 48-57 years with the least number of respondents falling between the ages 58 years at 7(4.6%).

4.1.2 The respondents' gender

The respondents were asked to state their gender. The results are as shown in table

Table 2: Showing the respondent age

Category	Frequency	Percent
Male	65	42.5
Female	88	57.5
Total	153	100.0

Source: *Primary Data, 2023*

The females were the most at 88(57.5%) with the males being the least at 65(42. 5%).The respondents were selected randomly; this therefore implies that there were more female stakeholders that the female.

4.1.3 Level of Education

The respondents were asked to state their level of education and the results are as shown in table

Table 3: Showing the respondents

Category	Frequency	Percent
Secondary	43	28.1
Tertiary	68	44.4
Diploma	30	19.6
Degree	12	7.8
Total	153	100.0

Source: *Primary Data, 2023*

The highest level of education for the most of the respondents was tertiary level at 68(44.4%), followed by Secondary holders at 43(28%), Diploma at 30(19.6%) with the minority being degree holders at 12(7.8%).

4.1.4 Period worked for the organization

The respondents were asked to state how long they have worked for their organization and the results are as shown in table.

Table 4: Showing the Period worked for the organization

Category	Frequency	Percent
1-2 Years	48	31.4
3- 7 Years	49	32.0
8-11 Years	34	22.2
11-14 Years	19	12.4
15 years & above	3	2.0
Total	153	100.0

Source: *Primary Data, 2023*

The average number of years' respondents had worked in the oil supply sector that they were presently in was 3 years; the respondent who has worked long enough for the petroleum sector has done so for 15 years with one who has worked for a shortest time has worked for 15 years with 2%.

Most of the respondents at 49(32%), have worked for their organization for between 3-7 years at 48(31.4%) working for between 1-2 years, 34(22.2%) working for between 8-11 years, 19(12.45) working for between 11-14 years with the least at 3(2%) working for over 15 years for the petroleum sector.

4.1.6 Program of engagement with oil supply sector

The respondents were asked to state what program areas they have engaged with oil supply sector and the results are as shown in table.

Table 5: Showing the programs of engagement with oil supply in Uganda

Category	Frequency	Percent
Oil Supply	30	19.6
Sales at the pump	49	32.0
Management	26	17.0
Transportation	19	12.4
Production (Value addition)	29	19.0
Total	153	100.0

Most of the respondents at 49(32%) in Sales at the pump and with transportation 19(12.4%), 30(19.6%) participate in oil Supply, 26(17%) are in the management department, other respondents participate in Production (Value addition) at 29(19%). This gave the researcher more information relates to the study.

4.1.7 The significance of Demographic Information to the study

From the results the engagement of respondents towards petroleum industry in Uganda has influenced price levels and oil supply. The demographic characteristic helped in assessing the assessment of the pricing on oil supply. The study observed that respondents were in position to discuss the impact of security of oil supply on petroleum products.

4.2 The rate on security of oil supply in Uganda.

This section presents the opinions on the security of oil supply in Uganda. The respondents were given several 5 point Likert Scale questions to respond to 1-Strongly Disagree,2- Disagree, 3-Neutral,4-Agree and 5-Strongly Agree

Table 6: Descriptive statistics showing the security of oil supply in Uganda

Category	*Mean*	*Std. Deviation*
Ugandan government is implementing a number of policies to strengthen its energy security and independence.	2.58	1.14
There are is fuel specification in that the quality standards and an increase of elasticity of the supply.	3.27	.814
Uganda is a net importer of oil	2.58	1.05
Every now and then oil companies bid for tenders and the winners are permitted to bring and supply oil in the region.	2.82	1.14
Government is ensuring security and accelerated economic growth in the long run.	3.23	.76
Average mean	**2.89**	**0.99**

Source: ***Primary Data, 2023***

Most of the respondents stated that every now and then oil companies bid for tenders and the winners are permitted to bring and supply oil in the region with at (Mean=2.58, SD=1.13), others. The findings of this study are divergent to those of Uganda Oil & Gas Documentation Bureau, (2014) which indicated the Giraffe 1 field contains an estimated 400 million barrels, and the Kingfisher field holds approximately 500 million barrels fortunately they contributed maximally; many quantities of man power, raw materials and financial resources. This has led to relative support of oil supply in Uganda.

It was popular among the respondents at (Mean=3.27, SD=.813) that stated that fuel specification is in quality standards and an increase of elasticity of the supply. The findings of the study diverge with the findings of the National Oil and Gas Policy (2008) which stated that Uganda is to promote valuable utilization of the country's oil and gas resources through in-country refining of crude oil. Most of the respondents at Mean=2.58, SD=1.05 stated that Uganda is a net importer of oil therefore oil supply is secured.

It was popular among Mean=2.58, SD=1.14) respondents mentioned that Uganda government is implementing a number of policies to strengthen its energy security and independence. This means is moderately implementing the base of securing its oil supply. The findings of the study showed that the stakeholders are adequately securing oil supply in Uganda, this converges to the findings of (IEA, 2022). Who found out that fuel switching is substation of another form of fuel is to be used for example natural gas, demand restraint measures and emergency oil stocks

K1: I asked the respondent that "Why is Uganda opting for development of a refinery?"

He said that "*Objective 4 of the National Oil and Gas Policy (2008) for Uganda is to promote valuable utilisation of the country's oil and gas resources through in-country refining of crude oil. In this regard therefore, Government undertook a feasibility study on in-country refining in 2010 and the study recommended that development of a refinery in Uganda".*

4.3 The factors that disrupt oil supply

This section analyses, presents and interprets and discusses the findings for the second objective of the study: To examine the factors that disrupt oil supply. The respondents were given several 5 point Likert Scale questions to respond to 1-Strongly Disagree, 2-Disagree, 3-Neutral,4-Agree and 5-Strongly Agree; means and Std. deviation were calculated and interpreted.

Table 7: Descriptive statistics showing the factors that disrupt oil supply

Category	***Mean***	***Std. Deviation***
There is Petroleum Exporting Countries influence over oil prices	3.95	1.03
OPEC members cooperatively agree to cut production which also include embargos that disrupt oil supply in Uganda.	3.09	1.40
There is political instability which has disrupted the oil supply for instance Russian-Ukraine war	3.45	1.18
There is unreliable storage facilities, Uganda tends to run out of fuel very fast.	3.97	1.03
The outcomes of pandemic like COVID-19 in 2020 and 2021	3.29	1.35
Average Mean	**3.55**	**1.21**

Source: *Primary Data, 2023*

It was popular among Mean=3.95, SD=1.03 of the respondents that Petroleum Exporting Countries

influence over oil prices. This is because they are principally responsible for regulating the supply of oil reserves.

Most of the respondents at Mean=3.09, SD=1.408 stated that OPEC members cooperatively agree to cut production which also include embargos that disrupt oil supply in Uganda. The findings of the study was supported by those of (Thompson J.D, 2005)and (Grant, 2010) who assert that even within a sector of an industry, CSFs are context specific and will vary from time due to changes in industry environment such as competition, technological innovations and maturity of the industry.

It was also popular among (Mean=3.45, SD=1.186) respondents that political instability which has disrupted the oil supply for instance Russian-Ukraine war. The most recent conflict that has disrupted the oil supply has been the Russian-Ukraine war. Russia was supplying to a big percentage of oil to Europe and 80% to the United States of America. This is in line with the study of (Rohner, 2022) who stated that Political economists and political scientists have long stressed the harmful political side effects of the world's addiction to fossil fuels (which adds to their devastating environmental impact). Fossil fuels are associated with a greater risk of civil wars, inter-state wars mass killings, corruption, and hollowing-out of democracy.

This differed with the findings of (Rohner D. M., 2013) show that a conflict may deplete mutual trust and drive down trade between conflict parties, which may then find it cheaper to engage in 5a silver lining: increased urgency for the green transition in Europe | Garicano, Rohner and Weder Di Mauro future conflict, leading to a 'war trap'. The world seems currently in the middle of such a spiral of conflict, destroying trust and trade and potentially making future wars more likely.

4.6 Sustainability of oil supply and the price of petroleum products

This section analyses, interprets, presents and discusses findings on elements on how the oil supply industry has sustained the oil supply and the price of petroleum products.

Table 8: **Showing descriptive analysis on Sustainability of oil supply and the price of petroleum products.**

Category	Mean	Std. Deviation
The oil supply is supported and subsidized financially and economically viable.	2.77	1.08
There is a strong partnership between the International oil organizations and the Government of Uganda	2.62	1.10
There is value addition by refining to protect the future energy challenges in the region.	3.23	.76
Energy efficiency improvement measures such as heat integration techniques have been considered.	3.00	.98
The scope of operation of the oil supply and pricing is enhanced with advanced technology.	2.53	1.05
Average Mean	**2.83**	**0.99**

Source: *Primary Data, 2018*

From the findings, results indicate that majority of respondents with mean =2.83 Std. Dev 0.99 strongly agreed moderately that there is sustainability of oil supply and the price of petroleum products. This is evident on there is value addition by refining to protect the future energy challenges in the region with mean= 3.23 Std. Dev .76. This means that Uganda has sustained the oil supply and price of petroleum products.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the findings of the main study, conclusions, recommendations arrived at and contribution to body of knowledge. It also gives suggestions for further research.

5.1 Conclusion

The study examined the impact of security of oil supply on the price of petroleum products in Uganda. This was guided by the following objectives; - to analyze the scarcity of oil supply in Uganda, examine the factors that disrupt oil supply, and lastly to examine the sustainability of oil supply and the price of petroleum products.

Given the findings, the researcher came up with the following conclusions;

It was concluded that there was a positive and strongly significant association between oil supply and price of petroleum products among companies in Uganda. For instance, the outcomes of pandemic like COVID-19 in 2020 and 2021 which affected both oil supply and pricing of the petroleum products in Uganda.

It is concluded that Uganda is a net importer of oil therefore oil supply is secured. This means is moderately implementing the base of securing its oil supply. To achieve effectiveness of oil exploration in Uganda ‘s oil sector, the learning organization may conduct benchmarking with the more experienced organizations.

The researcher also noted that OPEC members cooperatively agree to cut production which also include embargos that disrupt oil supply in Uganda. This is also attributed to political instability which has disrupted the oil supply for instance Russian-Ukraine war. The most recent conflict that has disrupted the oil supply has been the Russian-Ukraine war.

The study further noted that there is sustainability of oil supply and the price of petroleum products through strong partnership between the International oil organizations and the Government of Uganda.

When asked about the future of oil in Uganda, the Minister of Energy and Minerals Development optimistically responded that many legal structures must still be put into place to manage oil resources before going to market. The global price of oil might rebound by that time. If not, the minister claims that Uganda can still do quite well by using its domestic refining capacity to reduce dependence on expensive foreign oil and providing refined petroleum products to other East and Central African nations.

From a governance perspective, reduced economic pressure to get Ugandan oil to the global market might give the government time to reflect on, and improve, current legislation. These laws contain serious questions with respect to governance issues. Moreover, longer-term concerns regarding land ownership and preserving the ecological environment of Uganda need to be addressed. Indeed, the present uncertainty in the global oil market may well be a blessing if it helps Uganda to avoid the natural resource curse.

5.2 Recommendations

Given the conclusions, the following recommendations were arrived at

The Government should support local enterprise development by hiring local suppliers and collaborating with local organizations in Buliisa District to achieve enterprise development through oil exploration. Community development programs such as Buliisa Health Outreach Program, Education Programs and Enterprise Development should be enforced as well.

The Government of Uganda should monitor data entry, analysis and sharing in order to make evidence-based decisions. Government needs to uphold the existing information management systems and sensitize employees on their usage and merits.

There must be a quid pro quo negotiated with the industry and with other political forces to ensure that the short-term loss is always smaller than the long-term gain for the country.

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