EFFECT OF FUEL PRICING MECHANISM ON COMMUNITY LIVELIHOOD IN ISIOLO COUNTY, KENYA

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DECLARATION

I declare that this research project is my original work and it has not been submitted for a degree or examination in any other university.

Signature: …. ……Date: ……14/09/2023…….

Damaris Kawira Kiambati

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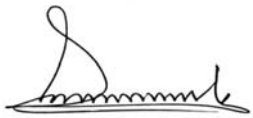
This research project has been submitted for examination with my approval as the University Supervisor.



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DEDICATION

This research project is dedicated to my family, supervisor, lecturers and friends for their endless support, love and encouragement during the study. May God Bless you all.

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ABBREVIATIONS AND ACRONYMS

DFID	UK Department for International Development
SLF	Sustainable Livelihoods Framework
MA	Moving Averages
PB	Price bands
OLS	Ordinary Least Squares regression
CGE	Computable General Equilibrium
SAM	Social Accounting Matrix
VAR	Vector Auto Regression
CPI	Consumer Price Index
EPRA	Energy And Petroleum Regulatory Authority
VIF	Variance Inflation Factor
SPSS	Statistical Software for Social Sciences

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Abstract

The study aimed to investigate the influence of inflation rate, international fuel prices, automatic fuel pricing mechanisms, and changes in fuel tax revenues on community livelihood in Isiolo County, Kenya. The study was conducted in Isiolo County, located in northeastern Kenya. The study adopted a quantitative research approach. It utilized multiple regression analysis to examine the relationship between the independent variables on the dependent variable. Primary data was collected through questionnaires and secondary data was collected from EPRA. The primary data focused on a sample of 379 households. Statistical analysis was used to assess the significance of these factors on community livelihood. The study revealed that the independent variables considered explained approximately 47% of the variability in community livelihood. However, none of the independent variables were found to be statistically significant predictors of community livelihood at the conventional significance level of 0.05. The results suggests that these specific economic factors may not have a significant relationship with community livelihood in Isiolo County. The research contributes to the understanding of the complex relationship between economic factors and community livelihood in a rural context. While the study did not identify significant predictors among the specific economic variables analyzed, it emphasizes the importance of employing a more comprehensive approach to study the well-being of rural communities. The findings provide valuable insights for policymakers and researchers aiming to enhance community livelihood and design targeted interventions that account for the unique challenges faced by communities in Isiolo County.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Fuel pricing mechanisms have a significant impact on the livelihoods of communities around the world. This is particularly true in developing countries, where the cost of gasoline can have a profound effect on economic activity and the daily lives of people. In many cases, fuel pricing policies are implemented as a way of controlling the availability and cost of gasoline to consumers, but they can also have unintended consequences on community livelihoods.

Many developed countries have implemented fuel pricing mechanisms that are designed to encourage the use of more environmentally friendly fuel sources, such as electric or hybrid vehicles. For instance, in Norway, a carbon tax has been implemented to incentivize the use of electric cars, resulting in a significant increase in electric car sales in the country. Similarly, in Germany, a fuel tax has been implemented to support the transition to renewable energy sources, resulting in a decline in fossil fuel consumption (Linder, 2018). In the United States, several states have implemented fuel tax increases to fund transportation infrastructure projects. Such policies are intended to mitigate the impact of carbon emissions on the environment.

In contrast, many developing countries, particularly those in sub-Saharan Africa, rely heavily on imported gasoline, and the cost of gasoline can have a significant impact on their economies. For example, in countries like South Africa, Ghana, Senegal, and Tanzania, the government has traditionally regulated the prices of petroleum products (Jha & Schmidt, 2021). These policies are intended to control the cost of gasoline and minimize inflation, but they can also create economic distortions and contribute to fuel shortages and smuggling. In South Africa, fuel pricing policies have been linked to social and economic inequality, with the poorest households spending a larger proportion of their income on fuel than wealthier households (Jha & Schmidt, 2021). In Ghana, fuel subsidies have led to significant losses for the government, while also contributing to gasoline smuggling across the border to neighboring countries (Jha & Schmidt, 2021). In Tanzania, gasoline pricing policies have been linked to inflation, with the government introducing price controls to mitigate the impact of rising fuel prices.

1.1.1 Fuel Pricing Mechanism

An explicit gasoline pricing formula, which adds up gasoline taxes, domestic wholesale and retail distribution margins, and the import price of gasoline goods, forms the basis of the research. "Price mechanism" refers to the process through which buyers and sellers negotiate the pricing of products and services based on supply and demand. A pricing mechanism is any of the several techniques that use price distribution to match buyers and sellers (Acemoglu et al., 2022). The employment of publicized bid and ask prices is an illustration of a pricing mechanism. The buyer will often state the price he is prepared to pay and the seller will typically state the price he is willing to accept when two parties seek to engage in a transaction.

There are three regional gas markets that span the three continents of Asia, Europe, and America. These markets' methods for determining gas prices vary from one another. The shale gas revolution in North America, the rise in energy demand in Asia due to the People's Republic of China, and the crisis in the Ukraine have all had a significant impact on all three markets recently (Butyrskyi et al., 2019). The relationships between the prices of gas and oil may be considerably altered by the pricing structures and specific occurrences in the three markets. Current research on the relationship between the gasoline price system and community livelihood has not come to a consistent result.

1.1.2 Community Livelihood

The skills, resources including both financial and social resources, and activities required to make a living together make up a livelihood. A sustainable way of life can tolerate stress and shocks, recuperate from them, and maintain or increase its capacities and resources both now and in the future without jeopardizing the base of natural resources. The UK Department for International Development (DFID) developed the Sustainable Livelihoods Framework (SLF) to better understand how people establish and maintain their means of sustenance (Guo et al., 2022). The framework serves as an analytical tool for understanding the numerous factors that might affect someone's quality of life and how those factors function together.

The SLF offers a means of comprehension and sees livelihoods as systems. Policy choices made at the national, local, and household levels have an impact on community livelihoods. Community stakeholders are people, organizations, or groups who are, by definition, impacted or

influenced by a problem or issue (Guo et al., 2022). Living conditions are therefore not a solid construct but rather a delicate system of fluid interactions between external and endogenous forces. Natural disasters like floods, fires, and droughts are examples of exogenous factors, whereas endogenous affects are more focused on detrimental effects within the family or community, such as changes in legislation or access rights.

1.1.3 Fuel Pricing Mechanism and Community Livelihood

Access to food is a crucial aspect of community livelihood. Fuel pricing mechanism can significantly affect food prices due to its influence on transportation and agricultural activities. High fuel prices can increase the cost of transportation, which can make it difficult for farmers to transport their products to the market (Gray, 2020). As a result, food prices may rise, making it challenging for low-income households to access adequate food. The effect is often felt disproportionately by women and children who are already vulnerable to food insecurity.

Fuel pricing mechanism can also have an impact on health outcomes in the community. High gasoline prices can result in a rise in the cost of health care services and medications, which can negatively affect the health of individuals and families (Gray, 2020). Access to affordable health care is essential for the community's livelihood. When households have good health, they are better equipped to engage in productive activities that contribute to the economy of the community.

Access to education is critical for the long-term sustainability of the community livelihood. High gasoline prices can affect school attendance, particularly in rural areas where schools are often located far from homes. Increased transportation costs can result in fewer children attending school, leading to a decrease in the overall literacy levels of the community (Gray, 2020). Therefore, it can have long-term implications on the economic development of the community.

Gasoline pricing can also have a significant impact on housing costs. High gasoline prices can lead to an increase in construction costs, making it difficult for low-income households to afford decent shelter (Gray, 2020). In addition, high gasoline prices can affect the cost of utilities, such as heating and electricity, making it challenging for households to meet their basic needs.

In Kenya, gasoline pricing mechanisms have been a contentious issue, with the government often accused of manipulating gasoline prices for political gain. In 2018, the government introduced a gasoline tax to raise revenue, which led to widespread protests across the country (Gelb & Mukherjee, 2019). In response, the government reduced the tax, but the issue of gasoline pricing remains a major concern for many Kenyans, particularly those living in rural areas where the cost of transportation is high.

1.1.4 Isiolo County

Isiolo County is located in the upper eastern area of Kenya. Isiolo is described as a cosmopolitan county in terms of its social makeup, housing the five main ethnic groups of Borana, Somali, Turkana, Meru, and Samburu. Moreover, it is home to several ethnic Kenyan tribes known together as the M37 in the County. Pastoralism serves as the villages' primary economic engine, however some also engage in agro-pastoralism. According to Kenya's Vision 2030, electricity and petroleum are the main drivers of the country's contemporary economy. On average, 2.5 million tons of different gasoline fuels are required domestically each year, all of which are imported from the Gulf (Alwanga, Mwaura & Mukulu, 2022). Isiolo County is also a large gasoline user.

Isiolo Town has previously experienced flooding, and half of the homes are located inside the Merire river basin. Due to these weaknesses, the County now has high rates of poverty and food insecurity, as well as a rise in unsustainable activities like charcoal burning to make up the shortfall in agricultural revenues. Agriculture, water, health, infrastructure, and ecosystems are the main sectors in Isiolo County that are particularly vulnerable and need major investments in climate change adaptation. Inadequate infrastructure, a lack of water, and a subpar drainage system are just a few of the significant problems in Isiolo County that need to be resolved. Increased demand for food from both crops and cattle is anticipated as a result of the demographic growth planned for Isiolo Town. Climate change is evident in Isiolo County through elevated temperatures, heat stress, frequent droughts, and flooding (Quandt, 2020). Conflict over the utilization of natural resources and conflicting demands for those resources pose another hurdle to agricultural output in the County. Livestock invasions of croplands happen often, especially during drought seasons.

Isiolo County, located in northeastern Kenya, is a particularly vulnerable area where the cost of gasoline can have a profound effect on community livelihoods. The county is largely arid and semi-arid, and many residents rely on pastoralism and small-scale agriculture for their livelihoods. The cost of gasoline can significantly impact these activities, as it affects the cost of transportation, irrigation, and other essential activities. Therefore, the aim of this research is to investigate the impact of gasoline pricing mechanisms on community livelihoods in Isiolo County, Kenya. The study seeks to understand the different gasoline pricing policies that have been implemented in the country, how they have affected the local economy, and the strategies that communities have adopted to cope with the impact of gasoline prices on their livelihoods.

1.2 Statement of the Problem

The shocking rise in gasoline prices has the potential to fundamentally alter global economic, political, and social connections. Gas and oil prices have soared with incredible intensity as a result of Russia's invasion of Ukraine, the world's largest exporter of oil and gas, and the sanctions that followed. The disaster is intensifying after two years of disruption brought on by the Covid-19 outbreak, intermittent shutdowns, and supply chain bottlenecks. Energy price increases caused economic growth to decrease much more than was anticipated (Mohsin et al., 2022). The poorest and most vulnerable people are feeling the worst consequences of the crisis.

The problem of fuel pricing mechanisms and their impact on community livelihood has been the subject of debate and research in various countries around the world. While the issue is complex and multifaceted, it is generally agreed that gasoline pricing policies have a significant impact on the cost of living and economic opportunities for households. In particular, the changes of fuel tax revenue, international fuel prices, and automatic fuel pricing mechanisms have all been identified as key issues that affect community livelihoods in Isiolo County, Kenya.

Changes of fuel tax revenue is a significant issue that affects community livelihood in Isiolo County. Fuel tax revenue is an important source of income for the government, and fluctuations in gasoline prices can have a significant impact on the amount of revenue collected (Mohsin et al., 2022). When gasoline prices are high, the government collects more revenue, but this can lead to higher gasoline prices for consumers, which can have a negative impact on the purchasing power of households. On the other hand, when gasoline prices are low, the

government collects less revenue, which can lead to a reduction in government spending and potentially impact the provision of public services.

International fuel prices also have a significant impact on community livelihoods in Isiolo County. The prices of gasoline in Kenya are influenced by international prices of crude oil, which can be highly volatile. When international prices of crude oil are high, the cost of gasoline in Kenya increases, which can result in higher prices for goods and services, and increased transportation costs (Nan et al., 2022). Therefore, it leads to a reduction in the purchasing power of households, which can have a negative impact on their economic opportunities.

Automatic fuel pricing mechanisms is another key issue that affects community livelihoods in Isiolo County. While automatic fuel pricing mechanisms can provide a fair and predictable system for determining gasoline prices, they can also lead to volatility in gasoline prices (Coady, Parry & Shang, 2018). This can have a negative impact on the purchasing power of households, particularly those who are most vulnerable to price changes, such as low-income households.

Shi & Sun (2017) found that volatile fuel prices can have an adverse effect on economic growth and development. High gasoline prices can lead to increased costs of production, which can reduce business profits and investment, resulting in reduced economic growth. According to Kpodar & Imam (2021), international fuel prices have a significant impact on gasoline prices in developing countries. Countries that are net importers of crude oil are particularly vulnerable to fluctuations in international fuel prices, which can lead to increased gasoline costs for consumers and businesses. Berument and Tascl (2002) investigated the effects of oil prices in Turkey and found that when wages, profits, interest, and rent are adjusted to the price level, that encompasses oil price increases, the inflationary impact of oil prices becomes significant. Previous academics have not delved deeper into the price mechanism hypothesis. There is a research gap since there are not many similar studies being done by other researchers locally, regionally, or worldwide. The previous research studies were generally conducted in jurisdictions other than Isiolo County, Kenya, leaving a contextual gap that the present study aims to fill. Moreover, the current research topic was not covered by the earlier researchers' conclusions. As a result, the researcher tries to provide a solution to the following research

question, what are the effect of fuel pricing mechanism on community livelihood in Isiolo County, Kenya?

1.3 General Objective

To establish the effect of fuel pricing mechanism on community livelihood in Isiolo County, Kenya.

1.4 Value of the Study

The research is expected to make a substantial contribution to the body of knowledge on the impact of fuel pricing mechanism on community livelihood, particularly in the context of Isiolo County, Kenya. While previous studies have examined the effects of gasoline prices on the economy, this study may provide a deeper understanding of the impact on the community livelihood, focusing on the areas of food, health, education, and shelter. The study's results are expected to give new insights into the complex relationships between gasoline prices and community livelihood.

The results of this research may contribute to policy issues related to the pricing of fuel in Kenya. The study will highlight the potential negative impact of high gasoline prices on the community's livelihood, particularly for vulnerable groups in the households. The study may recommend policy measures to mitigate these impacts and promote the sustainability of the community livelihood. The study's recommendations could inform future policy decisions related to gasoline pricing and its impact on the community livelihood in Kenya.

The target population of this study, the households in Isiolo County is likely to benefit from these commendations and findings. The recommendations of the study may lead to policies that promote the affordability and accessibility of basic necessities, such as food, health care, education, and housing, for the households. Improved access to these basic necessities would likely improve the community's overall livelihood and well-being.

The study is likely to contribute to further research on the impact of fuel pricing mechanism on community livelihood, particularly in the developing world. The study's findings and recommendations may serve as a starting point for future research to build upon and expand upon the understanding of the effects of fuel prices on the households. Future studies could

explore the effect of gasoline prices on other aspects of community livelihood, such as employment and income, and the effectiveness of policy measures in promoting the sustainability of the community livelihood.

CHAPTER TWO: LITERATURE REVEW

2.1 Introduction

The theoretical foundations of the study will be covered in this chapter. The theories covered in the study include the social capital theory and institutional theory. The empirical literature review discussed in the chapter is divided into themes such as changes of fuel tax revenue and community livelihood, international fuel prices and community livelihood and automatic fuel pricing mechanism and community livelihood. Moreover, the chapter discusses the research hypothesis, study summaries, and research gaps.

2.2 Theoretical Framework

The study will be guided by Social Capital Theory and Institutional Theory.

2.2.1 Social Capital Theory

The concept of social capital was first introduced by Pierre Bourdieu in 1985. However, the theory of social capital was later developed and popularized by Robert Putnam in 1993. Social Capital Theory assumes that social networks and relationships within a community can have a significant impact on the well-being of individuals and the community as a whole (Mahmood, Khwaja & Jusoh, 2019). It suggests that social connections and relationships can create social trust, facilitate cooperation, and lead to better outcomes in terms of economic growth, health, education, and other measures of well-being. It proposes that the existence of strong social capital within a community can lead to positive outcomes, such as increased civic engagement, more effective governance, and greater social and economic resilience. Social Capital Theory argues that social networks and relationships should be recognized as a valuable resource for promoting positive social and economic outcomes, and that investing in the development of social capital can lead to significant benefits for individuals and communities.

In the context of the current study, Social Capital Theory will be used to explore how changes in fuel pricing may impact the social networks and relationships within the community, and how this may affect the overall livelihood of the community. Critiques of Social Capital Theory include the argument that it tends to focus too much on the positive outcomes of social networks and relationships, while neglecting the negative effects of exclusion and inequality (Mahmood,

Khwaja & Jusoh, 2019). Additionally, some critics have suggested that the concept of social capital is too broad and can be difficult to measure in practice. Moreover, there is also debate over the extent to which social capital is a causal factor or a byproduct of other social, economic, and cultural factors.

2.2.2 Institutional Theory

The institutional theory is the main anchoring theory of the study. The institutional theory has several key contributors, including John Meyer and Brian Rowan. The institutional theory emerged in 1977. The main assumption of the institutional theory is that organizations and individuals are embedded within a larger social and cultural context, and they must conform to the prevailing norms, values, and expectations of that context to gain legitimacy and survive (Horodnic, 2018).The institutional theory suggests that organizations and individuals do not exist in isolation, but are subject to external forces that shape their behavior and decisions. These external forces can include laws, regulations, cultural beliefs, and social expectations, among other things. The institutional theory argues that organizations and individuals tend to adopt similar practices and behaviors in response to these external forces, even if those practices and behaviors are not necessarily efficient or effective. The theory also suggests that organizations and individuals may resist change or innovation if it threatens their legitimacy or identity within the larger institutional context.

The institutional theory is relevant to the study of the effect of fuel pricing mechanisms on community livelihood in Isiolo County, Kenya because it can help to explain how and why different stakeholders in the community may respond to changes in fuel prices and regulations. The institutional theory suggests that organizations and individuals in the community may adopt similar practices and behaviors in response to institutional pressures, such as new gasoline pricing regulations, even if those practices and behaviors are not necessarily optimal or sustainable for the community. The institutional theory has been criticized for being too deterministic and static, and for failing to account for the agency and power of individuals and organizations in shaping their institutional environments (Horodnic, 2018). Critics have also argued that the institutional theory tends to overlook the diversity and heterogeneity of organizations and communities, and may not adequately explain how and why some organizations and communities are able to resist institutional pressures and innovate.

2.3 Determinants of Community Livelihoods

2.3.1 Fuel Pricing Mechanisms

Several smoothing pricing techniques exist, such as moving averages (MA) and price bands (PB). The PB establishes a maximum cap on adjustments in retail prices. The MA method, on the other hand, bases adjustments to retail prices on variations in the average of prior import costs (Nan et al., 2022). The IMF report explained that from a political economics standpoint, choosing a pricing mechanism that avoids excessive prices, rise, especially when they turn out to be transitory, would depend sensitively on the precise weights given to each of these objectives.

Gasoline prices are automatically adjusted by pricing algorithms depending on variations in the price of crude oil throughout the world. These mechanisms are increasingly being adopted by governments and fuel suppliers in many countries (Nan et al., 2022). The purpose of automatic fuel pricing mechanisms is to provide a transparent and predictable system for determining gasoline prices, while also reducing the potential for political interference in fuel pricing decisions.

Automated gasoline price schemes being implemented in Kenya were initiated by the government in 2010. The government established a Fuel Pricing Committee, which is responsible for monitoring and adjusting gasoline prices automatically based on changes in international crude oil prices, exchange rates, and local taxes (Coady, Parry & Shang, 2018). This mechanism is aimed at ensuring that gasoline prices remain competitive while reducing the potential for political interference in the fuel pricing process. Moreover, automatic fuel pricing mechanisms can lead to more efficient fuel markets by encouraging competition among fuel suppliers. This, in turn, can help to reduce gasoline prices, which can have a positive impact on community livelihoods, particularly for low-income households.

2.3.2 Changes of Fuel Tax Revenue

The resulting revenue volatility is growing, especially when there are substantial financial charges during periods of ongoing increases in global prices. Changes in these pricing can be attributed in part to changes in supply and demand at the state and municipal levels. Chouinard and Perloff (2007) discovered that changes in driving habits and stronger environmental rules

tend to raise costs in the summer. Pricing cycles are driven by monopolistic rivalry at the local level (Bertoletti & Etro, 2021). Price fluctuations for crude oil and the gasoline's primary ingredient are to blame for a large portion of the volatility in retail gasoline and diesel prices.

The changes of gasoline tax revenue is a significant concern for many governments, particularly those in developing countries that rely heavily on gasoline tax revenues to fund their budgets. The revenue generated from fuel taxes can be highly variable, depending on a range of factors, such as changes in global oil prices, fluctuations in demand for gasoline, and the impact of fuel pricing policies on consumer behavior (Bertoletti & Etro, 2021).In Kenya, gasoline tax revenue has been a major source of income for the government, accounting for a significant portion of the national budget. However, the changes of fuel tax revenue has led to significant challenges for policymakers, who are forced to navigate the complex dynamics of global oil markets and domestic fuel consumption patterns.

One major challenge is the effect of global oil prices on fuel tax revenue. Kenya, like many other countries, is heavily reliant on imported gasoline, which means that changes in global oil prices can have a significant impact on the cost of gasoline for consumers. In turn it affects the level of fuel consumption and the amount of revenue generated from gasoline taxes. The changes of fuel tax revenue can also have a significant impact on community livelihoods. In some cases, fluctuations in fuel tax revenue can lead to cuts in government spending, which can affect the availability of essential services, such as healthcare and education (Anderson, 2019). Moreover, the unpredictability of fuel tax revenue can make it difficult for businesses and households to plan for the future, leading to increased economic insecurity and financial stress.

2.3.3 International Fuel Prices

International fuel prices play a significant role in shaping the local pricing mechanisms in many countries, including Kenya. The global oil market is complex and influenced by a range of factors, such as supply and demand, political instability, and natural disasters (Peng, Li & Drakeford, 2020). These factors can contribute to significant changes in international fuel prices, which can have an immediate influence on the cost of gasoline for consumers in Kenya. For example, during the COVID-19 pandemic, global oil prices experienced significant fluctuations due to the reduced demand for oil resulting from travel restrictions and lockdown measures

(Peng, Li & Drakeford, 2020). In turn, it leads to a decrease in the cost of gasoline for consumers in many countries, including Kenya. However, the situation has since changed, and international fuel prices have risen, leading to a significant increase in gasoline prices in Kenya and other countries.

Due to increasing demand and rising production costs, gasoline prices as well as the external costs of energy use such as the financial costs to nations that import petroleum and the environmental costs of carbon emissions are expected to rise and fluctuate dramatically in the future (Chen et al., 2021). Therefore, increasing fuel taxes today will boost the effectiveness of the transportation system and reduce the economic burden of high gasoline prices in the future. Long-term effects on demand are strong when energy prices are low. Moreover, the impact of international fuel prices on local fuel pricing mechanisms is not limited to the cost of gasoline. It can also affect the amount of revenue generated from fuel taxes and the availability of essential services. In some cases, the unpredictability of international fuel prices can lead to budgetary cuts, leading to reduced government spending on critical services such as healthcare, education, and infrastructure.

2.4 Empirical Literature Review

Brinkman et al. (2014) studied the effects of increased gasoline prices on subsistence activities in remote Alaskan communities. Brinkman et al. (2014) looked at how locals may adjust to the shift. Interviews were conducted with 178 subsistence farmers in 8 communities to gather data on changes in subsistence practices and the strategies being used to adapt to high gasoline prices. The study's conclusions showed that due to rising of petrol prices, 81% of farmers cut back on the distance and 89% on the number of subsistence trips they made during the last ten years. However, 85% of those surveyed admitted to making severe compromises, such as delaying the payment of monthly bills, in order to purchase gasoline for subsistence activities. 69% of participants stated that they are utilizing more fuel-efficient means of transportation, 37% shared their gas expenses more with family and friends, and 20% reported doing more multifunctional subsistence excursions as a result of the high cost of gasoline. The study findings show that unaffordable fuel has threatened social resilience and welfare of the people.

Akhmad et al. (2019) analyzed the impact of gasoline price fluctuations on Indonesia's economic development, inflation, and poverty. The framework used in the study was the Vector Auto Regression (VAR) method. The research involved the use of quarterly time series data spanning from 1980 to 2017. The study's conclusions showed that Indonesia's economy suffered as a result of rising fuel prices because it led to lower economic growth, higher inflation rates, and increased poverty levels. The results of the study show the need for the government and all stakeholders to work together to reduce the harmful consequences of fuel oil price fluctuations on the Indonesian economy and livelihood of the people.

Chowdhury & Murshid (2020) examined the potential gender-differentiated impacts of energy pricing on the use of kerosene oil in rural Bangladesh. The study utilizes a household survey of 630 kerosene-using households in eight districts of Bangladesh and focuses on variables such as study duration, night-time leisure duration, and time spent on income-generating activities. The framework used in the study includes OLS estimation and IV to address the endogeneity in the model. The findings suggest that higher kerosene prices have differential consequences for men and women, with females being more adversely affected in terms of study duration and night-time leisure hours. Moreover, the effort to offset these losses by increasing effort on income-generating activities is less successful for women compared to men.

Nkang (2018) evaluated the influence of a decrease in global oil prices on Nigerian agriculture and household wellbeing. The study used a computable general equilibrium (CGE) model and data from a social accounting matrix (SAM) for Nigeria. The study found that the shock led to a substantial increase in agricultural output and exports, as well as a decline in agricultural prices, with corresponding effects on imports and foreign exchange earnings. However, household welfare was negatively affected. Households in the rural north in Nigeria are the most affected according to the study findings. The study concludes that while high oil prices may benefit the Nigerian government, lower oil prices could lead to diversification of the export base and increased output from other sectors, but targeted interventions would be required to mitigate the negative impact of such shocks on household welfare.

Zhang, Broadstock & Cao (2014) investigated the effect of oil price shocks on Chinese home consumption, focusing on specific consumption categories. The study employed a quantitative

framework, analyzing data from 2001 to 2018 using a vector auto regression (VAR) model. The results demonstrated that, in addition to having a large impact on other consumption categories with less immediate consequences, the immediate and direct effects of oil price shocks had a considerable impact on transportation consumption as well. The research noted inequalities in the impacts of rising and falling oil prices internationally and examined the consequences for adjusting local pricing policies in the future.

Vizek, Lee & Payne (2020) investigated the effect of fluctuations in oil prices on family consumption and its sub-components in 30 European countries from 1996 to 2018. The study employed a variety of dynamic panel VAR econometric techniques to examine how household consumption expenditures were affected by oil prices, earnings, wealth, and debt. The research used Granger causality tests and impulse response analysis to determine the effect of unanticipated oil price increases on household consumption. According to the study, household consumption was negatively impacted by rising oil prices, and this effect was resilient to changes in income, wealth, and oil prices. The study also shown that household consumption shocks had a regime-dependent response, with consumption falling only when oil prices rose faster than the average rate of change. The consumption of durable goods showed the biggest fall following an oil price shock, while all consumption sub-components declined in reaction to rising oil prices.

Kpodar & Djiofack (2010) assessed the distributional effects of rising petroleum product prices on household budgets in Mali, with a focus on how these effects vary across different income groups. The study used a standard computable general equilibrium model. According to the study, growing kerosene and gasoline costs disproportionately hurt the poorest households, whereas rising diesel prices predominantly impact wealthier households. Overall, there was a U-shaped link between household spending per capita and the effect of gasoline costs on household budgets. The research also found that high-income families gain disproportionately from oil price subsidies, indicating that these subsidies are less successful than a targeted subsidy at safeguarding the income of low-income households.

Kpodar & Liu (2022) investigated the distributional consequences of gasoline price hikes on inflation. The study creates a CPI index for the lowest and highest income quintiles using household survey data and several CPI components. The World Monthly Retail Fuel Price

Database, which has been updated to include premium and normal fuels, a time dimension through December 2020, and a sample of 190 countries, serves as the foundation for the study. The results show that while inflation responds to gasoline price shocks more broadly and persistently in emerging economies than it does in affluent nations. The study also shows that earlier research that calculated pass-through using crude oil prices significantly underestimates it. Moreover, while all families' buying power declines when fuel prices rise, the distributional effect is progressive, lasting longer in developing nations than in advanced economies.

Saari, Dietzenbacher & Los (2016) investigated the possible effects of limited petroleum price deregulation on Malaysian income distribution, with an emphasis on disparities in impacts between key ethnic groups. This is accomplished using an enhanced social accounting matrix (SAM) model that takes into consideration the potential for substitution between production inputs and consumer items, as well as the exogenous determination of intermediate input prices. The findings suggest that petroleum price hikes tend to have regressive distributional impacts, with poorer households experiencing greater income losses compared to richer households. Furthermore, the study reveals that all ethnic groups in Malaysia experience income losses, with Malay households, which are relatively poorer, being the most affected, while Chinese and Indian households, which are generally wealthier, experience comparatively smaller losses.

2.5Summary of Literature

The study by Brinkman et al. (2014) investigated the impact of rising fuel costs on subsistence activities in rural Alaskan communities and found that unaffordable fuel has threatened the social resilience and welfare of the people. Similarly, Akhmad et al. (2019) analyzed the impact of gasoline price fluctuations on Indonesia's economic development, inflation, and poverty and found that high fuel prices had a negative impact on the economy, leading to lower economic growth, higher inflation rates, and increased poverty levels. Furthermore, Chowdhury & Murshid (2020) examined the potential gender-differentiated impacts of energy pricing on the use of kerosene oil in rural Bangladesh and found that higher kerosene prices have differential consequences for men and women, with females being more adversely affected.

Nkang (2018) evaluated the influence of a decrease in global oil prices on Nigerian agriculture and household wellbeing and found that while high oil prices may benefit the Nigerian

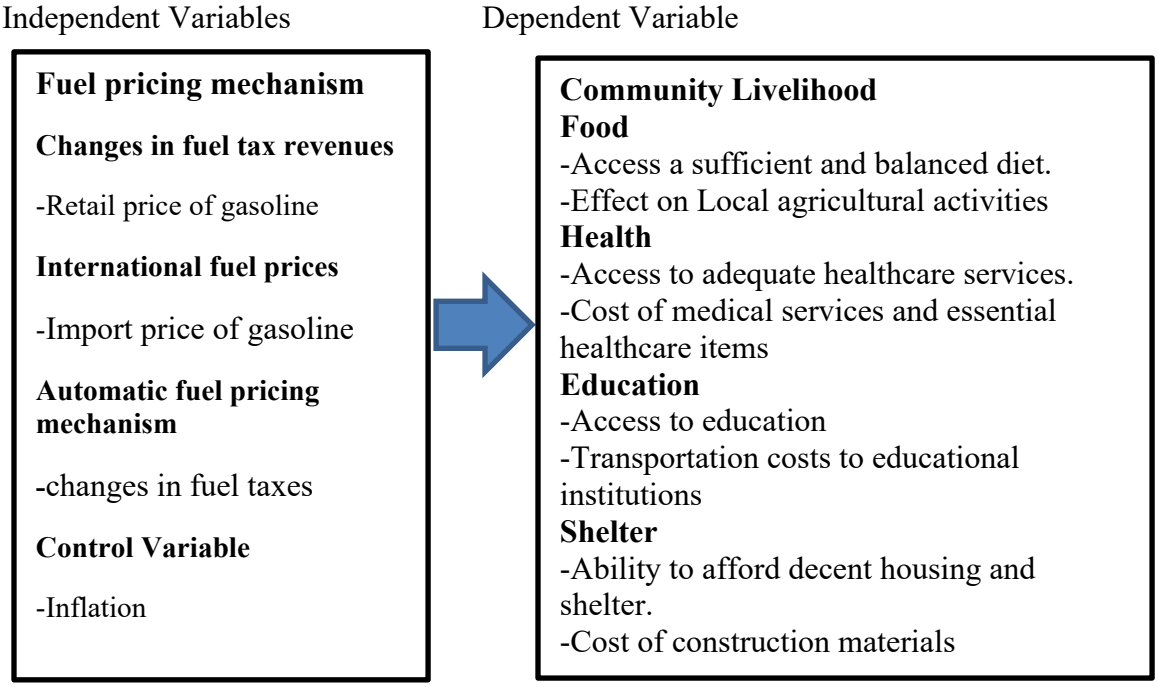
government. Lower oil prices leads to diversification of the export base and increased output from other sectors, but targeted interventions would be required to mitigate the negative impact of such shocks on household welfare. Similarly, Zhang, Broadstock & Cao (2014) investigated the effect of oil price shocks on Chinese home consumption and found that Oil price fluctuations have a significant impact on other consumption categories with less immediacy, observing asymmetries in the effects of changes in the price of oil globally. Vizek, Lee & Payne (2020) investigated the effect of fluctuations in oil prices on family consumption and found that household consumption was negatively impacted by rising oil costs, and this effect held true regardless of changes in income, wealth, and oil prices.

Kpodar & Djiofack (2010) assessed the distributional effects of rising petroleum product prices on household budgets in Mali and found that higher kerosene and gasoline price disproportionately hurt the poorest families, whereas rising diesel prices largely harm richer households. Kpodar & Liu (2022) studied how changes in gasoline prices affect inflation's distributional effects using household survey data and CPI components. The study found that advanced economies have an insignificant response of inflation to shocks to fuel prices compared to developing economies, but the impact is significant and broad-based in developing countries. The study also revealed that previous research using crude oil prices to evaluate pass-through significantly underestimates it. Saari, Dietzenbacher & Los (2016) examined the impact of limited petroleum price deregulation on distribution of income in Malaysia using an extended SAM model. The study found that petroleum price hikes tend to have regressive distributional impacts, with poorer households experiencing greater income losses compared to richer households.

2.6 Conceptual Framework

The conceptual framework illustrates how study variables relate to one another**.**

Figure 1: Conceptual framework



Source: Researcher, (2022)

The changes of fuel tax revenues, as measured using the retail prices of gasoline will impact the stability and predictability of gasoline prices, which affects the cost of living for households and businesses. International fuel prices, as measured using import price of gasoline, also impacts the cost of goods and services by affecting the cost of importing goods. Finally, the automatic fuel pricing mechanism, as measured using the changes in fuel taxes provides stability and predictability in gasoline prices, which benefits community livelihood. Inflation is the control variable utilized in the current study.

The dependent variable in the study is community livelihood, which is measured through the dimensions of Food, Health, Education, and Shelter. The variable represents the well-being of the community and they are influenced by the independent variables. The control variable in the study is inflation. The variable influence the relationship between the independent variables and the dependent variable.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter incorporates the research design, the sample size and the population of the study. Moreover, the chapter contains information on the sampling techniques used in the study. The diagnostic tests used to evaluate the validity and reliability of the data are discussed in the section. The data collection procedures and data analysis procedures are also addressed in the chapter.

3.2 Research Design

The study utilized a descriptive research design. Descriptive research design focuses on describing the characteristics of a phenomenon. The research design offers an insight into how people behave. Therefore, the design was suitable in the study to provide insight on how the community livelihood is affected by the changes in the gasoline prices. The descriptive research design provides answers to the research questions and it fits in the current study because it explains the relationship between variables. The research design is also appropriate for the current study because it studies variables in their natural settings. Moreover, the research design enables appropriate and accurate description of the research variables and procedures. According to Brinkman et al. (2014), utilization of the research design made it possible to use questionnaires and surveys to collect data from the respondents in Isiolo to know the effect of the gasoline pricing mechanism on their livelihood.

3.3. Target Population

The population of a study is the entire group of people that share similar characteristics. The target population in the current study are the head of the households in Isiolo County. According to InfoTrak county census report, Isiolo has 268,002 individuals and 120,000 households (InfoTrak, 2020).The target population were the heads of the households who either own vehicles that use gasoline or use public means as a way of transportation in Isiolo County. The heads of the households were the targeted population of the study. The target population was perfect for the study because the households are affected by the changes in gasoline prices as they travel to schools, health centers and transport food & shelter materials to their homes.

3.4 Sample and Sampling Frame

Sampling is the process of choosing a group of participants for a research from a certain demographic. The main goal of sampling is to make a generalization of the entire population. The random sampling method was used as the study's sampling strategy. In random sampling, a random sample is chosen from each group in the population. The sampling method was effective because it reduced the bias in selecting the participants to be involved in the study. Therefore, it helped in collecting the data from the population leading to a higher validity and reliability of the findings.

The sample size in the study was determined using the Fischer's formula. The target population of the people exceed 10,000. Therefore:

$$n=\frac{Z^2*P*Q}{I^2}$$

Where;

n = expected sample size

Z = Z value at 95% which is equal to 1.96

P = Population's proportion with preferred characteristic, computed as;

Number of households in Isiolo/Number of people in Isiolo sub-counties

P = 120,000/268,002

P = 0.4477

Q = Population's proportion minus preferred characteristic (1-P)

1 - 0.4477 = 0.5523

I = statistical significance level (degree of freedom=0.05)

Therefore,

$$n = \frac{1.96^2 * 0.4477 * 0.5523}{0.05^2}$$

n = 379

3.5 Data Collection

The research used primary and secondary data to collect the data. The primary data was gathered through structured questionnaires comprised of closed questions to measure the impacts of the fuel pricing mechanism on the community livelihood of the people in Isiolo. The questionnaires were distributed to the households and the motor operators in the area. Using the structured questionnaires was important for the study because it ensured the responses from the target sample size were consistent. The tool was effective for the population selected in the study because they remained anonymous. The utilization of questionnaires also ensured efficient and faster response time from the various respondents that allowed for maximization of the data collected from the sample. The secondary data was collected to measure the independent variables used in the study. The secondary data was collected from the energy and petroleum regulatory authority(EPRA) and the national treasury. The data was collected for a period of 5 years from 2018 to 2022 to evaluate the variables used in the study.

The first section of the questionnaire was composed of the demographic information. A 5-point Likert scale was used to quantify the replies for the purpose of analysis and it guided the other section. The choice of the Likert scale in the other section was to ensure that the respondents make definite choices rather than neutral responses to the effect of fuel pricing mechanism on their livelihood. The second section of the questionnaire had a segment on how food, shelter, education and health are influenced.

3.6Data Analysis

3.6.1 Diagnostic Tests

3.6.1.1Normality Test

The Shapiro-Wilk test is a parametric test that assesses whether the data follow a normal distribution. It compares the observed distribution to the expected normal distribution and

computes a test statistic. The null hypothesis of normality is rejected if the test statistic is below the critical value. The Kolmogorov-Smirnov test is a non-parametric test that compares the observed distribution to a theoretical normal distribution. It computes the maximum distance between the observed and expected cumulative distribution functions and computes a test statistic. The test statistic must be larger than the crucial value in order to reject the null hypothesis of normality.

3.6.1.2 Autocorrelation Test

The autocorrelation test is used to assess whether the residuals of the regression model are independent of each other. Autocorrelation occurs when the residuals of the model are correlated with one another, which violates the assumption of independence required for multiple regression analysis. The Durbin-Watson test is a commonly used test for autocorrelation. It assesses whether there is first-order autocorrelation by comparing the residuals at a given time point with the residuals at the adjacent time point. There is no autocorrelation when the test statistic's value is 2. Positive autocorrelation is indicated by a number less than 2 and negative autocorrelation by a value greater than 2. The higher the evidence for autocorrelation, the closer the test statistic is to 0 or 4. If there is evidence of autocorrelation, corrective measures such as adding lagged variables or using time series analysis may be needed to address the violation of the assumption of independence.

3.6.1.3 Multi Collinearity

Multi-collinearity occurs when two or more predictor variables in a regression model are highly correlated with each other. It leads to unstable and unreliable coefficient estimates and makes it difficult to determine the individual effects of each predictor. To detect multi-collinearity, the Variance Inflation Factor (VIF) will be used (Patel & Patel, 2019).The VIF is a measure that quantifies how much the variance of a regression coefficient is inflated due to multi-collinearity. A general rule of thumb is that VIF values greater than 5 or 10 indicate the presence of multi-collinearity.

3.6.1.4 Test of Independence

The test of independence is used to determine whether there is a statistically significant association between two categorical variables. It is applied to cross-tabulated data to see if the occurrence of one variable is independent of the occurrence of another. The chi-square test will be used to conduct the test of independence. The chi-square test compares the observed frequencies in the contingency table with the frequencies that would be expected if the variables were independent (Dzwigol, 2022). The test calculates the chi-square statistic, which is then compared to a critical value from the chi-square distribution with appropriate degrees of freedom. If the calculated chi-square statistic is greater than the critical value, it suggests that the variables are not independent.

3.6.1.5 Linearity

The linearity test is conducted to check whether the relationship between the dependent variable and each predictor variable in a regression model is approximately linear. It is essential to ensure that the linear regression assumptions are met for accurate and valid regression analysis (Dzwigol, 2022). To assess linearity, plotting the residuals against each predictor variable is necessary. In a linear relationship, the residuals should be randomly scattered around zero with no apparent patterns. If the residual plot exhibits a systematic pattern, it indicates non-linearity.

3.6.2 Analytical Model

After collecting the data, it was crosschecked to find the errors before entry of the data. The raw data was coded accordingly and the numerical values are used as inputs in SPSS for analysis. In the process, there was descriptive and inferential statistical analysis. The descriptive statistical analysis considered percentages, mean, median, maximum, minimum and standard deviations. The inferential statistics used in the current study considered analysis of the variance, and linear regression analysis of the variables considered in the study. In the analysis, diagnostic test was also considered to evaluate the conformity with the multiple regression model.

The correlation between fuel pricing mechanism and community livelihood was developed into a linear regression model. The model is;

$\hat{Y} = a + \beta\ 1X1 + \beta\ 2\ X2 + \beta\ 3\ X3 + \beta\ 4\ X4 + \alpha$

Where;

Y is community livelihood measured using food, health, education and shelter

X1 is changes of fuel tax revenues measured by changes in retail prices of gasoline.

X2 is international fuel prices, which is measured using import price of gasoline.

X3 is the automatic fuel pricing mechanism, which is measured using the changes in fuel taxes.

X4 is inflation as a control variable

a is constant i.e., value of Y when X1=X2=X3=X4=0

β1, β2 and β3 refer to fluctuations in Y with respect to unit change in X1, X2, X3, X4 correspondingly. α is an error term relating to indefinite variables, which may influence community livelihood.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

The chapter examined data on the effects of fuel pricing mechanism on community livelihood in Isiolo. Interpretation of findings was done using tables. The data used in the section represents the inflation rate, international fuel prices, automatic fuel pricing mechanism and changes of fuel tax revenues from 2018 to 2022. The descriptive statistics, inferential statistics and interpretation of findings are presented in this section.

4.2 Frequency tables

Table 1: Period of staying in Isiolo

How long have you been living in Isiolo County					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 year	61	16.1	16.1	16.1
	1-5 years	75	19.8	19.8	35.9
	6-10 years	106	28.0	28.0	63.9
	More than 10 years	137	36.1	36.1	100.0
	Total	379	100.0	100.0	

Table 1 show the distribution of respondents' years of residence in Isiolo County, Kenya. The results show that 61 respondents have been living in Isiolo County for less than a year. They represent 16.1% of the total respondents. Moreover, 19.8% of the participants have resided in Isiolo County for 1 to 5 years. The group includes people who have some experience with the impact of fuel pricing mechanisms but may not have witnessed long-term trends. The results also show that 28.0% have lived in Isiolo County for 6 to 10 years. These individuals have a more substantial history in the county and may have witnessed changes in fuel pricing mechanisms

and their effects on the community over an extended period. The largest group consists of 36.1% participants who have resided in Isiolo County for more than 10 years. The group includes long-term residents who have witnessed various changes in fuel pricing mechanisms. Their perspectives were valuable in understanding the historical context and trends.

Table 2: frequency of using fuel related services

How frequently do you use fuel-related services (e.g., transportation, cooking, etc.) in your daily life?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rarely	19	5.0	5.0	5.0
	Occasionally	93	24.5	24.5	29.6
	Regularly	53	14.0	14.0	43.5
	Frequently	120	31.7	31.7	75.2
	Always	94	24.8	24.8	100.0
	Total	379	100.0	100.0	

The data illustrates that there is a broad spectrum of usage of fuel-related services among respondents in Isiolo County, Kenya. The category includes 5.0% respondents who use fuel-related services rarely in their daily lives. They represent a small portion of the respondents and likely have limited reliance on such services. 24.5% of the participants occasionally use fuel related services. Their experiences vary depending on the frequency and nature of their usage. The findings also show that 14.0% participants use fuel-related services regularly. The group relies on these services for various aspects of their daily routines. 31.7% of the participants use fuel-related services frequently. Their high usage indicates a strong reliance on these services. Therefore, they are likely to be more susceptible to changes in fuel pricing mechanisms. Additionally, 24.8% of the respondents agreed that they use fuel-related services always in their daily lives. This group is highly dependent on these services. Therefore, any fluctuations in fuel prices can have a substantial impact on their community livelihoods.

4.3 Descriptive Statistics

Table 3: Descriptive Statistics

Descriptive Statistics									
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
changes of fuel tax revenues	12	117.328	133.100	124.63833	6.159959	.212	.637	-1.695	1.232
international fuel prices	12	47.836	57.396	53.07850	3.023803	-.228	.637	-.966	1.232
automatic fuel pricing mechanism	12	47.856	55.500	51.40583	3.094949	.418	.637	-1.769	1.232
Inflation rate	12	5.166	6.388	5.76900	.430860	.101	.637	-1.339	1.232
Community Livelihood	379	1.38	4.88	3.4964	.74842	-.586	.125	-.104	.250
Valid N (listwise)	12								

4.3.1 Changes in fuel taxes

The table 3 provides descriptive statistics for the independent and dependent variables used in the study. Changes of fuel tax revenues had a minimum value of 117.328 and a maximum value of 133.100. The minimum value represents the lowest recorded value for changes in fuel tax revenues in the dataset. The maximum value shows the highest recorded value for changes in fuel tax revenues. The mean value was 124.63833. The value represents the average value of changes in fuel tax revenues within that period. The value of standard deviation is 6.159959. It represents measure of the spread or variability in the data. The value is high showing there was a greater variability in the changes in fuel tax revenue. The skewness of the data is 0.212 which shows the changes in fuel tax revenue was almost symmetrical. The value is also greater than zero indicating a right-skewed distribution of the data. The kurtosis of changes in fuel tax revenue was -1.695. Therefore, it shows that the model was platykurtic. Moreover, the variable has a negative kurtosis indicating a distribution with thinner tails than a normal distribution.

4.3.2 International Fuel Prices

The minimum value of 47.836 represents the lowest recorded value for international fuel prices. Moreover, the maximum value of 57.396 represents the highest recorded value for international fuel prices. The mean value of international fuel prices was 53.07850. It represents the average value of international fuel prices in the sample. The deviation of the data was 3.023803. The deviation is high indicating that there was a greater variability in the international fuel prices. The variable was also slightly negatively skewed as shown by -0.228 from the table. The value of skewness shows that the data was almost symmetrical. The kurtosis of the data was -0.966. The kurtosis is less than 3. The value indicates that the distribution is platykurtic. Moreover, it also implies that the distribution has a thinner tails than a normal distribution.

4.3.3 Automatic Fuel Pricing Mechanism

The lowest recorded value for the variable was 47.856. Moreover, the highest recorded value for automatic fuel pricing mechanism is 55.500. The value of the mean was 51.40583. The value represents the average value of automatic fuel prices. The standard deviation was also 3.094949. The value represents the measure of variability. The value is high showing that the data had a greater variability. The skewness was 0.418. The value shows that the data on automatic fuel pricing was slightly positively skewed. The kurtosis was less than 3. Therefore, it indicates that the data had a thinner tails than a normal distribution.

4.3.4 Inflation Rate

The lowest recorded inflation rate was 5.166. The highest recorded inflation rate was6.388.The average inflation rate was 5.76900. Moreover, the standard deviation was 0.430860. The value represents the variability in inflation rates which was low. Therefore, the inflation rate was considered to be closer to the mean. The data was slightly positively skewed as shown by the value of 0.101. The near-zero skewness suggests that the distribution of inflation rates is very close to being normally distributed with a slight tendency toward the right. The kurtosis of inflation rate was -1.339. The negative kurtosis indicates that the distribution is platykurtic. Therefore, it means it has thinner tails and is less peaked compared to a normal distribution.

4.3.5 Community Livelihood

The minimum value of 1.38 represents the lowest recorded score for community livelihood within the dataset. The score suggests that there are communities with relatively lower perceived livelihood conditions. The maximum value of 4.88 represents the highest recorded score for community livelihood within the dataset. The score suggests that the communities had a relatively higher perceived livelihood conditions. The mean score of 3.4964 represents the central tendency of community livelihood in the dataset. On average, the respondents in the study agreed that fuel prices had an effect on community livelihood. The standard deviation was 0.74842. The value suggests that there is some degree of variability in how communities perceive their livelihood conditions. The lower standard deviation suggests that the variable is tightly clustered around the mean. The value of skewness was -0.586. The negative skewness suggests that the distribution of community livelihood scores is slightly skewed to the left. Therefore, it indicates that there are outliers on the left side of the distribution. The kurtosis was -0.104. The negative kurtosis suggests that the distribution is relatively close to a normal distribution. Moreover, it implies that the distribution has a thinner tail compared to a normal distribution.

4.3.6 Normality test

Table 4: Normality test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
changes of fuel tax revenues	.158	12	.200*	.886	12	.104
international fuel prices	.148	12	.200*	.962	12	.808
automatic fuel pricing mechanism	.230	12	.080	.832	12	.022
Inflation rate	.171	12	.200*	.923	12	.310
Community Livelihood	.179	12	.200*	.948	12	.603
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

Table 4 shows that most of the variables in the dataset do not significantly deviate from a normal distribution. The Kolmogorov-Smirnov and Shapiro-Wilk tests p-values which are above 0.05 for changes of fuel tax revenues, international fuel prices, Inflation rate, and Community Livelihood. Therefore, it indicates that there is no strong evidence to reject the null hypothesis that these variables follow a normal distribution. However, for automatic fuel pricing mechanism, the Shapiro-Wilk test yields a p-value of 0.022, which is below the typical significance level of 0.05. Therefore, it suggests that there may be some departure from normality for this variable.

4.3.7 Collinearity Test

Table 5: Collinearity Test

Coefficients			
Model		Collinearity Statistics	
		Tolerance	VIF
1	changes of fuel tax revenues	.118	8.483
	international fuel prices	.263	3.807
	automatic fuel pricing mechanism	.138	7.225
	Inflation rate	.209	4.778
a. Dependent Variable: Community Livelihood			

The VIF is a measure of multi-collinearity and is calculated as the reciprocal of Tolerance. It quantifies how much the variance of an estimated regression coefficient is increased due to multi-collinearity. Higher VIF value indicate higher multi-collinearity. Generally, VIF values above 10 are considered a cause for concern. They indicate high multi-collinearity. In the model, none of the VIF values exceed 10. Therefore, it suggests that while there may be some correlation among the independent variables, multi-collinearity does not appear to be severe.

4.4 Inferential Statistics

4.4.1 Model Summary

Table 6: Model Summary

Model Summary										
					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.685[a]	.470	.167	.51136	.470	1.550	4	7	.287	2.873
a. Predictors: (Constant), Inflation rate, international fuel prices, automatic fuel pricing mechanism, changes of fuel tax revenues										
b. Dependent Variable: Community Livelihood										

The R Square value is 0.470. The value shows that approximately 47% of the variability in community livelihood can be explained by the combined effect of the independent variables. Therefore, the model explains about 47% of the variation in Community Livelihood leaving approximately 53% unexplained. Moreover, the Durbin-Watson statistic was 2.873. The value is greater than 2 showing that there is negative autocorrelation in the residuals.

4.4.2 Analysis of variance

Table 7: ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.621	4	.405	1.550	.287[b]
	Residual	1.830	7	.261		
	Total	3.452	11			
a. Dependent Variable: Community Livelihood						
b. Predictors: (Constant), Inflation rate, international fuel prices, automatic fuel pricing mechanism, changes of fuel tax revenues						

The F-statistic tests whether the overall regression model is statistically significant. The F-statistic is 1.550 and the significance level is 0.287. Therefore, it is easier to conclude that the overall model is not statistically significant because the p-value is greater than the conventional significance level of 0.05. Therefore, inflation rate, international fuel prices, automatic fuel pricing mechanism, changes of fuel tax revenues may not be significantly related to the community livelihood.

4.4.3 Correlation

Table 8: Correlation

Correlations						
		changes of fuel tax revenues	international fuel prices	automatic fuel pricing mechanism	Inflation rate	Community Livelihood
changes of fuel tax revenues	Pearson Correlation	1	.789**	.898**	.886**	-.387
	Sig. (2-tailed)		.002	.000	.000	.215
	N	12	12	12	12	12
international fuel prices	Pearson Correlation	.789**	1	.852**	.746**	-.413
	Sig. (2-tailed)	.002		.000	.005	.183
	N	12	12	12	12	12
automatic fuel pricing mechanism	Pearson Correlation	.898**	.852**	1	.804**	-.252
	Sig. (2-tailed)	.000	.000		.002	.429
	N	12	12	12	12	12
Inflation rate	Pearson Correlation	.886**	.746**	.804**	1	-.184
	Sig. (2-tailed)	.000	.005	.002		.568
	N	12	12	12	12	12
Community Livelihood	Pearson Correlation	-.387	-.413	-.252	-.184	1
	Sig. (2-tailed)	.215	.183	.429	.568	
	N	12	12	12	12	379

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation values are important in understanding the relationships between variables in the study. Inflation Rate had a correlation of -0.184 with community livelihood. A negative correlation of -0.184 suggests a weak negative relationship between the inflation rate and community livelihood. The values mean that as the inflation rate increases, community livelihood tends to decrease slightly although the relationship is not very strong. International fuel prices had a correlation value of -0.413. A negative correlation of -0.413 indicated a moderate negative relationship between international fuel prices and community livelihood. When international fuel prices go up, community livelihood tends to decline. The relationship is relatively stronger than that of the inflation rate. Automatic fuel pricing mechanism was -0.252. A negative correlation of -0.252 suggests a weak negative relationship between the automatic fuel pricing mechanism and community livelihood. Therefore, it means that as the use of an automatic fuel pricing mechanism increases, community livelihood may decrease slightly. Changes in fuel tax revenues had a correlation of -0.387. A negative correlation of -0.387 indicates a moderate negative relationship between changes in fuel tax revenues and community livelihood. Therefore, when changes in fuel tax revenues increase, community livelihood tends to decline. The correlation values suggest that international fuel prices and changes in fuel tax revenues have relatively stronger negative relationships with community livelihood, while the inflation rate and the use of an automatic fuel pricing mechanism have weaker negative relationships.

4.4.4 Regression Analysis

Table 9: Regression coefficients

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	11.819	3.662		3.227	.015

	changes of fuel tax revenues	-.133	.073	-1.461	-1.823	.111
	international fuel prices	-.146	.099	-.789	-1.469	.185
	automatic fuel pricing mechanism	.188	.134	1.037	1.401	.204
	Inflation rate	1.125	.782	.866	1.439	.193
a. Dependent Variable: Community Livelihood						

Based on table 9, the regression equation is:

Community Livelihood = 11.819 - 0.133 (changes of fuel tax revenues) - 0.146 (international fuel prices) + 0.188 (automatic fuel pricing mechanism) + 1.125 (Inflation rate)

The constant value of 11.819represented the intercept of the regression equation. The estimated value of community livelihood is 11.819 when all independent variables are zero. The t-statistic of 3.227 indicated that the constant is significantly different from zero as evidenced by the p-value of 0.015. Therefore, it suggests that the intercept is statistically significant.

The coefficient for changes of fuel tax revenue is -0.133. A negative coefficient suggests that as changes of fuel tax revenue increases, community livelihood tends to decrease. However, the t-statistic of -1.461 is not statistically significant at the conventional significance level of 0.05 (p-value = 0.111). Therefore, it means that this variable does not have a significant impact on community livelihood.

The coefficient for international fuel prices is -0.146. A negative coefficient suggests that as international fuel prices increase, community livelihood tends to decrease. However, the t-statistic of -0.789 is not statistically significant at the conventional significance level of 0.05 (p-value = 0.185). Therefore, it also indicates that this variable was not significantly related to community livelihood.

The coefficient for automatic fuel pricing mechanism is 0.188. A positive coefficient suggests that as the automatic fuel pricing mechanism increases, community livelihood also increases. However, the t-statistic of 1.037 is not statistically significant at the conventional significance

level of 0.05 (p-value = 0.204). Therefore, it also shows that the variable was not significantly related to community livelihood.

The coefficient for inflation rate was 1.125. A positive coefficient suggests that as the inflation rate increased, community livelihood increased. However, the t-statistic of 1.439 is not statistically significant at the conventional significance level of 0.05 (p-value = 0.193). Therefore, it indicates that the variable was not significantly related to community livelihood.

Therefore, none of the independent variables appears to be statistically significant predictors of community livelihood in the model at the conventional significance level of 0.05. It suggests that there may not be a significant relationship between these independent variables and community livelihood in Isiolo County, Kenya.

4.5 Discussion of findings

The study provided an analysis of the relationship between various factors related to fuel pricing mechanisms and their impact on community livelihood in Isiolo County, Kenya. The findings show that a substantial portion of respondents have lived in Isiolo County for an extended period. These long-term residents had valuable insights into historical trends and changes in fuel pricing mechanisms. Moreover, the findings indicate that nearly a quarter of respondents use fuel-related services always and another significant portion using them frequently. The findings suggest a high dependence on these services in their daily lives. Therefore, it makes them more susceptible to changes in fuel prices.

Changes of fuel tax revenue shows a mean value of 124.64, with a relatively high standard deviation of 6.16. Therefore, it indicates substantial variability in fuel tax revenue changes. International Fuel Prices had mean value of 53.08, with a standard deviation of 3.02. The findings indicate some variability but less than the fuel tax revenue changes. Automatic Fuel Pricing Mechanism had a mean value is 51.41, with a standard deviation of 3.09. The findings also show that there was variability in the variable. The mean inflation rate is 5.77, with a low standard deviation of 0.43. Therefore, there was low variability in the variable. Community livelihood had mean score of 3.50, with a moderate standard deviation of 0.75. Therefore, it shows there is little variation in how communities perceive their livelihood conditions.

The R-square value of 0.47 indicates that approximately 47% of the variation in community livelihood can be explained by these variables. However, the model's overall significance, as indicated by the F-statistic ($p = 0.287$) suggests that the model was not statistically significant. The regression equation also shows that changes of fuel tax revenues, international fuel prices, automatic fuel pricing mechanism, and inflation rate do not have a statistically significant relationship with community livelihood. All the p-values are greater than 0.05. Moreover, the VIF values suggest that while there may be some correlation among the independent variables, multi-collinearity does not appear to be severe. Moreover, the correlations between the independent variables and community livelihood are weak to moderate. Therefore, there is a weak relationship of the independent and the dependent variables used in the study.

The findings of the study suggest that the changes in fuel tax revenues, international fuel prices, automatic fuel pricing mechanism, and inflation rate do not have a statistically significant relationship with community livelihood in Isiolo County, Kenya. The findings imply that the impact of these factors on community livelihood may not be substantial. The findings of the study are similar to Brinkman et al. (2014). The study found that unaffordable fuel costs threatened the social resilience and welfare of rural Alaskan communities. Similarly, the current study examines how changes in fuel pricing mechanisms might affect community livelihood. The relevance lies in the understanding that unaffordable fuel prices can have negative consequences on community well-being. The findings of the study are also relevant to Akhmad et al. (2019) who found that high fuel prices had a negative impact on economic development, inflation, and poverty in Indonesia. The findings are relevant to the current study as it suggests that fuel pricing mechanisms can influence economic conditions and poverty levels. The findings of the study are also relevant to Kpodar & Djiofack (2010). The study in Mali assessed the distributional effects of rising petroleum product prices on household budgets and found that it disproportionately hurt the poorest families. The finding align with the current study's focus on community livelihood and the potential differential impacts of fuel pricing mechanisms on different segments of the community.

CHAPTER FIVE

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

5.1 Introduction

The chapter includes a review of the findings, comprehensive conclusions, and study recommendations. The chapter also includes a discussion of the limitations of the study as well as recommendations for future research.

5.2 Summary of the findings

The R Square value is 0.470 indicating that approximately 47% of the variability in community livelihood can be explained by the combined effect of the independent variables in the model. The results show that roughly 53% of the variation in community livelihood remains unexplained by the model. The F-statistic is 1.550, and the significance level (p-value) is 0.287.Since the p-value is higher than 0.05, it suggests that the overall model is not statistically significant. Therefore, inflation rate, international fuel prices, automatic fuel pricing mechanism, and changes of fuel tax revenues are not significantly related to community livelihood. The findings of the study do not provide strong statistical evidence to support a significant relationship between the selected independent variables and the dependent variable in Isiolo County, Kenya. These results indicate that there may be other unexamined factors in the relationship between these variables and community livelihood that were not accounted for in the current analysis. Therefore, further investigation of additional variables is needed to gain a more comprehensive understanding of the factors influencing community livelihood in Isiolo County. The regression analysis also shows that none of the independent variables have a statistically significant effect on community livelihood.

The coefficient for changes of fuel tax revenues is -0.133 indicating a negative relationship. As changes in fuel tax revenues increase, community livelihood tends to decrease. The t-statistic of -1.461 is not statistically significant at the 0.05 significance level (p-value = 0.111).The lack of statistical significance suggests that changes in fuel tax revenues do not have a significant impact on community livelihood in Isiolo County. There is a negative relationship in the data but this

relationship is not strong enough to be considered statistically significant. The coefficient for international fuel prices is -0.146, indicating a negative relationship. As international fuel prices increase, community livelihood tends to decrease. The t-statistic of -0.789 is not statistically significant at the 0.05 significance level (p-value = 0.185).Similar to changes in fuel tax revenues, international fuel prices did not have a statistically significant impact on community livelihood in Isiolo County.

The coefficient for the automatic fuel pricing mechanism is 0.188, indicating a positive relationship. As the use of an automatic fuel pricing mechanism increases, community livelihood tends to increase. The t-statistic of 1.037 is not statistically significant at the 0.05 significance level (p-value = 0.204).The lack of statistical significance suggests that the use of an automatic fuel pricing mechanism does not have a significant impact on community livelihood in Isiolo County. Although there is a positive relationship in the data, it is not strong enough to be considered statistically significant. The coefficient for the inflation rate is 1.125, indicating a positive relationship. As the inflation rate increases, community livelihood tends to increase. The t-statistic of 1.439 is not statistically significant at the 0.05 significance level (p-value = 0.193).Similar to the other variables, the inflation rate did not have a statistically significant impact on community livelihood in Isiolo County. Despite a positive relationship in the data, it is not strong enough to reach statistical significance.

Overall, the findings suggest that the variables examined in the study do not have a significant and conclusive impact on community livelihood in Isiolo County, Kenya. These results indicate that other unexamined factors play a more significant role in influencing community livelihood in the region.

5.3 Conclusions of the study

The general conclusion of the study is that there is no statistically significant relationship between inflation rate, international fuel prices, automatic fuel pricing mechanism, and changes of fuel tax revenues and community livelihood in Isiolo County, Kenya. The overall regression model was found to be not statistically significant. Therefore, it suggests that the model as a whole does not provide strong evidence to support a significant relationship between these factors and community livelihood. The R-square value of 0.470 indicates that approximately

47% of the variability in community livelihood can be explained by the combined effect of the independent variables. However, about 53% of the variation remains unexplained by the model. Therefore, it indicates that there may be other factors at play that were not considered in this analysis. The Durbin-Watson statistic indicated negative autocorrelation in the residuals. Therefore, it suggests that there might be patterns in the data that the model did not capture. In conclusion, the study's findings suggest that the selected economic variables related to fuel pricing and inflation do not appear to be strong predictors of community livelihood in Isiolo County, Kenya. Therefore, other factors specific to the community may play a more significant role in influencing livelihood outcomes.

5.4 Recommendation of the study

The findings of the study show that inflation rate, international fuel prices, automatic fuel pricing mechanism, and changes in fuel tax revenues do not have statistically significant relationships with community livelihood in Isiolo County, Kenya. Therefore, the study does not provide clear evidence that these economic factors directly influence the well-being of the local community. Therefore, it is recommended to conduct additional research to explore other potential factors that may impact community livelihood in Isiolo County. The study's focus was primarily on economic variables. However, there may be social, cultural, and environmental factors that can play a significant role but were not considered in this analysis.

Researchers should consider redefining the methodology used in this study. Moreover, policy makers should focus on promoting livelihood diversification in Isiolo County. They should encourage and support community members in exploring various income-generating activities beyond those directly related to fuel and energy. The policy makers should also implement social safety nets and support mechanisms for vulnerable community members who may be disproportionately affected by changes in fuel prices. The measures could include targeted assistance programs to help mitigate economic shocks.

Moreover, it is recommended that the local community members should explore and invest in diverse income sources beyond those directly tied to fuel-related activities. The initiative will enhance their resilience to economic fluctuations. It is also recommended to initiate community-based projects and initiatives that aim to improve livelihood. These could include agriculture

cooperatives, small business associations, and vocational training programs. Moreover, it is also recommended to promote sustainable resource management practices that can help reduce reliance on expensive fuel sources.

5.5 Study Limitations

The study primarily focused on economic variables related to fuel pricing mechanisms and inflation. It did not consider other potentially relevant social, cultural, or environmental factors that could influence community livelihood. Social cohesion, cultural norms, environmental conditions, and local governance structures play pivotal roles in shaping how communities generate income, access resources, and withstand economic challenges. Neglecting these influences overlooks the intricate web of dynamics that contribute to community livelihood outcomes. Therefore, it makes it challenging to draw actionable conclusions about the drivers of livelihood in Isiolo County, Kenya. The study also focused on Isiolo County, Kenya which has its unique socioeconomic and cultural context. The findings may not be directly applicable to other regions. Researchers and policymakers in other areas should exercise caution when attempting to apply these findings to their own contexts. Therefore, it is important to recognize the need for region-specific investigations to inform policy and development initiatives effectively.

The study focuses solely on four independent variables as potential predictors of community livelihood. It does not consider other potential factors that could influence livelihood outcomes. Moreover, the findings of the study are based on a particular timeframe. The data used in the study was limited to findings from 2018 to 2022. Economic relationships can change over time. Therefore, it does not consider the potential impact of temporal trends and the dynamic nature of economic factors. Moreover, the Durbin-Watson statistic indicated negative autocorrelation in the residuals. Therefore, it suggests that the model may not fully account for time-series dependencies in the data. The autocorrelation could introduce bias and affect the statistical significance of the results.

5.6 Suggestions for Further Studies

Future research should employ a more comprehensive multivariate analysis that considers a broader range of variables. The approach would provide a more holistic understanding of the factors affecting community livelihood. Future studies should also involve conducting longitudinal studies to track changes in economic conditions and their impact on community livelihood over time. Long-term data collection will capture trends and fluctuations that may not be evident in cross-sectional studies. Future studies should also compare the findings from Isiolo County with other regions to identify regional variations in the impact of economic factors on community livelihood. The comparisons could help uncover location-specific patterns. Future studies should also combine quantitative data with qualitative research methods to gain deeper insights into the lived experiences of community members and how economic factors affect their daily lives.

REFERENCES

Acemoglu, D., Makhdoumi, A., Malekian, A., & Ozdaglar, A. (2022). Too much data: Prices and inefficiencies in data markets. *American Economic Journal: Microeconomics*, *14*(4), 218-256.

Akhmad, A., Romadhoni, B., Karim, K., Tajibu, M. J., & Syukur, M. (2019). The impact of fuel oil price fluctuations on Indonesia's macro economic condition. *International Journal of Energy Economics and Policy*, *9*(2), 277-282

Alwanga, M. U., Mwaura, F. O., & Mukulu, E. (2022). Evaluating The Effect Of Institutional Reforms On Electricity Access In Rural Kenya. *African Journal of Emerging Issues*, *4*(7), 38-50.

Andersson, J. J. (2019). Carbon taxes and CO 2 emissions: Sweden as a case study. *American Economic Journal: Economic Policy*, *11*(4), 1-30.

Bertoletti, P., & Etro, F. (2021). Monopolistic competition with generalized additively separable preferences. *Oxford Economic Papers*, *73*(2), 927-952.

Berument, H., & Taşçı, H. (2002). Inflationary effect of crude oil prices in Turkey. *Physica A: Statistical Mechanics and its Applications*, *316*(1-4), 568-580.

Brinkman, T., Maracle, K. T. B., Kelly, J., Vandyke, M., Firmin, A., & Springsteen, A. (2014). Impact of fuel costs on high-latitude subsistence activities. *Ecology and Society*, *19*(4), 18-27

Butyrskyi, A., Nikolenko, L., Poliakov, B., Ivanyuta, N., Donchak, L., & Butyrska, I. (2019). Economic, investment and legal paradigm of shale gas development: World experience and prospects for Ukraine. *Montenegrin Journal of Economics*, *15*(2), 165-179.

Chen, L., Debnath, D., Zhong, J., Ferin, K., VanLoocke, A., & Khanna, M. (2021). The economic and environmental costs and benefits of the renewable fuel standard. *Environmental Research Letters*, *16*(3), 034021.

Chouinard, H. H., & Perloff, J. M. (2007). Gasoline price differences: Taxes, pollution regulations, mergers, market power, and market conditions. *The BE Journal of Economic Analysis & Policy*, *7*(1), 1-26.

Chowdhury, T. T., & Murshid, K. A. S. (2020). Does Fuel Pricing Affect Males and Females Differently? Evidence from Kerosene Using Households in Rural Bangladesh. *The Bangladesh Development Studies*, *43*(3/4), 37-76.

Coady, D., Parry, I. W., & Shang, B. (2018). Energy price reform: lessons for policymakers. *Review of Environmental Economics and Policy*, *12(*2).

Dzwigol, H. (2022). Research methodology in management science: Triangulation. *Virtual Economics*, *5*(1), 78-93.

Gelb, A., & Mukherjee, A. (2019). Fuel Subsidy Reform and Green Taxes: Can Digital Technologies Improve State Capacity and Effectiveness?. *CGD Policy Paper*, *149*.

Gray, R. S. (2020). Agriculture, transportation, and the COVID-19 crisis. *Canadian Journal of Agricultural Economics*, *68*(2), 239-243.

Guno, C. S., Collera, A. A., & Agaton, C. B. (2021). Barriers and drivers of transition to sustainable public transport in the Philippines. *World Electric Vehicle Journal*, *12*(1), 46-57.

Guo, A., Wei, Y., Zhong, F., & Wang, P. (2022). How do climate change perception and value cognition affect farmers' sustainable livelihood capacity? An analysis based on an improved DFID sustainable livelihood framework. *Sustainable Production and Consumption*, *33*, 636-650.

Horodnic, I. A. (2018). Tax morale and institutional theory: a systematic review. *International journal of sociology and social policy*, *38*(9/10), 868-886.

InfoTrak. (2020). *Isiolo County | County Trak Kenya*. Countytrak. http://countytrak.infotrakresearch.com/isiolo/

Jha, P., & Schmidt, S. (2021). State of biofuel development in sub-Saharan Africa: How far sustainable?. *Renewable and Sustainable Energy Reviews*, *150*, 111432.

Kpodar, K., & Djiofack, C. (2010). The Distributional effects of oil price changes on household income: Evidence from Mali. *Journal of African Economies*, *19*(2), 205-236.

Kpodar, K., & Imam, P. A. (2021). To pass (or not to pass) through international fuel price changes to domestic fuel prices in developing countries: What are the drivers?. *Energy Policy*, *149*, 111999.

Kpodar, K., & Liu, B. (2022). The distributional implications of the impact of fuel price increases on inflation. *Energy Economics*, *108*, 105909.

Linder, M. (2018). Price cycles in the German retail gasoline market-Competition or collusion?. *Economics Bulletin*, *38*(1), 593-602.

Mahmood, S., Khwaja, M. G., & Jusoh, A. (2019). Electronic word of mouth on social media websites: Role of social capital theory, self-determination theory, and altruism. *International Journal of Space-Based and Situated Computing*, *9*(2), 74-89.

Mohsin, M., Taghizadeh-Hesary, F., Iqbal, N., & Saydaliev, H. B. (2022). The role of technological progress and renewable energy deployment in green economic growth. *Renewable Energy*, *190*, 777-787.

Nan, Y., Sun, R., Zhen, Z., & Fangjing, C. (2022). Measurement of international crude oil price cyclical fluctuations and correlation with the world economic cyclical changes. *Energy*, *260*, 124946.

Nkang, N. M. (2018). 'Oil price shocks, agriculture and household welfare in Nigeria: Results from an economy-wide model'. *European Scientific Journal*, *14*(31), 158-177.

Patel, M., & Patel, N. (2019). Exploring research methodology. *International Journal of Research and Review*, *6*(3), 48-55.

Peng, J., Li, Z., & Drakeford, B. M. (2020). Dynamic characteristics of crude oil price fluctuation—from the perspective of crude oil price influence mechanism. *Energies*, *13*(17), 4465.

Quandt, A. (2020). Contribution of agroforestry trees for climate change adaptation: narratives from smallholder farmers in Isiolo, Kenya. *Agroforestry Systems*, *94*(6), 2125-2136.

Saari, M. Y., Dietzenbacher, E., & Los, B. (2016). The impacts of petroleum price fluctuations on income distribution across ethnic groups in Malaysia. *Ecological Economics*, *130*, 25-36.

Shi, X., & Sun, S. (2017). Energy price, regulatory price distortion and economic growth: a case study of China. *Energy Economics*, *63*, 261-271.

Vizek, M., Lee, J., & Payne, J. E. (2020). Oil prices and European household consumption expenditures. *OPEC Energy Review*, *44*(1), 59-90.

Zhang, D., Broadstock, D. C., & Cao, H. (2014). International oil shocks and household consumption in China. *Energy Policy*, *75*, 146-156.

Appendix 1: QUESTIONNAIRE TO INVESTIGATE THE IMPACT OF FUEL PRICING MECHANISMS ON COMMUNITY LIVELIHOOD IN ISIOLO COUNTY

The purpose of this study is to investigate the impact of fuel pricing mechanisms on community livelihood in Isiolo County and to identify the factors that contribute to the changes of fuel prices. Your participation in this study is crucial as it will provide valuable insights that will help in making informed decisions on how to improve the livelihoods of communities in Isiolo County. We assure you that all information collected will be kept confidential and will only be used for research purposes. Your participation in this study is voluntary, and you have the right to withdraw from the study at any time without any consequences.

Section 1: DEMOGRAPHICS

1. How long have you been living in Isiolo County?
    - Less than 1 year
    - 1-5 years
    - 6-10 years
    - More than 10 years
2. How frequently do you use fuel-related services (e.g., transportation, cooking, etc.) in your daily life?
    - Rarely
    - Occasionally
    - Regularly
    - Frequently
    - Always

SECTION 2:COMMUNITY LIVELIHOOD

3. Choose the response that best reflects your opinion about the fuel pricing mechanism and its impact on the community livelihood in Isiolo County, Kenya. The rating scale ranges from strongly disagree to strongly agree. Strongly disagree-1, Disagree-2, Neutral-3, Agree-4, Strongly Agree-5.

Effect on Community Livelihood	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The affordability of fuel significantly affects the community's ability to access a sufficient and balanced diet.					
Local agricultural activities such as farming and livestock rearing are impacted by changes in fuel prices					
The price of fuel directly impacts the community's access to adequate healthcare services.					

Fluctuations in fuel prices influences the cost of medical services and essential healthcare items in the community					
The cost of fuel influences the community's access to education, including school fees and learning materials.					
Fuel price fluctuations influences the transportation costs to educational institutions for students and teachers in the community					
Fluctuations in fuel prices affect the community's ability to afford decent housing and shelter.					
The cost of construction materials in the community is affected by changes in fuel prices					

Thank you for participating in this questionnaire. Your responses will help us better understand the impact of fuel pricing mechanisms on community livelihood in Isiolo County, Kenya.