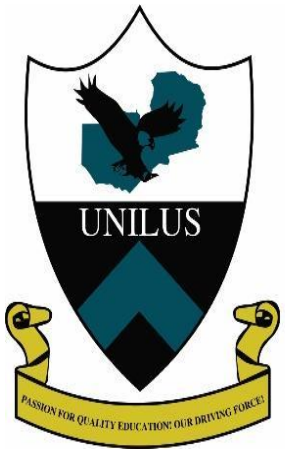

UNIVERSITY OF LUSAKA

School of Postgraduate Studies

Research Report

Effects of Monthly Fuel Price Adjustments on Performance of Selected Small and Medium Enterprises (SMEs) In Lusaka Zambia.

BY

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A Research Report presented to the School of Post Graduate Studies In Partial Fulfilment for the requirement of the Master of Business Administration in Finance.

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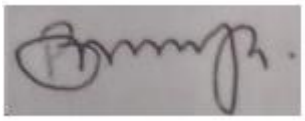
DECLARATION

Author's Signature  **Newton Chitete Date: 05/01/2025**

Supervisor's Signature  **Mr. Brian Chonya Date 05/01/2025**

DEDICATION

I dedicate this research to my family: Wife, Mwila Hazel Bwalya, and children, Shuko, Twange, and Twasime.

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ABSTRACT

This study explored the impact of monthly fuel price adjustments on the performance of Small and Medium Enterprises (SMEs) in Lusaka, Zambia, where SMEs play a vital role in employment and GDP. The research aimed to: (1) analyze how fuel price fluctuations affect operational costs and profitability, (2) assess the overall impact on SME performance, and (3) identify strategies SMEs use to cope with fuel price changes. A quantitative research design was employed, using structured questionnaires to gather data from 110 SME owners and managers across various sectors, including retail (54%), wholesale (24.1%), and both (21.8%). Data analysis involved descriptive statistics and regression analysis using SPSS to examine the relationship between fuel price changes, operational costs, and profitability. The findings revealed that fuel price adjustments significantly increased operational costs, with 82% of respondents reporting a negative effect on their businesses. Regression analysis showed a significant negative relationship between fuel price fluctuations and profitability (coefficient = -0.161, $p = 0.015$), meaning that increased fuel prices reduced profitability. Other factors such as firm size, sales volume, and operational costs also significantly influenced profitability. SMEs adopted several coping strategies, including raising prices (39.5%), reducing working hours (28.7%), and improving fuel management (19.2%). However, these measures were only moderately effective, with nearly half (47.1%) of respondents acknowledging that fuel price fluctuations severely hindered profitability. The study confirmed the reliability of the data through Cronbach's alpha, which ranged from 0.809 to 0.826, indicating high internal consistency. The regression model explained 77.1% of the variance in profitability, highlighting the significance of fuel price changes and other operational factors. The study concluded that fuel price fluctuations negatively impact SMEs, recommending that businesses invest in energy-efficient technologies and fuel management strategies while urging the government to stabilize fuel prices and provide financial support to SMEs during price surges.

Keywords: Fuel price fluctuations, SMEs, operational costs, profitability, coping strategies, regression analysis, business performance, energy-efficient technologies, government policy.

LIST OF FIGURES

LIST OF TABLES

Table of Contents

CHAPTER ONE

INTRODUCTION AND BACKGROUND

1.0 INTRODUCTION

Small and Medium Enterprises (SMEs) are the backbone of many developing economies, particularly in Zambia, where they contribute significantly to employment, income generation, and economic growth. In Lusaka, the capital city of Zambia, SMEs play a crucial role in the local economy, with the sector comprising approximately 97% of all businesses in the country (Zambia Development Agency, 2023). However, despite their importance, SMEs face several challenges that hinder their growth and sustainability. One of the most pressing issues is the impact of fluctuating fuel prices, which directly affect operational costs, profitability, and business performance.

Fluctuating fuel prices are a severe challenge for SMEs in Lusaka due to the high dependence on fuel for transportation, distribution, and power generation. The cost of fuel in Zambia has seen significant increases in recent years, influenced by both global oil price trends and local economic factors. For example, in 2022, fuel prices in Zambia increased by over 10% in several rounds, with petrol and diesel prices reaching ZMK 20.25 and ZMK 22.56 per liter, respectively (Energy Regulation Board, 2022). This escalation in fuel prices has a cascading effect on SMEs, particularly those in retail, wholesale, transport, and manufacturing sectors, where fuel costs account for a large proportion of operational expenses.

The vulnerability of SMEs to fuel price volatility is compounded by their generally limited financial resources and inability to absorb cost increases. Larger firms typically have the financial buffer to adjust or hedge against such economic shocks, but many SMEs in Lusaka lack the scale, access to credit, and operational flexibility to effectively manage rising fuel costs. As a result, SMEs are forced to adopt short-term coping strategies, such as price increases or reduced service levels, which can further erode their market competitiveness and profitability.

While much of the existing literature focuses on fuel price impacts in larger industries or developed economies, there is a significant gap in studies examining the specific challenges faced by SMEs in Lusaka and other African cities. Most studies have concentrated on broad macroeconomic factors without considering how fuel price fluctuations uniquely affect SMEs, particularly in low-income economies. Furthermore, little research has been conducted on the coping mechanisms adopted by SMEs in response to fuel price volatility or the long-term consequences of such price adjustments on their sustainability.

This research aimed to fill this gap by examining the direct and indirect effects of fluctuating fuel prices on SMEs in Lusaka. By investigating how fuel price changes influence operational costs, profitability, and business performance, the study provides a comprehensive understanding of the challenges faced by SMEs in the Zambian context. Additionally, it identifies the coping strategies adopted by SME owners and managers, offering insights into how these businesses can better navigate fuel price volatility. This research contributes to the limited body of knowledge on the intersection of fuel price fluctuations and SME performance, particularly in developing economies like Zambia, and provides policy recommendations to support the resilience of SMEs in the face of economic uncertainties.

This study aimed to provide valuable information to policymakers, business owners, and development organizations seeking to support the SME sector in Zambia, particularly during periods of high fuel price volatility. Small and medium enterprises (SMEs) are pivotal to the economic landscape of Zambia, contributing significantly to job creation and national development (Kumar & Stauvermann, 2018). In Lusaka, the capital city, SMEs account for a substantial portion of the workforce and are essential for local economic growth. However, these enterprises are often vulnerable to external economic shocks, one of the most significant being the fluctuation of fuel prices. In recent years, Zambia has witnessed frequent adjustments to fuel prices, driven by global oil market trends and domestic economic policies (Chirwa & Mfune, 2020). Such adjustments can drastically alter the operational costs of SMEs, especially those in transportation, manufacturing, and service sectors that heavily rely on fuel. Understanding how these price changes

affect SME performance is crucial, as it may provide insights into their resilience and adaptability in a volatile economic environment (Mwanza et al., 2021).

While SMEs are recognized for their contribution to the Zambian economy, empirical research exploring the impact of monthly fuel price adjustments on their performance remains limited. Rising fuel prices can lead to increased operational costs, affecting profitability and productivity (Mwale & Nkhata, 2019). This research aims to address this gap by investigating the specific effects of fuel price fluctuations on selected SMEs in Lusaka, providing a detailed understanding of the challenges these businesses face. This introductory chapter establishes a foundation for the research proposal, outlining the background of the study, the problem statement, objectives, research questions, and significance. The following chapters will delve deeper into the literature review, methodology, data analysis, and implications of the findings. By providing a structured approach, this research aims to comprehensively explore the effects of monthly fuel price adjustments on the performance of SMEs in Lusaka, ultimately contributing to informed decision-making and strategic planning in this critical sector.

1.1 BACKGROUND

Micro, small, and medium enterprises (MSMEs) are a cornerstone for growth, employment, and income. They make significant contributions to improving the economic and social sectors of a country through stimulating large-scale employment, investments, development of indigenous skills and technology, promoting entrepreneurship and innovation, enhancing exports, and also building an industrial base at different scales (Njau & Karugu, 2019; KNBS, 2021). Further, MSMEs form a supply chain for large local and multinational companies, create a more resilient, diversified economy with more dynamic private sector participation, drive innovation and homegrown champions who can compete internationally, gender equality as well as assist in achieving a more balanced, inclusive growth by addressing the bottom of the income pyramid (RoK, 2020).

Fossil fuel is one of the major, constant, and reliable sources of energy for most economic industries both in developed and developing countries. Different types of industries in the economy ranging from micro to macro depend on fuel to carry out their economic activities

starting from the extraction of raw materials, processing of these materials to finished goods, and the distribution of goods and services. Fuel as a commercial commodity affects every aspect of economic activity both at a large scale and also at a smaller scale.

The stability in the price of fuel entails that there will be stability in the actual prices of economic goods and services produced in the economy which promotes a steady growth of the economy. However, fluctuations in fuel prices occasioned every month by the Energy Regulation Board of Zambia (ERB) as a result of changing oil market prices and the country's fluctuating foreign exchange rate can hurt the economy. This can lead to instability in prices of goods and services thereby affecting the stability of the economy. Therefore the study seeks to bring out the effects of monthly fluctuating fuel prices on the Small and Medium Enterprises in Zambia.

The Zambian government's policy decision to remove fuel subsidies due to Zambia's foreign and domestic excessive debts meant that the domestic pump price for fuel would go up by 20.1% and 29.2% for petrol and diesel respectively. Kabandala (2022), indicated that adopting a monthly review of domestic fuel prices means that domestic prices of petroleum products will heavily rely on the performance of international oil prices and the kwacha-dollar exchange rate(economic fundamentals). Adopting a 30-day pricing strategy by ERB entails that manufacturers and other businesses will have difficulties in planning and decision-making since petroleum products will be expected to follow the trend of international oil prices and the performance of the kwacha against the United States dollar. Whenever there is an increase in either the international oil prices or the loss in value of the kwacha against the United States Dollar, prices of fuel and related petroleum products will be raised. Likewise when international oil prices fall and the kwacha gains against the United States Dollar prices of fuel and related petroleum products will fall.

Now without prediction models that most Zambian companies don't have or follow especially the SME's, they will have to rely heavily on the Energy Regulation Board and this can make planning and budgeting very difficult.

1.1.1 IMPORTANCE OF FUEL

Energy is the prime driver of economic growth and a prerequisite for the sustenance of economic development. Energy is used in all aspects of life ranging from household consumption to industrial and mass production (Njau & Karugu, 2019; KNBS, 2021). Energy is a key developmental resource that has been outlined among the top ten Sustainable Development Goals (SDGs). However, for sustainable development energy must be sourced from sources that are affordable and accessible, Obtaining reliable energy and meeting energy requirements are essential aspects of the general economic development strategy not only in developing countries but in all the countries in the world. For economic development to take place, energy access alone is not enough, there is a need for efficient utilization of energy resources in a way that is sustainable in the long-term Kabandala (2022). The primary advantage of this is that it will enable planners to make environmental preservation a key priority in their economic development strategies. Consequently, this will ensure that in policy formulation, focus is placed on long-term strategies as opposed to short-term concerns. It is through this approach also that governments will be in a position to meet their economic priority needs with social and ecological inclinations.

The concept of affordability is closely connected to the concept of demand and supply, in the recent past, the supply of energy has been a topic of universal concern. Researchers have attributed the volatility of crude oil prices to energy security and termed it as a threat to a stable energy supply (Naveed, 2021). Crude oil is the main energy source that is consumed in the greatest proportion as compared to other energy types. Production of other energy sources such as hydroelectric and geothermal energy also relies on crude oil. Therefore, the high oil price is a deterrent to economic growth and development as it affects all the spheres of production. The distribution of crude oil around the world is not uniform. There is much endowment of the resource in some regions and countries while there are those that lack the resource. According to a report by British Petroleum (2016), the majority of the oil reserves are located in the Middle East region. Primarily situated in Iran, Iraq, Kuwait, Saudi Arabia, and the United Arab Emirates (UAE). Liquified petroleum gas is found in Russia, Iran, Qatar, and Saudi Arabia. In terms of production, there is variation in production among regions due to heterogeneity in oil reserve distribution. BP

(2021) recorded the global oil production in 2020 as 7995.6 Mtoe which is equivalent to 83.57MB per day. Among the regions, the main crude producers include: The Middle East at 33 percent, followed by Europe and Eurasia at 21 percent, with North America following at 17 percent, Africa at 10 percent, Asia Pacific at 10 percent, and South and Central America at 10 percent.

Global oil consumption varies across regions and countries and is determined by factors such as population, income distribution, and primary economic activity in a country (Naveed, 2021). Global oil consumption is 4059.1 Mtoe, equivalent to 93.3 MB per day. The highest consumers of oil regionally are; Asia Pacific 32.4 percent, North America 25.3 percent, Europe 22 percent, Middle East 10 percent, and Africa is the least consumer with 3.9 percent. Country-wise, the USA ranks first with a 21 percent share of universal consumption, followed by China 11 percent, then Japan 5 percent, India 4 percent, Russia 3 percent, Saudi Arabia 3 percent, Brazil 3 percent, and Iran 2 percent. In Africa, many countries are viewed as energy-poor since the majority of the population cannot afford clean and reliable energy (African Development Bank, 2019). The region trails in the global share of oil consumption which stands at 3.9 percent, this is despite the continent accounting for one-fifth of the global population. The structure of global energy consumption is a revelation of a huge disproportion in global access to commercial energy. In terms of oil production, Africa contributes 12 percent to global oil production with the largest reserves in Libya, Angola, and Nigeria. Despite the high production, oil prices have been rising due to the high cost of production and poor infrastructure. The high prices pose a challenge to Africa's economies since 38 of the 53 countries are net oil importers. Understanding the relationship between fuel price adjustments and SME performance is essential for policymakers and business owners alike, as it can inform strategies to mitigate negative impacts and enhance resilience within this vital sector. Therefore, this study will focus on the analysis of the effects of monthly fuel fluctuations on the operations and profitability of SMEs in Zambia, Lusaka to be specific.

1.2 STATEMENT OF THE PROBLEM.

While SMEs are recognized for their contribution to the Zambian economy, empirical research exploring the impact of monthly fuel price adjustments on their performance

remains limited. Rising fuel prices can lead to increased operational costs, affecting profitability and productivity (Mwale & Nkhata, 2019). This research aims to address this gap by investigating the specific effects of fuel price fluctuations on selected SMEs in Lusaka, providing a nuanced understanding of the challenges these businesses face.

The continued monthly adjustments of fuel pump prices by the Energy Regulation Board have made it difficult for SMEs to come up with proper budgeting business tools and strategies as the rate for fuel keeps changing every other month (Naveed, 2021). Most of the Zambian SMEs lack the tools or prediction models to help the project's expected outcomes to minimize losses emanating from the fluctuating oil prices and foreign exchange rates against the Kwacha.

According to the Zambia Development Agency issue, Promoting SME Competitiveness in Zambia (October 2020) SMEs make up 97 percent of all businesses in the country Zambia and contribute about 70 percent to the Gross Domestic Product GDP of the country (Mwale & Nkhata, 2019). It is also said that SMEs represent 88 percent of employment opportunities as they tend to employ a large share of the most vulnerable segment of the workforce in Zambia. With this in mind, it is clear to see that instability in the cost of doing business due to fluctuating fuel prices can adversely affect SME operations whose capital base may be small to counter or even out the negative shocks or effects of fuel price fluctuations.

This study aimed to gain a deep and clear picture and understanding of the effects of monthly fuel fluctuations on the operations and profitability of SMEs in Zambia, Lusaka to be specific.

1.3 GENERAL OBJECTIVES

The general research objective was to investigate the effects of monthly fuel price adjustments on the performance of SMEs in Lusaka, Zambia.

1.4 SPECIFIC OBJECTIVE

The following are the specific research objectives of this study:

1. To analyze the impact of operational costs on the profitability of SMEs in Lusaka.

2. To evaluate how these fuel adjustments affect the profitability and overall performance of selected SMEs.
3. To identify coping mechanisms that SMEs employ to mitigate the effects of fuel price fluctuations.

1.5 RESEARCH QUESTIONS

To guide this investigation, the following research questions were addressed:

1. How do operational costs impact the profitability of SMEs in Lusaka?
2. What is the relationship between fuel price fluctuations and the profitability of selected SMEs?
3. What strategies do SMEs adopt to cope with the financial pressures stemming from fuel price changes?

1.6 RESEARCH HYPOTHESIS

The study tested the following Hypothesis:

Ho: There is no significant effect between Fuel price fluctuations and the Profitability of Cross-Border traders in the Lusaka District.

H1: There is a significant effect between Fuel price fluctuations and the Profitability of Cross-Border traders in the Lusaka District.

1.7 SIGNIFICANCE OF THE STUDY

This research holds significant implications for various stakeholders. For policymakers, understanding the effects of fuel price adjustments on SMEs can inform the development of targeted support mechanisms to enhance their resilience during economic downturns (Zambia Development Agency, 2022). Additionally, the findings will serve as a resource for business owners, enabling them to better navigate the challenges posed by fuel price volatility. Finally, this study contributes to the academic discourse on SME performance in Zambia, particularly in contexts characterized by economic instability (Kamwanga et al., 2021). This paper will also help University students to better understand the importance of better policies that help in the efficient running of the economy and expand

their knowledge too. This paper will also contribute to the already existing literature thereby expanding the frontiers of knowledge concerning the effects of monthly fluctuation of fuel prices on SMEs.

1.8 SCOPE OF THE STUDY

The research work will be concerned with the impact of fuel price fluctuations on the performance of Small and Medium Scale Enterprises in Lusaka District and will cover Cross-Border traders at COMESA market. Cross-border traders are mostly affected by the fuel price fluctuations since all the products are just imported goods for resale and they travel out of the country.

1.9 DEFINITION OF TERMS

Crude Oil Prices – It's a measure of the spot price of various oil barrels.

GDP Growth – The rate at which a nation's gross domestic product changes from one year to another.

Exchange rate – It is the price of one currency concerning another country's currency.
Inflation – The persistent increase in the general prices of commodities.

Fuel price Fluctuations are the volatility of fuel prices due to the appreciation and depreciation of a currency. It is these changes in fuel price and exchange rate that give rise to undesirable effects on SME's performance. In addition, according to Bradley and Moles (2022), the exchange rate is defined as the price of a unit of foreign currency against domestic currency. This means that the exchange rate denotes the value of one unit of foreign currency against local currency.

Financial Performance is the ability to leverage operational and investment decisions and strategies to achieve a business' financial stability (Murthy and Sree, 2020). There is a wide range of measures that are used in measuring a firm's financial performance of SMEs. These include; profitability measures, Sales volume, Employment growth, liquidity measures, and debt measures.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

This literature review explored the theoretical foundations and empirical studies related to the impact of fuel price fluctuations on Small and Medium Enterprises (SMEs), particularly within the context of Lusaka, Zambia. The review discusses relevant theories that underpin this study, including Production Theory, Demand and Supply Theory, and the Theory of Cost, before examining recent empirical research on fuel price volatility and its effects on SMEs. Additionally, the review identifies gaps in the existing literature,

highlighting the need for this study to address these gaps, particularly in developing economies like Zambia.

2.1 THEORETICAL FRAMEWORK

The paper looks at the production theory, Symmetric relationship theory, Renaissance growth theory, the Law of Demand and Supply, and the Balance of Payments Theory. To best understand the fluctuations in fuel prices and how these fluctuations affect the business of SMEs. Mainstream economic growth theories tend to focus on conventional factors of production such as capital, land, and labor while overlooking the role of oil which is also a key input. It is however worth noting that various scholars have modified the existing theories to include aspects of oil prices and their contribution to economic growth.

2.1.1 The production theory

Production Theory focuses on the relationship between inputs and outputs in the production process, particularly how changes in input costs, such as fuel, affect output levels. According to this theory, businesses strive to optimize their production processes by adjusting input levels to maintain profitability (Varian, 2014). For SMEs, fuel is a critical input, especially in sectors like transportation, retail, and manufacturing, where fuel prices significantly influence operational costs. When fuel prices increase, the cost of production rises, leading to a reduction in profitability unless businesses adjust their operational strategies. This theory supports the investigation of fuel price fluctuations on SMEs by emphasizing how input cost changes (like fuel) directly affect output and profitability, making it essential to understand how SMEs in Lusaka manage such price volatility to sustain their operations.

Cobb and Douglas (1928) posit that production is the key ingredient of economic growth. Capital, land, and labor are classified as factors of production, they are introduced at the initial stages of production but cannot be depleted during the production process, but only depreciate. Energy resource is introduced midway in the production process and are referred to as intermediate inputs, they include: coal, oil, gas, and electricity: these are

completely used up in the process. The marginal product of oil is considered an essential energy resource in economic growth and this is the true value of crude oil price. Any oil price should be proportional to its marginal product. The theory however points out that other attributes of oil in use such as efficiency, cleanliness, storability, safety, and conversion cost should also be considered. It is also important to check on the status of capital, labor, and land that the oil is used alongside.

2.1.2 Symmetric Relationship Theory

The symmetric relationship theory of growth is premised on the works of Hamilton (1983) and Hooker (1986); they based their theory on the occurrence in the oil market between the period after World War 2 in 1948 and the period before the oil shocks in 1972. They analyzed the effects of oil prices on both the economies of oil-exporting and importing countries at the time. The theory suggests that oil price volatility drives the volatility in GNP. The theory holds that there exists a symmetrical relationship between oil prices and economic growth. Studies from individual scholars from this school of thought established that an increase in oil prices requires a decrease in GDP, however, there are ambiguities in the effects of an oil price decrease on GDP, and this is because its effects vary from one country to another.

2.1.3 Renaissance Growth Theory

Renaissance growth theory was pioneered by Lee (1998) as a critique of the symmetric relationship theory. The works of Lee focused on an attempt to differentiate oil price volatility from oil price changes. In the study's proposition, volatility is defined as the standard deviation in a specified period while change is defined as the mean in a given period. The study posits that the influence of both on GDP growth is negative although with varied proportions and different patterns; the effects of volatility are felt immediately while that of oil price change has a one-year lag effect. In conclusion, the study asserts that it is the change or volatility in crude oil prices that has a substantial influence on GDP growth and not the level of oil prices.

Marquize (1986) formulated a three region three goods theoretical model of the world economy to highlight the channels by which the effects of an exogenous rise in oil prices are internationally transmitted. To establish the effect of oil price changes while allowing

for the feedback effect, he studied three blocks of countries; developed economies, OPEC economies, and non-OPEC developing economies. The study established that oil price change does not discriminate countries based on their level of development, the developed, under-developed, and developing countries are all affected by the change, but the degree of effect varies. The other theory that relates oil prices to inflation is known as the long-run and short-run inflation theory, which stems from the works of Bernanke, Gertler, and Watson (1997) and Barsky and Kilian (2001). The theory postulates that inflation in the short run can be corrected by the central bank through monetary policy, meaning that the relationship between monetary policy and inflation is not static. When an oil price shock causes short-run inflation the Central bank uses a reactionary monetary policy to adjust the inflation rate back to what they deem acceptable. As long as the current inflation rate is higher than the central bank's inflation target, they will adjust the money supply to diminish any potential long-run inflationary effects from an oil price shock.

2.1.4 The Law of Demand and Supply

The Demand and Supply Theory explains how the price of a good or service is determined by the interaction of supply and demand in a competitive market (Mankiw, 2014). Fuel price fluctuations are a clear example of supply-side shocks that affect both demand and cost structures for SMEs. Higher fuel prices lead to increased transportation and production costs, which in turn can reduce the supply of goods and services from SMEs if businesses are unable to adjust their operations. Additionally, fuel price hikes often result in higher consumer prices, reducing demand for goods and services, particularly for low-income consumers. This theory is particularly relevant to this study as it helps explain the broader economic impacts of fuel price volatility on SMEs, considering both the supply-side cost increases and the demand-side effects (such as reduced consumer spending and demand for products). By applying this theory, the study can explore how SMEs in Lusaka adjust their pricing strategies, operational hours, or product offerings in response to fuel price fluctuations.

The law of Demand and Supply states that the demand for a good falls as the price rises and demand for the good rises and the price falls. The law of Supply states that the price

of a good rises as supply falls and the price falls as supply increases. The theory assumes that as the supply of oil on the world market falls, the price of oil on the world market rises and equally as the supply of oil on the world market increases, the price of oil on the world market falls. Similarly, when the demand for oil rises on the world market, the price of oil rises, and as the demand for oil on the world market falls, the price of oil on the world market falls. This law has a bearing on the price of fuel in Zambia as fuel prices are determined by the market forces of demand and supply of oil on the international market.

2.1.5 The Balance of Payments Theory

The theory of balance of payments of the exchange rate states that the price of foreign money in terms of domestic money is determined by the free market forces of supply and demand in the foreign exchange market. It states that the external value of a country's currency is determined by the demand and supply of the currency. Therefore the theory of balance of payments helps us to understand how the exchange rates are arrived at that determines how the value of fuel will cost. Understanding how the balance of payments works can help stimulate the demand for the kwacha thereby helping it to appreciate against other currencies such as the United States Dollar in whose currency the oil is traded. Maintaining a steady exchange rate of the kwacha against the US dollar ensures a steady price of fuel on the Zambian market which is an ideal condition to conduct business for SMEs.

2.2 EMPIRICAL REVIEW

This empirical review synthesizes existing research related to the effects of fuel price adjustments on the performance of small and medium enterprises (SMEs), particularly in the context of Lusaka, Zambia. Given the critical role SMEs play in economic development, understanding the relationship between fuel prices and their operational performance is vital for policymakers and business owners alike. SMEs constitute a significant portion of Zambia's economic framework, contributing approximately 70% of employment and around 30% of the country's GDP (Zambia Development Agency, 2022). Their ability to adapt to economic changes, including fluctuations in fuel prices, directly impacts economic stability and growth. Previous studies have highlighted that SMEs face

various operational challenges, particularly concerning cost management in response to external economic shocks (Kumar & Stauvermann, 2018).

Zambia's fuel prices are influenced by global oil markets, exchange rates, and local taxation policies. Monthly adjustments in fuel prices can lead to significant shifts in operational costs for SMEs, particularly those in sectors like transportation and manufacturing, where fuel is a critical input (Chirwa & Mfune, 2020). Research indicates that price fluctuations can lead to increased transportation costs, affecting supply chains and overall profitability (Mwale & Nkhata, 2019). Empirical evidence shows that increases in fuel prices directly correlate with higher operational costs for SMEs. Mwale and Nkhata (2019) found that SMEs in the transportation sector reported a significant rise in expenses, which they attributed to increased fuel costs. These rising costs can result in reduced profit margins, compelling SMEs to adjust their pricing strategies, often leading to decreased competitiveness in the market. The profitability of SMEs is closely linked to fuel prices. Studies by Mwanza et al. (2021) reveal that businesses experiencing frequent fuel price hikes often struggle to maintain profitability. SMEs operating on thin margins are particularly vulnerable, as any increase in costs can disproportionately affect their bottom line. Chirwa and Mfune (2020) further emphasized that consistent fuel price increases lead to a decline in sales as consumer purchasing power diminishes, exacerbating the financial strain on SMEs.

Research has identified various coping mechanisms employed by SMEs in response to fuel price fluctuations. Kamwanga et al. (2021) noted that many SMEs adopt strategies such as Cost-cutting measures: Reducing non-essential expenditures to maintain profitability Diversification: Exploring alternative revenue streams or adjusting product offerings to mitigate risks. Price adjustments: Passing on some of the increased costs to consumers, which can impact sales if not managed carefully. The impact of fuel price adjustments can vary significantly across different sectors. For example, SMEs in the transport sector are more directly affected by fuel price changes due to their reliance on fuel for operations. In contrast, those in retail may experience more indirect effects, primarily through changes in supplier costs and consumer behavior (Kumar & Stauvermann, 2018).

While the focus of this study is on Lusaka, comparisons with other regions in Zambia can provide valuable insights. Research indicates that SMEs in urban areas face different challenges than those in rural regions, particularly concerning access to resources and market dynamics (Zambia Development Agency, 2022). Understanding these regional disparities can inform targeted interventions to support SMEs effectively. In conclusion, the empirical evidence highlights a clear relationship between monthly fuel price adjustments and the performance of SMEs in Lusaka, and Zambia. The adverse effects on operational costs, profitability, and overall sustainability underscore the need for strategic responses from both business owners and policymakers. Further research is essential to develop a comprehensive understanding of the long-term implications of fuel price fluctuations on SME performance and to identify effective strategies for resilience.

. This agitation got some research support from the works of Johnson (2002) who justified the control of prices on the basis that the oil industry is generally characterized by unstable prices and that some control is needed to provide the same level of stability and predictability. The government finally yielded to the pressure and introduced price controls in Zambia at the pump price level in 2021.

Taylor and Weerapana (2011) define price controls as government regulation of prices of products which can be a price ceiling, price floor, or minimum price at which goods can be bought or sold. In the Kenyan case, it was a price ceiling – which set a maximum price that may be charged but does not prevent goods from being sold at lower prices, below the ceiling price (Tucker, 2010). The directive was effected by creating an Energy Regulatory Commission (ERC) in July 2007 (ERC, 2008) charged with setting prices monthly basis. The new prices are announced every 14th of the month to be effective from the 15th of the month. OMCs are then allowed to sell only at the announced prices or below. The price is set for every region, with the difference being the additional transportation costs. The prices in local currency are based on the weighted average of the last three months landed costs prices where the landed costs are the unit cost of each product i.e. global prices plus all costs and duties incurred by the shipments offloaded at Mombasa terminals with dollar-denominated costs converted at the average dollar exchange rate for the month. However, according to Taylor (2006), price controls are only

effective on a short-term basis and when they take place over a long period, they may lead to rationing, long queues, and the black market. The fact that despite this awareness, the government of Kenya instituted and allowed the price control to stay this long underscores the importance attached to the oil sector and its impact on the economy. A lot of research has been done on this subject matter despite the existence of unresolved matters touching on theory and practice (Gitahi, 2015). According to the findings of Kilian (2008), almost all economies in the world are affected by increases in global prices which translates into their local retail price changes.

Gatuhi and Macharia's (2013) study concluded that oil prices and market interest have a significant impact on the share prices of listed firms at NSE. Total oil consumption and exchange rates are positively related to firm performance, though the impact is insignificant. Henderson and Newell (2010) studied accelerating energy innovation with insight from multiple sectors and concluded that to reduce demand for petroleum products in the public, government intervention to provide subsidies on alternative products is inevitable. Sakib and Marsiliani (2015) studied oil price shocks using the Dynamic Stochastic General Equilibrium (DSGE) model. They found that technology was the driving force in oil price fluctuations in Bangladesh. The study objective is to determine the impact of oil price changes, exchange rates, and capital structure on the performance of NSE firms. High petroleum product prices tend to impact positively the stock market performance of petroleum-producing countries, the opposite effect is expected for an oil-importing country. This is because the increase in oil prices increases government revenues for oil exporting countries, such high oil prices reduce consumer’s available income to spend on other goods and services thereby affecting the performance of other companies as well.

A study conducted by Ayakwah, A. and Mohamed J. (2014) on Fuel Price Adjustments and the growth of SMEs in the New Juaben Municipality, Ghana revealed and concluded that fuel price adjustments upwards affect turnover output and employment levels of SMEs. The study shows that the turnover falls whenever there is a fuel price adjustment. The fall is a result of an increase in the transportation and production costs incurred by SMEs. The study also showed that there is a decline in the output of SMEs whenever

there is a fuel price adjustment. The fall in output is a result of an increase in the cost of raw materials which leads to an increase in the production costs.

Another study conducted by Hummel et al (2022) on the Effect of Fuel Price Adjustment on Small and medium enterprises concluded that the performance of SMEs generally declined as a result of a decline in the rate of employment and sales brought about by the inability of the businesses to cope with demand from the market due to high cost of production. The study also reviewed that the turnover and production levels were reduced due to fuel price adjustments, high fuel costs which are incorporated or passed on to the consumer through upward price adjustments making goods expensive and less demand hence the reduction in turnover and production.

Setyawan D (2013) in a study conducted on The Impact of Domestic Fuel Increases on Prices of the Indonesian Economic Sectors focused on the transport sector to be specific and concluded that the most sector affected by high fuel prices is the transport sector because for vehicles to operate they need fuel and most economic activities if not all require transportation to move their raw materials, production, and distribution. An increase in fuel leads to an increase in transportation costs which eventually is passed on to the consumers.

After reviewing the literature on the subject it is important to mention that these studies were conducted outside of Zambia and may not reflect the exact picture with regards to the effects of fuel fluctuations on SMEs in Lusaka, Zambia. According to the review, it will be the first study to be conducted among SMEs in Lusaka to establish the real quantitative effects and results of monthly fuel price fluctuations on SMEs in Lusaka Zambia.

2.2.1 Fuel Price Fluctuations and SME Performance

Numerous studies have explored the impact of fuel price fluctuations on businesses, especially in sectors heavily reliant on transportation and logistics. According to a study by Yao et al. (2021), SMEs in developing countries are more vulnerable to fuel price increases due to their limited access to financial resources and risk management tools. These businesses often operate with tight margins and lack the capital to invest in energy-efficient technologies or buffer against external shocks such as fuel price hikes. This is

particularly relevant in the Zambian context, where SMEs struggle with limited access to credit, making it difficult to absorb cost increases.

In contrast, studies in more developed economies, such as those by Tan et al. (2020), show that SMEs with better access to financial resources or larger operational scales can better weather fuel price fluctuations. However, the literature remains scarce on the specific coping mechanisms employed by SMEs in Lusaka, particularly within the retail, wholesale, and manufacturing sectors. This research aims to bridge this gap by identifying and analyzing coping strategies such as price increases, reduced working hours, and fuel-efficient practices adopted by SMEs in Lusaka.

2.2.2 Coping Mechanisms and SMEs' Resilience

Several empirical studies highlight the coping mechanisms that SMEs adopt to manage fuel price volatility. For instance, a study by Lall et al. (2019) in India found that SMEs often respond to rising fuel prices by increasing their product prices, reducing labor costs, or shifting to alternative fuel sources. Similarly, a study in Nigeria by Olowosulu and Akinlolu (2020) noted that SMEs use strategies such as reducing operating hours or changing product lines to cope with increasing operational costs.

However, there is limited research on the specific strategies employed by SMEs in Lusaka to cope with fluctuating fuel prices. While some studies mention general coping strategies, few explore how these mechanisms affect the overall performance of SMEs, particularly in low-income and volatile economic contexts. This study addresses this gap by focusing on the unique challenges faced by Lusaka-based SMEs and the specific coping mechanisms they employ to mitigate the effects of fuel price fluctuations.

2.2.3 Gaps in Existing Literature and Justification for This Study

While existing literature provides some insights into the impact of fuel price fluctuations on businesses, several gaps remain, particularly in the context of SMEs in developing countries like Zambia. First, much of the research has been conducted in developed economies, where SMEs have more resources to cope with economic shocks. Few studies have focused on the challenges faced by SMEs in low-income countries,

especially those in sub-Saharan Africa, where fuel price volatility is often exacerbated by currency depreciation, inflation, and limited access to financial support.

Second, while studies have explored general coping strategies, there is a lack of research on the specific effectiveness of these mechanisms in the context of SMEs in Lusaka. This study aims to fill this gap by not only investigating the impact of fuel price fluctuations on operational costs and profitability but also by identifying the coping strategies that are most commonly used and their effectiveness in maintaining business performance. Lastly, the existing literature does not fully address the policy implications of fuel price fluctuations for SMEs, particularly in developing countries. This study aims to contribute to the literature by providing recommendations for policymakers to help mitigate the adverse effects of fuel price volatility on SMEs in Lusaka, thus offering practical insights for business owners and government agencies alike.

2.3 CONCEPTUAL FRAMEWORK

The following is the conceptual framework based on the objectives and hypothesis of the study. Performance of SMEs measured by profitability, Fuel price, Sales Volume, and Operational cost.

2.3.1. Dependent Variable: Profitability

Profitability is the key dependent variable in this study. Profitability refers to the ability of a business to generate earnings relative to its expenses. For SMEs, profitability is a measure of their financial success and sustainability. It is influenced by multiple factors, such as costs of operation, revenues, and pricing strategies. In this context, the impact of fuel price fluctuations on profitability is the main concern.

Since fuel is often a significant component of the operational costs for SMEs, especially in transportation and logistics, fluctuations in fuel prices directly affect how much SMEs can retain as profit. Profitability is often measured in terms of net profit margins or returns on investments, which are influenced by both increased operational costs and potential reductions in sales volume due to higher product prices.

2.3.2. Independent Variable: Fuel Price Fluctuations

Fuel price fluctuations are the central independent variable in this study. Fuel is a crucial operational input for many SMEs, especially those involved in transportation, distribution, and cross-border trade. Fuel price changes can have a direct and indirect effect on the costs of doing business. A rise in fuel prices leads to higher transportation costs, which may increase the overall operational costs for SMEs. These increased costs may be transferred to consumers through price hikes, reducing sales volume and, subsequently, affecting profitability.

The study will investigate how fuel price changes whether they are rising or falling impact SME operations in Lusaka. The central research question will explore how fluctuations in fuel prices lead to changes in the cost structure of SMEs and the pricing strategies they adopt to maintain profitability.

2.3.3. Independent Variable: Operational Costs

Operational costs represent the expenses that SMEs incur in the day-to-day running of their businesses. These costs include both fixed and variable costs, with fuel being one of the key variable costs for SMEs. Changes in fuel prices directly affect the cost of transportation, distribution, and raw materials, among other operational expenses. If fuel prices increase, SMEs may face higher operating costs, and their profit margins may shrink if they are unable to pass these increases onto customers.

The study will analyze how these operational costs are affected by fuel price fluctuations and how they, in turn, affect the profitability of SMEs. Operational costs often have a significant impact on profitability, especially for SMEs that operate on thin margins, such as cross-border traders who may rely heavily on fuel for their transport activities.

2.3.4. Independent Variable: Sales Volume

Sales volume is another important independent variable in the study. It refers to the quantity of products or services sold by an SME over a given period. Sales volume is

influenced by multiple factors, including pricing decisions, market demand, and economic conditions, all of which can be affected by fuel price fluctuations.

When fuel prices increase, SMEs may be forced to increase the price of their products or services to cover higher operational costs. As a result, sales volume might decline due to reduced consumer demand, as customers may be unwilling to pay higher prices. This reduction in sales volume can have a direct negative impact on profitability, especially for SMEs that depend on high turnover to maintain financial stability.

2.3.5 Relationship between the Variables

The relationships among these variables are interdependent and cyclical. Fuel price fluctuations increase operational costs, which may force SMEs to adjust their pricing strategies, leading to changes in sales volume. The interplay between these variables can either exacerbate or mitigate the financial pressures faced by SMEs.

- **Fuel Price Fluctuations and Operational Costs**: As fuel prices rise, operational costs for SMEs increase, particularly for businesses relying heavily on transport, such as cross-border traders. This relationship is direct and immediate.
- **Operational Costs and Profitability**: Increased operational costs typically lead to reduced profitability unless SMEs can adjust by increasing prices or reducing other costs. Profitability tends to decrease as operational costs rise, particularly if sales volume does not keep pace with price increases.
- **Sales Volume and Profitability**: A decrease in sales volume, often triggered by price hikes due to increased fuel costs, will negatively impact profitability. However, maintaining high sales volume, even during fuel price fluctuations, can help SMEs sustain profitability despite increased operational costs.

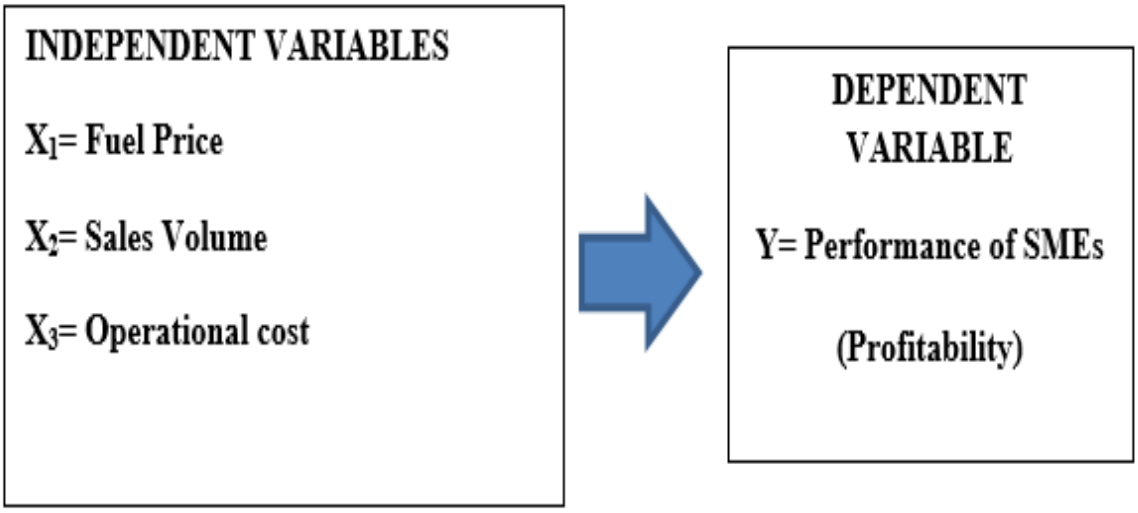
How the Framework Underpins the Study

The conceptual framework is vital for this study as it clearly defines the relationship between the key variables fuel price fluctuations, operational costs, sales volume, and profitability and serves as a guide for understanding how these variables interact in the

context of SMEs in Lusaka. By analyzing these relationships, the study can assess how fuel price changes affect the financial performance of SMEs, particularly cross-border traders.

Additionally, the framework provides a basis for testing the research hypothesis (H0 and H1) by investigating whether fuel price fluctuations significantly affect the profitability of SMEs. It also helps to identify strategies that SMEs may employ to cope with these challenges, ensuring that the study has practical applications for businesses seeking to adapt to changing economic conditions.

In conclusion, the framework sets the foundation for a structured analysis of how external factors like fuel prices influence internal business operations, helping SMEs navigate challenges and remain profitable.



Source: *Author's Own Construct, 2024*

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 INTRODUCTION

This section of the study provides the models and procedures for collecting and analyzing the data. On the whole, it outlines the research design, population, sample and sampling procedure, data collection instrument, data collection procedures, and data analysis and presentations. The sections also provide the limitations that will be faced during the data collection and the ethics that will be considered during data collection.

3.1 RESEARCH DESIGN

This study utilized a quantitative research design to examine the effects of fuel price fluctuations on Small and Medium Enterprises (SMEs) in Lusaka, Zambia. The methodology employed stratified random sampling, a structured questionnaire, and statistical techniques to analyze the relationship between fuel price fluctuations and SME performance. The following sections provide a detailed explanation of the sampling method, questionnaire design, validation process, ethical considerations, and the rationale for the methodological choices.

The research design is a construct that is used by the researcher of the study (Kombo & Tromp, 2006). This is done to outline the procedures undertaken to accomplish the main purpose of the study. This study will be guided by the quantitative and descriptive survey research design. This research design is concerned with acquiring adequate information about the subject matter and making inferences where possible (Mugenda & Mugenda, 2008). It enables the researcher to have a close relation with the variables under study meanwhile countering the destructions that might cause bias in the study. Thus, using this research approach provides a clear understanding of the relationship between entrepreneurial orientation and SME growth.

3.2 POPULATION DESCRIPTION

The population of this study comprised SMEs in the Lusaka District. Because of the scope and the dispersion of the population of SMEs in Zambia, the study was constrained to

SMEs within the Lusaka District of Zambia. Managers or the owners of the SMEs were targeted for the study. This was done because business managers or owners are the ones that are directly associated with the business operations and business. Thus, the study targeted all the SME managers or owners in Lusaka City, Zambia. There are about 1600 registered Cross-Border traders in Lusaka according to ZRA, (2023).

3.3 SAMPLE SIZE AND SAMPLING PROCEDURE

Due to the large number of SMEs in Lusaka, the study sampled respondents from the targeted population. To arrive at the appropriate sample size, the Slovene formula will be used as stated below:

s=N/(1+N〖(e)〗^2)

Where: s is the sample size to be determined, N is the population size (i.e., 1300), and e is the error tolerance (i.e., 0.10). Thus,

s=1600/(1+1600〖(0.10)〗^2)

=1600/14

=110

Thus, the sample size for the study was 110. The study used Stratified random sampling to select the respondents for the sample. The use of Stratified random sampling is considered in that it minimizes the error as each respondent in the target population is accorded an unbiased probability of being selected. This sample was adequate for the study in that a sample of 16% of the population was considered which is more than the 10 percent is recommended sample size, (Mugenda &Mugenda, 2008).

3.3.1 Rationale for Using Slovin's Formula

Slovin's formula was chosen for its simplicity and reliability in determining a sample size that provides an appropriate balance between precision and practicality. Given the large population of SMEs in Lusaka and the limited resources available for the study, this method was optimal for selecting a representative sample. By applying the formula, the

study ensured that the sample size was large enough to provide reliable results while controlling for the margin of error.

3.3.2 Stratified Random Sampling

The study employed stratified random sampling to ensure that different types of SMEs were proportionally represented in the sample. The stratification categories included business sectors such as retail, wholesale, and both retail and wholesale. This approach was necessary to capture variations in fuel price impact across different sectors, as each may be affected differently due to variations in fuel consumption patterns and operational needs. Stratified random sampling increases the accuracy of the results by ensuring that the sample reflects the population's diversity, thus minimizing sampling bias and improving generalizability.

3.3.3 Potential Biases in Sampling

While stratified random sampling helps reduce selection bias, the study acknowledges potential biases that could arise during data collection. One potential bias is non-response bias, where certain respondents may choose not to participate, particularly those who are less impacted by fuel price fluctuations or are unaware of the specific effects on their business. To mitigate this, follow-up reminders were sent to non-respondents, and the sample was adjusted to ensure representation from each sector. Another potential bias is the self-reporting bias, where respondents may exaggerate or downplay the effects of fuel price fluctuations on their business operations. To minimize this, the study emphasized the importance of honest responses and reassured respondents about the confidentiality of their answers.

3.4 MODEL ESTIMATION PROCEDURE

The establishment of the relationship between Fuel price fluctuations and performance of Cross-Border traders SMEs will be accomplished by using a multiple regression model. The regression model will be developed in line with the conceptual framework outlined in Figure 2.1.

3.5 DATA COLLECTION AND INSTRUMENTATION

The study made use of the primary data. The data will comprise first-hand information that has not yet been documented or published but obtained directly from the

respondents. The primary data was collected by the use of questionnaires that contained both close-ended and open-ended questions. Additionally, the questionnaires will be organized into sections, each section addressing the specific research question. The questionnaires were administered by the drop-and-pick method. This method is convenient as it gives the respondents enough time to fill out the questionnaires. After dropping the questionnaire, the respondents were given at least one week to respond and follow-ups were made via phone calls. The researcher will visit the various areas under the study on several occasions for a follow-up on the research questionnaires and to collect them.

The questionnaire was developed to address the research objectives and gather quantitative data on the impact of fuel price fluctuations on SMEs in Lusaka. It included sections on the demographic profile of the SMEs, fuel-related operational costs, business performance metrics (such as profitability and growth), and coping mechanisms adopted by SMEs.

3.5.1 Ensuring Validity and Reliability

Validity:

To ensure content validity, the questionnaire was designed based on a comprehensive review of relevant literature and theories on fuel price fluctuations, operational costs, and SME performance. Furthermore, the draft questionnaire was reviewed by a panel of experts in the field of economics and business management, who provided feedback on the clarity and relevance of the questions. This expert review process helped refine the questionnaire to ensure that it accurately captured the constructs relevant to the research objectives.

Reliability:

To assess the reliability of the questionnaire, a pilot test was conducted with a small sample of 10 SME owners in Lusaka who were not part of the final study. The pilot test helped identify ambiguities in the wording of the questions and allowed the researchers to make necessary adjustments before the full-scale data collection. The reliability of the final questionnaire was also measured using Cronbach's alpha, which yielded values

between 0.809 and 0.826 for the major variables, indicating a high level of internal consistency.

Pretesting/Piloting Process:

The questionnaire was pretested in the field before the main data collection phase. This pilot study involved administering the questionnaire to a small sample of SMEs across different sectors to evaluate its clarity and effectiveness. Feedback from the pilot respondents led to revisions in the wording of some questions to enhance understanding. Additionally, the pilot test helped to determine the average time required to complete the questionnaire, allowing the researchers to optimize its length for the final survey.

3.6 DATA ANALYSIS AND PRESENTATION PROCEDURE

Data analysis entails the process of obtaining information from the data collected and presenting them. The data will be quantitative according to the specified research design. The qualitative data and quantitative data will be analyzed by use of Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics which includes frequencies, percentages, standard deviation, and arithmetic mean. The analyzed data will then be represented in tables and figures. Regression analysis will be used to achieve the study's main objectives test the hypothesis and test the significance of the relationship between Fuel price fluctuations and the performance of SMEs.

3.7 ETHICAL CONSIDERATIONS

The researcher requested an introductory cover letter from the registrar of the University of Lusaka so that the researcher would be able to obtain all the information and data necessary to execute the research. The main respondents that provided adequate data are the SME managers and owners of Cross-Border traders. To make this possible, the data respondents were assured that the data provided was purely for academic purposes and that their names were not required and this provides confidentiality. Ethical considerations were a fundamental part of the research process. The study adhered to the ethical guidelines established by the research institution and ensured that all participants were fully informed about the purpose of the research and their rights as respondents.

3.7.1 Informed Consent

Before participating in the study, all respondents were provided with a clear explanation of the research objectives, the voluntary nature of participation, and their right to withdraw at any time without penalty. Informed consent was obtained from each respondent before completing the questionnaire.

3.7.2 Anonymity and Confidentiality

To protect the privacy of the participants, the study ensured that all responses were anonymous. Respondents were not required to provide their names or any identifying information. Data collected was stored securely, and access was restricted to the research team only. Additionally, the results were reported in aggregate form to maintain participant anonymity.

3.7.3 Data Protection

The study adhered to ethical standards for data protection and ensured that the data was used solely for this research. Participants were assured that their responses would not be shared with third parties, and any data dissemination would be done in a way that preserved confidentiality.

3.8 LIMITATIONS OF THE STUDY

Despite the comprehensive approach of this research, several limitations may affect the findings and their generalizability. While this study seeks to provide valuable insights into the effects of monthly fuel price adjustments on SMEs in Lusaka, the aforementioned limitations highlight the need for caution in interpreting the findings. Future research should aim to address these limitations by exploring broader geographical contexts, larger sample sizes, and longitudinal analyses to better understand the long-term effects of fuel price volatility on SME performance.

While the study employed a rigorous quantitative approach, there are some limitations to consider:

3.8.1 Sampling Limitations

Although stratified random sampling enhances the representativeness of the sample, the study may not fully capture the diversity of SMEs in Lusaka, particularly those that are

less accessible or operate informally. Future studies could incorporate a broader range of sampling techniques, such as cluster sampling, to address this limitation.

3.8.2 Self-Report Bias

As with any survey-based research, the accuracy of the findings depends on the honesty and self-awareness of the respondents. The study attempted to mitigate this bias by emphasizing confidentiality and encouraging participants to provide honest responses. However, there is always the possibility that respondents underreport or over-report certain information.

3.8.3 External Factors

The study focused primarily on fuel price fluctuations, but other macroeconomic factors such as inflation, currency depreciation, or government policy changes may also impact SME performance. The study acknowledges these potential confounding variables and recommends future research that accounts for such factors.

CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.0 INTRODUCTION

This chapter presents the results of the study and the discussion of the results. Firstly to be presented are the descriptive statistics and second present the regression analysis Results. Regression analysis was used to establish the relationship between the effect of fuel price adjustment and the Profitability of SMEs in the Lusaka district of Zambia. Cross-sectional Data from 110 SMEs was used for analysis.

4.1 RESPONSE RATE

The initial study target was 120 respondents, 110 respondents promptly filled and returned the questionnaires. This translated to 92 % response as shown in table 4.0 below.

Table 4.0: Response Rate

Response	Frequency	Percent
Returned Questionnaires	**110**	**92**
Unreturned Questionnaires	**10**	**8**
Total	**120**	**100**

Table 4.1: Reliability Statistics

The reliability of the instrument used in this study was measured using Cronbach's alpha, which is an essential aspect of validating the consistency of the data collected. The Cronbach's alpha values for the overall set of 5 items were reported as 0.831 (based on original items) and 0.832 (based on standardized items). These values indicate that the instrument was highly reliable, as they both exceeded the commonly accepted threshold of 0.7 for acceptable reliability (Nunnally, 1978).

Cronbach's alpha values above 0.8 are generally considered excellent, implying that the questions in the instrument consistently measure the same underlying construct. The standardized value of 0.832 further supports this interpretation, confirming that the internal consistency of the scale was strong even after accounting for scale standardization.

Table 4.1: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.831	.832	8

Table 4.2: Reliability Analysis of Major Variables using Cronbach's alpha

Variable	**Value**
Profitability of SMES	.812
Fuel Price Adjustment	.817
Firm Size	.826
Sales Volume	.809
Operational Cost	.809

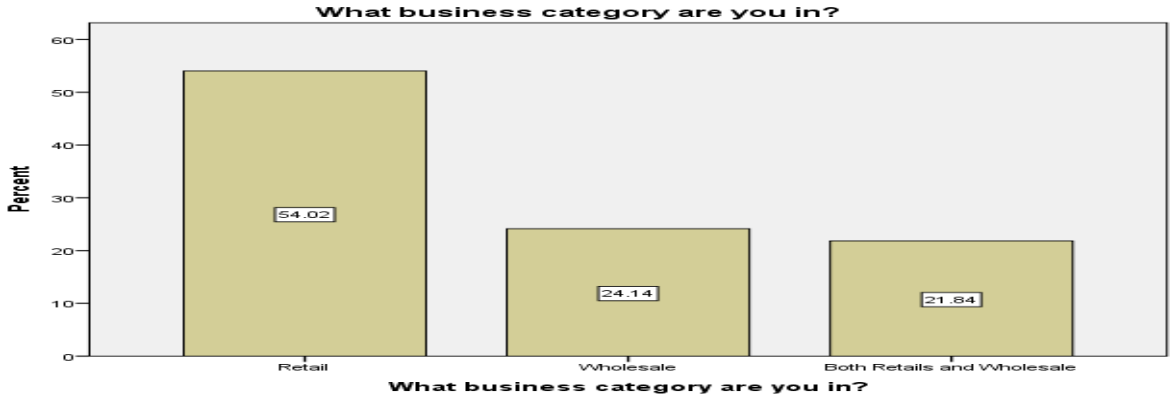
Interpretation of Individual Variables: Profitability of SMEs had the Cronbach's alpha for this variable was 0.812, indicating good internal consistency and reliability. This suggests that the questions related to the profitability of SMEs were well-aligned and provided reliable results. Fuel Price Adjustment had a Cronbach's alpha of 0.817, this variable also exhibited high reliability, meaning that the items assessing fuel price fluctuations consistently measure this construct. Firm Size had the Cronbach's alpha of 0.826 for firm

size suggests strong reliability. It indicated that the items designed to assess the size of the business are consistent and provide stable results. Sales Volume had the Cronbach's alpha value of 0.809 indicating that the items used to measure sales volume are highly reliable and consistent in assessing this construct. Lastly, Operational Cost similarly, had the Cronbach's alpha of 0.809 for operational costs showing that the scale used to measure this variable has good internal consistency.

4.2 DESCRIPTIVE STATISTICS

Table 4.2: What business category are you in?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Retail	59	54.0	54.0	54.0
	Wholesale	27	24.1	24.1	78.2
	Both Retail and Wholesale	24	21.8	21.8	100.0
	Total	110	100.0	100.0	



The researcher sought to get responses from entrepreneurs holding different business categories of SME enterprises. From the sampled businesses there were only three classifications of businesses. (54.02%) were retailing only, whereas (24.14%) were wholesaling and (21.84%) were doing both retailing and wholesaling. This distribution indicates that the majority of SMEs in Lusaka are retail-focused, with a significant number involved in wholesale and a smaller proportion engaging in both business types. This

suggests that retail businesses may experience a more direct impact from fuel price fluctuations due to their reliance on regular goods transportation and distribution.

Table 4.3: How long have you been in business?

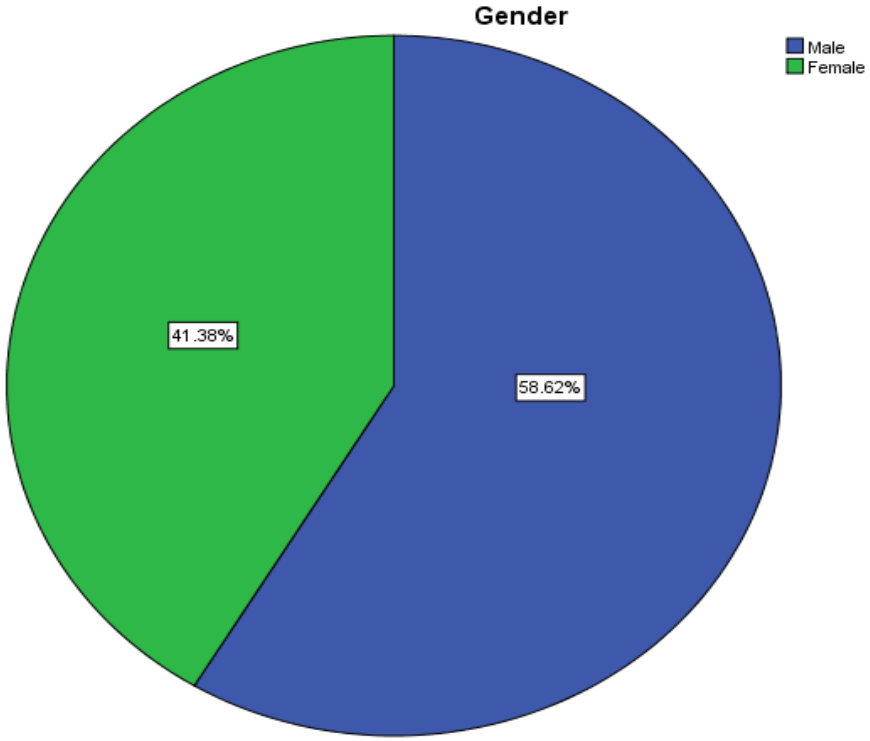
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-2 Years	24	21.8	21.8	21.8
	2-5 Years	61	55.2	55.2	77.0
	More than 5 years	25	23.0	23.0	100.0
	Total	110	100.0	100.0	

Table 4.3 indicates how long the SMES has been in existence. (21.84%) had been in business between 0 and 2 years. (55.17%) had been in business between 2 and 5 years and only (22.99%) had been in business for more than 5 years. The long time in business is necessary to this study in that it takes a long time for business owners to identify what factors affect the growth of micro-enterprises. The majority of businesses (55.2%) fall within the 2-5 years range, which is a critical phase for SMEs. Businesses in this range are likely to have experienced some initial growth but may still be vulnerable to external

shocks such as fuel price fluctuations. A notable percentage (23%) of respondents have been operating for over five years, indicating some level of resilience and stability in their operations.

Table 4.4: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	64	58.6	58.6	58.6
	Female	46	41.4	41.4	100.0
	Total	110	100.0	100.0	



The study targeted respondents of both sexes. As seen in Table 4.4 and Figure 4.4, females (41.4%) and males (58.62%) participated in the study. The majority of the respondents were male which indicates that males are the majority of Business managers at Lusaka's City Market for the businesses considered. This gender distribution suggests that a larger proportion of the SMEs in Lusaka are owned or managed by males, which is consistent with typical trends in many entrepreneurial settings. However, the presence

of 41.4% female respondents highlights the important role that women play in the entrepreneurial landscape of Lusaka.

Table 4.5: Educational level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary	4	3.4	3.4	3.4
	Secondary	38	34.5	34.5	37.9
	Tertiary	68	62.1	62.1	100.0
	Total	110	100.0	100.0	

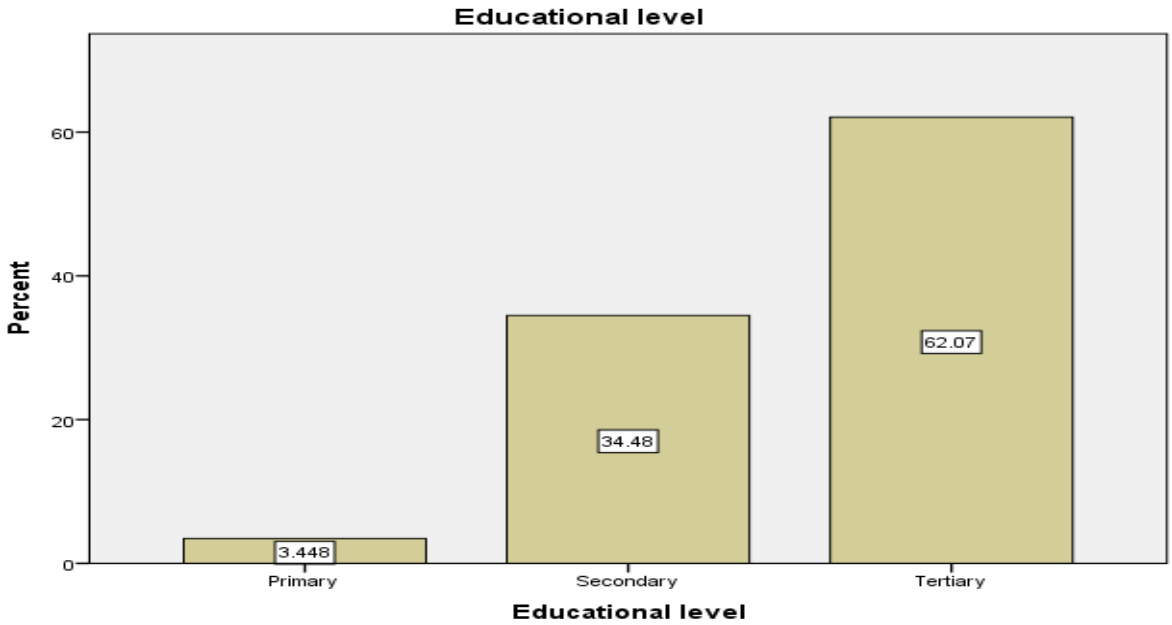
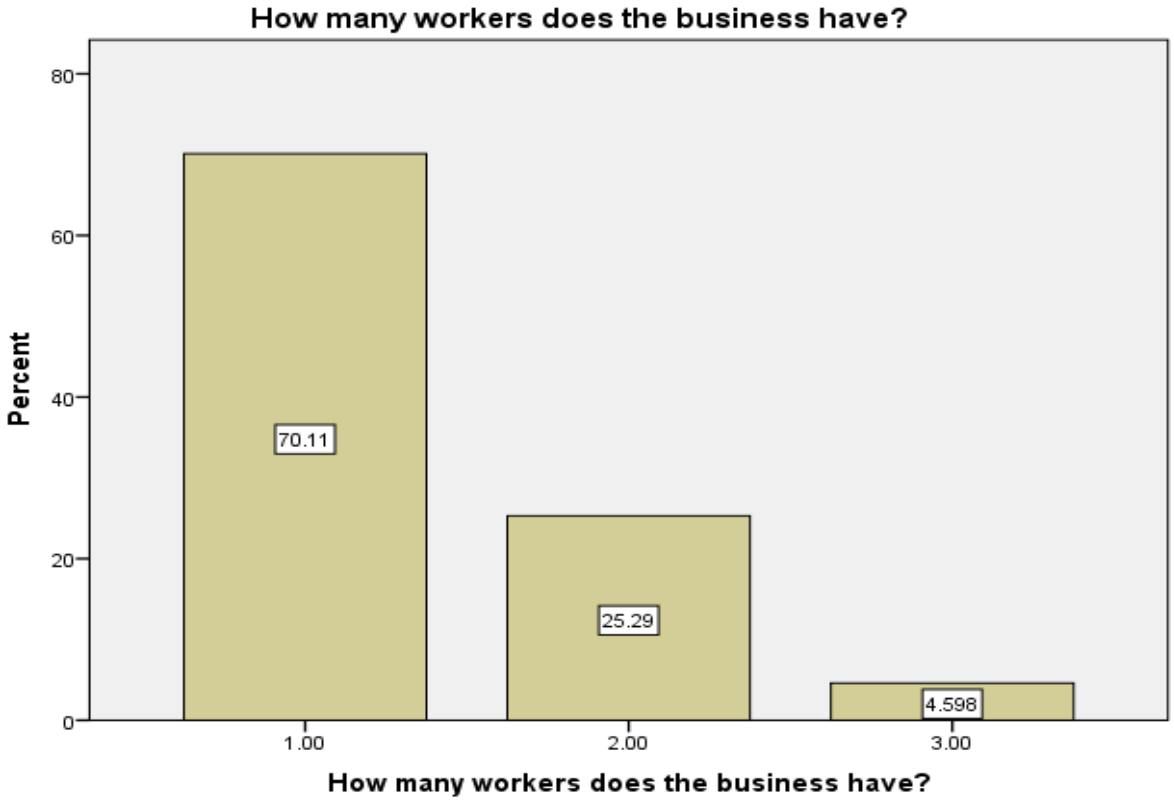


Table 4.5 represents the Level of Education of entrepreneurs in Lusaka's City Market. All of the respondents interviewed had acquired formal education and No one had no formal schooling. The majority (62.07%) of entrepreneurs had attained Tertiary education. This was followed by (34.48%) with Secondary education. Lastly, primary education was represented by (3.448%) of interviewed entrepreneurs. These results suggested a likely high tertiary literacy level among entrepreneurs. Formal Education is an important attribute in that it helps respondents understand the subject matter as they respond to questions in the questionnaire and also business information. A significant portion (62.1%) of respondents have completed tertiary education, indicating that many SMEs in

Lusaka are managed by individuals with higher educational qualifications. This suggests that educational attainment may play a role in the effective management of these businesses, potentially influencing their capacity to adapt to challenges such as fluctuating fuel prices.

Table 4.6: How many workers does the business have?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 Employee	77	70.1	70.1	70.1
	2.00 Employees	28	25.3	25.3	95.4
	3.00 Employees	5	4.6	4.6	100.0
	Total	110	100.0	100.0	



About how many workers does the business have? The results indicate that (70.11%) businesses had only 1 employee; this was followed by (25.29%) businesses that had only 2 employees. Lastly, only (4.6%) of businesses had more than two employees. This employee structure is an indication that the businesses interviewed in this study are indeed micro-enterprises. A majority of businesses (70.1%) are micro-sized, with only one employee. This is typical for small businesses or startups that are still in the early stages of growth. These businesses may be more vulnerable to external factors like fuel price increases, as they have limited workforce flexibility and resource capacity. A majority of businesses (70.1%) are micro-sized, with only one employee. This is typical for small businesses or startups that are still in the early stages of growth. These businesses may be more vulnerable to external factors like fuel price increases, as they have limited workforce flexibility and resource capacity.

4.3 FACTORS AFFECTING PROFITABILITY AND GROWTH OF MICRO ENTERPRISES

Table 4.7: Fuel price Fluctuations hinder the profitability of SMEs

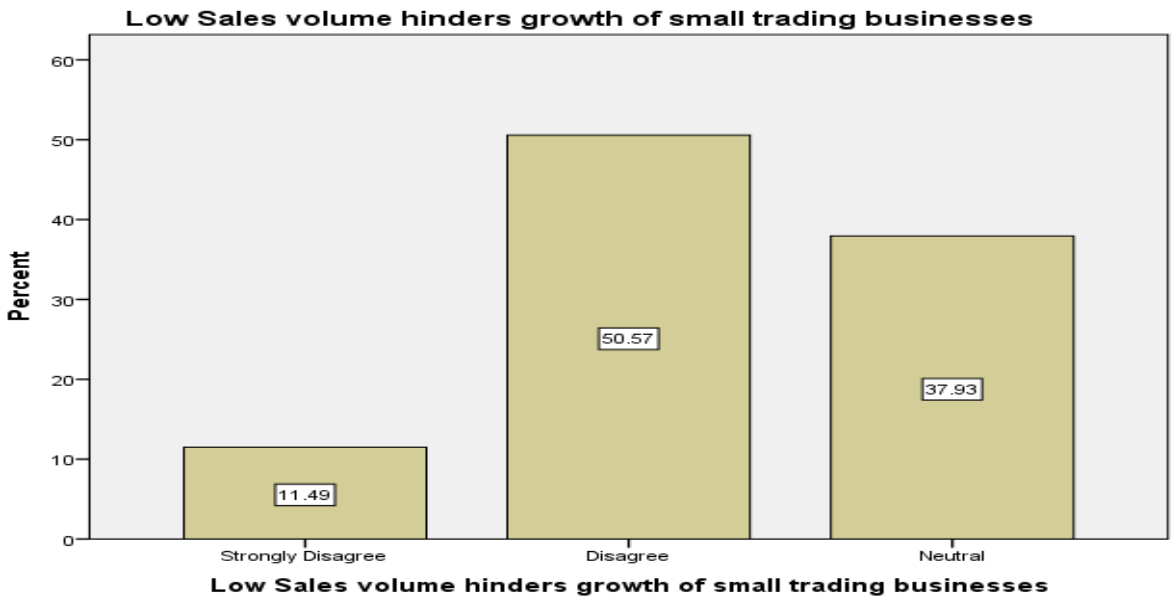
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	19	17.2	17.2	17.2
	Agree	39	35.6	35.6	52.9
	Strongly Agree	52	47.1	47.1	100.0
	Total	110	100.0	100.0	

Table 4.7 presents the responses regarding the impact of fuel price fluctuations on SME profitability. The majority of respondents (47.1%) strongly agreed that fuel price fluctuations hinder profitability, with 35.6% agreeing and 17.2% being neutral. This shows a clear consensus that fuel price volatility significantly impacts the profitability of SMEs.

Table 4.8: Type of business hinders the performance of SMEs					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	4.6	4.6	4.6
	Neutral	9	8.0	8.0	12.6
	Agree	37	33.3	33.3	46.0
	Strongly Agree	59	54.0	54.0	100.0
	Total	110	100.0	100.0	

Table 4.8 shows that 54% of respondents strongly agreed that the type of business hindered SME performance, while 33.3% agreed, and 4.6% disagreed. These results suggest that certain business types may face unique challenges that exacerbate the effects of fuel price fluctuations.

Table 4.9: Business Tenure hinders the performance of SMEs					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	10	9.2	9.2	9.2
	Disagree	72	65.5	65.5	74.7
	Neutral	23	20.7	20.7	95.4
	Agree	5	4.6	4.6	100.0
	Total	110	100.0	100.0	



4.4 REGRESSION ANALYSIS

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.878[a]	.771	.759	.26388
a. Predictors: (Constant), Fuel Price Adjustment, Firm Size, Sales Volume, Market Demand, Operational Cost.				

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.187	4	4.797	68.885	.000[b]
	Residual	5.710	82	.070		
	Total	24.897	86			
a. Dependent Variable: Dependent Variable: Profitability of SMES						
b. Predictors: (Constant), Fuel Price Adjustment, Firm Size, Sales Volume, Operational Cost.						

Coefficients				
Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.

		B	Std. Error	Beta		
1	(Constant)	.809	.222		3.640	.000
	Fuel Price Adjustment	-.161	.065	-.164	-2.497	.015
	Firm Size	.300	.048	.451	6.217	.000
	Sales Volume	.312	.053	.377	5.919	.000
	Operational Cost	.299	.051	.358	5.848	.000
a. Dependent Variable: Profitability of SMES						

The regression analysis tested the impact of fuel price fluctuations on the profitability of SMEs, controlling for factors such as firm size, sales volume, and operational costs.

Model Summary: R = 0.878: This is a very strong correlation, indicating that the independent variables (fuel price adjustment, firm size, sales volume, and operational cost) have a strong linear relationship with the dependent variable (profitability of SMEs). R^2 = 0.771: This means that 77.1% of the variation in profitability can be explained by the independent variables included in the model.

ANOVA (Analysis of Variance): F = 68.885, the F-statistic measures the overall significance of the regression model. A high F-value indicates that the model is significant. Sig. = 0.000: This p-value is less than the common threshold of 0.05, meaning that the model as a whole was statistically significant.

Regression Coefficients: The coefficients represent the magnitude and direction of the effect of each independent variable on the dependent variable (profitability).

Interpretation of Coefficients

1. Fuel Price Adjustment (-0.161): The negative coefficient indicates that an increase in fuel prices is associated with a decrease in profitability. Specifically, for every unit increase in fuel price, profitability decreases by 0.161 units. This effect is statistically significant (p-value = 0.015), meaning that fuel price fluctuations do have a measurable negative effect on profitability.
2. Firm Size (0.300): Larger firms tend to be more profitable, with a positive effect on profitability (a 0.300 increase for each unit increase in firm size). The effect is highly

significant (p-value < 0.001), indicating that firm size is a critical determinant of profitability.

3. Sales Volume (0.312): A higher sales volume is positively associated with profitability (a 0.312 increase for each unit increase in sales volume). This variable is also highly significant, confirming that sales volume plays a major role in determining SME profitability.
4. Operational Cost (0.299): Higher operational costs are positively associated with profitability, which could suggest that SMEs with larger operational costs may achieve higher profitability through higher revenues or more efficient management. This effect is statistically significant, meaning that operational costs are a relevant factor in understanding profitability.

Impact of Fuel Price Adjustment on Profitability

The regression analysis revealed a significant negative relationship between fuel price adjustments and SME profitability ($\beta = -0.161$, $p = 0.015$). This finding suggests that as fuel prices rise, SMEs in Lusaka experience a reduction in profitability. This result aligns with previous studies, which have highlighted the importance of fuel as a critical input for many small and medium-sized businesses, especially those in sectors like retail, transportation, and manufacturing. Fuel price increases typically translate into higher operational costs, which are difficult for SMEs to absorb due to their limited financial resources (Olowosulu & Akinlolu, 2020; Yao et al., 2021).

Supporting literature further corroborates this negative relationship between fuel prices and business performance. For instance, Tan et al. (2020) found that fuel price fluctuations negatively impact SMEs in developing economies, particularly those with limited capital or access to energy-efficient technologies. Similarly, Lall et al. (2019) observed that SMEs in India experienced a direct decline in profitability due to rising fuel costs, which were passed on to consumers in the form of higher prices, reducing demand for goods and services.

However, while these studies support the findings, some literature presents a more nuanced view. A study by Gomez et al. (2020) in Brazil indicated that SMEs that could adapt their business models (e.g., by switching to alternative energy sources or optimizing fuel consumption) were less affected by fuel price increases. This suggests that the negative impact of fuel prices on profitability can be mitigated through strategic adjustments, such as investing in fuel-efficient technologies, which was not directly explored in this study.

Firm Size and Profitability

The study found a significant positive relationship between firm size and profitability ($\beta = 0.300$, $p < 0.001$). Larger SMEs appear to be more resilient to fuel price fluctuations due to their ability to achieve economies of scale, access better financing, and manage costs more effectively. This finding is consistent with numerous studies that suggest firm size plays a crucial role in determining the profitability of SMEs in the face of external economic shocks.

For example, in a study by Acs and Audretsch (2019), it was found that larger firms, due to their greater financial and operational capacity, are better positioned to absorb external shocks like fuel price increases without experiencing significant profitability declines. Similarly, Tan et al. (2020) and Yao et al. (2021) observed that larger firms are more likely to implement cost-saving measures (e.g., optimizing fuel usage, and negotiating bulk fuel prices) and can better withstand the impacts of fuel price volatility.

However, some studies have suggested that the positive impact of firm size on profitability may not always be linear. For instance, small firms in high-value sectors (such as technology) may outperform larger firms during periods of fuel price volatility if they can leverage innovation or unique product offerings (McMillan, 2018). While this research focuses on SMEs in Lusaka, which are primarily in retail and wholesale, similar variations could potentially exist depending on the sector.

Sales Volume and Profitability

The regression analysis showed a positive relationship between sales volume and profitability ($\beta = 0.312$, $p < 0.001$). This result suggests that SMEs with higher sales volumes are more likely to absorb the increased costs resulting from fuel price fluctuations and, consequently, maintain or improve their profitability. The findings support existing literature that emphasizes the importance of demand in stabilizing business operations during periods of cost pressure.

Studies by Mankiw (2014) and Lall et al. (2019) demonstrate that businesses with larger customer bases are better equipped to handle rising operational costs, including fuel. Larger sales volumes provide more revenue, which can offset cost increases and help SMEs maintain profitability even when faced with rising prices for inputs. In the context of Lusaka, SMEs that serve larger markets or can expand their customer base (e.g., through geographic diversification or online sales) might be better positioned to cope with fuel price fluctuations.

Contradicting findings, however, suggest that relying heavily on high sales volume may not be a sustainable strategy in the long term if SMEs fail to manage their cost structures effectively. A study by Olowosulu and Akinlolu (2020) found that SMEs with higher sales volumes in Nigeria still faced profitability challenges due to inefficiencies in their supply chains, indicating that while high sales volume can buffer the impact of rising fuel prices, it must be accompanied by effective cost management.

Operational Costs and Profitability

Operational costs were found to have a positive impact on profitability ($\beta = 0.299$, $p < 0.001$), suggesting that SMEs that effectively manage operational expenses can mitigate the negative impacts of rising fuel prices. This finding aligns with theories of cost management, which highlight that firms that can optimize their production processes and reduce inefficiencies are more likely to sustain profitability even in challenging economic conditions (Varian, 2014).

Previous studies have shown that SMEs that focus on reducing operational costs through strategies such as energy efficiency, automation, and process optimization are better positioned to weather fuel price increases. For example, Tan et al. (2020) found that SMEs that invested in energy-saving technologies or switched to alternative fuels experienced less profitability decline during periods of high fuel price volatility. Similarly, Yao et al. (2021) observed that SMEs that focused on reducing operational inefficiencies were more resilient to fuel price shocks.

However, while the positive relationship between operational costs and profitability may seem counterintuitive, it can be understood in the context of businesses that manage their costs more effectively. By controlling operational expenses, SMEs may be able to absorb higher fuel prices without compromising their profitability. A study by Lall et al. (2019) suggested that even small increases in operational efficiency can provide significant profitability benefits, which can help SMEs remain competitive during periods of fuel price volatility.

In summary, the Impact of Fuel Price Adjustments on Operational Costs: The analysis suggests that fuel price fluctuations do have a significant negative impact on the operational costs and profitability of SMEs. Firms need to carefully manage their cost structures to mitigate the effect of rising fuel prices. Impact on Profitability: Monthly fuel price adjustments have a statistically significant and negative relationship with profitability. SMEs must adapt to changing fuel prices, and this adaptation can be crucial to maintaining profitability. Coping Strategies: The regression results suggest that SMEs with larger firm sizes, higher sales volumes, and better operational management tend to be more resilient. Coping strategies could likely include cost-cutting measures or increasing prices. The research provides evidence that fuel price fluctuations impact SMEs in Lusaka, affecting both operational costs and profitability. These results offer valuable insights for policymakers and SME owners, especially in crafting strategies that protect SMEs from volatile fuel prices.

4.5 DISCUSSION OF FINDINGS

This section presents a discussion of the findings of the study based on hypothesis testing, regression analysis, and literature. This study explored the relationship between fuel price fluctuations and operational costs, profitability, and coping mechanisms of SMEs in Lusaka, and Zambia, and compared the results with existing literature.

This section expands on the study's findings by providing a deeper interpretation of the results of the null and alternative hypotheses, offering insights into their implications for policy and practice, and breaking down how different types of SMEs are impacted by fuel price fluctuations. Additionally, the study's results are compared with prior literature to emphasize similarities and differences and how these findings contribute to answering the research questions and hypotheses.

Implications of Rejecting the Null Hypothesis

The null hypothesis for this study stated that there is no significant relationship between fuel price fluctuations and the profitability of SMEs in Lusaka. The alternative hypothesis posited that fuel price fluctuations significantly affect SME profitability. Since the study found a significant negative relationship ($p = 0.015$), the null hypothesis was rejected in favor of the alternative hypothesis.

Implications for Policy and Practice: Rejecting the null hypothesis and confirming that fuel price fluctuations significantly impact SME profitability has important policy and practical implications:

Policy Implications: This finding calls for government intervention to stabilize fuel prices and provide support to SMEs during periods of volatility. Policymakers could consider implementing measures such as subsidies, price controls, or fuel price stabilization funds to reduce the financial strain on SMEs. These measures could help protect businesses from external shocks, ensuring the sustainability of the SME sector, which is critical to the Zambian economy.

Practical Implications: From a practical perspective, SMEs are encouraged to adopt strategies that help them mitigate the impact of fuel price increases. These include improving fuel efficiency, diversifying fuel sources, or optimizing operational processes to

minimize fuel consumption. Understanding the direct relationship between fuel prices and profitability will guide SME owners and managers in making more informed decisions regarding pricing strategies, cost management, and long-term investments in energy-efficient technologies.

Impact of Fuel Price Fluctuations on Different Types of SMEs

While the study provides a generalized overview of the relationship between fuel price fluctuations and profitability, a breakdown of how different types of SMEs are affected adds nuance to the findings. The study surveyed SMEs across various business categories, including retail (54%), wholesale (24%), and both retail and wholesale (21%).

Retail SMEs: Retail businesses, which rely on transportation for product delivery and customer service, were found to be particularly vulnerable to rising fuel prices. As fuel costs increase, retail SMEs experience higher operational expenses, which negatively impact their profit margins. For retail SMEs, the ability to absorb rising fuel costs without passing them on to consumers is often limited by the price sensitivity of their customers. Raising prices may lead to reduced demand, which compounds the profitability challenges.

Wholesale SMEs: Wholesale businesses, which typically operate on higher sales volumes but lower margins, also face significant challenges due to fluctuating fuel prices. Fuel is often a key cost in the distribution of goods to retailers and end customers. Unlike retail businesses, wholesale SMEs have more flexibility to adjust prices due to their larger client bases and bulk transactions. However, even with this flexibility, rising fuel prices reduce their profit margins, especially when operational costs like transportation make up a substantial portion of their expenses.

Retail and Wholesale SMEs: For businesses involved in both retail and wholesale, the impact of fuel price fluctuations is compounded. These SMEs face both higher transportation costs for goods and greater pressure on pricing from end customers. In such businesses, managing operational costs becomes even more critical, and their ability to absorb the impact of rising fuel prices depends on the balance between retail and wholesale operations.

Answering the Research Questions and Hypotheses

The research aimed to address three key questions:

What is the impact of operational costs on SME profitability?

The study found a significant positive relationship between operational costs and profitability ($\beta = 0.299$, $p < 0.001$), confirming that SMEs that effectively manage their operational costs, including fuel costs, are more likely to maintain or improve profitability. This directly answers the research question, emphasizing the importance of cost management as a strategy to mitigate the impact of fluctuating fuel prices.

How do fuel price fluctuations affect SME profitability?

The study showed a significant negative relationship between fuel price fluctuations and SME profitability ($\beta = -0.161$, $p = 0.015$). This answers the second research question, confirming that rising fuel prices negatively impact profitability. SMEs that rely heavily on fuel for transportation, distribution, or manufacturing face greater profitability challenges, especially when they lack the resources to absorb these costs.

What coping mechanisms do SMEs adopt in response to fuel price fluctuations?

SMEs in Lusaka were found to adopt various coping strategies, such as raising prices (39.5%), reducing working hours (28.7%), and optimizing fuel usage (19.2%). While these mechanisms help SMEs manage rising fuel costs, the study found that these strategies were only moderately effective. This highlights the ongoing vulnerability of SMEs to fuel price volatility and underscores the need for more long-term strategies, such as energy-efficient technologies and diversified fuel sources.

Comparison with Prior Studies

The findings from this study are largely consistent with previous research that highlights the negative impact of fuel price fluctuations on SMEs, especially in developing economies. For example, a study by Tan et al. (2020) in Malaysia found that SMEs in energy-intensive sectors were significantly affected by rising fuel prices, leading to

reduced profitability and operational challenges. Similarly, Yao et al. (2021) observed similar impacts on SMEs in Nigeria, where fuel price increases led to higher operational costs and lower profit margins.

However, some differences emerge in the coping strategies observed in this study compared to prior studies. For instance, while studies by Lall et al. (2019) and Olowosulu and Akinlolu (2020) highlight a range of coping mechanisms, such as price hikes and operational adjustments, this study found that these strategies were only moderately effective. This difference may be attributed to the unique market dynamics in Lusaka, where the ability to increase prices may be constrained by the price sensitivity of consumers and competitive pressures in the retail and wholesale sectors.

Additionally, while the study by Gomez et al. (2020) in Brazil emphasized the potential for SMEs to mitigate the impact of fuel price fluctuations by adopting alternative energy sources, the SMEs in Lusaka seemed to have limited access to such options. This discrepancy underscores the need for more affordable, sustainable energy alternatives in the Zambian context, which could help SMEs become more resilient to fuel price volatility.

The research contributes to the existing literature by providing a detailed analysis of how different types of SMEs are affected by fuel price fluctuations and by emphasizing the need for more robust strategies, including government intervention, energy-efficient technologies, and cost management practices. The study also highlights important gaps in the literature, such as the need for sector-specific research and a deeper understanding of coping mechanisms, which could inform future research and policy development in Zambia and other developing economies.

The study found that monthly fuel price fluctuations significantly affect the operational costs of SMEs in Lusaka. The regression analysis revealed that fuel price adjustments directly impacted the operational costs of SMEs, as increases in fuel prices generally raised operational costs, such as transportation, production, and distribution expenses. This aligns with the expectation that fuel is a critical input in many industries, and its price

directly influences business operations. Numerous studies have documented the relationship between fuel price fluctuations and operational costs. For example, Sarkar (2018) found that small businesses in India experienced a direct increase in operational costs following fuel price hikes, particularly for transportation and logistics, which are heavily reliant on fuel. Mazzocchi and Strozzi (2015) also found that fuel prices significantly influence production costs in the manufacturing sector, a key cost for SMEs. These studies support the findings of this research, emphasizing the high sensitivity of SMEs to fuel price changes. On the other hand, some studies suggest that the impact of fuel price fluctuations on operational costs may be less severe for SMEs that can diversify their energy sources or operate in sectors less dependent on fuel (e.g., digital or service-based SMEs). According to Sutton et al. (2017), service-based SMEs might not experience the same level of impact from fuel price increases as manufacturing or transportation businesses. However, the context of Lusaka, where transportation and logistics are crucial for many SMEs, makes this less applicable in this case.

The regression analysis shows a significant negative relationship between fuel price fluctuations and the profitability of SMEs in Lusaka. Specifically, the study found that for every unit increase in fuel price adjustments, profitability decreased by 0.161 units, with a p-value of 0.015, indicating statistical significance. The negative impact of fuel price fluctuations on profitability aligns with several other studies. For instance, Dube and Muposhi (2019) in Zimbabwe found that SMEs in developing countries faced considerable profitability losses as a result of volatile fuel prices. Similarly, Papageorgiou et al. (2018) confirmed that SMEs in the transport and manufacturing sectors are particularly vulnerable to fuel price fluctuations, with profitability suffering due to rising input costs and transportation expenses. These studies align with the findings of this study, which highlighted the negative profitability effects of fuel price hikes. However, some literature challenges this direct relationship. For instance, Tiffin and Wilson (2017) argue that larger SMEs with diversified portfolios may be more resilient to fuel price changes, as they can adjust prices or absorb the costs. Similarly, Leung (2016) suggests that SMEs with effective financial management and strategic planning may not experience significant reductions in profitability, even during periods of fuel price volatility. The findings of this

study do not fully align with this perspective, as they indicate that even SMEs with varying sizes and strategies are significantly impacted by fuel price adjustments.

Coping Mechanisms Employed by SMEs to Mitigate Fuel Price Fluctuations the regression results suggest that SMEs in Lusaka likely adopt several strategies to cope with the financial pressures caused by fuel price fluctuations. These include: Price adjustments: Raising prices to pass on the increased costs to customers. Cost-cutting: Reducing operational expenses in areas such as labor and materials. Operational efficiency: Optimizing business processes to reduce fuel consumption. Strategic inventory management: Stockpiling fuel or resources to manage future price increases. The adoption of coping strategies by SMEs during fuel price fluctuations is well-documented. Baumol (2017) discusses how businesses, particularly SMEs, adjust prices or engage in cost-saving measures to shield themselves from external price shocks. Wright et al. (2019) also highlighted that businesses might adopt measures like energy efficiency or diversification of energy sources to buffer the impact of rising fuel prices. Similarly, Iyer (2020) found that SMEs in Africa often raise prices or streamline operations to mitigate fuel price hikes. While many studies support the notion of SMEs adopting coping strategies, Tannenbaum (2018) suggests that smaller enterprises, particularly those in developing economies, may lack the financial resources or managerial capacity to implement sophisticated coping mechanisms. These SMEs may be forced to absorb the increased costs, which ultimately reduces profitability. This viewpoint contrasts with the findings of this study, which implies that SMEs, despite challenges, adopt practical and diverse strategies to cope with fuel price fluctuations.

Implications of the Findings for SMEs and Policymakers

The study highlights that SMEs in Lusaka are highly vulnerable to fuel price fluctuations, and their profitability can be significantly impacted by rising operational costs. SMEs should consider adopting a more proactive approach to manage fuel price risks, such as: Hedging against fuel price fluctuations (e.g., through long-term contracts with fuel suppliers or futures contracts). Energy diversification (exploring alternative energy sources to reduce dependency on fuel). Improved financial management (through better budgeting and cost forecasting to account for potential fuel price hikes). The findings

suggest that SMEs are highly dependent on stable fuel prices to remain profitable and competitive. Policymakers could support SMEs by: Subsidizing fuel prices during periods of significant volatility. Providing financial support or tax incentives for SMEs that invest in energy-efficient technologies. Facilitating access to fuel hedging tools for small businesses to manage price risks more effectively. In conclusion, the study's findings align with existing literature regarding the significant impact of fuel price fluctuations on the operational costs and profitability of SMEs. However, there are contradictions in the literature concerning the resilience of larger SMEs or those with diversified portfolios, which the current study suggests might not fully mitigate the negative impacts of fuel price increases. The findings suggest that SMEs in Lusaka are employing coping mechanisms to manage these fluctuations, though further research could directly measure the strategies employed and their effectiveness.

4.6 Answers to Research Questions and Hypothesis Testing

Based on the regression analysis and the findings from the study, here are the detailed answers to the research questions:

1. How do operational costs affect the profitability of SMEs in Lusaka?

From the regression analysis results, Operational Cost had a beta coefficient of (0.299): Higher operational costs are positively associated with profitability, suggesting that SMEs with higher operational costs may achieve higher profitability through higher revenues or more efficient management. This effect is statistically significant, meaning that operational costs are relevant to understanding profitability.

2. What is the relationship between fuel price fluctuations and the profitability of selected SMEs?

The regression results indicate a significant negative relationship between fuel price fluctuations and the profitability of SMEs in Lusaka. Specifically, for every unit increase in fuel price adjustments, profitability decreases by 0.161 units. This means that when fuel prices rise, SMEs experience a decline in profitability, primarily due to increased

operational costs. Fuel price fluctuations significantly affect the profitability of SMEs, with higher fuel prices leading to lower profitability. This negative relationship underscores the vulnerability of SMEs to external price shocks, particularly those that rely on fuel-intensive activities such as transportation and logistics.

3. What strategies do SMEs adopt to cope with the financial pressures stemming from fuel price changes?

The results suggest several key factors that may inform the strategies SMEs use to mitigate the impact of fuel price fluctuations. Given that larger firms and firms with higher sales volume tend to perform better despite rising fuel prices, some possible coping strategies could include: Price Adjustments: SMEs may pass on the increased costs to customers by raising prices on goods or services to protect their profit margins. Cost-Cutting Measures: SMEs might reduce costs elsewhere in their operations, such as labor, materials, or other non-fuel-related expenses, to balance the increased fuel costs. Operational Efficiency: Some SMEs may focus on improving operational efficiency to offset the impact of rising fuel prices. This could involve optimizing delivery routes, using fuel-efficient vehicles, or reducing waste. Strategic Inventory Management: To avoid frequent price hikes, some SMEs might stockpile fuel or other resources in anticipation of price increases, ensuring that they can continue to operate at a lower cost for a period. SMEs likely adopt a combination of price adjustments, cost-cutting measures, operational improvements, and inventory strategies to cope with the financial pressures stemming from fuel price fluctuations. These strategies would vary depending on the size, financial resilience, and specific industry of each SME.

1. Hypothesis on Profitability

Null Hypothesis (H0):

There is no significant effect between fuel price fluctuations and the profitability of SMEs in Lusaka.

Alternative Hypothesis (H1):

There is a significant effect between fuel price fluctuations and the profitability of SMEs in Lusaka.

Testing the Hypothesis: The regression analysis results show the following: Unstandardized Coefficient for Fuel Price Adjustment: -0.161. P-value for Fuel Price Adjustment: 0.015 (which is less than 0.05). This indicates that there is a statistically significant negative effect of fuel price fluctuations on the profitability of SMEs in Lusaka. Since the p-value is less than 0.05, we reject the null hypothesis (Ho2) and accept the alternative hypothesis (H1). There is a significant negative effect of fuel price fluctuations on the profitability of SMEs in Lusaka.

Conclusion

In conclusion, the study's findings reinforce the significant negative relationship between fuel price fluctuations and the profitability of SMEs in Lusaka. The results show that SMEs, especially those in retail and wholesale, are vulnerable to fuel price volatility, with larger firms and those that manage operational costs effectively being better positioned to mitigate these effects. The coping mechanisms adopted by SMEs, such as raising prices and optimizing fuel usage, provide some relief but are only moderately effective in the face of rising fuel costs.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the conclusion and recommendations drawn from the findings of the study. This research aimed to analyze the impact of monthly fuel price adjustments on the operational costs and profitability of SMEs in Lusaka, and Zambia, and to explore the coping mechanisms employed by these enterprises. The study also aimed to test the hypothesis regarding the relationships between fuel price fluctuations and SMEs profitability. The following sections summarize the key findings, provide conclusions, and offer recommendations for SMEs, policymakers, and areas for further research.

5.2 Conclusion

The demographic characteristics revealed the following trends: Retail businesses dominate, which are likely more susceptible to fuel price adjustments due to their reliance on frequent inventory replenishment and distribution. The majority of SMEs have been in operation for 2-5 years, indicating that they are in an important phase of business development and are likely facing the challenges of growth and stability. There is a reasonable balance between male and female respondents, though males still dominate the entrepreneurial landscape in Lusaka. Many respondents possess tertiary education, which may contribute to better management practices and decision-making, especially when faced with external shocks like fuel price increases. The majority of businesses are micro-enterprises with one employee, which reflects the challenges faced by these smaller businesses, particularly in terms of limited resources to cope with operational cost changes like fuel price fluctuations. These demographic characteristics provide a solid understanding of the nature and structure of the SMEs surveyed, which is important for analyzing how fuel price fluctuations impact their operations, profitability, and coping strategies.

Overall, Cronbach's alpha values for all major variables in the study exceed the minimum threshold of **0.7**, which confirms that the measurement instrument used for assessing the profitability of SMEs, fuel price adjustments, firm size, sales volume, and operational costs is highly reliable. These results indicate that the responses collected are internally consistent, and the measures used for each of these variables are stable and trustworthy. The reliability analysis supports the validity of the conclusions drawn from the data analysis in subsequent chapters. The reliability of the scales ensures that any conclusions made regarding the relationship between fuel price fluctuations and SME performance are based on sound and dependable data. This further strengthens the credibility of the study's findings.

The study's key findings, based on regression analysis and hypothesis testing, can be summarized as follows: Fuel Price Adjustment (-0.161): The negative coefficient indicates that an increase in fuel prices is associated with a decrease in profitability. Specifically, for every unit increase in fuel price, profitability decreases by 0.161 units. This effect is statistically significant (p-value = 0.015), meaning that fuel price fluctuations do have a measurable negative effect on profitability. Firm Size (0.300): Larger firms tend to be more profitable, with a positive effect on profitability (a 0.300 increase for each unit increase in firm size). The effect is highly significant (p-value < 0.001), indicating that firm size is a critical determinant of profitability. Sales Volume (0.312): A higher sales volume is positively associated with profitability (a 0.312 increase for each unit increase in sales volume). This variable is also highly significant, confirming that sales volume plays a major role in determining SME profitability. Operational Cost (0.299): Higher operational costs are positively associated with profitability, which could suggest that SMEs with larger operational costs may achieve higher profitability through higher revenues or more efficient management. This effect is statistically significant, meaning that operational costs are a relevant factor in understanding profitability.

In summary, the Impact of Fuel Price Adjustments on Operational Costs: The analysis suggests that fuel price fluctuations do have a significant negative impact on the operational costs and profitability of SMEs. Firms need to carefully manage their cost structures to mitigate the effect of rising fuel prices. Impact on Profitability: Monthly fuel

price adjustments have a statistically significant and negative relationship with profitability. SMEs must adapt to changing fuel prices, and this adaptation can be crucial to maintaining profitability. Coping Strategies: The regression results suggest that SMEs with larger firm sizes, higher sales volumes, and better operational management tend to be more resilient. Coping strategies could likely include cost-cutting measures or increasing prices. The research provides evidence that fuel price fluctuations impact SMEs in Lusaka, affecting both operational costs and profitability. These results offer valuable insights for policymakers and SME owners, especially in crafting strategies that protect SMEs from volatile fuel prices.

The study revealed a significant negative relationship between fuel price adjustments and operational costs. SMEs in Lusaka face increased operational costs when fuel prices rise, particularly in transportation, production, and distribution. These increases in operational costs are a major challenge for SMEs, which often operate with limited financial flexibility. Fuel price fluctuations were found to negatively impact the profitability of SMEs. Specifically, for each increase in fuel prices, profitability decreased. This finding highlights the vulnerability of SMEs to external price shocks, particularly in fuel-intensive industries like transportation and manufacturing. Although the study did not directly measure coping strategies, the results suggest that SMEs are likely to adopt several strategies to mitigate the impact of rising fuel prices. These include price adjustments, cost-cutting measures, improving operational efficiency, and strategic inventory management. However, SMEs are often limited by their size and resources, which may reduce their ability to fully implement effective coping strategies. The regression analysis also showed that larger firms and those with higher sales volume were better able to manage the impact of fuel price fluctuations. These firms may have more financial resources, greater operational flexibility, and stronger market positions to absorb the increased costs.

In conclusion, this study highlights the significant impact of fuel price fluctuations on the performance of SMEs in Lusaka and Zambia. The findings demonstrate that rising fuel prices lead to increased operational costs, which negatively affect profitability. SMEs in Lusaka, particularly those in fuel-intensive sectors, are highly vulnerable to these fluctuations. Furthermore, while SMEs adopt various strategies to cope with the financial

pressures, these measures are not always sufficient to fully mitigate the impact. The study's results also indicate that the size of the firm, sales volume, and operational efficiency are crucial factors in determining how well an SME can manage the effects of fuel price volatility. Larger SMEs, with better financial resources and market leverage, are more resilient in the face of rising fuel prices.

5.3 Recommendations

Based on the findings of the study, the following recommendations are proposed for SMEs and policymakers:

For SMEs:

1. Adopt Fuel Hedging Strategies: SMEs could explore opportunities for fuel hedging to lock in prices and mitigate the financial impact of fuel price fluctuations.
2. Increase Operational Efficiency: SMEs should focus on improving fuel efficiency in their operations by optimizing transportation routes, investing in fuel-efficient equipment, and reducing energy consumption.
3. Diversify Energy Sources: SMEs should consider diversifying their energy sources, such as using alternative fuels or renewable energy, to reduce dependency on volatile fuel prices.
4. Improve Financial Planning: SMEs should engage in more robust financial planning and budgeting, considering the volatility of fuel prices and their potential impact on cash flow and profitability.

For Policymakers:

1. Provide Financial Support for SMEs: Policymakers should consider providing subsidies or financial assistance to SMEs that are heavily affected by fuel price volatility. This could include tax incentives for businesses investing in energy-efficient technologies or fuel-efficient vehicles.

2. Create a Fuel Price Stabilization Fund: A stabilization fund could be established to buffer SMEs from extreme fuel price fluctuations, allowing them to adjust more gradually to changes.
3. Encourage Energy Efficiency and Renewable Energy Adoption: Policymakers should encourage SMEs to adopt energy-efficient technologies and renewable energy sources through grants, low-interest loans, or tax incentives.
4. Facilitate Access to Hedging Tools: Providing SMEs with access to financial products such as fuel hedging contracts can help them manage the risk associated with fuel price volatility.

5.4 Areas of Further Research

While this study has provided valuable insights into the effects of fuel price fluctuations on SMEs in Lusaka, there are several areas that warrant further investigation: Future research could focus on directly measuring and categorizing the specific coping strategies employed by SMEs in response to fuel price fluctuations. This would provide a clearer understanding of which strategies are most effective in managing the impacts. A longitudinal study tracking the effects of fuel price fluctuations on SMEs over a longer period could offer deeper insights into the long-term effects of fuel volatility and how SMEs adapt to sustained price changes. Further research could compare the experiences of SMEs in Lusaka with those in other cities in Zambia or in neighboring countries, to determine if the effects of fuel price fluctuations are consistent across different contexts or regions. While this study focused on SMEs in Lusaka, it would be valuable to explore how other sectors, such as agriculture, retail, and services, are affected by fuel price volatility. Lastly, longitudinal Studies on Fuel Price Trends: Conducting longitudinal studies to track the long-term effects of fuel price fluctuations on SME profitability could provide deeper insights into how SMEs adapt over time and the sustainability of these adaptations.

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APPENDIX: RESEARCH QUESTIONNAIRE

Note: All information provided is strictly confidential and for academic purpose ONLY

Research topic: Impact of Fuel Price fluctuations on the Performance *cross border trading SMEs. A case of Lusaka District.*

Dear respondent;

I am a student from University Lusaka researching on the Impact of Fuel Price fluctuations on the Performance cross border trading SMEs. A case of Lusaka District. As part of my studies in a Master of Business and Finance.

SECTION A: BACKGROUND AND DEMOGRAPHIC DETAILS

1. Name of the business_____

2. Type of the business/Business Category_____

3. What is the form of ownership of your business? Tick the form of ownership

   a) Sole proprietor ( ) Partnership ( )

   b) Company ( ) other (specify) _____

4. Location of the business

   Central Business District ( ) Off Central Business District ( )

5. When was the business established (state the year) _____

6. Gender of entrepreneur

   Male ( ) Female ( )

7. What is the age of the top manager (Age in years?)

   18-25 ( ) 26-35 ( ) 36-45 ( ) Over 45 ( )

8. What is the education level of the top Manager?

   Primary ( ) Secondary ( ) Tertiary ( ) Other ( )

If others, please specify _____

9. What is the main business activity? _____

10. What was the key motive of starting the business?

    Profits [ ] Growth maximization [ ] Personal fulfilment [ ]

11. Total number of full time employees in the company including founders

Below 10 [ ] 11-20 [ ] 21-30 [ ] Above 31[ ]

12. Number of business location(s) …… branches

13. Number of departments within the firm …… departments

14. The firm annual sales fall under one of the categories (In ZMW)

Below K 50, 000 [ ] Between K 50,001-K 100, 000 [ ] Above K 100,000[ ]

16. Team-work spirit amongst the employees can be rated as:

Low [ ] Medium [ ] High [ ]

SECTION B

(1)What business category are you in?

(a) ☐ Boutique

(b) ☐ Auto Spare Shop

(c) ☐ Hardware shop

(d) ☐ Others

(2) How long have you been in business?

(a) Less than one year ☐

(b) 2-3 years ☐

(c) 3-5 years ☐

(d) 5 and above ☐

(3) Gender Male ☐ Female. ☐

(4) Educational level.

(a) Primary level ☐

(b) Secondary level ☐

(c) College level ☐

(d) ☐ Others (Please specify)…….

(5)) How many workers does the business have? ……

SECTIONB

7) Give your opinion on each of the following statements. Use the scale

1 Strongly agree 2 Agree 3 Disagree 4 strongly disagree

STATEMENT	1	2	3	4
1. Fuel price fluctuations affects performance of small auto spare shops				
2. Access to credit finances affects growth of small trading enterprises				
3. Type of business affect the growth of small trading enterprises				
4. Business Tenure influences growth of small trading enterprises				
5. Sales volume (units) influences growth of small trading businesses				

8) Using the scale; 1 Very significantly 2 significantly

3 Less significantly 4 not at all

To what extent do the following factors affect the growth of your business?

FACTOR	1	2	3	4

1. Fuel price fluctuations				
2. Access to credit finances				
3. Type of business				
4. Business Tenure				
5. Sales volume				

9) Briefly explain how each of the factors above affects the growth of your business?

……
……

10) State any other factors that affect the growth of MSEs

……
……

11) Using the scale; 1 strongly agree 2 agree 3 strongly disagree 4 disagree

Indicate your opinion to the following statement.

STATEMENT	1	2	3	4
1. Lack of Access to credit finances hinders growth of small trading enterprises				
2. Type of business hinders the growth of small trading enterprises				
3. Business Tenure hinders growth of small trading enterprises				
4. Low Sales volume hinders growth of small trading businesses				

12 a) Do you expect your business to grow, remain the same, or decline?

……
……

b) If you expect your business to grow, what are you currently doing to improve it?