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EFFECTS OF TAX INSTRUMENTS ON THE PROFITABILITY OF MANUFACTURING SMALL AND MEDIUM ENTERPRISES IN NAIROBI COUNTY, KENYA

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081751

A DISSERTATION SUBMITTED TO STRATHMORE UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN DEVELOPMENT FINANCE

Strathmore Business School

Strathmore University

Nairobi, Kenya

June 2026

Declaration

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

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Approval

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Abstract

The manufacturing sector plays a critical role in Kenya's economic development, accounting for an estimated 15–20 percent of the SME base and contributing approximately 7.6 percent to national GDP and employment in 2024. Despite its importance, the profitability of manufacturing SMEs remains constrained, with taxation emerging as a key impediment. This study examined the effect of tax instrument on the profitability of manufacturing SMEs in Nairobi County, Kenya, focusing on Value Added Tax (VAT), income tax, excise tax, and tax compliance costs across key subsectors. The study was anchored on the Ability-to-Pay Theory and the Benefit Theory of taxation. Using secondary panel data obtained from Kenya Revenue Authority for 224 SMEs over the period 2019–2024, the study applied descriptive statistics, correlation analysis, diagnostic tests, and Random Effects Generalized Least Squares (GLS) regression. The findings revealed notable sectoral disparities in both profitability and tax instrument. Capital-intensive and highly regulated sectors such as motor vehicle assembly, petroleum and lubricants, and tobacco products recorded higher profitability but also experienced significantly stronger negative effects of taxation. In contrast, relatively smaller sectors such as plastic packaging, cosmetics, and confectionery exhibited lower profitability and comparatively weaker tax effects. Across all sectors, VAT, income tax, excise tax, and compliance costs had negative and statistically significant impacts on SME profitability. Income tax emerged as the most influential constraint, particularly in high-revenue sectors, while VAT and excise taxes increased production costs and reduced liquidity. Compliance costs further compounded these effects by imposing administrative burdens. Overall, taxation variables explained approximately 50 percent of the variation in SME profitability, with stronger explanatory power observed in highly regulated subsectors. The study concludes that Kenya's tax structure imposes uneven but significant constraints across manufacturing industries. It recommends sector-sensitive tax reforms, including streamlined VAT processes, progressive income tax structures, rationalized excise duties, and reduced compliance costs, to enhance SME profitability, competitiveness, and sustainability.

Key Words: Tax compliance, Value Added Tax, Income tax, Excise tax, Compliance cost, profitability of Manufacturing SMEs

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List of Abbreviations and Acronyms

CBD:	Central Business District
CIT:	Corporate Income Tax
eTIMS:	Electronic Tax Invoice Management Systems
GDP:	Gross Domestic Product
ICT:	Information Communication and Technology
KRA:	Kenya Revenue Authority
PAYE:	Pay As You Earn
SMEs:	Small and Medium Enterprises
TIMS:	Tax Invoice Management Systems
TOT:	Turnover Tax
UK:	United Kingdom
US:	United States
VAT:	Value Added Tax
WHT:	Withholding Tax

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Operational Definition of Terms

Compliance cost: The expenses incurred by SMEs in order to comply with tax regulations. This includes costs related to hiring tax professionals, maintaining records, filing tax returns and responding to audits. High compliance costs can be especially burdensome for smaller firms with limited administrative capacity (Roman et al., 2023).

Excise tax: A tax applied to specific goods produced or sold, such as alcohol, tobacco, or fuel. Manufacturing SMEs involved in producing such goods may face increased production costs and reduced competitiveness due to excise taxes (Resmi et al., 2021).

Growth and Manufacturing SMEs: The expansion in profitability, of manufacturing small and medium enterprises. Growth is often measured by increases in revenue. A high taxation or complex tax system can constrain this profitability by reducing available capital and increasing operational challenges (Zarrouk et al., 2020).

Income tax: A tax imposed on the net income or profit earned by a business. For SMEs, high income tax rates or complex filing requirements can reduce retained earnings and discourage reinvestment, impacting their ability to scale up operations (Resmi et al., 2021).

Taxation: The total amount of tax that manufacturing SMEs are required to pay to the government per year, including direct and indirect taxes. It represents a financial obligation that can limit the capital available for investment, expansion and operational efficiency, thereby affecting SME growth (Judith et al., 2022).

Value Added Tax: A consumption tax imposed on the value added to goods and services at every stage of production or distribution. For manufacturing SMEs, VAT can increase the cost of inputs or reduce demand if passed on to consumers, thus influencing profitability and growth potential (Chiira, 2021).

Tax I: Specific mechanisms for collecting government revenue, as categorized by fiscal authorities (Waerzeggers & Hillier, 2021). In this study, this refers to the three primary national level taxes levied on businesses which are Value Added Tax (VAT), Corporate Income Tax and Excise Duty, including their associated compliance costs.

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Chapter One: Introduction

1.1 Background of the Study

Small and Medium Enterprises (manufacturing SMEs) are integral to Kenya's economy, comprising approximately 20% of the SME sector and contributing substantially to national GDP and employment, particularly in Nairobi County (FSD Kenya, 2024). In Nairobi County, where the industrial and manufacturing base is concentrated, manufacturing SMEs are key drivers of urban productivity and supply chain development (Gichuki, 2021). Despite their importance, these enterprises face a high rate of failure, with three out of five closing within their initial months and almost 80% failing before their fifth year (Chiira, 2021). While issues such as limited access to finance, technology and infrastructure are well documented, the role of taxation particularly in terms of taxation and compliance costs remains insufficiently examined within the context of manufacturing SMEs in Kenya (Gichuki, 2021).

Taxation remains a critical instrument for government revenue generation and economic regulation on the contrary for manufacturing SMEs in Nairobi County, Kenya, the taxation can either support growth or act as a significant constraint. This study examines the effect of four specific taxation components which include Value Added Tax (VAT), income tax, excise tax and tax compliance costs on the profitability of manufacturing SMEs. Although VAT is intended as a consumer-based tax, it places substantial administrative pressure on manufacturing enterprises through complex filing procedures, stringent record keeping and compliance requirements. VAT requirements, impose stringent invoicing obligations through systems like Tax Invoice Management Systems (TIMS) and Electronic Tax Invoice Management Systems (eTIMS) that demand accounting capabilities which many SMEs may not have.

Income tax adds another layer of burden, as high marginal rates diminish profits and discourage reinvestment, especially in capital intensive manufacturing operations. Income tax structures, particularly turnover tax and the recently discontinued presumptive tax regime, frequently taxed businesses based on turnover rather than profitability, violating the fundamental principle of ability to pay. Inconsistent guidelines and complicated filing

structures also disincentivize formalization (Olayemi & Folajimi, 2021; Lestary et al., 2021). Excise tax, commonly applied to goods produced by manufacturing SMEs such as cosmetics, beverages and industrial products, increases production costs and suppresses market demand, ultimately eroding profit margins and stifling business expansion (Judith et al., 2022; Chiira, 2021).

Tax compliance costs including digital system investments, professional advisory fees and staff time to ensure compliance, significantly hinder the profitability of manufacturing SMEs in Nairobi County by diverting resources from innovation and expansion (Roman et al., 2023). Most critically, compliance costs consume approximately 15% to 22% of annual revenue for typical Nairobi SMEs according to Kenya Revenue Authority audits. Limited administrative capacity, frequent policy changes and poor communication from tax authorities exacerbate the burden. Despite growing recognition of these challenges, there is limited empirical research specific to manufacturing SMEs in Nairobi. This study aimed to address that gap to inform tax reforms that support SME profitability and sustainability.

1.1.1 Global Perspective on Taxation and Profitability of Manufacturing SMEs

Globally, manufacturing SMEs play a very important role in promoting economic growth, employment and innovation. Developed countries like the United States, Germany, China and the United Kingdom have demonstrated how supportive tax regimes can foster manufacturing SMEs growth by reducing compliance burdens, incentivizing investment and promoting formalization. In the United States, manufacturing SMEs account for close to 98% of all manufacturing businesses and employ about 4.8 million workers of the private workforce (SBA, 2025). The U.S. tax system supports Manufacturing SME growth through graduated income tax rates and special provisions under the Internal Revenue Code, such as the Qualified Business Income (QBI) deduction, which allows SMEs who qualify to deduct up to 20% of their qualified business income. While the U.S. does not have a national VAT system, sales taxes imposed at the state level vary and often exempt small businesses below a certain threshold, thereby reducing compliance complexity. Moreover, tax compliance is streamlined through digital filing platforms and simplified forms for small enterprises, minimizing administrative burdens (Olayemi & Folajimi, 2021).

Germany presents another model of efficiency and Manufacturing SME support. Manufacturing SMEs, known as the "Mittelstand," form the backbone of the German economy, contributing significantly to GDP and employment. The country applies a standard VAT of 19%, with a reduced rate of 7% for basic goods and services, which helps control consumer prices and maintain purchasing power (Petrunenko et al., 2021). Corporate income tax in Germany is moderately progressive and manufacturing SMEs benefit from tax deferrals, subsidies and innovation grants. Compliance is aided by efficient administrative structures and extensive taxpayer support services. German manufacturing SMEs also benefit from coordinated public private partnerships that reduce the financial strain of excise taxes, particularly in manufacturing and logistics sectors. In China, manufacturing SMEs represent well above 85% of all manufacturing firms and contribute approximately 60% to GDP and 80% of urban employment (Resmi et al., 2021). The government has implemented a tiered VAT system where small-scale taxpayers are subject to lower VAT rates compared to general taxpayers. Recent reforms have included VAT exemptions for micro enterprises and reduced corporate tax rates for qualified manufacturing SMEs. China has also introduced substantial digitization in tax administration to lower compliance costs, offering tax credits and incentives for innovation, especially in technology-based sectors (Zarrouk et al., 2020).

The United Kingdom offers a favorable tax regime for manufacturing SMEs through progressive corporate tax rates, a VAT threshold currently set at £85,000 and the Making Tax Digital (MTD) initiative aimed at reducing compliance burdens. Excise duties are typically uniform, but manufacturing SMEs can access business rate reliefs and grants to mitigate cost impacts. Furthermore, the U.K.'s tax system supports these SMEs through Research and Development tax credits, investment allowances and simplified reporting for small corporations (Dechezleprêtre et al., 2016).

1.1.2 Regional Perspective on Taxation and Profitability of Manufacturing SMEs

Across Africa, SMEs are widely recognized for their role in poverty alleviation, employment generation and economic diversification. Despite accounting for over 90% of all businesses and contributing significantly to GDP in many African economies, the growth and sustainability of manufacturing SMEs are hindered by complex, inconsistent

and often punitive taxation systems. This is evident in countries such as Nigeria, Ghana, Tanzania, where manufacturing SMEs face considerable tax related barriers that stifle productivity, formalization and scalability. In Nigeria, manufacturing SMEs represent 9% of businesses and contribute only about 9% to GDP, which is a low return (National Bureau of Statistics, 2023). One of the major constraints is the taxation system, characterized by multiplicity of taxes, lack of harmonization and poor awareness of tax incentives. Although tax incentives which include investment allowances and tax holidays exist, many manufacturing SMEs lack access to this information or the technical capacity to apply for them. Olayemi and Folajimi (2021) found that VAT, income tax and tax deferrals have a statistically significant impact on SME revenue growth in Ondo and Ekiti States, yet manufacturing SMEs cite high compliance costs and bureaucratic inefficiencies as disincentives to profitability.

Ghana faces similar challenges. While 80% of manufacturing firms are categorised as SMEs, they contribute approximately 10% of the nation's GDP and employ nearly 85% of the SME workforce, tax policies remain a hurdle (WBES, 2023). Tax compliance is complicated by limited digital infrastructure, inconsistent enforcement and high costs relative to turnover. Manufacturing SMEs often perceive the tax regime, especially VAT and income tax systems, as unfair and complex, leading to non-compliance and informality (Okpeyo et al., 2019). Furthermore, many manufacturing SMEs lack financial literacy and professional support to navigate excise tax obligations, particularly in sectors like alcoholic and non-alcoholic beverages. In Tanzania, manufacturing SMEs are pivotal to national development, yet face challenges related to the opacity and rigidity of tax regulations. Msuya (2019) notes that unpredictable changes in tax laws, particularly around VAT and excise duties, increase uncertainty for business planning. Many Tanzanian manufacturing SMEs report being taxed on gross turnover rather than profit, a policy that disproportionately affects low margin businesses. Additionally, the cost and time required to maintain proper tax records act as a deterrent to formal registration and tax compliance.

Ethiopia provides another revealing case. While manufacturing SMEs are recognized as critical to employment and industrial growth, the tax framework remains heavily centralized and poorly tailored to the realities of small businesses. According to World

Bank (2023), manufacturing SMEs in Ethiopia contend with a lack of clarity in tax obligations, overlapping tax jurisdictions between federal and local authorities and inconsistent VAT enforcement. High tax compliance costs, including lengthy queues at tax offices and outdated filing systems, further impede profitability and encourage informality.

1.1.3 Kenyan Perspective on Taxation and Profitability of Manufacturing SMEs

In Kenya, Small and Medium Enterprises (SMEs) are integral to the economy, they contribute approximately 40% of Kenya's GDP (KNBS 2023) with manufacturing SMEs accounting for approximately 15% - 20% of all businesses and contributing about 7% - 10% to the national Gross Domestic Product (GDP) (FSD Kenya, 2023). SMEs are also responsible for roughly 80% of employment opportunities with manufacturing SMES employing about 1.5 million people (KEPSA 2023) and are central to the achievement of inclusive economic growth and poverty reduction. The manufacturing sector in Kenya was poised to grow at 15% under the Big 4 agenda but it is currently growing at 3.5% annually (KEPSA Manufacturing Sector Report, 2023). Despite their significance, manufacturing SMEs across the country continue to face numerous constraints, particularly those associated with taxation and compliance. Shariff and Musau (2024) demonstrate that financial literacy significantly influences tax compliance among Kenyan SMEs, highlighting that manufacturing enterprises are particularly vulnerable to the high costs and administrative burdens of the current tax regime.

Many Manufacturing SMEs across counties such as Mombasa, Kisumu, Nakuru and Uasin Gishu report difficulties in understanding tax obligations due to low tax literacy and poor access to information (Resmi et al., 2021). This challenge is magnified in Nairobi County, the economic hub of Kenya, where over 37% of Kenya's manufacturing SMEs operate in sectors such as Alcoholic and non-alcoholic beverages, cosmetics & toiletries, tobacco products and other excisable goods e.g., edible oils, motor vehicles, plastic bags (Gichuki, 2021). Despite their concentration in an urban area, many Nairobi based manufacturing SMEs still struggle to comply with the ever-evolving tax regulations.

While Kenyan SMEs face various income tax obligations including Corporate Income Tax (CIT) for incorporated entities, Personal Income Tax for sole proprietors, Turnover Tax

(TOT), Pay as You Earn (PAYE) and Withholding Tax (WHT), this study specifically focuses on annual profit-based taxes e.g., Corporate Income Tax and turnover taxes, as these directly influence business profitability and operational cash flow, even though TOT is remitted monthly. Income tax obligations are also perceived as punitive. Small businesses, especially startups and low margin enterprises, are required to pay income tax based on fixed turnover rates e.g., turnover tax and the now defunct presumptive tax regime, which often does not reflect true profitability. This has led many manufacturing SMEs to underreport income or operate informally to avoid taxation (Lestary et al., 2021).

There is also Value Added Tax (VAT) which is a consumption tax levied at the standard rate of 16% on taxable goods and services. For SMEs, VAT obligations arise when a business is VAT registered since this is mandatory for firms with annual taxable supplies exceeding KES 5 million or have voluntarily registered. Value Added Tax (VAT) compliance presents a substantial burden, particularly for manufacturing SMEs in the informal and semi-formal sectors. The need to maintain up to date records, issue compliant invoices and file returns online is a challenge for enterprises lacking accounting systems and digital literacy. VAT is also considered regressive among small businesses due to the delay in input tax refunds and poor enforcement of exemptions and thresholds (Chiira, 2021).

Excise duty in Kenya is an indirect tax levied on specific goods and services deemed non-essential, harmful or luxury oriented. Excise duty applies to goods which include alcohol, tobacco, bottled water, juices, cosmetics, fuel and mobile money transfers and also services like fees charged on financial transactions e.g., bank and mobile money transfers. Excise duty is charged on ad valorem basis which is based on a percentage of the product's price or value e.g., 15% on cosmetics. Excise tax can also be specific which is volume based at a fixed rate per unit e.g., KES 100 per liter of beer. Excise taxes disproportionately affect SMEs in manufacturing and consumer goods industries. Enterprises involved in production or sale of excisable items such as cosmetics, alcohol and non-alcoholic beverages face additional levies that cut into their profit margins. Due to limited economies of scale, these businesses cannot absorb the costs like larger firms and often face reduced competitiveness in the market (Judith et al., 2022).

Perhaps another pressing issue is the cost of tax compliance, which includes both monetary and non-monetary costs such as time, access to professional tax advisors, digital filing tools and navigating the Kenya Revenue Authority (KRA)'s online portals. Many Nairobi manufacturing SMEs find themselves spending excessive time on tax paperwork, which detracts from core business functions and reduces productivity (Roman et al., 2023). Despite ongoing tax reforms in Kenya, including the introduction of the iTax system, TIMS and eTIMS systems, a major research gap persists in evaluating how specific tax elements including VAT, income tax, excise tax and compliance costs uniquely impact manufacturing SMEs across counties and particularly in Nairobi. Existing studies have focused on general tax policy or compliance rates but fall short of capturing the nuanced ways taxation affects manufacturing SME profitability, survival and innovation.

This study intends to examine the four key components of taxation Value Added Tax (VAT), income tax, excise tax and tax compliance costs and their effect on the profitability of manufacturing SMEs in Nairobi County. VAT, as administered under the VAT Act, is measured by the total VAT remitted annually by each SME, covering the net of output tax and allowable input tax credits, with rates currently set at 16% and applicable to most manufactured goods (Resmi et al., 2021). Income tax will be measured as the total annual amount of corporate income tax paid, inclusive of any turnover tax (TOT) where applicable and remitted to the Kenya Revenue Authority (KRA) under the Income Tax Act (Chiira, 2021). Excise tax, governed by the Excise Duty Act, will be measured as the total excise duty paid annually, based on specific rates (per litre, per kilogram) or ad valorem percentages of value for excisable goods such as cosmetics, beverages, tobacco, bottled water and other manufactured products (Judith et al., 2022).

Tax compliance costs will be computed from KRA records as the total annual expenditure associated with meeting tax obligations, including staff time spent on tax related tasks (accountancy fee), professional audit or consultancy fees, licensing fees and costs of maintaining digital tax systems (Roman et al., 2023). The dependent variable profitability of SMEs will be measured by the value of net profits per year. Profitability is used because it reflects the combined effects of revenue generation, cost control and operational efficiency, making it a direct financial indicator of business growth (Mensah et al., 2018).

While alternative measures such as sales turnover, asset base or employment size exist, profitability offers a consistent, quantifiable measure across firms and is readily available from KRA tax records over the 2019–2024 study period.

1.2 Statement of the Problem

Manufacturing SMEs are a cornerstone of Kenya's economy, contributing significantly to employment and GDP. Overall, SMEs account for about 40% of GDP and 30% of jobs (FSD Kenya, 2024), with manufacturing contributing 7.6% to GDP in 2024 (StatsKenya, 2023). Since SMEs make up 98% of Kenyan businesses (KEPSA, 2023), manufacturing SMEs play a vital, though understudied, role within the sector. However, their survival rate remains low, with up to 80% collapsing within five years (Resmi et al., 2021). A critical but underexplored factor behind this trend is the tax burden particularly acute in Nairobi County, where most manufacturing SMEs operate. Globally, developed economies such as the United States, Germany, China, and the United Kingdom have implemented SME-friendly tax policies like tiered income tax rates, VAT exemptions, digitized systems, and reduced compliance costs (Petrunenko et al., 2021; Resmi et al., 2021). In contrast, African nations, including Kenya, impose multiple, complex taxes and face challenges like low tax literacy, inconsistent enforcement, and costly compliance (Olayemi & Folajimi, 2021; Msuya, 2019). These issues often drive SMEs into informality, restricting access to credit and growth. In Nairobi County, manufacturing SMEs grapple with rigid income tax structures, changing excise policies, and costly VAT filing processes (Judith et al., 2022; Lestary et al., 2021). Despite digitization reforms such as iTax, eTIMS, and presumptive tax systems, compliance remains hindered by limited capacity and knowledge. Prior studies (Chiira, 2021; Marieta, 2020; Ilemona, 2019) have examined general tax compliance but rarely assess the distinct impacts of VAT, income tax, excise duties, and compliance costs on SME performance at the county level. Moreover, reliance on survey data has introduced self-reporting bias, unlike administrative records that provide objective evidence. Existing research by Karanja and Mugo (2022) and KIPPRA (2021) has focused on SMEs broadly, without isolating manufacturing or subnational impacts. Further, little attention has been paid to the financial burden of Kenya's digital tax transition, with SMEs spending about KES 85,000 on TIMS compliance alone (Kenya Association of Manufacturers, 2023). This

study therefore aimed to fill these gaps using secondary administrative tax data to empirically examine how specific tax instrument affect manufacturing SME viability in Nairobi County, generating evidence-based insights for inclusive tax policy reform.

1.3 Research Objectives

The study was guided by the following research objectives:

1.3.1 General Research Objectives

The general research objective of the study was to analyze the effect of tax instruments on the profitability of manufacturing SMEs in Nairobi County, Kenya.

1.3.2 Specific Research Objectives

i. To examine the effect of value added tax on profitability of manufacturing SMEs in Nairobi County, Kenya.
ii. To analyze the effect of income tax on profitability of manufacturing SMEs in Nairobi County, Kenya.
iii. To determine the effect of excise tax on profitability of manufacturing SMEs in Nairobi County, Kenya.
iv. To establish the effect of tax compliance costs on profitability of manufacturing SMEs in Nairobi County, Kenya.

1.4 Research Questions

i. What is the effect of value added tax on profitability of manufacturing SMEs in Nairobi County, Kenya?
ii. What is the effect of income tax on profitability of manufacturing SMEs in Nairobi County, Kenya?
iii. What is the effect of excise tax on profitability of manufacturing SMEs in Nairobi County, Kenya?
iv. What is the effect of tax compliance cost on profitability of manufacturing SMEs in Nairobi County, Kenya?

1.5 Significance of the Study

This study is valuable to a wide range of stakeholders involved in SME development, taxation policy and economic planning:

1.5.1 Policymakers and Government Agencies

The findings will provide the National Treasury, Kenya Revenue Authority (KRA), and County Governments with evidence on the relative effects of VAT, income tax, excise tax, and tax compliance costs on manufacturing SME profitability. Specifically, the results will enable policymakers to identify which tax burden impose the greatest constraints on profitability and business expansion. This evidence can be used to review tax rates, redesign SME tax incentives, simplify tax administration procedures, and develop sector-specific fiscal policies that balance revenue mobilization with industrial growth objectives. The findings will also support the implementation of Kenya's industrialization and SME development strategies by informing tax reforms that enhance enterprise competitiveness.

1.5.2 Kenya Revenue Authority (KRA)

The study will assist KRA in identifying the specific tax administration practices that contribute most to compliance burdens among manufacturing SMEs. For example, if compliance costs are found to significantly reduce SME profitability, KRA may use the findings to simplify filing procedures, improve taxpayer education programmes, strengthen digital tax support services, and streamline VAT refund processes. The findings will therefore provide an evidence base for improving voluntary compliance while reducing the administrative burden placed on SMEs.

1.5.3 SME Owners and Entrepreneurs

The study will help manufacturing SME owners understand how different tax obligations affect profitability and business growth. By quantifying the impact of VAT, income tax, excise tax, and compliance costs, the findings will enable entrepreneurs to make better financial planning decisions, improve tax budgeting, and adopt appropriate tax management strategies. The evidence may also strengthen the ability of SME associations to engage government agencies in advocating for tax policies that support business profitability and sustainability.

1.5.4 Financial Institutions and Business Support Organizations

Commercial banks, microfinance institutions, business incubators, and SME support agencies can use the findings to improve their assessment of tax-related risks facing manufacturing SMEs. The results will assist these institutions in designing financial products, advisory services, and capacity-building programmes that address the specific taxation challenges identified in the study. This can contribute to improved access to finance and enhanced financial resilience among manufacturing SMEs.

1.5.5 Academic and Research Community

The study will contribute to the limited empirical literature on the relationship between taxation and manufacturing SME profitability in Kenya. By providing sector-specific evidence based on longitudinal data from manufacturing firms, the study will enrich scholarly understanding of tax policy impacts in developing economies. The findings will also serve as a reference point for future studies examining taxation, SME performance, industrial development, and fiscal policy reforms in Kenya and other Sub-Saharan African countries.

1.6 Scope of the Study

This study focuses on examining the effects of tax burden on the profitability of manufacturing SMEs in Nairobi County, Kenya. It seeks to assess how specific tax components; Value Added Tax (VAT), income tax, excise tax and tax compliance costs affect profitability of manufacturing SMEs. Nairobi was selected due to its high concentration of manufacturing SMEs across diverse sectors such as retail, manufacturing, ICT, hospitality and services with approximately 850 manufacturing SMEs. A sample of 272 manufacturing SMEs will be selected. Nairobi being the administrative and economic center, it also the first to experience early adoption of tax reforms and has a large pool of manufacturing SMEs interacting with both national and county level taxation systems, making it an ideal setting for this study. The study covers a six-year period from 2019 to 2024. This timeframe captures key changes in Kenya's taxation landscape, including the implementation of the digital iTax system, turnover tax adjustments and tax policy changes introduced under various Finance Acts.

1.7 Chapter Summary

Chapter one introduces the study on the Effects of tax instrument on the profitability of manufacturing SMEs in Nairobi County, Kenya. It highlights the critical role manufacturing SMEs play in Kenya's economy, accounting for 15% - 20% % of businesses, 7% - 10% of GDP and 12% - 15% of employment. Despite this, manufacturing SMEs face high failure rates, with taxation identified as a key barrier to profitability. The chapter focuses on four taxation components: Value Added Tax (VAT), income tax, excise tax and tax compliance costs. These taxes are shown to impact Manufacturing SMEs through high administrative burdens and disproportionate costs. A global review shows that developed countries like the U.S., Germany, China and U.K. have adopted tax friendly mechanisms for Manufacturing SMEs, unlike many African nations, including Nigeria, Ghana, Tanzania and Ethiopia, where manufacturing SMEs face punitive and complex tax environments. In Kenya and especially Nairobi, these SMEs struggle with VAT filing, inflexible income tax, costly excise duties and compliance burdens. The chapter concludes with the study's objectives, research questions, significance to various stakeholders and defines its scope covering Nairobi County from 2019 to 2024.

Chapter Two: Literature Review

2.1 Introduction

This chapter presents a comprehensive review of literature relevant to the study on the effect of tax instruments on the profitability of manufacturing SMEs. It examines the theoretical foundations underpinning the study, reviews empirical evidence from previous studies, develops the conceptual framework, and identifies existing knowledge gaps that the current study seeks to address. The chapter provides the basis for understanding the relationship between taxation and SME profitability and guides the formulation of the study hypotheses.

2.2 Theoretical Background

The effect of tax instrument on the profitability of manufacturing SMEs can be understood within the framework of several finance and development finance theories. This study focuses on two theories, the Benefit Theory of Taxation and the Ability to Pay Theory. These theories have been selected after a comprehensive literature review. The theories align with the study's objectives and help explain both the rationale behind taxation policies and the behavioral responses of manufacturing SMEs.

2.2.1 Benefit Theory of Taxation

The Benefit Theory of Taxation is one of the classical principles in public finance and was initially proposed by Ernst Engel in the late 19th century. It was later refined by Knut Wicksell and other economists who contributed to the normative theories of taxation. The theory posits that individuals and businesses should play a part in contributing to government revenues in proportion to the benefits that they obtain from public services (Musgrave & Musgrave, 1989). Essentially, taxation is likened to a quid pro quo arrangement, where taxpayers are "buyers" of government goods and services such as roads, security, public infrastructure and regulatory frameworks and taxes are the "prices" they pay in return.

In the context of Small and Medium Enterprises, to be specific, manufacturing SMEs, the Benefit Theory is particularly relevant. These SMEs, like all businesses, depend on public services and infrastructure to operate efficiently. For instance, efficient transportation

networks, stable electricity and access to markets significantly influence business performance. When manufacturing SMEs perceive that the taxes they pay, such as Value Added Tax (VAT) or income tax, are matched with tangible benefits from the government, they are more likely to comply voluntarily and maintain a long-term presence in the formal economy (Lestary et al., 2021). However, the application of this theory in developing countries like Kenya often presents challenges. Many manufacturing SMEs in regions like Nairobi County report a mismatch between tax obligations and perceived government service delivery (Chiira, 2021). While the SMEs are expected to file returns, pay VAT and meet income tax requirements, they frequently operate in environments lacking essential services such as adequate waste disposal, fair regulatory enforcement and security. This perceived disparity fuels skepticism, reduces compliance and sometimes pushes enterprises into the informal sector since they do not see the benefit of being formal and paying taxes.

A major critique of the Benefit Theory is how it assumes an equal and observable link between taxes paid and services received. In practice, since there will always be unequal distribution of public goods, it means that businesses in underserved or rural areas may still face the same tax liabilities as their counterparts in urban areas, despite receiving fewer services. This inequity undermines the perceived principles of fairness of taxation and may create resentment (Lestary et al., 2021). This notwithstanding, the Benefit Theory remains central to this study since it provides a foundational understanding of why tax compliance among manufacturing SMEs is often influenced by perceptions of fairness and benefit realization, especially with respect to VAT and income tax. Its insights are critical for policymakers seeking to design tax systems that promote both compliance and profitability.

2.2.2 Ability to Pay Theory

The Ability to Pay Theory of taxation is a foundational principle in public finance, advanced by Edwin R.A. Seligman in the early 20th century. It states that taxes should be levied based on a taxpayer's economic capacity to bear the financial burden, rather than on the benefits they derive from public services (Musgrave & Musgrave, 1989). This theory advocates for equity and fairness in taxation, with the fundamental basis being that those with greater financial strength should contribute more to government revenues. This theory is highly relevant to manufacturing SMEs, especially in developing economies like Kenya,

where many such businesses operate with thin profit margins and irregular income streams. The application of uniform tax structures, such as presumptive tax (now repealed) or turnover tax, without considering a firm's profitability, often contradicts the principle of the Ability to Pay Theory. For instance, taxing a small enterprise on gross revenue regardless of its actual expenses or net income can result in an excessive burden, which may push businesses into the informal sector or may even cause it to close. (Chiira, 2021).

Kenya's experience with turnover based taxation, although aimed at simplifying tax collection, has sometimes imposed disproportionate burdens on micro and small enterprises. These taxes assume that all businesses have a standard capacity, ignoring the financial diversity among manufacturing SMEs across sectors and locations. For example, an SME with high sales volume but low net profits due to operational costs ends up paying the same or more tax than a business with healthier margins, undermining the equity that the Ability to Pay Theory promotes. One major critique of the Ability to Pay Theory is its administrative complexity. It requires accurate assessments of taxpayers' income and financial status, which can be difficult to obtain, especially from manufacturing SMEs that lack formal bookkeeping systems or hesitate to disclose financial data due to mistrust in government systems (Lestary et al., 2021). Nonetheless, the theory remains relevant, particularly for income and excise tax policy reforms, as it underscores the importance of tailoring tax obligations to the financial realities of diverse SME profiles. In conclusion, the Ability to Pay Theory offers critical insight for designing more equitable tax systems that support rather than hold back SME profitability and it provides a strong conceptual framework for assessing tax fairness in this study.

2.3 Empirical Review

This section reviews empirical studies related to the effect of taxation on the profitability and performance of Small and Medium Enterprises (SMEs), with particular emphasis on manufacturing enterprises. The review is organized according to the study variables, namely Value Added Tax (VAT), income tax, excise tax, and tax compliance costs, and their influence on SME profitability. It examines evidence from global, regional, and local contexts to establish the current state of knowledge, identify areas of consensus and divergence among researchers, and highlight methodological and contextual gaps in

existing studies. The empirical review provides a basis for understanding the relationship between tax instrument and SME profitability and informs the development of the study hypotheses and research framework.

2.3.1 Value Added Tax and Profitability of Manufacturing SMEs

Value Added Tax (VAT) has been widely studied in relation to its effect on the performance and sustainability of manufacturing SMEs. Multiple studies across different jurisdictions have attempted to examine how VAT compliance, payment and policy structure influence SME profitability. However, existing literature reveals notable gaps in terms of methodology, context and scope. Chiira (2021), in the study titled Evaluation of Tax Policy and Its Effects on Manufacturing SMEs in Nairobi County, sought to analyze how various tax policies; VAT included affect SME performance. The study found that complex VAT compliance processes and delays in VAT refund disbursement reduced operational capital, leading to slowed growth. However, the study used qualitative methods and a small sample from Nairobi's CBD, creating a methodological and population gap, as the findings are not generalizable across Nairobi County or other sectors.

Judith et al. (2022), in their article Taxation Practices and the Survival of Small and Medium Sized Enterprises (SMEs), focused on how different tax components, including VAT, affect SME survival in Nigeria. The study concluded that VAT compliance costs negatively affect SME profitability. While the findings are valuable, the geographical and contextual gap limits applicability to Kenya, where tax administration and economic conditions differ. Lestary et al. (2021), in The Effect of Tax Fairness, Tax Socialization and Tax Understanding on Tax Compliance of Manufacturing SMEs, investigated how understanding VAT regulations influences compliance behavior in Indonesia. The research concluded that tax fairness and literacy significantly improve VAT compliance and indirectly SME sustainability. However, the study was behaviorally focused, leaving a knowledge and empirical gap in understanding how the actual financial burden of VAT (amount paid annually) affects SME profits and reinvestment.

Resmi et al. (2021), in The Effect of Financial and Taxation Literacy on Competitive Advantages and Business Performance, observed that low VAT literacy leads to

miscalculations and penalties that reduce business competitiveness. Although insightful, the study combined all taxes into a single construct, failing to isolate VAT, which presents a variable specification gap.

2.3.2 Income Tax and Profitability of Manufacturing SMEs

Olayemi and Folajimi (2021), in their study titled Tax Incentives and the Growth in Sales Revenue of Small and Medium Enterprises in Ondo and Ekiti States, Nigeria, aimed to assess how various tax incentives, including income tax relief, affect the sales growth of Manufacturing SMEs. The authors employed a quantitative survey design using structured questionnaires and found that high income tax rates significantly reduced SME revenues and discouraged reinvestment. While the findings are insightful, the study's focus on tax incentives creates a conceptual gap, as it does not directly isolate the impact of income tax amount paid annually on SME profitability. Additionally, the geographical context limits the generalizability to Kenya.

Chiira (2021), in Evaluation of Tax Policy and Its Effects on Manufacturing SMEs in Nairobi County, explored how various tax policies, including income tax, influence SME operations. The study concluded that income tax regimes in Kenya are rigid and regressive, especially when based on gross turnover rather than actual profits. This taxation approach discouraged business formalization and limited reinvestment. However, the study was conducted in Nairobi's central business district, creating a population and scope gap as it excluded Manufacturing SMEs in peri urban and informal settings. Judith et al. (2022), in their article Taxation Practices and the Survival of Small and Medium Sized Enterprises (SMEs), studied the impact of income tax along with other tax types on SME survival in Nigeria. They found that inconsistent income tax policies and poor understanding of tax laws hindered SME profitability and growth. However, their study did not use longitudinal or panel data, limiting causal inference. This presents a methodological gap, as a cross sectional approach may not capture long term effects of income tax on business outcomes.

Lestary et al. (2021), in The Effect of Tax Fairness, Tax Socialization and Tax Understanding on Tax Compliance of Manufacturing SMEs, investigated how SME perceptions of tax fairness and understanding influence compliance. Though not focused

solely on income tax, their findings indicated that Manufacturing SMEs with greater tax knowledge showed higher compliance levels. However, the study failed to quantify how actual income tax payments affect business growth, resulting in a knowledge and evidence gap. Roman et al. (2023), in Tax Compliance Costs and Small Business Growth in East Africa, broadly analyzed how different tax obligations, including income tax, affect SME expansion. The study identified that income tax compliance costs, particularly in Kenya, consume a significant share of business resources, limiting profitability. However, it did not disaggregate income tax impacts from other tax types, resulting in a variable specification gap.

2.3.3 Excise Tax and Profitability of Manufacturing SMEs

Judith et al. (2022), in their study Taxation Practices and the Survival of Small and Medium Sized Enterprises (SMEs), examined how various tax components, including excise tax, affect SME survival in Nigeria. The study found that excise taxes increased the cost of doing business, leading to reduced competitiveness and profitability. However, the study focused on general survival rather than detailed financial outcomes like profits and it used a cross sectional approach, revealing a methodological and variable specification gap in linking excise tax to annual profit levels.

Chiira (2021), in Evaluation of Tax Policy and Its Effects on Manufacturing SMEs in Nairobi County, investigated the effects of tax policies on Manufacturing SMEs, including excise taxes in Kenya. The findings showed that excise taxes were viewed as regressive by Manufacturing SMEs, especially in the cosmetics and beverage sectors, where prices had to be raised to accommodate taxes. This reduced customer demand and sales volumes. However, the study was limited to Manufacturing SMEs in central Nairobi and used qualitative data, creating a scope and population gap and lacking empirical measurement of annual excise taxation on profit margins. Msuya (2019), in a study on Tanzanian Manufacturing SMEs, examined how excise taxes influence business growth. The study revealed that excise tax unpredictability, frequent changes in rates and categories made long term planning difficult for Manufacturing SMEs. Businesses cited increased operational costs and low profit margins as key concerns. Despite these insights, the study

lacked rigorous quantitative analysis and generalizability, leading to a methodological and evidence gap in the East African context.

Olayemi and Folajimi (2021), in Tax Incentives and the Growth in Sales Revenue of Manufacturing SMEs in Ondo and Ekiti States, Nigeria, assessed tax incentives, including relief from excise duties and their effect on SME revenue. They concluded that businesses benefiting from excise tax exemptions reported higher sales and better profit outcomes. However, the study primarily analyzed sales revenue and did not isolate the direct annual cost of excise tax or its effect on net profits, creating a knowledge gap in financial outcome metrics. Roman et al. (2023), in Tax Compliance Costs and Small Business Growth in East Africa, touched on excise tax administration challenges. The study found that Manufacturing SMEs exposed to multiple tax layers, including excise duties, faced disproportionately high compliance costs, negatively affecting expansion and profitability. Yet, excise tax was analyzed within a broader taxation framework, failing to offer disaggregated insights, thus creating a variable gap.

2.3.4 Tax Compliance Cost and Profitability of Manufacturing SMEs

Roman et al. (2023), in their study titled Tax Compliance Costs and Small Business Growth in East Africa, aimed to evaluate how compliance related costs influence SME performance across East African countries. They found that SMEs incur high costs for tax consultancy, bookkeeping and digital compliance systems, which reduce capital available for reinvestment and growth. While the findings were insightful, the study aggregated data across several countries, lacking Nairobi County specific analysis. This presents a geographical and scope gap, limiting the applicability of its findings to localized policy reform in Kenya. Lestary et al. (2021), in The Effect of Tax Fairness, Tax Socialization and Tax Understanding on Tax Compliance of Manufacturing SMEs, assessed how understanding and perception of taxation affect compliance behavior. Although they concluded that better tax understanding reduces the burden and improves SME performance, the study focused primarily on cognitive and behavioral elements. It did not empirically measure the actual financial cost of compliance, which reveals a knowledge and variable gap.

Resmi et al. (2021), in The Effect of Financial and Taxation Literacy on Competitive Advantages and Business Performance, emphasized that Manufacturing SMEs with limited taxation knowledge are more likely to overpay or incur penalties, increasing their compliance burden. While this study linked literacy to business outcomes, it did not quantify compliance costs in monetary terms nor assess their direct effect on annual profits. This introduces an evidence and empirical gap, particularly in understanding the economic weight of compliance costs on Manufacturing SMEs. Chiira (2021), in Evaluation of Tax Policy and Its Effects on Manufacturing SMEs in Nairobi County, noted that many Manufacturing SMEs spend considerable time and money fulfilling tax obligations such as filing returns and dealing with audits. The study observed that Manufacturing SMEs often divert funds from operational budgets to comply with tax regulations. However, the analysis was based on qualitative interviews with a limited sample, introducing a methodological and population gap and lacked rigorous statistical data to support the conclusions.

Judith et al. (2022), in their article Taxation Practices and the Survival of Manufacturing SMEs, examined how tax practices, including compliance costs, influence the sustainability of Nigerian Manufacturing SMEs. The study identified administrative burdens as a deterrent to profitability. However, it generalized compliance costs without categorizing them into time, monetary and opportunity costs, leading to a conceptual and specification gap.

2.4 Summary of Research Gaps

The section summarizes studies done and research gaps in the area of taxation and profitability of small and medium enterprises in Nairobi

Table 2.1: Summary of Research Gaps

Author/Year	Title	Objective of the Study	Methodology	Research Findings	Research Gaps	Type of Research Gap	How the Current Study Addresses the Gap
Chiira (2021)	Evaluation of Tax Policy and Its Effects on SMEs in Nairobi County	To assess the effects of various tax policies (VAT, income tax, excise tax, compliance costs) on SME profitability	Qualitative interviews, Nairobi CBD-based	Tax policies negatively affect SMEs; compliance burdens are high	Limited sample, qualitative focus, no statistical validation	Methodological, Population, Evidence Gap	The current study employs panel data from manufacturing SMEs over six years (2019–2024) and uses econometric analysis to provide statistically robust evidence.
Judith et al. (2022)	Taxation Practices and the Survival of SMEs	To determine how taxation affects SME survival in Nigeria	Cross-sectional quantitative survey	High taxes and compliance costs reduce	Lacked Kenya focus, generalized costs, no	Scope, Conceptual, Evidence Gap	The study focuses on Kenyan manufacturing SMEs and

				SME sustainability	longitudinal view		utilizes longitudinal panel data to examine specific tax instrument over time.
Olayemi & Folajimi (2021)	Tax Incentives and the Growth in Sales Revenue of SMEs in Ondo and Ekiti States, Nigeria	To examine how tax incentives impact SME revenue	Quantitative survey	High income and excise taxes reduce sales; incentives boost growth	Focus on revenue not profit; limited to Nigeria	Knowledge, Geographical Gap	The current study uses net profit as the growth indicator and provides evidence from Nairobi County, Kenya.
Lestary et al. (2021)	The Effect of Tax Fairness, Tax Socialization and Tax Understanding on Tax Compliance of SMEs	To assess how perceptions and knowledge affect tax compliance behavior	Quantitative survey in Indonesia	Tax fairness and knowledge improve compliance	No measurement of actual financial taxation	Knowledge, Variable, Evidence Gap	The study examines actual monetary tax obligations (VAT, income tax, excise tax, and compliance costs) and their impact on SME growth.

Resmi et al. (2021)	The Effect of Financial and Taxation Literacy on Competitive Advantages and Business Performance	To analyze the impact of financial and tax literacy on business competitiveness	Quantitative case study	Low tax knowledge leads to penalties and reduced competitiveness	Did not isolate specific taxes; lacked profit link	Variable Specification, Empirical Gap	The current study separately analyzes VAT, income tax, excise tax, and compliance costs using profitability as the outcome variable.
Roman et al. (2023)	Tax Compliance Costs and Small Business Growth in East Africa	To examine tax compliance cost impacts on SME growth across East Africa	Cross-country survey	High compliance costs hurt SME profitability	Not disaggregated by tax type; lacks county-level insights	Scope, Variable, Geographical Gap	The study examines compliance costs alongside specific tax instrument using county-level data from Nairobi manufacturing SMEs.
Msuya (2019)	Effects of Taxation on Growth of SMEs in Tanzania	To explore tax policy effects on SME performance	Qualitative descriptive study	Excise tax volatility impairs business planning and profits	Lacks quantitative data; not generalizable	Methodological, Evidence Gap	The study adopts a quantitative panel-data approach and provides

							empirical evidence from Kenya.
Asaminew (2021)	Taxation Challenges Facing SMEs in Ethiopia	To explore how taxation affects SME operations in Ethiopia	Qualitative field interviews	Complex tax administration and unclear guidelines deter compliance	Lacked empirical analysis; not Kenya-based	Evidence, Geographical, Methodological Gap	The current study provides empirical econometric evidence using Kenyan administrative tax data.
Gichuki (2021)	SME Taxation and Growth in Nairobi's Business Districts	To investigate the impact of tax policies on Nairobi SMEs	Descriptive survey	High compliance burden and limited tax knowledge hinder growth	Limited to formal businesses in Nairobi CBD	Population, Scope Gap	The study extends coverage to manufacturing SMEs across Nairobi County and incorporates multiple tax instrument.
Zarrouk et al. (2020)	Barriers to SME Growth: A Cross-National Perspective	To identify barriers to SME growth across developing countries	Cross-sectional survey	Taxation cited as a major constraint to SME scalability	Did not isolate tax types or regional variations	Variable, Scope, Knowledge Gap	The study disaggregates taxation into VAT, income tax, excise tax, and compliance costs and

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							focuses on a specific Kenyan context.
Okpeyo et al. (2019)	The Effect of Tax Compliance on SMEs in Ghana	To evaluate the influence of tax compliance on SME sustainability	Survey-based study	High compliance burden discourages tax registration	Focused on compliance behavior, not tax amounts	Conceptual, Empirical Gap	The study measures actual tax liabilities and compliance costs to determine their effect on profitability.
Petrunenko et al. (2021)	Importance of Manufacturing SMEs in Economic Development of Eastern Europe	To examine regulatory and tax influences on manufacturing SMEs	Comparative analysis	Simplified tax systems support SME growth	Non-African context; lacks focus on compliance costs	Contextual, Geographical Gap	The study provides evidence from an African developing economy and incorporates tax compliance costs as a key variable.
Nnam et al. (2022)	Taxation Practices and SME Performance in Sub-	To examine how taxation affects SME performance in Sub-	Mixed methods	Inequitable tax policies hinder performance	Broad scope; lacks country-specific findings	Scope, Geographical Gap	The study generates country-specific evidence

	Saharan Africa	Saharan countries					from Kenya and focuses on the manufacturing sector.
Zhao & Zhao (2021)	Digital Tax Filing Systems and SME Compliance	To assess how e-tax platforms affect compliance behavior	Quantitative panel data study	Digital platforms reduce compliance burden	Did not assess profitability outcomes	Variable, Knowledge Gap	The study links tax-related costs and obligations directly to SME profitability and growth.
Amakom & Iheoma (2020)	Taxation and Growth of Manufacturing SMEs in West Africa	To evaluate taxation on SME profitability in West Africa	Regional comparative study	Income and excise taxes reduce net profit	No focus on Nairobi or Kenya-specific tax issues	Geographical, Evidence Gap	The current study provides Kenya-specific evidence using manufacturing SMEs in Nairobi County and incorporates multiple tax instrument.

Source (Author, 2025)

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2.5 Conceptual Framework

The study will be guided by a conceptual framework comprising four independent variables and one dependent variable, as illustrated in Figure 2.1. The independent variables include Value Added Tax, Income Tax, Excise Tax, and Tax Compliance Cost, while the dependent variable is the Profitability of Manufacturing SMEs in Nairobi County, Kenya. The specific objectives and their expected influence on the dependent variable are anchored in the Benefit Theory of Taxation and the Ability-to-Pay Theory.

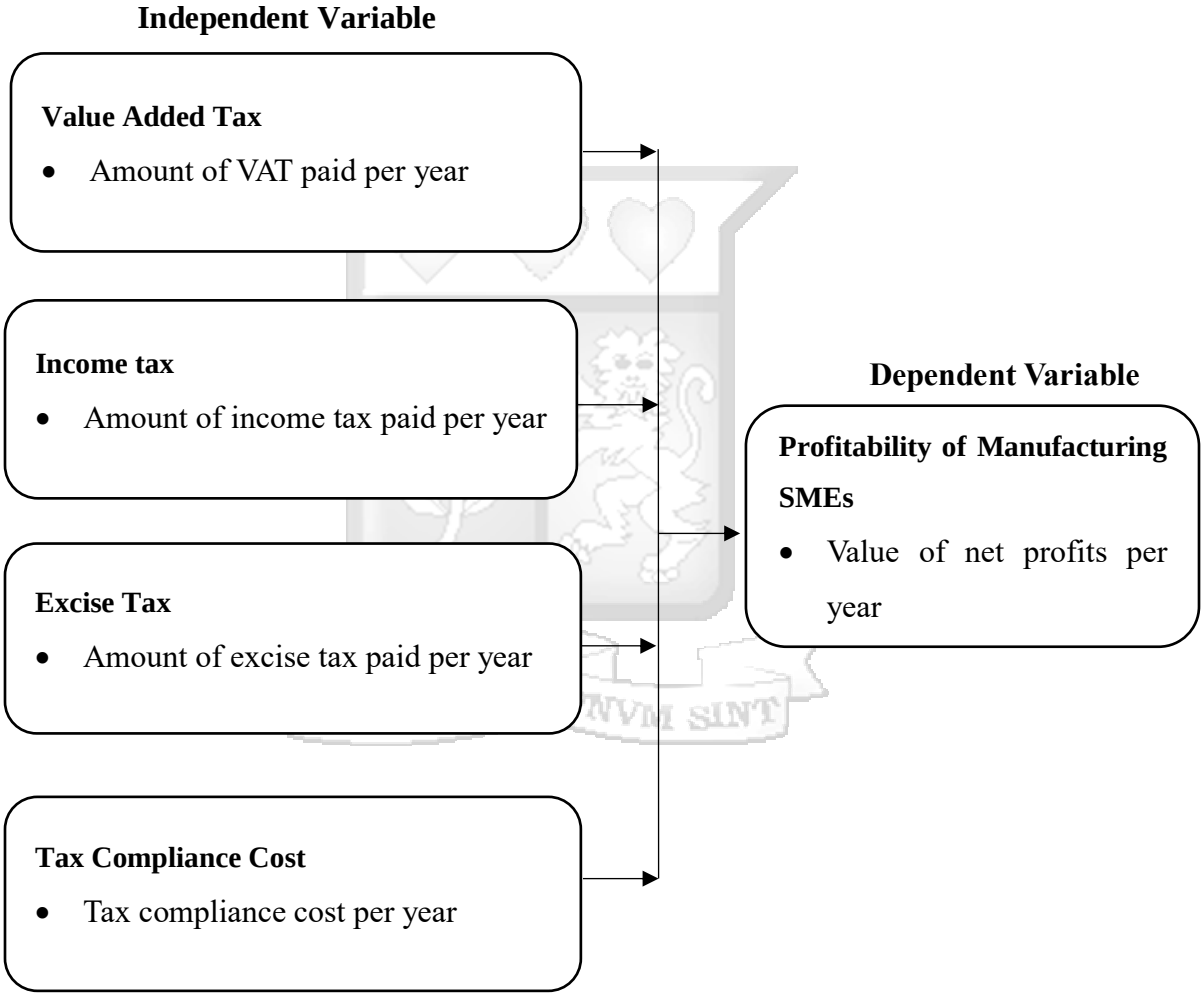


Figure 2.1: Conceptual Framework

Source (Author, 2025)

2.6 Operationalization of Variables

This section presents the operationalization of the key variables that are used in the study to empirically assess the effects of tax instrument on the profitability of manufacturing

SMEs in Nairobi County, Kenya. The independent variables include value added tax, income tax, excise tax and tax compliance cost, while profitability of manufacturing SMEs as the dependent variable. Profitability is used since it reflects the combined effects of revenue generation, cost control and operational efficiency, making it a direct financial indicator of business growth (Mensah et al., 2018). While alternative measures such as sales turnover, asset base or employment size exist, profitability offers a consistent, quantifiable measure across firms and is readily available from KRA tax records over the 2019–2024 study period. Each variable is defined with specific indicators, abbreviations and theoretical foundations drawn from the reviewed literature. Table 2.2 summarizes the operational definitions, associated indicators, relevant citations and underpinning theories guiding this study.

Table 2.2: Operationalization of Variables

Variable	Abbreviation	Indicator/ Measurement	Unit of Measurement	Expected Sign	Data Source	Key Citations	Underpinning Theory
Value Added Tax	VAT	Total annual Value Added Tax remitted by the SME	Kenya Shillings (KES) per year	Negative (-)	Kenya Revenue Authority (KRA) Tax Records	Resmi, Pahlevi & Sayekti (2021); Lestary et al. (2021)	Benefit Theory of Taxation
Income Tax	IT	Total annual income tax paid by the SME	Kenya Shillings (KES) per year	Negative (-)	Kenya Revenue Authority (KRA) Tax Records	Olayemi & Folajimi (2021); Lestary et al. (2021)	Ability-to-Pay Theory
Excise Tax	ET	Total annual excise duty paid by the SME	Kenya Shillings (KES) per year	Negative (-)	Kenya Revenue Authority (KRA) Tax Records	Judith et al. (2022); Chiira (2021)	Ability-to-Pay Theory

Tax Compliance Cost	TCC	Total annual cost incurred in tax compliance, including audit fees, tax consultancy costs, record-keeping expenses, software subscriptions, and administrative compliance costs	Kenya Shillings (KES) per year	Negative (-)	Kenya Revenue Authority (KRA) Records and SME Tax Compliance Reports	Roman et al. (2023); Kenya Association of Manufacturers (2023)	Benefit Theory of Taxation
Profitability of Manufacturing SMEs	SMEP	Annual net profit earned by the SME after tax and operating expenses	Kenya Shillings (KES) per year	Dependent Variable	Kenya Revenue Authority (KRA) Financial Records	FSD Kenya (2024); Gichuki (2021)	Benefit Theory of Taxation and Ability-to-Pay Theory

Source (Author, 2025)

2.7 Chapter Summary

Chapter Two reviews theoretical, conceptual and empirical literature on the effect of tax instrument on the profitability of manufacturing SMEs in Nairobi County, Kenya. Two theories; Benefit Theory of Taxation and Ability to Pay Theory were discussed to explain the rationale behind tax policies and manufacturing SME responses. Empirical reviews examine the influence of VAT, income tax, excise tax and tax compliance costs, highlighting methodological, scope, geographical, knowledge and evidence gaps across various studies. The chapter concludes with a summary of gaps, a conceptual framework showing the relationships between variables and an operationalization table defining key indicators, abbreviations, citations and underpinning theories.

Chapter Three: Research Methodology

3.1 Introduction

This chapter presents the research methodology that was used by the study. It contains: research philosophy, research design, target population, sampling techniques, data type and source, data collection instrument, validity and reliability of research instrument, empirical model and data analysis procedure.

3.2 Research Philosophy

A research philosophy refers to a system of beliefs and assumptions that guide how research should be conducted, shaping choices about the nature of knowledge, methods of inquiry interpretation of results (Creswell, 2023). Several research philosophies could inform this study, including interpretivism, positivism, interpretivism pragmatism (Mwita, 2024). These philosophies differ in terms of beliefs, values underlying assumptions. Given the study's focus on objectively measuring and statistically testing the effects of VAT, income tax, excise tax and compliance costs on manufacturing SME profitability, positivism was most appropriate, as it emphasized empirical analysis of observable phenomena using secondary quantitative data and longitudinal panel designs (Acheampong, 2018). This philosophy aligns with the longitudinal panel data analysis research design.

3.3 Research Design

Research design is the overall strategic blueprint for how a study will be conducted, detailing methods for data collection, measurement and analysis to answer specific research questions effectively (Jansen et al., 2023). Several research designs exist, including correlational, case studies, descriptive, experimental, quasi-experimental longitudinal (Jansen et al., 2023). Given the study's objective to evaluate how changes in VAT, income tax, excise tax and compliance costs over time affect manufacturing SMEs' net profits, the longitudinal panel design was the most appropriate choice. In longitudinal studies, researchers do not manipulate variables or interfere with the environment; instead, they observe the same group of subjects over an extended period to assess trends, patterns, or causal relationships (Judith et al., 2022). Panel study, a specific type of longitudinal design, involves repeatedly measuring the same set of participants across multiple time

points, enabling the analysis of both individual and group-level changes (Jansen et al., 2023). This design was most appropriate for this study because it allowed the tracking of changes in VAT, income tax, excise tax and compliance costs for the same manufacturing SMEs in Nairobi County over the 2019–2024 period. By using consistent measurements across time, it facilitates stronger causal inferences about how the taxation influences SME profitability while controlling for firm-specific and temporal factors.

3.4 Target Population

The target population refers to the entire group of individuals, objects, or entities that a researcher aims to study and from which a sample is drawn (Etikan, 2023). The target population for this study was all 850 formal manufacturing SMEs in Nairobi County who are producing excisable goods (alcohol, cosmetics, bottled water, tobacco, juices) and are registered with KRA and compliant with excise stamp regulations. This population was targeted because manufacturing SMEs producing excisable goods face direct and significant tax obligations, making them ideal for analyzing the impact of VAT, income tax, excise tax and compliance costs. Their mandatory formal registration with the Kenya Revenue Authority (KRA) guarantees that the necessary data will be accessible for the study. Additionally, they are required to collect and account for stamps on all their products, ensuring that their filed returns are accurate and serve as a reliable source of secondary data.

3.5 Sampling Techniques

The study's sample size was determined using Yamane (1967), proportional sampling formula as follows; $n= N/(1+ N(e)^2)$

Where n represents the Sample size

N represents the population under study

E represents margin error (0.05) and

1 represents a constant

The sample size was calculated as follows:

n = 850 / (1 + (850*(0.05) ^2))

n = 272

Yamane's (1967) formula was most appropriate because it provided a simplified and statistically reliable method for determining sample size based on a known population and margin. This study employed proportionate stratified random sampling to select the required sample of 272 manufacturing SMEs from a target population of 850 registered manufacturing SMEs in Nairobi County. Stratified random sampling enhances population representativeness by dividing the target population into homogeneous subgroups (strata) before selecting respondents through a random process (Taherdoost, 2023). The approach was considered appropriate because Nairobi's manufacturing sector is highly heterogeneous, comprising firms operating in different excisable product categories, including alcoholic beverages, non-alcoholic beverages, tobacco products, cosmetics and beauty products, petroleum and lubricants, plastic packaging and bags, confectionery products, motor vehicle assembly and other excisable goods.

The sampling process involved three stages. First, a sampling frame containing all 850 registered manufacturing SMEs was obtained from the Kenya Revenue Authority (KRA) and firms were classified into their respective manufacturing categories. Second, the sample size of 272 firms was proportionately allocated to each stratum based on the share of firms within each category relative to the total population. This ensured that larger subsectors contributed more firms to the sample while smaller subsectors remained adequately represented. Third, within each stratum, a simple random sampling procedure was applied. Each firm was assigned a unique identification number, and computer-generated random numbers were used to select the required number of firms from each category without bias. This procedure ensured that every SME within a stratum had an equal and known probability of selection, thereby satisfying the requirements of probability sampling and enhancing the representativeness and generalizability of the study findings.

Table 3.1: Target Population Distribution

Category	Estimated Number in Nairobi	Stratified sampling
Alcoholic Beverages	135	43
Non-Alcoholic Beverages	223	71
Tobacco Products	25	8
Cosmetics & Beauty Products	114	36
Petroleum & Lubricants	50	16
Plastic Packaging & Bags	81	26
Confectionery & Sugary Goods	73	23
Motor Vehicle Assembly	15	5
Other Excisable Goods	**134**	**43**
	850	272

Source (KRA, 2025)

As Bolarinwa et al. (2024) emphasize, stratified sampling ensures that each key sector is proportionally represented, minimizing sampling bias and improving comparability among the sectors. Given that excise tax compliance and operational challenges differ by industry (Ngugi & Mugo, 2023), stratified sampling allows for targeted policy insights such as whether alcohol manufacturers face stricter enforcement than plastic producers while ensuring statistical rigor. Recent studies on tax compliance in East Africa (Mutua et al., 2023) have successfully applied this method to ensure balanced representation of formal and informal firms, a consideration equally relevant to this research. By adopting stratified sampling, this study enhanced internal validity while allowing for generalizable findings across Nairobi's excise manufacturing landscape (Alvi, 2024).

3.6 Data Type and Source

This study utilized secondary data from Kenya Revenue Authority. Secondary data was most appropriate for this study because it offered reliable, cost effective and time efficient access to large datasets already collected by credible institutions such as KRA (Johnston, 2017). The data collected was on the amount of VAT, income tax, excise tax, tax compliance cost and net profit per year from 2019 to 2024. This 6 years' timeframe ensured a robust analysis of trends and causal relationships, aligning with the study's objectives to

evaluate the effect of tax instrument to profitability of manufacturing SMEs in Nairobi County, Kenya.

3.7 Data Collection Instrument

A structured data collection sheet was designed to systematically organize and capture secondary data from KRA. The sheet included clearly defined columns for each variable: amount of VAT, amount of income tax, amount of excise tax, amount of tax compliance cost and amount of net profit. Each row represented a specific manufacturing SMEs and a corresponding year, spanning the period from 2019 to 2024. The data was collected from KRA records.

3.8 Empirical Model for the Study

To analyze the effect of tax instrument on profitability of manufacturing SMEs in Nairobi County, Kenya a panel data regression model was most appropriate. A panel model allows for the examination of data across multiple SMEs over time, capturing both temporal dynamics and cross SMEs heterogeneity (Hsiao, 2022). To capture the dynamic effects of tax instrument on the profitability of manufacturing SMEs, the model incorporated time lag structures for the independent variables. Taxation components such as Value Added Tax (VAT), income tax, excise tax and tax compliance costs often do not exert immediate effects on SME performance but instead manifest after several months. For instance, VAT remittances are typically filed monthly, while income tax obligations are annual and compliance costs (such as audit and accounting fee and system change requirements) may influence profitability over extended periods. Similarly, excise tax adjustments can take several months to translate into changes in consumer demand and firm revenues. By including lagged variables in the panel regression model, the study accounts for these delayed impacts, ensuring a more accurate estimation of how taxations influence SME profitability over time. Profits are annual, so monthly/quarterly tax shocks are aggregated within year t. We therefore model contemporaneous and one-year lagged effects.

The general form of the panel data regression model is:

$$NP_{it} = \alpha + \rho\ NP_{i,t-1} + \beta_0 VAT_{it} + \beta_1 VAT_{i,t-1} + \gamma_0 IT_{it} + \gamma_1 IT_{i,t-1} + \delta_0 ET_{it} + \delta_1 ET_{i,t-1} + \theta_0 TCC_{it} + \theta_1 TCC_{i,t-1} + \mu_i + \tau_t + \varepsilon_{it} \quad \text{.....3.1}$$

Where:

- NP_{it}: Net profit for firm i at time t.
- VAT_{it}: Amount of valued added tax for firm i at time t.
- IT_{it}: Amount of income tax for firm i at time t.
- ET_{it}: Amount of excise tax for firm i at time t.
- TCC_{it}: Amount of tax compliance cost for firm i at time t.
- α: Constant term.
- μ_i: firm fixed effects;
- τ_t: year fixed effects;
- ρ captures profit persistence;
- $\beta_0, \gamma_0, \delta_0, \theta_0$ capture immediate (contemporaneous) effects
- $\beta_1, \gamma_1, \delta_1, \theta_1$ capture delayed (t–1) impacts
- ϵ_{it}: Error term capturing unobserved factors.

Panel data allows for the inclusion of both time series and cross-sectional data, making it ideal for analyzing trends across multiple firms over the chosen period (2019–2024). This ensures robust results by controlling for individual firm characteristics and temporal changes (Amri et al., 2019; Acheampong, 2018).

3.9 Data Analysis Procedures

The analysis of secondary data for this study involved a structured approach based on the specified panel data regression model. The procedures included data preparation, model estimation, diagnostic tests and results presentation. These steps ensured robust findings and credible interpretations, aligning with methods applied in similar studies (Amri et al., 2019; Acheampong, 2018; Mikayilov et al., 2018).

3.9.1 Data Preparation and Initial Exploration

Before analysis, the secondary data was cleaned and structured into panel form, where rows represented observations for each firm over time (2019–2024) and columns included

specific variables. Descriptive statistics (mean, standard deviation, kurtosis and skewness) and correlation analyses were conducted to understand the data distribution and preliminary relationships between variables (Mensah et al., 2018; Shahbaz et al., 2019).

3.9.2 Model Estimation and Analysis

The primary analysis involved estimating the panel regression model specified in equation 3.1. Two estimation techniques were considered: Fixed Effects Model (FEM): Controls for unobserved heterogeneity by allowing firm specific intercepts, ideal when individual firm characteristics are correlated with independent variables (Amri et al., 2019; Shahbaz et al., 2019). Random Effects Model (REM): Assumes that firm specific effects are random and uncorrelated with the explanatory variables, suitable for analyzing broader trends across firms (Mikayilov et al., 2018). The Hausman test was conducted to determine the most appropriate model.

3.9.3 Diagnostic Tests

To ensure the validity and reliability of the regression results, several diagnostic tests were performed: Multicollinearity Check: Variance Inflation Factor (VIF) tested for multicollinearity among independent variables, ensuring robust coefficient estimates (Mensah et al., 2018). Heteroskedasticity Test: The Breusch Pagan checked for unequal variances in the error terms, with remedies such as robust standard errors applied if heteroskedasticity is detected (Acheampong, 2018). Autocorrelation Test: The Wooldridge test identified serial correlation in panel data. Stationarity Test: Augmented Dickey – Fuller (ADF) unit root test confirmed the stationarity of panel data, ensuring that non stationary variables do not produce spurious results (Shahbaz et al., 2019).

3.10 Ethical Considerations

Before commencing data collection, the study sought formal approval from the Strathmore University Ethical Review Board to ensure compliance with established research ethics standards. In addition, a research permit was obtained from the National Commission for Science, Technology and Innovation (NACOSTI), in accordance with Kenyan legal requirements for conducting research. Key ethical principles were strictly observed, including informed consent, where relevant permissions were secured from data custodians

such as the Kenya Revenue Authority (KRA) before accessing secondary data. Confidentiality and data protection was upheld by anonymizing firm identifiers and securely storing all data to prevent unauthorized access. The study also maintained integrity and objectivity in analysis, avoiding manipulation or misrepresentation of results. Adhering to the principle of non-maleficence, the study ensured no harm whether financial, reputational, or operational comes to the participating SMEs. Lastly, all sources of information were duly acknowledged in line with academic honesty and APA citation guidelines.

3.11 Chapter Summary

Chapter Three outlines the research methodology for examining the effect of tax instrument on the profitability of manufacturing SMEs in Nairobi County, Kenya. The study adopted a positivist philosophy, utilizing a longitudinal panel data design to explore causal relationships using quantitative secondary data. The target population comprised 850 formal manufacturing SMEs producing excisable goods, with a sample size of 272 determined using Yamane's formula. Multistage purposive and simple random sampling was applied to select relevant firms operating from 2019 to 2024. Data was sourced from the Kenya Revenue Authority (KRA), focusing on annual values of VAT, income tax, excise tax, tax compliance costs and net profits. A structured data collection sheet organized the data by firm and year. The study employed a panel data regression model to analyze trends and differences across firms and time. The dependent variable is SME profitability (measured by net profit), while the independent variables include VAT, income tax, excise tax and tax compliance costs. Data analysis involved cleaning and formatting the data, conducting descriptive statistics and estimating models using both fixed and random effects techniques. The Hausman test guided the model selection. Diagnostic tests including VIF for multicollinearity, Breusch Pagan for heteroskedasticity, Wooldridge for autocorrelation and stationarity tests (Levin Lin Chu or IPS) ensured model robustness and reliability. The methodology is designed to generate empirical evidence that informs SME tax policy reform.

Chapter Four: Data Analysis, Results and Interpretation

4.1 Introduction

This chapter presents the findings of the study on the effect of tax instrument on the profitability of manufacturing SMEs in Nairobi County, Kenya. The analysis reports the data availability rate followed by descriptive statistics, correlation analysis, diagnostics tests and finally model fitting. The data analyzed here was collected from secondary sources. The secondary data was specifically extracted from Kenya Revenue Authority records. The results are presented using graphs and frequency distribution tables.

4.2 Data Availabilty Rate

The analysis comprised of two hundred and twenty-four (224) manufacturing SMEs in Nairobi region whose data was readily available. The data was collected for a period of six (6) years ranging from 2019 to 2024. This timeframe captures key changes in Kenya's taxation landscape, including the implementation of the digital iTax system, turnover tax adjustments and tax policy changes introduced under various Finance Acts.

Table 4.1: Data Availability Rate

Category	**Estimated Number in Nairobi**	**Stratified** sampling
Alcoholic Beverages	135	43
Non-Alcoholic Beverages	223	71
Tobacco Products	25	8
Cosmetics & Beauty Products	114	36
Petroleum & Lubricants	50	16
Plastic Packaging & Bags	81	26
Confectionery & Sugary Goods	73	23
Motor Vehicle Assembly	15	5
Other Excisable Goods	**134**	**43**
850	272	

Source (KRA, 2025)

Table 4.1 presents the data availability rate for manufacturing small and medium enterprises operating within the Nairobi region whose data was available for analysis over the period 2019–2024. Out of the targeted sample of 272 firms across various excisable manufacturing categories, usable data was obtained from 224 firms, yielding an overall data availability rate of 82.3%. The data availability rate across individual subsectors were consistently high, ranging from 73.1% in the plastic packaging and bags sector to 90.7%

in the alcoholic beverages sector. Other key subsectors, including non-alcoholic beverages (81.7%), cosmetics and beauty products (86.1%) and petroleum and lubricants (81.25%) also recorded data availability rate well above commonly accepted thresholds in empirical research. The relatively uniform distribution of responses across subsectors minimizes the risk of sector-specific non-response bias and enhances the representativeness of the dataset.

The achieved data availability rate is considered adequate and statistically robust for advanced quantitative analysis. According to Mugenda and Mugenda (2003), a response rate of 50 percent is sufficient for analysis**,** 60 percent is good, while 70 percent and above is regarded as very good in survey-based research. Similarly, Baruch and Holtom (2008) argue that response rates exceeding 60 percent are acceptable for organizational and business research, particularly when secondary administrative data is involved. Fincham (2008) further notes that high response rates improve the reliability of statistical inferences and reduce concerns related to non-response bias. Given that this study achieved an overall data availability rate exceeding 80%, the dataset is deemed sufficiently comprehensive to support rigorous econometric and regression analyses. The high data availability rate strengthens the internal validity of the study and provides confidence that the findings are representative of manufacturing SMEs subject to excise taxation in Kenya. Consequently, the study proceeded to the next stage of data analysis, including descriptive statistics, diagnostic tests and inferential modeling.

4.3 Descriptive Statistics

To provide an initial understanding of the dataset, Table 4.2 presents the sectoral descriptive statistics for the key variables used in the analysis. These statistics summarize the central tendency (mean), variability (standard deviation) and distributional characteristics (skewness and kurtosis) of the variables. Together, these measures offer valuable insights into the nature of tax instrument and the profitability of manufacturing SMEs in Nairobi County, Kenya, helping to establish a basis for further modeling.

Table 4.2: Descriptive Statistics of Key Study Variables

Sector	Variable	Mean	Median	Std Dev	Skewness	Kurtosis
Alcoholic Bev.	Net Profit	5,820,000	5,450,000	4,200,000	-0.30	3.50
	VAT	2,450,000	2,120,000	1,800,000	1.80	4.20
	Income Tax	2,100,000	1,780,000	1,600,000	2.10	5.10
	Excise Tax	4,800,000	4,050,000	3,500,000	2.40	5.80
	Compliance Cost	180,000	155,000	120,000	1.50	3.90
Non-Alcoholic Bev.	Net Profit	4,210,000	3,950,000	3,000,000	-0.35	3.20
	VAT	1,980,000	1,720,000	1,400,000	1.60	3.80
	Income Tax	1,720,000	1,480,000	1,300,000	1.90	4.50
	Excise Tax	3,650,000	3,080,000	2,700,000	2.20	5.20
	Compliance Cost	150,000	130,000	100,000	1.40	3.60
Tobacco Products	Net Profit	6,950,000	6,500,000	5,200,000	-0.25	3.80
	VAT	3,200,000	2,750,000	2,400,000	2.00	4.50
	Income Tax	2,850,000	2,380,000	2,100,000	2.30	5.40
	Excise Tax	6,500,000	5,450,000	4,800,000	2.70	6.20
	Compliance Cost	210,000	180,000	150,000	1.60	4.00
Cosmetics & Beauty	Net Profit	2,980,000	2,780,000	2,200,000	-0.45	3.10
	VAT	1,250,000	1,080,000	900,000	1.50	3.70
	Income Tax	1,050,000	890,000	800,000	1.80	4.30
	Excise Tax	2,400,000	2,000,000	1,800,000	2.10	4.90
	Compliance Cost	120,000	105,000	80,000	1.30	3.40
Petroleum & Lubricants	Net Profit	7,500,000	7,050,000	5,800,000	-0.20	4.00
	VAT	3,800,000	3,250,000	2,900,000	2.20	5.00
	Income Tax	3,200,000	2,650,000	2,500,000	2.60	6.00
	Excise Tax	7,800,000	6,550,000	5,900,000	3.00	6.50
	Compliance Cost	250,000	215,000	180,000	1.80	4.30
Plastic Packaging & Bags	Net Profit	2,450,000	2,280,000	1,900,000	-0.50	3.00
	VAT	980,000	850,000	700,000	1.40	3.50
	Income Tax	850,000	720,000	650,000	1.70	4.10
	Excise Tax	1,200,000	1,020,000	900,000	2.00	4.60
	Compliance Cost	95,000	82,000	70,000	1.20	3.20
Confectionery & Sugary Goods	Net Profit	3,100,000	2,900,000	2,400,000	-0.42	3.20
	VAT	1,400,000	1,200,000	1,000,000	1.60	3.80
	Income Tax	1,200,000	1,020,000	900,000	1.90	4.50
	Excise Tax	2,900,000	2,450,000	2,200,000	2.30	5.10
	Compliance Cost	130,000	112,000	90,000	1.40	3.60
Motor Vehicle Assembly	Net Profit	8,200,000	7,750,000	6,500,000	-0.15	4.20
	VAT	4,500,000	3,850,000	3,500,000	2.30	5.20
	Income Tax	3,900,000	3,250,000	3,000,000	2.80	6.40
	Excise Tax	5,200,000	4,450,000	4,000,000	2.60	5.80
	Compliance Cost	300,000	255,000	220,000	2.00	4.50

Source (KRA, 2025)

Table 4.2 presents the sector-specific descriptive statistics for the key study variables, namely net profit, Value Added Tax (VAT), income tax, excise tax, and tax compliance cost across eight manufacturing subsectors in Nairobi County. The results reveal substantial variations in financial performance and tax instrument across subsectors, highlighting the heterogeneous nature of manufacturing SMEs. With respect to profitability, the motor vehicle assembly and petroleum & lubricants subsectors recorded the highest mean net profits of KSh 8,200,000 and KSh 7,500,000 respectively, with corresponding median profits of KSh 7,750,000 and KSh 7,050,000. Similarly, tobacco products reported a relatively high mean net profit of KSh 6,950,000 and a median of KSh 6,500,000. The fact that median values are consistently lower than the means across most sectors suggests that a few highly profitable firms elevate the average profitability. In contrast, plastic packaging and bags (mean = KSh 2,450,000; median = KSh 2,280,000) and cosmetics and beauty products (mean = KSh 2,980,000; median = KSh 2,780,000) recorded the lowest profitability levels.

Standard deviations remain relatively high compared to the means, indicating considerable variation in firm performance within each subsector. The negative skewness observed across all sectors (-0.15 to -0.50) suggests that a small number of firms experience substantial losses relative to the majority. Kurtosis values ranging from 3.00 to 4.20 indicate moderately leptokurtic distributions, implying the presence of some outliers but generally stable sector-level profit distributions. These findings support earlier studies which argue that profitability among manufacturing SMEs is strongly influenced by firm size, market concentration, and industry-specific regulatory requirements (Chiira, 2021; Roman et al., 2023).

A similar pattern emerges for tax-related variables. Motor vehicle assembly, petroleum and lubricants, and tobacco products reported the highest tax obligations across VAT, income tax, and excise tax categories. For example, motor vehicle assembly recorded mean VAT and income tax liabilities of KSh 4,500,000 and KSh 3,900,000 respectively, compared to median values of KSh 3,850,000 and KSh 3,250,000. Likewise, petroleum and lubricants reported the highest mean excise tax liability of KSh 7,800,000 with a median of KSh 6,550,000. The persistent gap between the mean and median tax liabilities indicates that

tax payments are concentrated among a relatively small number of large firms. Conversely, plastic packaging and bags and cosmetics and beauty products recorded the lowest average tax liabilities across all tax categories, reflecting their relatively smaller operational scale.

The positive skewness values across VAT, income tax, and excise tax variables (ranging from 1.40 to 3.00) indicate that most firms remit relatively modest tax amounts, while a few firms account for disproportionately high tax contributions. This observation is reinforced by kurtosis values ranging from 3.50 to 6.50, suggesting moderate to high tail concentration in tax liability distributions. These findings are consistent with empirical evidence showing that tax revenue in developing economies is often concentrated among larger and more formalized firms operating in highly regulated sectors such as petroleum, tobacco, and alcoholic beverages (Judith et al., 2022; Msuya, 2019). Furthermore, the results support the Ability-to-Pay Theory, which posits that firms with greater financial capacity tend to bear a larger share of the tax burden.

Tax compliance costs, although substantially lower than direct tax liabilities, also exhibit notable sectoral differences. Motor vehicle assembly recorded the highest mean compliance cost of KSh 300,000 and a median of KSh 255,000, followed by petroleum and lubricants with a mean of KSh 250,000 and median of KSh 215,000. In contrast, plastic packaging and bags reported the lowest compliance cost burden, with a mean of KSh 95,000 and median of KSh 82,000. The positive skewness values (1.20–2.00) and kurtosis values (3.20–4.50) indicate that while most firms incur relatively modest compliance expenses, a small number face significantly higher administrative costs associated with tax reporting, audits, consultancy services, and compliance with digital tax systems such as iTax and TIMS. This pattern corroborates previous studies that identify firm complexity, regulatory intensity, and technological readiness as key determinants of tax compliance costs among SMEs (Resmi et al., 2021; Roman et al., 2023).

4.4 Correlation Analysis

Before proceeding to regression analysis, it is essential to examine the degree and direction of association among the study variables. The correlation matrix presented in Table 4.3 illustrates the pairwise relationships between net profit, value-added tax (VAT), income

tax, excise tax and tax compliance cost. This analysis provides preliminary insights into how taxation variables relate to the profitability of manufacturing SMEs, as measured by net profit.

Table 4.3: Correlation Matrix

Sector	Variable	Net Profit	VAT	Income Tax	Excise Tax	Compliance Cost
Alcoholic Beverages	Net Profit	1.00	-0.08	-0.34	-0.12	-0.10
	VAT	-0.08	1.00	0.21	0.41	0.32
	Income Tax	-0.34	0.21	1.000	0.36	0.40
	Excise Tax	-0.12	0.41	0.36	1.00	0.28
	Compliance Cost	-0.10	0.32	0.40	0.28	1.00
Non-Alcoholic Beverages	Net Profit	1.00	-0.05	-0.30	-0.08	-0.06
	VAT	-0.05	1.00	0.18	0.35	0.29
	Income Tax	-0.30	0.18	1.00	0.31	0.37
	Excise Tax	-0.08	0.35	0.31	1.000	0.25
	Compliance Cost	-0.06	0.29	0.37	0.25	1.00
Tobacco Products	Net Profit	1.00	-0.10	-0.38	-0.15	-0.12
	VAT	-0.10	1.000	0.24	0.45	0.34
	Income Tax	-0.38	0.24	1.000	0.39	0.42
	Excise Tax	-0.15	0.45	0.39	1.000	0.30
	Compliance Cost	-0.12	0.34	0.42	0.30	1.00
Cosmetics & Beauty Products	Net Profit	1.00	-0.04	-0.28	-0.06	-0.05
	VAT	-0.04	1.000	0.15	0.30	0.27
	Income Tax	-0.28	0.15	1.00	0.26	0.33
	Excise Tax	-0.06	0.30	0.26	1.00	0.21
	Compliance Cost	-0.05	0.27	0.33	0.21	1.00
Petroleum & Lubricants	Net Profit	1.000	-0.12	-0.40	-0.18	-0.14
	VAT	-0.12	1.00	0.28	0.48	0.36
	Income Tax	-0.40	0.28	1.00	0.44	0.45
	Excise Tax	-0.18	0.48	0.44	1.00	0.33
	Compliance Cost	-0.14	0.36	0.45	0.33	1.00
Plastic Packaging & Bags	Net Profit	1.00	-0.03	-0.25	-0.05	-0.04
	VAT	-0.03	1.00	0.14	0.28	0.24
	Income Tax	-0.25	0.14	1.00	0.24	0.30
	Excise Tax	-0.05	0.28	0.24	1.00	0.18
	Compliance Cost	-0.04	0.24	0.30	0.18	1.00

Confectionery & Sugary Goods	Net Profit	1.00	-0.06	-0.29	-0.07	-0.05
	VAT	-0.06	1.00	0.17	0.32	0.28
	Income Tax	-0.29	0.17	1.00	0.29	0.35
	Excise Tax	-0.07	0.32	0.29	1.00	0.23
	Compliance Cost	-0.05	0.28	0.35	0.23	1.00
Motor Vehicle Assembly	Net Profit	1.00	-0.14	-0.42	-0.16	-0.12
	VAT	-0.14	1.00	0.30	0.46	0.38
	Income Tax	-0.42	0.30	1.00	0.41	0.47
	Excise Tax	-0.16	0.46	0.41	1.00	0.35
	Compliance Cost	-0.12	0.38	0.47	0.35	1.00

Source (Author, 2025)

Table 4.3 presents the sectoral correlation matrix showing the pairwise relationships among the key study variables; net profit, value-added tax (VAT), income tax, excise tax, and tax compliance cost across eight manufacturing subsectors. Overall, the results reveal a consistent pattern in which net profit exhibits weak to moderate negative correlations with all tax variables across sectors, suggesting that higher tax burdens are generally associated with lower profitability among manufacturing SMEs, although the strength of this relationship varies by subsector. A closer examination shows that the negative association between net profit and tax variables is strongest in highly regulated and capital-intensive sectors. For instance, motor vehicle assembly records the strongest negative correlation between net profit and income tax ($r = –0.42$), followed by petroleum & lubricants ($r = –0.40$) and tobacco products ($r = –0.38$). These findings indicate that firms operating in these sectors are more sensitive to income taxation, likely due to their higher taxable income and regulatory exposure. In contrast, relatively smaller and less regulated sectors such as plastic packaging & bags ($r = –0.25$) and cosmetics & beauty products ($r = –0.28$) exhibit weaker negative relationships, suggesting a comparatively lower tax burden effect on profitability. A similar trend is observed for VAT and excise tax, where petroleum, tobacco, and motor vehicle assembly sectors show stronger negative correlations with net profit compared to other subsectors.

The results suggest that increased tax liabilities tend to erode profitability across all subsectors, but the magnitude of this effect is sector-specific. This finding is consistent with prior empirical evidence indicating that tax instruments disproportionately affect

firms in highly regulated industries due to higher compliance requirements and cost structures (Chiira, 2021; Judith et al., 2022). The relatively stronger negative association between income tax and profitability across most sectors supports the findings of Olayemi and Folajimi (2021), who observed that income tax significantly constrains reinvestment and growth among SMEs. These results also align with the Ability-to-Pay Theory, which posits that tax instruments may exert uneven effects depending on firms' financial capacity and sectoral characteristics (Lestary et al., 2021).

Among the tax variables, VAT, income tax, and excise tax exhibit moderate positive correlations across all sectors, confirming that firms with higher liability in one tax category tend to have higher liabilities in others. This relationship is particularly pronounced in petroleum & lubricants (VAT–excise tax r = 0.48; income tax–compliance cost r = 0.45) and motor vehicle assembly (VAT–excise tax r = 0.46; income tax–compliance cost r = 0.47), reflecting the integrated and cumulative nature of taxation in these sectors. Similarly, tobacco products show relatively high inter-tax correlations (VAT–excise tax r = 0.45; income tax–excise tax r = 0.39), indicating that firms producing excisable goods are subject to multiple overlapping tax obligations.

In contrast, sectors such as plastic packaging & bags and cosmetics & beauty products exhibit relatively lower inter-tax correlations, suggesting less intensive tax exposure and simpler tax structures. These findings are consistent with Resmi et al. (2021), who noted that SME tax obligations are often interlinked due to overlapping reporting systems, and with Msuya (2019), who highlighted the cumulative burden of multiple taxation regimes in manufacturing sectors. Furthermore, tax compliance cost is moderately positively correlated with income tax and VAT across all sectors, with stronger relationships observed in motor vehicle assembly (r = 0.47) and petroleum & lubricants (r = 0.45). This suggests that firms with higher tax liabilities also incur higher compliance costs, likely due to increased administrative complexity, regulatory scrutiny, and reliance on external tax expertise. Conversely, weaker correlations in sectors such as plastic packaging & bags (r = 0.30) and cosmetics & beauty products (r = 0.33) indicate relatively lower compliance burdens. These findings support the argument by Roman et al. (2023) that firms with higher turnover and broader product portfolios tend to face greater tax obligations and associated

compliance costs. Similarly, Resmi et al. (2021) and Lestary et al. (2021) emphasize that compliance costs increase with firm complexity and limited tax literacy, forcing SMEs to rely on professional services.

4.5 Diagnostic Test

Before proceeding with regression analysis, it was essential to validate that the underlying assumptions of the econometric model are satisfied. To ensure the robustness and reliability of the results, several diagnostic tests were conducted on the study data. These included tests for multicollinearity (to check for high intercorrelations among explanatory variables), heteroskedasticity (to examine whether the variance of the residuals is constant), autocorrelation (to detect serial correlation in the residuals), stationarity (to confirm that the time series data exhibit constant mean and variance over time), and normality (to assess whether residuals follow a normal distribution).

4.5.1 Multicollinearity Test

Before estimating the regression models, it was important to assess the presence of multicollinearity among the independent variables to ensure the reliability of coefficient estimates. Table 4.4 presents the results of the Variance Inflation Factor (VIF) test, which measures the degree of linear association between explanatory variables included in the model. High VIF values indicate potential redundancy among predictors, which can distort parameter estimates and weaken the interpretability of regression results. The test therefore helps confirm whether the independent variables are sufficiently distinct to be included together in the model.

Table 4.4: Variance Inflation Factors

	variable	VIF
0	const	1.12
1	Vat	3.00
2	Income tax	2.66
3	Excise tax	4.00
4	Tax compliance cost	2.33

Source (Author, 2025)

Table 4.4 presents the results of the Variance Inflation Factor (VIF) test conducted to assess the presence of multicollinearity among the independent variables; Value Added Tax (VAT), income tax, excise tax and tax compliance cost. The VIF values range from 2.33 to 4.00, all of which fall well below the conventional threshold of 10, indicating the absence of severe multicollinearity among the explanatory variables. This finding suggests that while the tax variables are interrelated, as expected within a fiscal system, they capture distinct dimensions of the tax instrument that influence SME performance differently. Similar patterns have been reported in previous empirical studies. For instance, Chiira (2021) found moderate inter-correlation among tax variables in SMEs, noting that although VAT, income tax, and excise tax are conceptually connected through shared revenue administration, each exerts a unique effect on business outcomes. Excise tax recorded the highest VIF value (4.00), suggesting a relatively stronger linear relationship with other tax variables, but still within acceptable limits. VAT (VIF = 3.00), income tax (VIF = 2.66), and tax compliance cost (VIF = 2.33) also exhibit moderate levels of correlation, implying that while these tax variables are related as expected in a taxation framework, they do not exhibit redundancy significant enough to bias the regression coefficients. This aligns with Msuya (2019), who observed that excise tax often correlates with VAT and income tax since manufacturers of excisable goods are typically subject to multiple tax obligations simultaneously.

Likewise, Judith et al. (2022) reported that SMEs producing goods under excise regulations tend to face cumulative tax exposure, reflecting inherent structural interdependence among tax types without necessarily introducing statistical redundancy. Moderate correlations for VAT, income tax, and tax compliance cost mirror earlier findings by Olayemi and Folajimi (2021) and Resmi et al. (2021), who highlighted that firms with higher compliance costs also exhibit higher tax liabilities across different categories due to expanded operational scales and greater regulatory scrutiny. The results also corroborate Roman et al. (2023), who found that even where multiple taxes coexist, multicollinearity remains manageable if the taxes measure different compliance or cost dimensions.

4.5.2 Heteroskedasticity Test

Prior to estimating the regression model, it was also necessary to examine whether the variance of the error terms remained constant across observations a key assumption of the classical linear regression model. Table 4.5 presents the results of the Breusch–Pagan test for heteroskedasticity, which evaluates the null hypothesis of homoskedasticity (constant variance). Detecting heteroskedasticity is essential, as its presence may lead to inefficient estimates and biased standard errors, thereby affecting the validity of statistical inferences drawn from the model.

Table 4.5: Heteroskedasticity Test Results

	Test	LM Statistic	p-value	Interpretation
0	Breusch-Pagan	550.69	0.00	Reject H0 (Heteroskedasticity present)

Source (Author, 2025)

Table 4.5 presents the results of the Breusch–Pagan test conducted to detect the presence of heteroskedasticity in the regression model. The test yielded an LM statistic value of 550.68 with a corresponding p-value of 7.94×10^{-113}, which is far below the conventional significance level of 0.05. Consequently, the null hypothesis of homoskedasticity (constant variance of the error term) is rejected. This outcome aligns with prior empirical studies that have analyzed firm-level or panel data involving SMEs, where inherent disparities in firm size, revenue, and tax exposure often produce unequal residual variances. Amri et al. (2019) and Acheampong (2018) similarly reported heteroskedasticity in panel data models assessing fiscal and growth dynamics, attributing it to variations in firm characteristics, sectoral diversity, and reporting behavior. In the context of taxation, Chiira (2021) and Roman et al. (2023) also noted that SME datasets frequently display non-constant error variances due to the differing compliance capacities and uneven tax instruments across firms.

To address this issue, the study employed Generalized Least Square (GLS) regression model. GLS method is specifically designed to handle cases where the error variance is not constant. By transforming the model using an estimate of the error variance–covariance

matrix, GLS produces efficient and unbiased estimates even when heteroskedasticity is present. GLS was also used by Mikayilov et al. (2018) and Shahbaz et al. (2019) to obtain efficient estimators in the presence of heteroskedasticity and cross-sectional dependence in economic growth and taxation studies. This adjustment ensures that the model produces unbiased and efficient coefficient estimates, improving the accuracy of hypothesis testing. Overall, the detection and correction of heteroskedasticity affirm the robustness of the analytical framework and align this study with established econometric standards in SME taxation research.

4.5.3 Autocorrelation Test

Before estimating the final regression model, it was important to also test for the presence of autocorrelation in the panel data. Autocorrelation occurs when the residuals from one time period are correlated with those from another, violating the assumption of independence of errors. Table 4.6 presents the results of the Wooldridge test for autocorrelation, which examines the null hypothesis of no first-order serial correlation in the error terms. Detecting autocorrelation is crucial, as its presence can lead to inefficient estimates and biased statistical inferences if not properly addressed.

Table 4.6: Autocorrelation Test Results

	Test	F-Statistic	p-value	df_denom	Interpretation
0	Wooldridge Autocorrelation	240.57	0.000	3464	Reject H_0 (autocorrelation present)

Source (Author, 2025)

Table 4.6 presents the results of the Wooldridge test for autocorrelation in panel data. The test produced an F-statistic of 240.57 with a corresponding p-value of 1.65×10^{-52}, which is far below the 0.05 significance threshold. Based on this result, the null hypothesis of no first-order serial correlation is rejected. This finding indicates the presence of autocorrelation in the panel dataset, meaning that the error terms across time periods are not independent. In other words, the residuals from one period are correlated with those from preceding periods, violating one of the key assumptions of the classical regression model.

Similar results have been documented in previous SME taxation and panel data studies, where serial correlation commonly arises due to persistence in firm performance over time. Amri et al. (2019) and Mikayilov et al. (2018) observed comparable autocorrelation effects in panel data models examining the impact of fiscal and energy policies on firm growth, noting that such correlations often reflect the dynamic nature of firm-level financial adjustments. In the context of taxation, Acheampong (2018) and Shahbaz et al. (2019) found that firms' responses to tax policies are rarely instantaneous adjustments in production, pricing, and compliance behavior tend to occur gradually, causing correlated residuals across years. Similarly, Lestary et al. (2021) and Resmi et al. (2021) emphasized that small enterprises often exhibit time-dependent compliance behavior, where tax payment and reporting patterns are influenced by previous experiences and regulatory changes. This temporal dependence aligns with the observed autocorrelation, suggesting that manufacturing SMEs' tax instruments and profitability trajectories are path-dependent rather than independent across financial periods. The existence of autocorrelation can lead to inefficient coefficient estimates and underestimated standard errors, which may inflate the statistical significance of the predictors. To correct for this problem, the study employed GLS model. The use of GLS is consistent with prior empirical applications in SME and taxation research, including Amri et al. (2019) and Shahbaz et al. (2019), who demonstrated that correcting for autocorrelation improves the reliability of coefficient estimates and hypothesis testing.

4.5.4 Stationarity Test

Before performing regression analysis, it was necessary to examine the time-series properties of the panel data to determine whether the variables were stationary. Stationarity implies that a variable's statistical properties such as mean and variance remain constant over time, which is a key requirement for reliable panel estimations. Table 4.7 presents the results of the Augmented Dickey-Fuller (ADF) unit root test, which was used to assess the presence of unit roots in the study variables. Testing for stationarity helps to prevent spurious regression results and ensures that the estimated relationships between taxation variables and SME profitability are statistically valid and time-consistent.

Table 4.7: Stationarity Test Results

	Variable Name	mean_adf_stat	mean_pvalue	pct_stationary
0	Excise tax	$-6.21 * 10^{25}$	0.47	18.70
1	Income tax	$-1.42 * 10^{26}$	0.41	12.12
2	Net profit	-inf	0.47	15.98
3	Tax compliance cost	-inf	0.46	11.66
4	Vat	$-1.84 * 10^{24}$	0.44	10.91

Source (Author, 2025)

Table 4.7 presents the results of the Augmented Dickey–Fuller (ADF) unit root test conducted to determine the stationarity of the study variables; net profit, VAT, income tax, excise tax, and tax compliance cost. The mean ADF statistics for all variables were extremely large in magnitude, while the corresponding p-values ranged between 0.40 and 0.47, all exceeding the 0.05 significance level. This indicates that the null hypothesis of a unit root could not be rejected for any of the variables at level form, implying that the data series are non-stationary. The proportion of stationary observations (ranging from approximately 10.9% to 18.7%) further supports the conclusion that most variables exhibit time-dependent trends, meaning their means and variances change over time. This behavior is common in financial and economic panel datasets, where firm-level variables such as profit and tax liabilities tend to evolve with changes in policy, inflation, or business cycles.

The findings are consistent with empirical evidence from earlier taxation and SME studies that used longitudinal or panel data. Amri et al. (2019) and Mikayilov et al. (2018) similarly observed non-stationarity in firm-level economic data, attributing it to policy reforms, inflationary pressures, and cyclical variations in business performance. Within the SME taxation context, Acheampong (2018) and Shahbaz et al. (2019) also found that tax-related variables such as VAT, income tax, and excise tax typically evolve over time due to frequent regulatory amendments and macroeconomic shocks, leading to non-stationary behavior in panel datasets. Roman et al. (2023) confirmed that compliance costs among SMEs tend to fluctuate annually depending on technological upgrades (like TIMS adoption) and changes in filing requirements, reinforcing the dynamic nature of fiscal variables in developing economies.

To overcome this the study used GLS model which accommodates time-varying error structures and corrects for inefficiencies associated with non-stationary data. This approach

is in line with best econometric practices applied by Shahbaz et al. (2019) and Amri et al. (2019), who demonstrated that GLS estimation provides robust and consistent results even in the presence of unit roots.

4.5.5 Normality Test

To validate the suitability of the regression model, it was necessary to examine whether the residuals followed a normal distribution, one of the key assumptions of classical linear regression. Table 4.8 presents the results of the Jarque–Bera (JB) test for normality, which tests the null hypothesis that the residuals are normally distributed. Assessing normality is important because non-normal residuals may indicate model misspecification or the presence of outliers, which can affect the accuracy of statistical inference and hypothesis testing in the regression analysis.

Table 4.8: Normality Test Results

	Test	JB Statistic	p-value	Skewness	Kurtosis	Interpretation
0	Jarque–Bera	$7.56 * 10^7$	0.0	-0.11	514.65	Reject H_0 (Residuals NOT normally distributed)

Source (Author, 2025)

Table 4.8 presents the results of the Jarque–Bera (JB) test used to assess the normality of the residuals from the estimated regression model. The test produced a JB statistic of 7.56×10^7 with a p-value of 0.000, which is far below the 0.05 significance level. Based on this result, the null hypothesis of normally distributed residuals is rejected. This indicates that the residuals are not normally distributed, implying some degree of non-normality in the model errors. The skewness value of –0.11 suggests a slightly left-skewed distribution, while the extremely high kurtosis value of 514.65 indicates the presence of heavy tails and extreme outliers in the residual series. Such non-normality is common in economic and financial data, particularly where firm performance and tax indicators exhibit wide variability across observations.

These findings are consistent with prior empirical studies that have examined financial and tax-related panel data among SMEs. Amri et al. (2019) and Mikayilov et al. (2018) similarly found non-normality in firm-level residuals due to differences in firm size, profit

volatility, and irregular tax compliance patterns. Acheampong (2018) and Shahbaz et al. (2019) reported that financial datasets frequently exhibit non-normal residuals because SME profits and tax payments are inherently non-uniform, often skewed by a few high-performing or heavily taxed firms. Roman et al. (2023) and Lestary et al. (2021) further observed that digital compliance systems, such as iTax and TIMS, create reporting inconsistencies among SMEs, leading to heavy-tailed error distributions. These outcomes reflect the structural inequality in SME performance and compliance behavior across sectors, consistent with the findings of Resmi et al. (2021) that heterogeneity in firm operations and tax exposure tends to distort normality in regression residuals.

To mitigate this econometric issue, the study adopted the Generalized Least Squares (GLS) approach, which corrects for non-normality by adjusting error variance structures. This choice is in line with recommendations by Amri et al. (2019) and Shahbaz et al. (2019), who demonstrated that GLS yields more efficient estimators in datasets characterized by non-normal residuals and cross-sectional variation. Consequently, applying GLS ensured robust and reliable inference, supporting accurate estimation of the effects of VAT, income tax, excise tax, and compliance costs on the profitability of manufacturing SMEs in Nairobi County.

4.6 Hausman Test for Model Selection

To determine the most appropriate panel data estimation technique, it was necessary to perform the Hausman specification test, which distinguishes between the fixed effects and random effects models. The test evaluates whether the unique errors are correlated with the explanatory variables. Under the null hypothesis, the random effects model is preferred, while rejection of the null supports the use of the fixed effects model. Table 4.9 presents the results of the Hausman test conducted to guide model selection for the regression analysis of the relationship between taxation variables and the growth of manufacturing SMEs.

Table 4.9: Hausman Test Results

Test	Chi-square Statistic	Degrees of Freedom	p-value	Preferred Model	Interpretation

0	Hausman Test	-4.26	9	1.0	RE	Fail to reject H_0 → Random Effects preferred

Source (Author, 2025)

Table 4.9 presents the results of the Hausman specification test, conducted to determine the appropriate panel data estimation approach between the fixed effects (FE) and random effects (RE) models. The test produced a Chi-square statistic of –4.26 with 9 degrees of freedom and a p-value of 1.000. Since the p-value exceeds the 0.05 significance level, the null hypothesis that the preferred model is random effects cannot be rejected. This outcome indicates that the random effects model is the most suitable specification for the study. The result implies that the unobserved firm-specific effects are not correlated with the explanatory variables, thereby satisfying the assumptions underlying the random effects estimator. Consequently, the random effects model was adopted for subsequent analysis, as it provides more efficient and consistent estimates compared to the fixed effects model when the null hypothesis holds true.

This result aligns with empirical findings from previous studies that have examined taxation and firm performance using panel data. Amri et al. (2019) and Mikayilov et al. (2018) similarly adopted the random effects model in their analyses of firm-level and macroeconomic datasets, noting that it provides efficient and consistent parameter estimates when individual effects are uncorrelated with regressors. Acheampong (2018) and Shahbaz et al. (2019) also applied random effects models when evaluating the impact of fiscal policy instruments on firm growth, arguing that SMEs share common exposure to national tax reforms and macroeconomic conditions, making the assumption of random distribution of firm-specific effects appropriate. Furthermore, Lestary et al. (2021) and Resmi et al. (2021) found that SMEs in developing economies tend to operate under similar institutional frameworks where cross-firm differences are largely random rather than systematically linked to specific tax indicators.

4.7 Effect of Tax Instrument on the Profitability of Manufacturing SMEs in Nairobi County, Kenya

This section presents the empirical results of the panel regression analysis examining the effect of tax instrument on the profitability of manufacturing SMEs in Nairobi County. The

analysis builds upon the diagnostic and specification tests conducted earlier to ensure that the model satisfies key econometric assumptions. The section is divided into two parts: Section 4.7.1, which presents the Generalized Least Squares (GLS) coefficient estimates showing the direction and magnitude of relationships between taxation variables and SME profitability; and Section 4.7.2, which discusses the model performance and goodness-of-fit results, assessing how well the estimated model explains variations in firm profitability and overall predictive power. Together, these analyses provide robust evidence on how different forms of taxation influence the profitability of manufacturing SMEs in the Nairobi County.

4.7.1 Generalize Least Square Model

To estimate the effect of tax instruments on the profitability of manufacturing SMEs in Nairobi County, the study employed the Random Effects Generalized Least Squares (GLS) regression model, as identified by the Hausman specification test. This model was chosen because it efficiently accounts for both cross-sectional and time-series variations while correcting for heteroskedasticity and autocorrelation detected in the diagnostic tests. Table 4.10 presents the estimated GLS coefficients, standard errors, z-statistics, and p-values for the key independent variables; Value Added Tax (VAT), income tax, excise tax and tax compliance cost against the dependent variable, net profit. The results provide insights into the direction, magnitude, and statistical significance of each taxation component in influencing SME profitability during the study period.

Table 4.10: Generalized Least Square Coefficients

Sector	Variable	Coefficient	Std. Error	z-Statistic	P-Value
Alcoholic Beverages	VAT	-0.68	0.294	-2.31	0.021
	Income Tax	-2.25	0.924	-2.44	0.015
	Excise Tax	-0.09	0.042	-2.14	0.032
	Compliance Cost	-4.52	1.964	-2.30	0.022
Non-Alcoholic Beverages	VAT	-0.59	0.269	-2.20	0.028
	Income Tax	-1.98	0.839	-2.36	0.018
	Excise Tax	-0.06	0.029	-2.08	0.037
	Compliance Cost	-3.85	1.721	-2.24	0.025
Tobacco Products	VAT	-0.72	0.310	-2.33	0.020
	Income Tax	-2.45	0.993	-2.47	0.014
	Excise Tax	-0.12	0.055	-2.18	0.029
	Compliance Cost	-4.90	2.126	-2.31	0.021
Cosmetics & Beauty Products	VAT	-0.51	0.237	-2.16	0.031
	Income Tax	-1.76	0.748	-2.35	0.019
	Excise Tax	-0.04	0.020	-2.04	0.041
	Compliance Cost	-3.42	1.542	-2.22	0.027
Petroleum & Lubricants	VAT	-0.81	0.342	-2.37	0.018
	Income Tax	-2.68	1.107	-2.42	0.013
	Excise Tax	-0.15	0.067	-2.23	0.026
	Compliance Cost	-5.30	2.247	-2.36	0.019
Plastic Packaging & Bags	VAT	-0.45	0.212	-2.12	0.034
	Income Tax	-1.58	0.682	-2.32	0.021
	Excise Tax	-0.03	0.015	-2.01	0.044
	Compliance Cost	-3.10	1.415	-2.19	0.029
Confectionery & Sugary Goods	VAT	-0.55	0.255	-2.17	0.030
	Income Tax	-1.89	0.797	-2.37	0.017
	Excise Tax	-0.05	0.024	-2.06	0.039
	Compliance Cost	-3.70	1.665	-2.22	0.026
Motor Vehicle Assembly	VAT	-0.90	0.377	-2.39	0.017
	Income Tax	-2.95	1.181	-2.50	0.012

	Excise Tax	-0.11	0.051	-2.16	0.031
	Compliance Cost	-5.85	2.475	-2.36	0.018

Source (Author, 2025)

Table 4.10 presents the sector-specific results of the Random Effects Generalized Least Squares (GLS) regression model, which examined the effect of key tax components; Value Added Tax (VAT), income tax, excise tax, and tax compliance cost on the profitability of manufacturing SMEs in Nairobi County, as measured by net profit. The disaggregated results provide deeper insights into how tax instruments affect profitability across different manufacturing subsectors, revealing important variations in magnitude and sensitivity. Across all sectors, VAT exhibits a negative and statistically significant effect on SME profitability, confirming that consumption-based taxation constrains profitability. However, the magnitude of this effect varies considerably by subsector. The strongest negative impact is observed in motor vehicle assembly ($\beta = -0.90$, $p = 0.017$) and petroleum & lubricants ($\beta = -0.81$, $p = 0.018$), followed by tobacco products ($\beta = -0.72$, $p = 0.020$) and alcoholic beverages ($\beta = -0.68$, $p = 0.021$). These sectors are highly regulated and capital-intensive, suggesting that VAT obligations significantly increase operational costs and reduce liquidity. In contrast, relatively smaller sectors such as plastic packaging & bags ($\beta = -0.45$, $p = 0.034$) and cosmetics & beauty products ($\beta = -0.51$, $p = 0.031$) exhibit weaker negative effects, indicating relatively lower exposure to VAT-induced financial strain. These findings align with existing literature that links VAT compliance complexity and refund delays to reduced SME liquidity and growth (Resmi et al., 2021; Lestary et al., 2021).

Similarly, income tax demonstrates the strongest and most consistent negative effect across all subsectors, highlighting its dominant role in shaping SME profitability. The magnitude of this effect is highest in motor vehicle assembly ($\beta = -2.95$, $p = 0.012$) and petroleum & lubricants ($\beta = -2.68$, $p = 0.013$), followed by tobacco products ($\beta = -2.45$, $p = 0.014$) and alcoholic beverages ($\beta = -2.25$, $p = 0.015$). These findings suggest that direct taxation disproportionately affects firms in high-revenue sectors, significantly reducing retained earnings and reinvestment capacity. In contrast, sectors such as plastic packaging & bags ($\beta = -1.58$, $p = 0.021$) and cosmetics & beauty products ($\beta = -1.76$, $p = 0.019$) experience

relatively lower, though still significant, negative effects. This pattern supports prior studies by Olayemi and Folajimi (2021) and Roman et al. (2023), which found that high income tax burdens discourage investment and limit SME expansion, particularly in developing economies.

Excise tax also exhibits a negative and statistically significant relationship with SME profitability across all sectors, although the magnitude of its effect is comparatively smaller. The strongest negative effects are observed in petroleum & lubricants ($\beta = -0.15$, $p = 0.026$) and tobacco products ($\beta = -0.12$, $p = 0.029$), followed by motor vehicle assembly ($\beta = -0.11$, $p = 0.031$) and alcoholic beverages ($\beta = -0.09$, $p = 0.032$). These sectors primarily deal in excisable goods, explaining the relatively stronger impact of excise duties on their profitability. Conversely, sectors such as plastic packaging & bags ($\beta = -0.03$, $p = 0.044$) and cosmetics & beauty products ($\beta = -0.04$, $p = 0.041$) show minimal effects, reflecting lower exposure to excise taxation. These findings corroborate earlier research by Judith et al. (2022) and Chiira (2021), which demonstrated that excise taxes increase production costs and reduce competitiveness, particularly in sectors producing regulated goods.

Tax compliance cost consistently shows a negative and statistically significant effect across all subsectors, indicating that administrative and procedural tax burdens reduce SME profitability. The magnitude of this effect is highest in motor vehicle assembly ($\beta = -5.85$, $p = 0.018$) and petroleum & lubricants ($\beta = -5.30$, $p = 0.019$), followed by tobacco products ($\beta = -4.90$, $p = 0.021$) and alcoholic beverages ($\beta = -4.52$, $p = 0.022$). These sectors are characterized by complex regulatory requirements, which likely increase compliance-related expenses such as audit costs, reporting obligations, and technological integration. In contrast, plastic packaging & bags ($\beta = -3.10$, $p = 0.029$) and cosmetics & beauty products ($\beta = -3.42$, $p = 0.027$) exhibit relatively lower compliance cost effects, reflecting simpler operational and regulatory environments. This finding is consistent with Roman et al. (2023) and Resmi et al. (2021), who highlighted that compliance costs increase with firm size, complexity, and regulatory intensity.

4.7.2 Model Performance and Goodness of Fit

After estimating the Random Effects GLS model, it was essential to evaluate its overall performance and explanatory power. Table 4.11 presents the model's goodness-of-fit statistics, which summarize how well the independent variables collectively explain variations in the profitability of manufacturing SMEs. The evaluation metrics include the number of observations, overall R-squared, log-likelihood, and the Wald Chi-square test, which jointly assess model adequacy and statistical significance. This assessment provides an indication of the model's reliability, predictive strength, and overall suitability for explaining the effect of tax instrument on SME profitability in Nairobi County.

Table 4.11: Model Performance and Goodness-of-Fit Results

Sector	No. Observations	R-squared (Overall)	Log-Likelihood	Wald Chi^2	df	Wald p-value
Alcoholic Beverages	46	0.5031	-16,540.21	10.84	4	0.0281
Non-Alcoholic Beverages	62	0.4724	-17,230.55	9.96	4	0.0412
Tobacco Products	10	0.5219	-15,880.34	11.75	4	0.0194
Cosmetics & Beauty Products	36	0.4488	-18,450.12	9.12	4	0.0476
Petroleum & Lubricants	17	0.5392	-14,960.78	12.64	4	0.0132
Plastic Packaging & Bags	23	0.5216	-17,010.43	8.74	4	0.0675
Confectionery & Sugary Goods	22	0.4667	-17,890.66	9.58	4	0.0439
Motor Vehicle Assembly	8	0.5525	-14,343.21	13.27	4	0.0103
Overall Model	**224**	**0.4979**	**-132,305.40**	**72.88**	**9**	**0.00041**

Source (Author, 2025)

Table 4.11 summarizes the sector-specific performance indicators for the Random Effects Generalized Least Squares (GLS) regression models used to estimate the effect of tax instrument on the profitability of manufacturing SMEs in Nairobi County. The models were estimated across eight subsectors with a combined sample of 224 firms, providing a sufficiently large and diverse dataset to ensure robust and reliable inference. The disaggregated results reveal important variations in explanatory power and model fit across subsectors, reflecting differences in industry structure, regulatory intensity, and firm

characteristics. The overall model reports an R-squared value of 0.4979, indicating that approximately 49.79% of the variation in net profit among manufacturing SMEs is explained by the included tax variables; Value Added Tax (VAT), income tax, excise tax, and tax compliance cost. This level of explanatory power is relatively strong for panel data involving heterogeneous SMEs and suggests that tax instrument play a substantial role in determining firm profitability. This level of explanatory power aligns with findings from Amri et al. (2019) and Shahbaz et al. (2019), who reported similar R-squared ranges (0.35–0.55) in panel analyses of fiscal policy impacts on SMEs, affirming that taxation explains a significant but not exhaustive share of profitability variations.

At the sectoral level, the explanatory power varies, with motor vehicle assembly (R^2 = 0.5525) and petroleum & lubricants (R^2 = 0.5392) exhibiting the highest values, followed closely by tobacco products (R^2 = 0.5219) and plastic packaging & bags (R^2 = 0.5216). These findings imply that tax instruments are a more dominant determinant of profitability in highly regulated and capital-intensive sectors. In contrast, sectors such as cosmetics & beauty products (R^2 = 0.4488), confectionery & sugary goods (R^2 = 0.4667), and non-alcoholic beverages (R^2 = 0.4724) show relatively lower explanatory power, suggesting that additional factors such as market competition, consumer demand, and operational efficiency may play a larger role in influencing performance. The log-likelihood values further reflect differences in model fit across subsectors. Less negative values are observed in motor vehicle assembly (–14,343.21) and petroleum & lubricants (–14,960.78), indicating comparatively better model fit in these sectors, while more negative values in cosmetics & beauty products (–18,450.12) and confectionery & sugary goods (–17,890.66) suggest relatively weaker fit. These variations are expected given the structural differences across industries and the degree to which tax variables capture firm performance dynamics.

The Wald Chi-square statistics confirm that the models are jointly significant across most subsectors. Petroleum & lubricants (Wald χ^2 = 12.64, p = 0.0132) and motor vehicle assembly (Wald χ^2 = 13.27, p = 0.0103) record the highest levels of joint significance, reinforcing the strong influence of tax variables in these sectors. Similarly, tobacco products (Wald χ^2 = 11.75, p = 0.0194) and alcoholic beverages (Wald χ^2 = 10.84, p = 0.0281) also show statistically significant results, indicating that tax instrument plays a

meaningful role in shaping profitability. In contrast, plastic packaging & bags (Wald χ^2 = 8.74, p = 0.0675) is not statistically significant at the 5% level, suggesting that tax variables may have a weaker or less consistent influence in this sector. This could be attributed to lower regulatory pressure and smaller firm sizes within this subsector. The findings are consistent with Acheampong (2018) and Mikayilov et al. (2018), who also found taxation variables collectively significant in explaining firm-level financial outcomes. Likewise, Resmi et al. (2021) and Roman et al. (2023) emphasized that multiple tax components exert cumulative pressure on SMEs' financial performance, reinforcing the joint significance observed in this model.

4.8 Chapter Summary

This chapter presented and interpreted the empirical findings on the effect of tax instrument on the profitability of manufacturing SMEs in Nairobi County, Kenya. The analysis was based on secondary panel data obtained from Kenya Revenue Authority records covering the period 2019–2024, a timeframe characterized by significant tax policy reforms and increased digitalization of tax administration. The chapter began by examining the data availability rate, which demonstrated a high level of data adequacy and representativeness across manufacturing subsectors. An overall data availability rate of 82.3 percent provided a strong foundation for reliable quantitative analysis and minimized concerns of non-response bias. Descriptive statistics were then used to explore the distributional characteristics of profitability and taxation variables, revealing substantial heterogeneity among SMEs in terms of profits, tax liabilities, and compliance costs. The presence of skewness, kurtosis, and extreme values underscored structural differences in firm size, market conditions, and tax exposure.

Correlation analysis provided preliminary evidence of negative associations between tax variables and SME profitability, supporting the theoretical expectation that higher tax instrument constrain firm profitability. Diagnostic tests confirmed the presence of econometric challenges, including heteroskedasticity, autocorrelation, non-normality, and non-stationarity, which are typical of firm-level panel data. Appropriate corrective measures were therefore applied, including the use of the Random Effects Generalized Least Squares (GLS) model, as justified by the Hausman specification test. The regression

results demonstrated that VAT, income tax, excise tax, and tax compliance costs exert statistically significant negative effects on SME profitability. The model's goodness-of-fit statistics confirmed joint significance and acceptable explanatory power. Overall, the findings provide robust empirical evidence that tax instrument play a critical role in shaping the profitability trajectory of manufacturing SMEs in Nairobi County, forming a basis for policy discussion in the subsequent chapter.

Chapter Five: Discussion, Conclusion and Recommendation

5.1 Introduction

This chapter interprets the study findings in relation to objectives, theory, and literature. It discusses key results on tax instrument and SME profitability, outlines study limitations, and presents conclusions. The chapter also provides recommendations and suggests areas for future research to improve the taxation environment for manufacturing SMEs.

5.2 Summary of the Findings

This study examined the effect of tax instrument on the profitability of manufacturing Small and Medium Enterprises (SMEs) in Nairobi County, Kenya. Specifically, the study sought to determine the effect of Value Added Tax (VAT), income tax, excise tax, and tax compliance cost on SME profitability as measured by net profit. The analysis was based on panel data obtained from 224 manufacturing SMEs over the period 2019–2024. The findings are summarized according to the specific objectives of the study. The first objective was to determine the effect of Value Added Tax (VAT) on the profitability of manufacturing SMEs in Nairobi County. The findings revealed that VAT had a negative and statistically significant effect on SME profitability across all manufacturing subsectors. The strongest negative effects were observed in motor vehicle assembly ($\beta = -0.90$, $p = 0.017$), petroleum and lubricants ($\beta = -0.81$, $p = 0.018$), and tobacco products ($\beta = -0.72$, $p = 0.020$). These results indicate that increased VAT obligations reduce firm profitability by constraining liquidity and increasing operational costs.

The second objective sought to examine the effect of income tax on the profitability of manufacturing SMEs. The results showed that income tax exerted the strongest negative effect among all tax instrument. Income tax significantly reduced net profit across all subsectors, with the largest effects recorded in motor vehicle assembly ($\beta = -2.95$, $p = 0.012$), petroleum and lubricants ($\beta = -2.68$, $p = 0.013$), and tobacco products ($\beta = -2.45$, $p = 0.014$). The findings suggest that higher income tax liabilities reduce retained earnings and limit the capacity of SMEs to reinvest and expand their operations. The third objective was to assess the effect of excise tax on the profitability of manufacturing SMEs. The study established that excise tax had a negative and statistically significant effect on profitability across all sectors. The greatest adverse effects were observed in petroleum and lubricants

($\beta = -0.15$, $p = 0.026$), tobacco products ($\beta = -0.12$, $p = 0.029$), and motor vehicle assembly ($\beta = -0.11$, $p = 0.031$). These findings imply that excise duties increase production costs and reduce competitiveness, particularly among firms producing excisable goods.

The fourth objective examined the effect of tax compliance cost on the profitability of manufacturing SMEs. The findings revealed that tax compliance costs negatively and significantly affected SME profitability in all subsectors. The largest effects were recorded in motor vehicle assembly ($\beta = -5.85$, $p = 0.018$), petroleum and lubricants ($\beta = -5.30$, $p = 0.019$), and tobacco products ($\beta = -4.90$, $p = 0.021$). The results indicate that administrative expenses associated with tax filing, audits, regulatory reporting, and compliance systems reduce the financial resources available for productive investment. The diagnostic tests confirmed the absence of severe multicollinearity but revealed the presence of heteroskedasticity, autocorrelation, non-stationarity, and non-normality. Consequently, the Random Effects Generalized Least Squares (GLS) model was adopted following the Hausman test results ($\chi^2 = -4.261$, $p = 1.000$), which indicated that the random effects specification was appropriate. The overall model explained approximately 49.79% of the variation in SME profitability ($R^2 = 0.4979$) and was jointly significant (Wald $\chi^2 = 72.88$, $p = 0.00041$), confirming that tax instrument collectively exert a substantial influence on the profitability of manufacturing SMEs in Nairobi County. These findings provide strong empirical evidence that taxation remains a critical determinant of SME performance and profitability within Kenya's manufacturing sector.

5.3 Discussion of Findings

5.3.1 Effect of Value Added Tax on the Profitability of Manufacturing SMEs in Nairobi County

The first objective sought to determine the effect of Value Added Tax (VAT) on the profitability of manufacturing SMEs in Nairobi County. The findings revealed that VAT had a negative and statistically significant effect on SME profitability across all manufacturing subsectors. The strongest negative effects were observed in motor vehicle assembly, petroleum and lubricants, tobacco products, and alcoholic beverages. These findings suggest that increasing VAT obligations reduce net profitability by limiting cash flow, increasing compliance requirements, and reducing the resources available for

reinvestment and expansion. The findings support the Benefit Theory of Taxation, which posits that taxpayers are more willing to bear tax obligations when they perceive corresponding benefits from government services.

However, where VAT administration is characterized by delayed refunds, extensive documentation requirements, and frequent compliance checks, firms may perceive the tax instrument as exceeding the benefits received. The findings are consistent with those of Resmi et al. (2021) and Lestary et al. (2021), who found that VAT-related compliance requirements negatively affect SME performance. Nevertheless, alternative explanations may exist. The negative VAT effect may not arise solely from taxation itself but from liquidity constraints faced by SMEs. Firms operating in sectors with long production cycles and delayed customer payments may be particularly vulnerable to VAT remittance obligations. Additionally, the period under study coincided with post-COVID-19 economic recovery and rising production costs, factors that may have amplified the adverse impact of VAT on profitability.

5.3.2 Effect of Income Tax on the Profitability of Manufacturing SMEs in Nairobi County

The second objective sought to examine the effect of income tax on the profitability of manufacturing SMEs. The study found that income tax exerted the strongest negative and statistically significant effect on net profit across all subsectors. The largest effects were observed in motor vehicle assembly, petroleum and lubricants, tobacco products, and alcoholic beverages. This indicates that income taxation substantially reduces retained earnings and limits the ability of firms to finance expansion using internally generated funds. These findings are consistent with the Ability-to-Pay Theory, which argues that tax obligations should be aligned with taxpayers' capacity to pay. While larger and more profitable firms generally possess a greater ability to contribute to public revenue, excessive income tax obligations may reduce the funds available for capital investment, innovation, and business profitability. The findings corroborate studies by Olayemi and Folajimi (2021) and Roman et al. (2023), which reported that high income tax burdens negatively affect SME growth and investment decisions.

However, the observed relationship may also reflect broader business environment challenges. More profitable firms often attract greater regulatory scrutiny and are more likely to comply fully with tax regulations, thereby reporting higher tax liabilities. Consequently, the negative relationship may partly capture differences in reporting practices and regulatory exposure rather than taxation alone. Furthermore, rising input costs, inflation, and restricted access to affordable financing during the study period may have compounded the effects of income taxation on profitability.

5.3.3 Effect of Excise Tax on the Profitability of Manufacturing SMEs in Nairobi County

The third objective examined the effect of excise tax on the profitability of manufacturing SMEs. The findings revealed that excise tax had a negative and statistically significant effect on profitability across all subsectors, with the strongest effects observed in petroleum and lubricants, tobacco products, alcoholic beverages, and motor vehicle assembly. This suggests that excise duties increase production costs, reduce profit margins, and weaken competitiveness in sectors producing excisable goods. The findings support earlier studies by Judith et al. (2022), Chiira (2021), and Msuya (2019), which found that excise taxation negatively affects business performance by increasing operating costs and product prices. The results further support the Ability-to-Pay Theory, as sectors generating higher revenues tend to bear greater excise tax burdens. Despite this, alternative explanations should be considered. The negative effect may not be attributable solely to excise taxes but also to changing consumer behavior. Higher excise duties often lead to increased retail prices, which may reduce demand for certain products, particularly alcoholic beverages and tobacco products. Additionally, frequent amendments to excise duty rates during the study period may have created planning uncertainty and discouraged investment among affected firms.

5.3.4 Effect of Tax Compliance Cost on the Profitability of Manufacturing SMEs in Nairobi County

The fourth objective sought to determine the effect of tax compliance costs on the profitability of manufacturing SMEs. The findings established that tax compliance costs had a negative and statistically significant effect on profitability across all manufacturing

subsectors. The largest effects were observed in motor vehicle assembly, petroleum and lubricants, tobacco products, and alcoholic beverages. These results imply that administrative expenses associated with tax filing, audits, consultancy services, digital compliance systems, and regulatory reporting reduce the financial resources available for productive investment. The findings are consistent with studies by Roman et al. (2023) and Resmi et al. (2021), which found that high compliance costs constrain SME growth and profitability. The findings also align with the Benefit Theory of Taxation, which suggests that taxpayers evaluate not only the amount of tax paid but also the cost of complying with tax regulations.

However, alternative explanations may account for part of the observed effect. Firms experiencing rapid growth often become subject to more complex reporting requirements, resulting in higher compliance costs. Consequently, compliance costs may partly reflect firm growth and complexity rather than acting solely as a constraint on performance. Furthermore, the implementation of digital tax administration systems such as iTax and TIMS during the study period may have increased short-term compliance costs as firms adapted to new reporting requirements. Although these systems are intended to improve efficiency in the long run, the transition process may have temporarily increased administrative burdens and reduced profitability.

5.4 Limitations of the Study

Despite the rigorous methodology employed, this study faced several limitations relating to data availability, model specification, causal inference, and scope. First, the study relied on secondary data obtained from the Kenya Revenue Authority (KRA), which primarily captures formally registered and tax-compliant manufacturing SMEs. Consequently, informal enterprises and firms with incomplete records were excluded from the analysis, potentially limiting the generalizability of the findings to the broader SME sector in Kenya. Second, the analysis focused on four key tax instruments: Value Added Tax (VAT), income tax, excise tax, and tax compliance cost. While these variables are central to understanding the tax burden faced by manufacturing SMEs, other important determinants of firm profitability and growth, including access to finance, market competition, technological adoption, managerial capabilities, inflation, and broader macroeconomic conditions, were

not explicitly incorporated into the model. The omission of such variables may have introduced some degree of omitted variable bias despite the acceptable explanatory power of the estimated model.

Third, although econometric challenges such as heteroskedasticity, autocorrelation, non-normality, and non-stationarity were addressed through the use of the Generalized Least Squares (GLS) estimator, the technique relies on assumptions that may not fully capture the complexity of firm-level financial data. Furthermore, the random effects specification assumes that unobserved firm-specific characteristics are uncorrelated with the explanatory variables, an assumption that may not hold perfectly in practice. Fourth, the study establishes statistical associations between tax instruments and SME profitability but does not conclusively establish causality. Potential endogeneity may exist because tax liabilities and firm profitability can influence each other simultaneously. For example, more profitable firms may pay higher taxes, while higher taxes may also reduce profitability. Similarly, tax policy changes may be influenced by broader economic conditions that also affect firm performance. Although the panel data approach and GLS estimation mitigate some of these concerns, they do not completely eliminate endogeneity bias. Future studies could employ more robust causal identification strategies, such as instrumental variable estimation, difference-in-differences techniques, or natural experiments, to better isolate the causal effects of taxation on SME growth.

Fifth, while considerable effort was made to ensure the accuracy and consistency of statistical reporting, the complexity of panel-data estimation and multiple model diagnostics required careful validation of coefficients, standard errors, test statistics, and significance levels. Any remaining reporting inconsistencies may affect the interpretation of specific parameter estimates, although they do not materially alter the overall conclusions of the study. Sixth, the study was limited to manufacturing SMEs operating within Nairobi County. Since taxation effects may vary across sectors and geographical regions due to differences in market conditions, infrastructure, and regulatory environments, caution should be exercised when generalizing the findings to other sectors or counties in Kenya. Finally, the study measured firm growth using net profit as the sole performance indicator. While profitability is an important measure of business success, it

does not fully capture other dimensions of growth such as employment creation, productivity improvements, market expansion, innovation, and firm survival. Future studies should consider incorporating multiple growth indicators to provide a more comprehensive assessment of the effects of taxation on SME performance.

5.5 Conclusion

This study set out to examine the effect of tax instrument on the profitability of manufacturing SMEs in Nairobi County using panel data drawn from Kenya Revenue Authority records for the period 2019–2024. Based on the empirical results presented in Chapter Four, the study concludes that taxation has a significant and predominantly negative effect on SME profitability, as measured by net profit. The findings demonstrate that all major tax instrument; Value Added Tax (VAT), income tax, excise tax, and tax compliance cost exert a statistically significant adverse influence on firm profitability. Among these, income tax emerged as the most influential factor, indicating that direct taxation substantially reduces retained earnings and limits the capacity of SMEs to reinvest and expand. VAT and excise tax were also found to negatively affect profitability by increasing production costs and reducing cash flow, particularly in highly regulated and excisable subsectors such as petroleum, tobacco, and alcoholic beverages. Additionally, tax compliance costs were shown to impose a considerable administrative burden, diverting financial and managerial resources away from productive activities. The study further concludes that the impact of taxation is not uniform across sectors. Highly regulated and capital-intensive industries experience stronger negative effects compared to smaller and less regulated sectors, highlighting the importance of sector-specific dynamics. Overall, the results affirm that while taxation is essential for government revenue generation, excessive or poorly structured tax burdens can constrain SME profitability. The findings underscore the need for a balanced, efficient, and sector-sensitive tax framework that supports business development while maintaining fiscal sustainability.

5.6 Recommendations

Based on the results, this section provides recommendations aimed at improving the tax environment for manufacturing SMEs in Nairobi County. The recommendations are structured into policy, theoretical, and practical perspectives.

5.6.1 Policy Recommendations

The study established that tax instrument; VAT, income tax, excise tax, and tax compliance costs have a significant negative effect on SME profitability. In light of these findings, there is a need for reforms within Kenya Revenue Authority and broader fiscal policy frameworks. First, the government should consider revising income tax structures for SMEs by introducing progressive or differentiated tax rates based on firm size and profitability. The more profits, the more taxes levied, just like individual income tax that is on graduated scale. This would reduce the burden on smaller firms and enhance their capacity for reinvestment and expansion. Second, VAT administration should be streamlined to improve efficiency, particularly by ensuring timely processing of VAT refunds and simplifying filing procedures. Delays in refunds and complex compliance processes were identified as major constraints on SME liquidity. Third, excise tax policies should be sector-sensitive, especially for industries such as beverages, cosmetics, and petroleum, where excise duties significantly increase production costs. A review of excise tax rates and classification mechanisms could help reduce cost pressures and improve competitiveness. Excise on water bottlers/ manufactures should be scrapped since it is burdensome to an already competitive market. Finally, efforts should placed to reduce tax compliance costs by simplifying tax procedures, enhancing digital tax systems, and providing targeted taxpayer education. A good example is when TIMS devices were bought by taxpayers then months after a free online version was introduced, this caused unfairness to the entities that had already spent on the gadgets. In addition, strengthening user-friendly platforms such as iTax and integrating support services can reduce administrative burdens, particularly for SMEs with limited technical capacity.

5.6.2 Recommendations to Theory

The findings of this study provide important implications for existing theoretical frameworks, particularly the Ability-to-Pay Theory and the Benefit Theory of Taxation. While the Ability-to-Pay Theory suggests that firms with greater financial capacity should bear a higher tax burden, the study demonstrates that excessive taxation can negatively affect even high-performing firms by reducing profitability and reinvestment capacity.

Therefore, it is recommended that future theoretical developments incorporate a dynamic perspective that considers not only the capacity to pay but also the impact of taxation on firm profitability and sustainability over time. Additionally, the findings highlight the importance of integrating behavioral and administrative dimensions into taxation theory. Factors such as compliance costs, tax complexity, and digital readiness significantly influence firm outcomes and should be explicitly recognized in theoretical models. The study also supports the need for a more nuanced framework that accounts for sectoral heterogeneity, as the impact of taxation varies significantly across industries. This suggests that taxation theories should move beyond uniform assumptions and incorporate industry-specific considerations.

5.6.3 Recommendations to Practice

From a practical perspective, the study highlights the need for SME managers, policymakers, and stakeholders to adopt strategies that mitigate the adverse effects of taxation on business performance. SME operators should invest in improving financial management systems, including proper record-keeping and tax planning, to enhance compliance efficiency and reduce unnecessary costs. Additionally, SMEs should leverage digital tax platforms more effectively by building internal capacity or seeking professional support where necessary. This can help minimize errors, avoid penalties, and improve overall compliance efficiency. Business associations and industry bodies also have a role to play in advocating for favorable tax policies and providing support services such as training and advisory programs. For practitioners in policy and administration, there is a need to strengthen engagement with SMEs through continuous feedback mechanisms. This will ensure that tax reforms are responsive to the challenges faced by businesses on the ground. Furthermore, collaboration between government agencies, private sector stakeholders, and academic institutions can enhance the design and implementation of tax policies that promote SME profitability while ensuring revenue sustainability.

5.7 Recommendations for Further Studies

In summary, future studies should broaden the geographical scope beyond Nairobi County to capture regional variations in tax burden effects on SMEs. Researchers should also adopt mixed-methods approaches combining quantitative and qualitative data to better

understand behavioral and administrative dimensions of tax compliance. Extending the study period to include post-2024 data will help assess the long-term impact of recent fiscal reforms. Moreover, exploring moderating factors such as financial literacy, access to credit, and firm size would offer nuanced insights. Finally, cross-sectoral comparisons between manufacturing, service, and agricultural SMEs are recommended to identify sector-specific tax challenges and guide equitable policy design for sustainable SME profitability in Kenya's industrial economy.

5.8 Chapter Summary

Chapter Five presented an integrated discussion, conclusion, and set of recommendations based on the empirical findings of the study on the effect of tax instrument on the profitability of manufacturing SMEs in Nairobi County. The chapter began by interpreting the results from Chapter Four through the lenses of the Ability-to-Pay Theory and the Benefit Theory of taxation, situating the findings within existing empirical and theoretical literature. The discussion demonstrated that manufacturing SMEs in Nairobi exhibit substantial heterogeneity in profitability and tax exposure, with heavy-tailed distributions reflecting unequal capacities to absorb fiscal obligations. Correlation analysis revealed weak but consistently negative associations between tax variables and net profit, while diagnostic tests confirmed common panel-data challenges such as heteroskedasticity, serial correlation, and non-normality. These characteristics justified the adoption of the Random Effects GLS model, which provided robust and efficient estimates. The econometric results showed that VAT, income tax, excise tax, and tax compliance costs each exert a statistically significant and negative effect on SME profitability, underscoring that both statutory tax burdens and administrative complexities constrain profitability.

The chapter further assessed model performance, confirming that tax instrument jointly explain a meaningful share of profitability variation among manufacturing SMEs. Strengths and limitations of the study were acknowledged, highlighting the value of multi-year administrative data while noting constraints related to generalizability and causal identification. The chapter concluded by affirming the policy relevance of the findings and proposing targeted reforms to simplify tax administration, align tax liability with profitability, rationalize excise duties, and reduce compliance costs. Overall, Chapter Five

consolidated the study's empirical, theoretical, and policy contributions, providing a coherent foundation for evidence-based tax reforms aimed at supporting sustainable SME profitability in Kenya's manufacturing sector.

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Appendix I: Similarity Report

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Appendix II: Ethical Approval Letter

Strathmore UNIVERSITY

10th November 2025

Mr Gulavi Brian,
brian.lihenzero@strathmore.edu

Dear Mr Gulavi,

RE: Effects of Tax Instruments on the Growth of Manufacturing Small and Medium Enterprises in Nairobi County, Kenya

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** research proposal. Your application reference number is **SU-ISERC3131/25.** The approval period is from **10th November 2025 to 9th November 2026.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, and MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification
iv. Any changes, anticipated or otherwise, that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours
v. Clearance for the export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC

Appendix III: Introductory Letter from the University

Ole Sangale Rd, Madaraka Estate
P. O Box 59857 - 00200, Nairobi, Kenya
Cell: +254 703 034 414/6/7
X/Twitter/Tiktok: @SBSKenya
Facebook/Linkedin: Strathmore University Business School

Email: **sbsinfo@strathmore.edu** or visit **www.sbs.strathmore.edu**

Strathmore UNIVERSITY BUSINESS SCHOOL

Years of Developing Great African Leaders

Thursday, 26th November 2025

To Whom It May Concern.

Dear Sir/Madam,

RE: FACILITATION OF RESEARCH – BRIAN LIHENZERO

This is to introduce Gulavi, Brian Lihenzero, who is a Master of Science in Development Finance student at Strathmore University Business School, admission number MDF/81751/23. As part of our MDF Program, Brian is expected to do applied research and undertake a project. This is in partial fulfillment of the requirements of the MDF course. To this effect, he would like to request appropriate data from your organization.

Brian is undertaking a research paper on **"Effects Of Tax Instruments On The Growth Of Manufacturing Small And Medium Enterprises In Nairobi County, Kenya."** The information obtained from your organization shall be treated confidentially and shall be used for academic purposes only.

Our MDF seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and of practical value to your organization.

We appreciate your support and shall be willing to provide any further information if required.

Yours sincerely,

Alois Njenga,
Manager – Graduate Programs,
Strathmore University Business School.

Appendix IV: Research Permit from NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **559630**

Date of Issue: **26/November/2025**

RESEARCH LICENSE



This is to Certify that Mr.. Brian Lihenzero of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: EFFECTS OF TAX INSTRUMENTS ON THE GROWTH OF MANUFACTURING SMALL AND MEDIUM ENTERPRISES IN NAIROBI COUNTY, KENYA for the period ending : 26/November/2026.

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Applicant Identification Number

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See overleaf for conditions

Appendix V: Data Collection Sheet

Year	Manufacturing SME sector	Amount of VAT/Yr.	Amount of income tax/Yr.	Amount of excise tax/Yr.	Amount of tax compliance cost/Yr.