

**THE MODERATING EFFECT OF GREEN INVESTMENT ON THE
RELATIONSHIP BETWEEN TAX INCENTIVES AND TAX REVENUE
COLLECTION FROM COMPANIES LISTED ON THE NAIROBI
SECURITIES EXCHANGE, KENYA.**

BY

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ADMINISTRATION**

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2024

DECLARATION

Declaration by Candidate

This research project is my original work and has not been presented for any degree award at any other University. No part of the thesis should be reproduced without the prior permission of the author and/or Moi University.

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DEDICATION

I dedicate this research to my loving family and friends for unwavering support during this study.

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I have enjoyed studying at the Kenya School of Revenue Administration. I give my sincere gratitude to the Almighty God for granting me the opportunity to be associated with the great institutions. I also want to convey my heartfelt appreciation to my family and friends who have stood by me during my study period. I wish to acknowledge the efforts of my supervisor Professor Lucy Rono for her invaluable support, concern, and timely feedback. Special thanks also go to Dr Stephen Chelogoi for his immense contribution and insights that enabled me to write and complete this research project in time. Without the tireless support of my supervisors, I would not have completed this project. May God bless them.

ABSTRACT

For any government in the globe, revenue collection is crucial because it allows it to purchase assets that are debt-free and that it can employ to grow its economy. However, because of things like global climate change and environmental sustainability, revenue collection in Kenya hasn't always been as successful as it should be. Green investments have therefore become a pivotal avenue to address these global concerns. In developing countries, the government has intervened through fiscal policies such as tax incentives, particularly amidst economic pressures and overall volatility in macro and microeconomic conditions. This study's main goal was to ascertain how green investment affected the relationship between tax incentives and tax revenue collection from Kenyan companies listed on the Nairobi Securities Exchange. Finding out how corporation tax incentives affect tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya; how value-added tax incentives affect tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya; how customs incentives affect tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya; and figuring out how green investment influences the relationship between corporation tax incentives, value-added tax incentives, customs tax incentives, and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya have been the specific goals of the study. The triple bottom line theory served as the study's main theoretical framework. This study, which used an explanatory research approach, examined secondary data gathered over a five-year period from 2019 to 2023 to focus on the sixty-seven businesses listed on the Nairobi Securities Exchange. The Capital Markets Authority's standards for listed firms include the publication of sustainability reports and audited financial reports, which is how the study acquired its data. Correlation and multiple regression analysis were used to analyze the descriptive and inferential statistics. Corporation tax incentive has a positive and significant effect on tax revenue collection with $\beta_1 = 0.0226592$ ($p = 0.043 < 0.05$). VAT incentives have a positive and significant effect on tax revenue collection with $\beta_2 = 0.0093434$ ($p = 0.011 < 0.05$). Customs duty incentives have a positive and significant effect on tax revenue collection with $\beta_3 = 0.0000221$ ($p = 0.000 < 0.05$). The study found that green investment moderates the relationship between: Corporation tax incentive and tax revenue collection, with a coefficient of $\beta_5 = 0.0000123$ ($p = 0.010 < 0.05$). VAT incentives and tax revenue collection, with a coefficient of $\beta_6 = 0.00000881$ ($p = 0.000 < 0.05$). Customs duty incentives and tax revenue collection, with a coefficient of $\beta_7 = 0.00000476$ ($p = 0.004 < 0.05$). Recommendations in view of the study's conclusions that tax incentives have a positive impact on tax revenue collections, the Kenyan government ought to think about updating and growing its tax incentives program, especially the ones related to corporation tax, VAT, and customs duty, in order to promote compliance and boost investment. Government incentives for environmentally sound behaviors and investments should be strengthened in light of the moderating influence of green investment on the relationship between tax incentives and tax revenue collection. This can entail providing tax exemptions or other financial incentives to businesses who use eco-friendly products, energy-saving procedures, or recycle their waste. Research recommendations included conducting a study to look into how tax reforms have affected Kenya's ability to collect taxes. One possible course of action would be to carry out research on how digitizing tax systems affects tax revenue collecting.

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OPERATIONAL DEFINITION OF TERMS

Corporate income tax incentives The percentage difference between the ordinary corporate income tax (CIT) rate and the incentive CIT rate (World Bank 2020).

Customs Incentives are measures adopted by governments to stimulate international trade and foster economic development. These initiatives target both importers and exporters and aim to lower trade barriers and enhance competitiveness. Key strategies include tariff reductions or exemptions to facilitate imports and bolster export competitiveness. Additionally, duty drawback programs refund or waive import duties on goods destined for export, while free trade agreements reduce tariffs on traded goods among participating nations. Special economic zones (SEZs) and export processing zones (EPZs) offer favorable regulatory environments with customs incentives like duty exemptions and simplified procedures, further encouraging trade and investment (IMF, 2022).

Green investment refers to businesses or funds dedicated to minimizing harmful pollutants or promoting sustainable resource usage. These initiatives may manifest through the adoption of alternative technologies like solar or wind power, or through research aimed at enhancing resource efficiency (UN Climate Change (COP26), 2021).

Tax incentives are defined as Preferential tax treatments given to a selected group of taxpayers include exemptions, tax holidays, credits, investment allowances, preferential tax rates, import tariffs, and tax payment delay (Chen et al., 2018).

Tax revenue collection is an enforced payment to the government (Garner, 1999).

While stimulating and directing the nation's economic and social growth is the primary goal of revenue collecting for most governments, there are a number of factors that must come into play for the exercise to be carried out successfully. For the majority of nations, the evident difficulties in revenue collecting are universal (Garner, 1999).

Value Added Tax Incentives refers to zero-rating or exemptions tailored for particular goods or services, especially within priority sectors such as manufacturing, tourism, Special Economic Zones (SEZs), and Export Processing Zones. Green investments benefit from VAT incentives aimed at encouraging investment in renewable energy technologies, fostering sustainability. Additionally, social welfare incentives extend VAT exemptions or reduced rates on essential goods and services to bolster support for vulnerable populations. These initiatives are strategically aligned with national development objectives and economic strategies, enhancing both business competitiveness and social welfare outcomes (IMF, 2022).

ABBREVIATIONS

AfDB	African Development Bank
AGOA	African Growth and Opportunity Act
EU	European Union
FTZs	Free Trade Zones
GDP	Gross Domestic Product
IFIs	International Financial Institutions
IMF	International Monetary Fund
KRARDB	Kenya Revenue Authority Rwanda Development Board
RVCMC	Regional Voluntary Carbon Market Company
UNCTAD	United Nations Conference on Trade and Development
USA	United States of America
WTO	World Trade Organization

CHAPTER ONE

INTRODUCTION

1.1 Overview

This chapter explains the background of the study, statement of the problem, objectives of the study, research hypotheses, and justification for the study and finally scope of the study.

1.2 Background of the Study

Taxes are fees imposed by a nation's government on its citizens in exchange for their support or to help with the provision of services (Aamir, Qayyum, Nasir, Hussain, Khan & Butt, 2011). It is not a donation, nor is it a voluntary payment made by the taxpayer. Instead, according to Garner (1999), it is an orderly payment to the government. While stimulating and directing the nation's economic and social growth is the primary goal of revenue collecting for most governments, there are a number of factors that must come into play for the exercise to be carried out successfully. For the majority of nations, the evident difficulties in revenue collecting are universal (Garner, 1999).

Green investment refers to businesses or funds dedicated to minimizing harmful pollutants or promoting sustainable resource usage. These initiatives may manifest through the adoption of alternative technologies like solar or wind power, or through research aimed at enhancing resource efficiency (UN Climate Change (COP26), 2021). Tax incentives play a significant role in corporate decision making, thus influencing investments. The incentives are a set of policies or provisions of the law given by a government to achieve economic objectives. Tax Incentives reduce tax liabilities by offering exemptions or allowances to taxpayers (IMF, 2009).

In business, tax incentives have a substantial effect on investment decisions because they reduce the tax burden hence operational costs. The tax savings offer reallocation of the financial resources to other crucial aspects of a business such as expansion, investment, research and development. In addition, they safeguard the cashflow hence liquidity and financial stability.

Ultimately, tax incentives can boost shareholder value hence investments. Companies may use the extra funds to pay dividends, repurchase shares, or reinvest in the business, all of which can enhance shareholder returns.

Globally, taxation is the most practical way to manage limited resources with the ultimate aim of funding public spending to provide the general public with goods and services. However, non-tax revenue, a different source of funding for public spending, is essential to supporting public budgets and guaranteeing their long-term viability (Cheeseman & Griffiths, 2010). Taxation, debt financing from financial institutions and international governments through bilateral and multilateral agreements, and state company income are the three main ways that public expenditures are funded globally (Kayaga, 2010). Government expenditures are largely financed by tax revenue from taxes, customs, cess fees, excise charges, license fees, and other sources, which also support ongoing government activities (Gruber, 2008). According to the reviewed literature, Value Added Tax (VAT) is the primary source of tax revenue for members of the European Union (EU), with corporate income tax being less important. The Tax Reform Act of 2008 in Germany lowered the general tax rate by more than ten percent. Value Added Tax (VAT) was observed to have increased by 3% during the same period, from 16% to 19%. This suggests that the nation has refocused its attention on indirect taxes throughout the whole tax system. As a result, the Fair Tax Act was passed in

2007 with the intention of replacing the federal income tax and other levies with a national sales tax.

According to Pearce, 1989, green investments were as a result of social costs and environmental degradation that had a direct effect on the current price. The green is therefore the middle way to obtain sustainability in unrestricted markets (Pearce, 1992). The growth of green investment has increased due to the massive concerns by environmental economists (Pearce, 1992; Barbie, 1987). Given the broad nature of green investments, the definition varies based on options, strategies and interests of stakeholders (Pattberg & Zelli, 2015; Mazzoni, 2020). United Nations Environmental Protection (UNEP) organization defines green investments as economic activities that improve people's well-being and ensure social justice by reducing environmental risks (UNEP, 2011). The green investment is an umbrella concept that identifies consequences for growth and wellbeing while reducing natural resource risk, (Weng et al., 2018).

In the United States of America, the Financial Accounting Standards Board developed new guidance to enhance clarity and streamline processes, while the Internal Revenue Service issued guidance on the transferability of green investment tax credits by mid-2023. Under these regulations, corporations can offset up to 75% of their federal income tax liability and retroactively apply this offset up to three years, effectively receiving a tax rebate to reinvest in the Environmental Social Governance space -positive opportunities (Financial Accounting Standards Board, (2023); Internal Revenue Service, (2023) to companies trading. To be clear, in order to reach global ambitions to triple the world's generation of renewable energy by 2030, additional subsidies in more regions are imperative. Companies require renewable energy credits RECs to advance

their sustainability goals, including the nation's commitment to achieving net zero emissions by 2050. These credits create a market and revenue stream for renewable energy producers, enabling companies to align with a sustainable, potentially reducing transition risks and capital costs (US Environmental Protection Agency, 2022).

Green aligned investments offer various social benefits, including job creation in infrastructure, human capital, and research and development. The Investment Tax Credit (ITC) under the IRA provides a base credit of 20% and a bonus credit of 80% for renewable energy projects, subject to certain wage and apprenticeship requirements. Additionally, there are three adder credits for meeting domestic content requirements, locating projects in defined energy communities, and undertaking low-income solar activities (Internal Revenue Service, 2022).

Investing in renewable energy, particularly in rural communities, can stimulate economic growth and provide tax equity. Community solar investments offer social advantages by providing discounted electricity to low-income families (Internal Revenue Service, 2022).

According to Elena et al., 2020, a shift to a circular economy is necessary for the adoption of a new paradigm for social development, based on her research on green investments in Russia. It calls for using waste products, cutting greenhouse gas emissions, and utilizing renewable energy sources (Bazaluk et al., 2020). The "green" recognizes and considers more than just the value of natural wealth. In order to maintain and improve the environment, it also calls for investments in environmental protection. The Earth is seriously threatened by climate change. With the adoption of the Paris Climate Agreement in 2016, it is now feasible to alert investors and companies to the urgency, certainty, and speed of the global shift to a "green" economy. Implementing

this agreement should expedite the introduction of technological advancements and appropriate legislation that permit investment in low-carbon and "green" assets and projects (International Finance Corporation 2016). Furthermore, significant financial resources are required to support and fund environmental protection initiatives. There are fewer carbon-intensive infrastructure and technologies among them. The issue is how to use low-carbon transportation, technologies, wind and solar power plants, and buildings and entire cities to become more energy- and water-efficient (Peeters, 2005; Štreimikienė et al., 2016; Moumen et al., 2019).

Environmental tax reform can encourage businesses to spend more in green, efficient technology innovation in order to avoid paying taxes, according to research on environmental taxes conducted by Sharif et al. (2022) on six associations in South East Asian nations between 1995 and 2018. These findings corroborate the estimates made by the OECD (2010) and Karmaker et al. (2021). As per the OECD (2010) analysis, environmental taxes have the potential to stimulate creativity, which is a vital component of economic growth. The estimates showed that one of the major drivers of green innovation is economic growth. Applications for patents pertaining to the environment rose as the grew.

Glick, (2005), growth, profitability, and market value are the key dimensions of evaluating the firm's ability to generate returns. Growth focuses on the institution's ability to expand in size and increase revenue. The size of a company is indicated by the possibility of reducing operation expenses by utilizing economies of scale and influence on a larger market which in turn increase its earnings. The firm's profitability on the other hand focuses on the competitive edge and the possibility of growth of revenues in the future (Santos & Brito, 2012).

From a global overview reduced operational costs of tax incentives has significantly influenced investment decisions, the most prominent case being a fiscal health study by Naz, Ijaz, and Naqvi, (2016) on the cement industry in Pakistan. In this study the operational efficiency and maximization of stakeholders' wealth indicate the financial/fiscal health of the company and the ability to proceed with its operations. The study revealed that financial ratios are key indicators of investment decisions making reference to similar studies done in Iran, India, Pakistan and other international scenarios. Making reference to Selvam et al., (2004) on the key investment ratios, the study utilized common ratios that suit the cement industry such as asset use ratios, profitability, leverage, liquidity and cash conversion ratios from 2006-2014. The critical ratios for this study was the ROI and ROA as they are key metrics that drive external investment in the cement industry (Chandrasekaran, 1989; Dhanalakshmi, 1994).

In the Russian Federation, a comparable study by Rumna, Balandina, and Bannova (2014) sought to determine the connection between tax breaks, investment choices, and innovation. The researchers evaluated the changes incorporated in the Russian tax code for a period of five years. The minute nature of tax incentives showed minimal investment and lagging financial performance; thus, they evaluated the impact of the existing incentives. The findings were that the tax incentives were insufficient to spur investments. They recommended a model that advocates for reasonable tax assessments and key tax motivators of investment in relation to revenue growth and financial performance as a result of tax cuts.

An assessment of key determinants of investment decisions was conducted by Samiloglu, Oztop and Kharaman (2016) using 51 companies listed at the Stock Exchange in Istanbul. The study covered a period on 10 years (2005-2015). They used

return on investments (ROI) and return on asset (ROA) to analyze the financial performance of these companies because they were the most agreeable to lenders and investors. The key findings of this study were that ROI and ROA gave a panoramic view of the correlation between investment and financial performance.

A study conducted in River State, Nigeria by Chukwumerije and Akinyomi (2011) on the effect of tax incentives on Small and Medium Enterprises revealed that tax incentives have a direct relationship to growth, profitability, productivity and development. The study was conducted on 11 out of the 2022 registered SMEs and through questionnaires they collected data from 260 stakeholders of these enterprises. They focused on the wide range of tax incentives available to SMEs after which they utilized chi-square and frequency distribution to evaluate the data. In the conclusion, they advised the Nigerian government to regularly adjust tax breaks in accordance with the demands of the economy.

In Kenya, similar studies have been conducted, Memba (2011) analyzed financial performance using investment returns per unit, asset return, and sales returns—however accounting measures posed a challenge because of non-financial measures such as depreciation and inventory costs. Nyabwanga et al. (2013) used Return on Asset a more stable measure to evaluate the financial performance of small and medium-sized enterprises in Kissi Municipality.

According to Zee, Stotsky & Ley, (2001), tax incentives refer to the reduction of the effective burden of tax. The scholars made comparisons on the difference between the tax burden in the absence of a tax incentive and the relative burden of tax if the project qualifies for an incentive. The difference in the burden of tax is what they refer to as an incentive of tax. Easson (2001) on the other hand defines tax incentives as

exemptions, deductions, and special exclusions that result in credits, preferential rates of tax, or a deferred tax liability. The incentives can be in the form of tax holidays for a specified duration, current deductions of expenditures or reduced tariffs on imports.

Many scholars have recently become interested in the impact of tax incentives on investments in the green economy (Teraoui, Kaddour, Chichti & Rejeb, 2011). Tax advantages, according to researchers, boost investments that improve the financial stability of companies that are already in operation. Countries all over the world have embraced proactive tax incentives that focus on environmental sustainability to deal with the global competition. The tradition of giving tax incentives to stimulate investments began in the industrial era and has been augmenting until today. In the industrial era, governments offered reduced tax burdens to encourage trade within their territories.

In Europe, countries such as Ireland have experienced dynamic economic growth due to investments over the last two decades as a result of enticing tax incentives. Before 1960, the Irish economy was experiencing economic stagnation as a result of insufficient tax incentives. In 1959, an incentive known as the Shannon Free Zone whose aim was to promote exports was established to further support the former regime where exports profits were tax free, (Ricupero, 2000). A 10% income Tax rate was introduced for Export Processing zone focusing on manufacturing and financial services in 1981. Ireland therefore reports the fastest economic growth in Europe since the 80s. These incentives increased investments from foreign firms thus a contribution of 60% output from this firms. Manufacturing grew by 45% from 0% in the late 50s (Ricupero, 2000).

In America, the state of New Jersey, United States of America, in 1971, offered a tax incentive to Alexander Hamilton a well-known businessman to invest in that area by setting up a factory. This trend was picked up by other US states in the 1800s by capital financing to private institutions to invest in industries and infrastructural development to stimulate industrial growth (Buss, 2001). Moreover, by 1844, Pennsylvania had investments whose value exceeded 100 million US dollars in over 150 state-owned corporations. In view of this development states rivalry increased for instance the conflict between Philadelphia and Pittsburgh on investment in road, rails, bridges, and banks.

In 1936, Mississippi was the first US state to introduce bonds that were tax-exempt to encourage economic growth. The first business development corporation was established in Maine in the year 1949 which grew over the years to an additional twenty-one by 1949 (Engen & Skinner, 1996). In 1955, New Hampshire's, first finance authority was established and other states followed suit by establishing nineteen others by 1963. Between 1956 and 1963, sanctions to tax concessions were introduced by seventeen states but the unemployment calamity of the economic depression of 1970 to 1980 compelled many states to reintroduce tax incentives to stimulate investments (Buss, 2001).

From being a poor nation in the 1960s to a resource-dependent economy in the 1970s to a newly industrialized economy in 2020, Malaysia has seen tremendous economic transformation. The growth can be attributed to tax holidays for five years that were aimed at stimulating industries in import substitution. By 1970, import substitutions had achieved growth thus there was introduction of Export processing zones (Sinenko & Mayburov, 2017).

According to research done by UNIDO 2011, tax incentives were ranked 11 on the motivation factors that influence investments. The research was done in 7000 firms of African countries. The research confirmed that in 1980s, no low-income, sub-Saharan country operated a tax-free zone. Due to low economic growth, the sub-Saharan countries increased tax incentives by 80% in form of tax holidays in 2005 to stimulate investments which was a major increase from 40% of the 1980s (IMF, 2009).

The tax incentives contributed to dramatic turnarounds in countries such as Mauritius that developed reforms in 2006 to regularize tax incentives particularly the reduction of investment tax credits, exemptions, and tax holidays. Following these reforms corporate tax revenue and foreign direct investments increased (IMF, 2011). In Tanzania, the government introduced tax exemptions in 2012 which were equivalent to the \$1.1 billion dollars they borrowed from China to build the gas pipeline. This incentive has expanded Tanzania as an investment hub (FT, 2013) Morocco has upgraded its budgeting process to include an elaborate tax expenditure report to track the impact of tax incentives (OECD, 2008).

In Kenya, the economic objectives of different political regimes have been influencing tax incentive decisions. The two most frequently stated goals have been to increase employment and draw in foreign direct investment. In 1990, tax incentives such as the establishment of EPZA to stimulate investments in the export sector were introduced thus creating an enabling environment. The EPZA incentives included a ten-year tax holiday, as well as a 25% corporation tax after the 10 years. The two incentives are still effective up to date.

Prior to 1992, there were a lot of bottlenecks facing the export sector which led to the establishment of EPC to address these challenges as well as promote the export sector

performance. A manufacturer under bond known as TREO was established vide a legal notice number 129 to provide 100% import duty remission for raw materials for the manufacture of export commodities. In addition to this, a remission of duty was provided to export manufacturers of goods and services. In 2014, an institution known as KenInvest was formed to stimulate investment in Kenya, its major role is to track investors and provide after-sale services. The Kenya tax incentive arena is dynamic as well as robust that allow tax reliefs on double taxation, investment allowance, tax immunities, discounted investment plans, and tax holidays for EPZs and SPZ.

In conclusion, tax incentives stimulate investments, address unemployment, and reduce tax-related expenses thus encouraging investments by institutions (Phillips, 2010). A study by Klemm and Parys, (2009) was conducted to establish the techniques of tax motivation. The research established that tax credits enhanced investments. The researchers examined information from 40 nations between 1985 and 2004. The scholars analyzed the data using spatial econometrics and established that tax holidays are in competition with corporate income tax. There was however noted that there was no competition between tax discounts and investments. The reduction of corporate income tax and tax holidays stimulate economic growth as evidenced by dynamic panel data collected by Klemm and Parys, (2009).

Harju & Kasonen, (2012) studied tax reforms in Finland between 1997 and 1998 evaluating their impact on economic activities. The empirical data and theoretical framework revealed that tax relief plans have a causal relationship with the economic activities of small holder businesses. The concept of reduced taxation has a direct relationship with efforts invested by small holes businesses.

According to Xing, Cui and Qu, (2017), there is a direct correlation between capital control, profits before tax and investments as a result of tax reliefs. The scholars study the response to tax reliefs by foreign firms in China. They conducted an industrial survey from 2000 to 2013 using firm level data generated by China's industrial enterprise survey. The study revealed competition of Chinese cities over average rates. In conclusion the competition is as a result of incentives' influence on profits and efficient resource use by the cities.

Tax incentives are diverse in nature and range from, low tax rates, tax exemption, special zone tax reductions, investment allowances and tax reliefs (Tembur, 2016). Tax incentives are stimulants of investments and are used to achieve fiscal economic objectives (Steven & Ana, 2007). The reliefs are selective and can lead to preferential tax regimes (Sally & Shelly, 2010). The KRA claims that tax incentives provide better trading conditions than the current tax system. Such favorable conditions can influence the investment decisions of a person. Most of the conditions are industry-focused and targeted to achieve specific economic objectives. They can adopt various forms. In the Kenyan context, they include investment allowances, tax credits, tax exemptions, tax relief periods, and special economic zone taxes.

The Nairobi Securities Exchange (NSE) is a leading African Exchange, based in Kenya – one of the fastest-growing economies in Sub-Saharan Africa. Founded in 1954, NSE has a six decade heritage in listing equity and debt securities. It offers a world class trading facility for local and international investors looking to gain exposure to Kenya and Africa's economic growth. NSE demutualized and self-listed in 2014. Its Board and management team are comprised of some of Africa's leading capital markets

professionals, who are focused on innovation, diversification and operational excellence in the Exchange.

NSE is playing a vital role in the growth of Kenya's economy by encouraging savings and investment, as well as helping local and international companies access cost-effective capital. NSE operates under the jurisdiction of the Capital Markets Authority of Kenya. It is a full member of the World Federation of Exchange, a founder member of the African Securities Exchanges Association (ASEA) and the East African Securities Exchanges Association (EASEA). The NSE is a member of the Association of Futures Market and is a partner exchange in the United Nations-led SSE initiative.

1.3 Statement of the Problem

The world economy is facing urgent difficulties from the growing problems of environmental degradation and climate change, which pose hazards to human health as well as income and productivity levels (Mohanty and Mohanty, 2019; Wade and Jennings, 20). Growing economic activity results in higher energy consumption and greenhouse gas emissions, which worsen environmental damage. According to Swiss Re Institute (2021) projections, developing economies such as Kenya could be most severely affected by climate change, which could cause a loss of approximately 18 percent of world GDP. The UN Production Gap Report 2021 highlights that despite strenuous efforts to comply with the Paris Agreement, the present production plan exceeds the accord's limits, necessitating immediate action to drastically cut carbon emissions and accomplish sustainable development goals (UNEP, 2021).

In response to these challenges, governments have devised strategies to reinforce adherence to the Paris Agreement through fiscal incentives, such as green investment tax incentives. Notably, initiatives like renewable energy credits in the United States

and proposed renewable energy investment tax credits in Canada have catalyzed substantial private sector investments in clean energy and decarbonization projects (US Environmental Protection Agency, 2022). Concurrently, the European Union's subsidy efforts have attracted over 100 companies to embrace sustainability incentives, while Rwanda's proactive measures, including investments in e-waste management and the launch of a Carbon market framework post-COP28, underscore the potential for impactful climate action in Africa (Rwanda, Ministry of Environment, 2023).

Despite the implementation of factors aimed at improving revenue collection in Kenya, there is still a significant level of non-compliance among some companies. Despite its efforts to improve revenue collection, the KRA has recently fallen short of its income targets, especially those related to VAT. For example, compared to other countries, Kenya's reaction to green investment incentives has been lackluster, even with programs like customs incentives, VAT exemptions, and reductions in corporation taxes. This disparity is glaring, with only sixteen Saudi Arabian companies engaging in carbon market trade, highlighting the untapped potential for green investments that could contribute to tax revenue collection (RVCMC, 2023). Considering the pivotal role of revenue generation, the limited contribution of green investment tax incentives is particularly concerning.

Thus, the goal of this research is to ascertain how green investment influences the relationship between tax incentives and tax revenue collection from Nairobi Securities Exchange-listed businesses.

1.4 Objectives of the Study

The general objective of this study was to determine the moderating effect of green investment tax incentives on tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.

1.4.1 Specific objectives of the study

The specific objective of the study was:

- i. To determine the effect of corporation tax incentives on revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.
- ii. To determine the effect of value-added tax incentives on tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.
- iii. To determine the effect of customs incentives on tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.
- iv. To determine the moderating effect of green investment on the relationship between corporation tax incentives, value-added tax incentives, customs tax incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.
 - a) To determine the moderating effect of green investment on the relationship between corporation tax incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.
 - b) To determine the moderating effect of green investment on the relationship between value-added tax incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.
 - c) To determine the moderating effect of green investment on the relationship between customs incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.

1.5 Hypotheses of the Study

The study tested the following hypothesis.

- i. **H01** corporation tax incentives do not have a significant effect on the tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.
- ii. **H02** value-added tax incentives do not have a significant effect on the tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.
- iii. **H03** customs incentives do not have a significant effect on the tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.
- iv. **H04** green investment does not moderate the relationship between:
 - a) Corporation tax incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.
 - b) Value-added tax incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.
 - c) Customs incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.

1.6 Significance of the Study

Policymakers, regulatory agencies, and academics are influenced by the study's comprehensive and comprehensive analysis of the moderating effect of green investments on the relationship between tax incentives and tax revenue collection from companies listed on Kenya's Nairobi Securities Exchange.

The policymakers including the legislature made reference to this research when advocating and making laws on green investments and tax incentives that affect revenue collection. Given that this is a government expenditure the executive made

reference to this research while approving budgets and reliefs in the form of tax incentives. It also helped the government determine the optimal tax incentives to achieve fiscal objectives.

Regulatory bodies such as the national treasury, capital markets authority, Nairobi Securities Exchange, and Kenya Revenue Authority made reference to this research while enforcing regulations affecting the green investment, tax incentives and tax revenue collection from companies listed on the NSE, Kenya.

The scholarly literature on the moderating impact of green investment on the relationship between tax incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya, has become more robust as a result of this research. It therefore forms a base for future research and development.

1.7 Scope of the Study

The moderating influence of green investment on the relationship between tax incentives and tax revenue collection from Nairobi Securities Exchange-listed companies was ascertained by this study. The aim of the research was to ascertain the impact of distinct tax incentives on the tax revenue obtained from companies listed on Kenya's Nairobi Securities Exchange. The effects of business tax incentives, value-added tax incentives, and customs incentives were a few of them. Additionally, the relationship between corporate tax incentives, value-added tax incentives, and customs tax incentives and tax revenue collection from companies listed on the Kenya's Nairobi Securities Exchange was examined, as well as the moderating effect of green investment. The 67 firms that are listed on the Nairobi Securities Exchange were the subject of this study, which employed secondary data that was gathered during a five-year period from 2019 to 2023. It employed a comprehensive explanatory research

technique. Only companies with complete data were taken into account. The measurement of variables was from a national level and over five years thus gave a robust view of the sector hence the accuracy of the results.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter investigated the existing literature on the moderating effect of green investment on tax incentives and tax revenue collection from companies listed on the NSE. It expanded the literature through the theoretical and empirical framework on publications related to the research problem.

2.2 Conceptual Review

This section discussed the concepts of the study

2.2.1 Tax revenue collection

For state and federal governments to invest in infrastructure, hire revenue specialists, and provide the public with top-notch services, they need to collect money (Mlure, 2013). A variety of methods are employed by governments to generate revenue, such as taxes, fees, fines, and non-tax sources including earnings from state-owned businesses or the exploitation of natural resources. The funds are then used to finance infrastructure projects, maintain law and order, fund social welfare programs, and supply public goods and services (Bird and Gendron 2017).

Projections from the World Bank indicate that by 2021, the majority of government revenue collection will come from mandatory taxes imposed on individuals and corporations based on their income, wealth, transactions, or consumption. Governments also levy various fees and fines in order to raise funds. Fees are levied for particular government-issued licenses or services, like court fees, passport fees, and driver's license fees. In addition to acting as a deterrent and a source of income, fines are penalties assessed for breaking laws or regulations (Munyao, 2018).

Governments need to have efficient revenue collection systems in place in order to meet their budgetary obligations and sustain economic growth. In order to accomplish this, governments frequently set up revenue agencies or tax authorities that are in charge of overseeing tax compliance, collecting taxes, and enforcing and administering tax laws. These organizations use a range of instruments and tactics, such as audits, taxpayer registration, fines for noncompliance, and public awareness campaigns and streamlined tax filing procedures to encourage voluntary compliance (MartinezVazquez & Rider 2017).

For example, China and Taiwan's special municipalities, counties, and urban and rural townships have passed laws establishing the justification for taxation. However, the rules are constrained by or governed by the Government Act, which manages the distribution of public funds, and they have to abide by the Act Governing Local Tax Regulations in fifteen instances. The regulations passed encompass the levies on land, construction, automobile licensing, entertainment, and special taxes; the national government receives thirty percent of the proceeds from these levies (Government of China, 2021). The United States government use diverse methodologies to gather revenue and finance public expenditures. The primary source of income is taxes, including state and federal taxes (IRS, 2021).

Income taxes, corporation taxes, payroll taxes (which include Social Security and Medicare taxes), and excise taxes on certain goods and services are just a few of the ways the federal government raises money. Property taxes, sales taxes, income taxes, and other levies are other ways that state governments might collect revenue (Tax policy Center 2020). Furthermore, the United States government obtains funding from several channels, including import duties, government-owned businesses, license and permission charges, and fines. Although tax income to GDP ratios in Latin America

and Asia have grown since 2000, Arizonan et al. (2015) note that they are still lower than in European regions. This is a result of significant reforms, particularly those aimed at improving compliance and administration. Even though the majority of reforms have been focused on eliminating inefficiencies, corruption is still a problem in many tax jurisdictions. One of the main causes of tax evasion in Africa is corruption, which has a detrimental effect on economic progress. This is also the primary reason why the Middle East's GDP has low revenue collections. In a similar vein, governments' income collection throughout Africa plays a vital role in the continent's public finances. African governments depend on a variety of revenue-generating strategies, including non-tax revenue, taxes, fees, and fines (African Tax Administration Forum, 2019).

One of the main ways that governments raise money is by taxation. Examples of taxes that are imposed include income tax, corporation tax, VAT, and customs duties. In addition, payments are gathered for services rendered by the government, like permits and licenses. Lawbreakers are subject to fines, which act as a deterrent and a source of income (IMF, 2019). VAT on goods and services and income taxes, such as corporate and personal income taxes, are Uganda's main sources of funding. Certain products are subject to excise duties, including petroleum, tobacco, and alcohol. Imported commodities are subject to customs duties (URA, 2020).

In Tanzania, excise taxes are imposed on specific products, such as alcohol, tobacco, and petroleum, while value-added tax (VAT) is applied to goods and services. Customs duties are collected on imported goods. Non-tax revenue comes from licenses, permits, fees, and fines. Africa's devolved units need to come up with creative ways to raise more money if they are to efficiently and sufficiently deliver the required services. According to Gitaru (2017), establishing financial decentralization requires decentralized governments to have a strong tax collecting system in place. According

to Ataro et al. (2016), spirit 4 of devolution holds that local governments should have greater ability than the federal government to address demands and provide public services in a way that best suits them.

As a result, many nations have devolved governance in order to improve citizen service delivery. In keeping with this spirit, the Kenyan people ratified a new constitution in August 2010 that established a new structure of government and created 47 independent but interdependent counties under the national government. Better service delivery at the county level is now necessary as a result of this growth. Burch et al. (2020) assert that county administrations are incapable of spearheading the implementation of the previously described agenda if they lack the necessary funds to make the necessary investments. Given this, in order to enhance their financial capacity for the expansion of their areas of influence, county governments must identify and collect local revenue streams, such as property taxes, rates, tolls, fines, and fees.

Article 209 of the Kenyan Constitution grants counties the authority to impose taxes, including property taxes and entertainment taxes, as long as they are approved by law. To increase revenue production and collection, laws permitting the imposition of different taxes have been implemented, such as those pertaining to business permits, parking fees, cess, markets, trade services, slaughterhouses, natural resources, exploitations, and conservancy (County Government Toolkit, 2020). Decentralization is based on the idea that county governments should, on the whole, be better equipped to detect local requirements than the federal government and, as a result, be able to provide public services more effectively. Considering this, it is anticipated that county governments will raise more money from domestic sources to fortify their financial basis for regional development.

Additionally, it is expected of the county governments to use the Internally Generated Funds (IGFs) to develop initiatives and programs aimed at eliminating poverty in their respective communities (Karori et al. 2016). For government operations to run smoothly, revenue from taxes, licensing, customs, excise taxes, and other sources is essential. Kenya's government generates the majority of its revenue by rationalizing and controlling expenditure through stringent fiscal controls, or by making the current tax structure more elastic (Muriithi, M. and Moyi, E. 2003).

The bulk of the tax system is composed of direct and indirect taxes. When it comes to direct taxes, the tax-producing factors are assumed to pay the taxes; but, when it comes to indirect taxes, the firms, households, and families that use the taxed commodities are responsible for paying the taxes (Chan, 2000). Corporation tax, personal income tax, withholding tax, bank interest tax, rental income tax, and presumptive income tax are a few types of direct taxes. Value-added taxation is one type of indirect tax. According to Karingi et al. (2005), tax administration plays a critical role in revenue collection when a well-designed tax is implemented. Three interconnected tasks make up tax administration:

- a) the identification of tax liabilities based on existing tax laws,
- b) the assessment of taxes to determine if the taxes paid are smaller (or larger) than liabilities, and,
- c) the collection, prosecution, and penalty activities that impose sanctions on tax evaders and ensure that taxes and penalties due from taxpayers are collected.

2.2.2 Green investments

Large-scale pollution emissions from industrialization are a component of most governments' plans for economic development. Environmental pollution is becoming a more significant issue in spite of the country's quick economic growth and rising

standard of living (Hao et al., 2022a). According to Yale University's 2022 Global Environmental Performance Report, Kenya's environmental performance places it 148th out of 180 nations. Businesses have drawn attention to their environmental management because of their significant pollution (Utomo et al., 2020; Hao et al., 2022c). A crucial technological tool for achieving corporate transformation and upgrading, clean production, sustainable development, and the growth of green innovation in organizations is green investment through innovation (Cao et al., 2022).

According to data from China's Ministry of Science and Technology, the country invested 2.2 trillion yuan in R&D in 2019, up 12.5% from the year before. This represented 2.23% of GDP, with enterprises investing 1.69 trillion yuan of it, a rise of 11.1% from 2018. Tax incentives and subsidies were the primary regulatory tools used by the government in a range of industrial policies aimed at lowering R&D costs for businesses and encouraging them to conduct their own R&D. Scholars have investigated whether and to what extent the two intervention tools influence enterprises' investments in green through innovation, although the instruments themselves were disputed (Liu et al., 2022). Following the advent of Keynes's neoclassical school and government failure theory, researchers began examining how policies affected green innovation (Cao et al., 2021; Hao et al., 2022b; Wang J et al., 2021; Zheng et al., 2022).

Hu et al. (2021) first looked into the impact of subsidies on companies' green innovation and found a positive correlation. Certain scholars suggest that companies might be dissuaded from funding innovative research and development (Xu et al., 2021), hence impeding green innovation (Yi et al., 2020). With the discussion of direct cash subsidy mechanisms, tax incentives—an indirect fiscal tool—came into focus (Ren et al., 2021). (Marjanović, 2018). Tax incentives also have a mixed effect on green

innovation; according to Cao and Chen (2018) and Song et al. (2020), they can be advantageous or harmful. The impact of tax incentives is rarely taken into account, despite the abundance of research examining the effects of particular policies on innovation and those based on a single variable assessing green innovation.

This study examined the green investments made by firms that are listed on the NSE in Kenya, taking into account various subsidy levels and the way in which tax incentives operate. Using data on listed firms from 2012 to 2023, this study established an assessment system for green investment through innovation using the entropy weighting method (EWM) and measured the intensity of tax incentives policy using the B-index. Furthermore, a firm's R&D investment includes significant and essential external financing forces (Adegboye and Iweriebor, 2018; Feng, 2021).

2.2.3 Corporation tax incentives

According to Calitz et al. (2020), one of the most crucial considerations when making capital investment decisions for businesses is the cost of capital. The opportunity cost of money invested in a firm or the minimum rate of return necessary to justify a capital investment is indicated by the cost of capital, also known as the cost of holding onto a unit of capital for a unit of time. Chen et al. (2018) state that capital deductions are tax deductions that can be used for any kind of capital investment. Furthermore, they might only apply to capital costs associated with particular projects, such research and development, or to particular types of machinery or sophisticated equipment. They enable the investor to write off an amount greater than the cost of the investment because they are provided in addition to ordinary depreciation allowances.

Melville (2019) asserts that as most capital assets used by firms lose value owing to wear and tear and obsolescence, capital consumption expenses increase. Companies can gradually deduct the costs of capital assets from their income thanks to accounting

and corporation tax procedures. Kenya offers tax deductions for capital expenses related to the construction of industrial buildings, machinery, farms, roads, railroads, fences, water and sewage systems, and other infrastructure (Income tax act, 2018). When investing in buildings and machinery for green projects, businesses can choose to claim an investment deduction, which is equivalent to 100% of the capital expenditures, against profits or gains in the year the machinery or building is constructed (Income Tax Act, 2018).

Furthermore, 12.5 percent is deducted for wear and tear on installed machinery and plants. The Finance Act of 2021 changed the rules for investment deductions. It now specifies that the investment deduction rate will be 100% for businesses operating outside of the counties of Nairobi and Mombasa if capital investments equal at least 2 billion shillings over the preceding five years. Nonetheless, the 150 percent rate will still apply if the investments were made before to April 26, 2020. The rate of investment deduction in counties outside than Nairobi and Mombasa will be 100% if the capital expenditure for that income year exceeds 250 million shillings.

A corporation is subject to a direct tax on its income or chargeable profits. This tax is known as corporate income tax. Governments utilize corporate income tax incentives as a means of motivating businesses to make environmentally friendly investments (OECD, 2019). According to the World Bank (2020), corporate income tax incentives (CIT) are calculated as the percentage point difference between the standard CIT rate and the tax incentive CIT rate. Corporate tax incentives are becoming more and more popular as a result of increased competition to draw in foreign direct investment (OECD, 2019).

A reduction in tax rates, a complete exemption from profits tax, or a mix of the two, such as a two-year exemption followed by five years at half the standard rate, are examples of corporate income tax incentives (Chen et al., 2018). This exemption or discount is only valid while stocks last. Unlike the benchmark system, corporate income tax incentives are a form of tax expenditure that are exclusively available to investors or assets that meet 24 specified conditions (OECD, 2019). A firm that engages in any commercial operations oriented towards green investments such as carbon market exchange, the corporate rate of tax 15% for the first ten years as from 2021 (Income tax act, 2021).

2.2.4 Value-added tax incentives

Value-added tax, or VAT, is a consumption tax that is imposed on the value added to goods and services at each stage of production and delivery. Businesses collect and pay taxes on sales and purchases, applying VAT incrementally until they pass the tax burden on to the final customer. Policy initiatives known as VAT incentives are intended to incentivize particular economic activities or behaviors by offering advantages or tax relief inside the VAT system. These incentives can take various forms and serve multiple purposes, such as stimulating economic growth, attracting investment, promoting exports, supporting small businesses, or encouraging the consumption of particular goods and services OECD, (2022).

Products and services that are zero-rated are taxable, but only at a zero percent rate. Richardson (2019) claims that this allows businesses to claim credits for the VAT they paid on inputs, hence reducing manufacturing costs and encouraging certain activities like exports. Certain products and services could have a VAT rate that is lower than the average rate. This is often applied to essential goods and services, cultural activities, or

environmentally beneficial products. Businesses can claim deductions for the VAT paid on inputs related to their taxable activities. This reduces the overall tax burden and encourages investment and production, Pampel et al. (2019).

When information asymmetry exists, the party with the information will typically hide unfavorable information, giving innovative enterprises an informational advantage (Soskice, 2019). Industry companies were the study population, and the value-added tax (VAT) reform was the natural experimental group (Wang M et al., 2021). According to the academics cited, VAT loosened regulations on corporate finance. Companies can send out positive signals to the outside world by providing information such as tax breaks and government subsidies, in addition to directly disclosing to society their financial and R&D status (Czarnitzki et al., 2021).

The effect of China's 2002 income tax revenue-sharing reform on corporate financial performance was investigated by Fang et al. (2022). According to the scholars cited earlier, the reform program improves company performance by addressing financial issues. Yu et al. (2021) used a sample of Chinese listed businesses from 2001 to 2017 to investigate the effect of financial restrictions on green innovation. The aforementioned writers claim that companies with greater financial constraints have a harder time innovating in an environmentally friendly way.

2.2.5 Customs and excise tax incentives

A study on the impact of export promotion incentives on performance in the South African automobile industry was carried out by Madani and Mas-Guix (2011). The Motor Industry Development Program's quantitative effect on South Africa's motor vehicle export performance from 1996 to 2006 was assessed using the difference-indifference approach in this study. The researchers employed two levels of strategy.

The authors conducted a comparative analysis with various manufacturing industries inside the nation at the first level. By using a second technique, the researchers compared South Africa to numerous comparator countries that produce and export cars. The results showed that the effects of automobile exports to South Africa were positively correlated. The study also found that program acceptance took some time before the program's introduction-related improvements in production were noticeable. The study also discovered that the effects of tax incentives faded with time, confirming the hypothesis that, although they might affect certain companies' short-term choices, most companies do not consider them over the long term.

These tax breaks, according to IEA (2012), are intended to promote investments in specific industries. The export popularization initiative's fundamental tenet is that in order to avoid being accused of unfair competition tactics, exporters should assess their purchases at the worldwide pricing. The nation implemented a number of value-added tax groups-specific policies. The advantages provided to manufacturers to encourage the free-tax importation of assets and unfinished items are referred to as "manufacture under bond." The goal of the action was to entice manufacturers to establish operations in the nation IEA (2012). In terms of benefits associated with trade, Tax Remission for Exports Office (TREO) resulted in a loss of KSh19.6 - 13824. The United Nations Conference on Trade and Development (UNCTAD) data was utilized in the analysis to show that Kenya gained \$1.15 billion during the same time, which was less than what Tanzania and Uganda received.

Kosure (2016) looked into how the macromarketing environment and investment promotion incentives related to the financial performance of companies in the EPZ sector. The direct effects of investment promotion incentives and the macromarketing environment's moderating effect on company performance were the main foci of the

trials. The study discovered that in order to achieve the intended company performance, investment promotion incentives need be supported by a favorable macro-marketing environment.

According to the East African Common External Tariff (EAC, CET, 2022), solar heaters classified as other slag and ash (including kelp) of code 84.19, waste, parings, and scrap; ash and residue from the burning of municipal waste of heading 26.21, waste, and scrap; semi-manufactures; articles of heading 39.14, and waste, parings, and scrap, of plastics of heading 39.15, are exempt from duty. These incentives, which include exemptions and reductions of import duty and local taxes, lower supply rates and production costs, allowing for higher profits to be made.

2.3 Theoretical Review

The section reviewed the theoretical framework on the effect of tax incentives on the green investment decisions. The theories to be discussed included the triple bottom line theory, optimal tax theory, neoclassical theory and normative theory.

2.3.1 Tripple Bottom Line Theory

The Triple Bottom Line (TBL) introduced by John Elkington in 1994 represents a transformative paradigm in business, transcending the traditional focus solely on financial performance (Elkington, 1994). Initially, businesses operated with profit maximization as their primary objective, prioritizing financial gains above all else. However, Elkington's concept revolutionized this narrow perspective by advocating for a broader evaluation of organizational impact and success (Elkington, 1994).

The TBL comprises three key dimensions: environmental sustainability, social responsibility, and economic prosperity (Elkington, 1994). The environmental dimension underscores the importance of minimizing ecological footprint, reducing

resource consumption, and mitigating environmental degradation (Elkington, 1994). Social responsibility encompasses the ethical and moral obligations of businesses towards stakeholders, including employees, communities, customers, and society at large (Elkington, 1994). Economic prosperity pertains to the financial performance and stability of businesses, but within the context of the TBL, it is evaluated in conjunction with environmental and social considerations (Elkington, 1994).

At its core, the TBL emphasizes the interconnectedness of environmental, social, and economic factors, highlighting that sustainable business practices are essential for long-term viability and resilience (Elkington, 1994). By integrating the principles of the TBL into their operations, organizations can strive towards a more regenerative and sustainable future (Elkington, 1994). The implications and applications of the TBL are manifold. It serves as a transformative framework that guides businesses towards adopting more sustainable practices and models (Elkington, 1994).

Additionally, TBL offers measurement tools and metrics that enable organizations to assess their performance across environmental, social, and economic dimensions (Elkington, 1994). By integrating TBL principles into their business strategies, organizations can enhance resilience, mitigate risks, and capitalize on opportunities for innovation and growth (Elkington, 1994). Furthermore, the TBL encourages businesses to engage with a wide range of stakeholders to foster transparency, accountability, and trust (Elkington, 1994).

The Triple Bottom Line theory was essential in this study as it embraces the principles of environmental sustainability, social responsibility, and economic prosperity, organizations can not only achieve financial gains but also contribute positively to the well-being of people and the planet (Elkington, 1994). It served as a guiding framework

for creating value that extends beyond monetary profits (Elkington, 1994).

Despite Triple Bottom Line (TBL) theory being a key theory for this study it faces criticism for its measurement approach, lack of integration across dimensions, and serving more as a compliance tool evidenced by corporate reports from a study done in 40 listed companies in Japan by Archel, P., Fernandez, M., & Larrinaga, C. (2008). Other theories such as Optimal tax theory was considered as it offers insight into incentivizing sustainability through tax mechanisms. Neoclassical theory emphasizes market-driven solutions for sustainability. Normative theory provides ethical frameworks for decision-making.

2.3.2 Optimal Tax Theory

Optimal tax theory offers valuable insights into the development of tax regulations that minimize market disturbances resulting from poor taxation policies (Mirrlees, 1976). This theory posits the existence of a neutral tax, theoretically designed to prevent distortions and inefficiencies in the market. This viewpoint states that taxpayers are faced with a decision between two investment projects that are mutually exclusive and have identical pre-tax risks and profits, providing all other variables stay the same. Rational industry players would naturally opt for projects with minimal tax risk, fostering prudent decision-making.

This rationalization underscores the impact of taxes on business behavior, a phenomenon economists have explored over time. Lisi (2015) and Saez and Stantcheva (2016) employed the tax model to explain tax compliance in the UK and the social marginal welfare weights of taxes in the US, respectively. The idea was used in an African context by Babatunde, Ibukun, and Oyeyemi (2017) to clarify the relationship between income, taxes, and economic growth on the continent.

The optimal tax model also provides insights into the dynamics of tax stimulus packages and their effects on behavior. For instance, the introduction of low- or no-tax employee allowances is intended to promote financial flow within the economy, as it is recognized that the burden of income taxes on employee compensation benefits only economic actors.

Based on a study done on EU VAT reforms by Tax Foundation, 2023, to address the UN's request for public input on inclusive and effective tax Cooperation it was evident that the optimal tax theory fails to address the practical challenges faced by policymakers and retailers in accurately applying and enforcing multiple tax rates. Consequently, its theoretical elegance falters when confronted with real-world complexities, undermining its applicability and effectiveness. Therefore, neoclassical and normative theories was considered, given that the neoclassical theory focuses on market-driven solutions, advocating for simplicity and efficiency in economic policies. Given the administrative burdens and complexities highlighted in the critique of optimal tax theory, neoclassical principles of simplicity and efficiency offer a contrasting perspective that resonates with practical considerations. Normative theory provides ethical frameworks for decision-making, emphasizing fairness and equity. In contrast to optimal tax theory's focus on economic efficiency, normative theory raises questions about the fairness of a tax system that imposes varying rates on different goods, potentially burdening certain segments of the population disproportionately. Therefore, considering normative principles becomes crucial in evaluating the equity implications of tax policies.

2.3.3 Neoclassical Theory

Twan and Slow introduced the theory in 1956, asserting a connection between tax incentives and the violation of horizontal equity—a crucial aspect of a well-established tax structure. According to this theory, providing tax incentives can lead to market distortions, resulting in inefficient resource allocation. Notably, these tax incentives are often implemented to address existing inefficiencies in the market systems (Caillé & Vandenberghe, 2016).

Business failures are frequently attributed to either insufficient or excessive investments (Amankwah-Amoah, Boso & Antwi-Agyei, 2018). An illustrative example of such failure is observed in research activities, where an investment may yield a higher social rate of return compared to the private one. Tax incentives serve various purposes, including compensating for market inefficiencies (Bergner, Bräutigam, Ever & Spengel, 2017). However, it's crucial to note that incentives on investments encompass aspects such as cash grants or reliefs. Nevertheless, the impact of decisions, including investments, is influenced by multiple factors beyond rewards (Adner & Feiler, 2019). Examining this theory within the context of this study reveals how firms' base investment decisions on factors like future demand forecasts, government policy certainty, competitor movements, and prevailing interest rates during specific periods.

Neoclassical tax theory's emphasis on market-driven solutions and efficiency often overlooks social and distributive concerns. By prioritizing economic efficiency, it may neglect the needs of marginalized or vulnerable populations who may not benefit equally from market mechanisms. Additionally, it tends to rely heavily on assumptions of perfect information and rational decision-making, which may not accurately reflect real-world behavior. Furthermore, neoclassical theory's reliance on market forces may

fail to address market failures, such as externalities or monopolies, which can result in inefficient outcomes.

Considering normative theory becomes imperative due to its focus on fairness and equity. Normative theory provides a framework for evaluating tax policies based on ethical principles, ensuring that the burden of taxation is distributed equitably and that the most vulnerable members of society are adequately protected. By incorporating normative considerations into tax policy analysis, policymakers can strive to create tax systems that promote social justice and mitigate inequalities.

2.3.4 Normative Theory

The theory illustrates how various levels of government structures create incentives and establish boundaries that govern the operations of the government and other entities (Cochran, 1999). These incentives not only dictate the pace of development but also chart the trajectory of that development. The theory states that tax laws enacted by following governments can vary, which might lower previous profits. As a result, as time goes on, tax structures, regulations, and administrative strategies should be developed dynamically, accounting for the relative importance of various tax-related concerns. The institutional model offers a compelling foundation for forecasting and representation, as well as a comprehensive framework for understanding how tax strategies and management evolve across different locations.

According to Tresch (2014), this theory takes into account both advantageous and detrimental incentives, making it difficult to decide which is best for a given economy given its changing conditions and environmental concerns. As a result, during tax planning, variables including the state of the economy, the skill of tax administrators, the nature of investments, and financial limitations should all be closely watched.

Boadway (2015) notes that rewards bestowed by politicians or civil personnel are vulnerable to misuse, frequently as a result of corruption. Boadway advocates for transparent criteria, established laws, and incentives available to all investors. In order to ensure that all possible investments in a given industry are eligible for incentives, organizations should receive just the right amount of incentives to encourage investments. Nonetheless, it appears that the distribution of government incentives is determined by the moral standing of the regulatory bodies that monitor the industry in which businesses operate. The allocation of incentives is influenced by public office and the political class, which adds opacity to the process and influences results. According to Chukwumerije and Akinyomi (2011), modest tax breaks for R&D, machinery, and equipment can greatly increase investment without resulting in large losses.

The normative theory is pertinent to this investigation since it makes the assumption that the tax incentives in place can only be deemed acceptable and suitable given the state of the economy. Considerable regional variations in tax benefits can negatively impact a country's operations and reduce its competitiveness relative to other trading partners in the area.

2.4 Empirical Review

The section reviewed the empirical framework on the moderating effect of green investment on the relationship between tax incentives and tax revenue collection from companies listed on the NSE. The section analyzed diverse studies from different geographical locations and sectors to underscore the multifaceted impacts of tax incentives on various aspects of firm performance and economic growth. Each study contributed unique insights, emphasizing the importance of nuanced policy

considerations and the need for targeted incentives to foster positive outcomes in specific contexts.

2.4.1 Tax revenue collection

Taxes are levied by a nation's government against its citizens in order to fund it or to help with the provision of services (Aamir et al., 2011). It's not like a donation or a voluntary payment made by the tax payer. Instead, according to Garner (1999), it is an orderly payment to the government. The purpose of revenue collection for the majority of governments is to direct and promote the nation's social and economic growth. The exercise will depend on a number of factors. For the majority of nations, the evident difficulties in revenue collecting are universal (Garner, 1999).

The Organization for Economic Co-Operation and Development (OECD) stated in 2008 that governments need taxes in order to finance long-term investments in public goods as well as fundamental services. Most emerging countries have a positive correlation between taxation and economic growth. Kenya's tax burden has fluctuated throughout time, moving from low to high, yet it is still evident that the government requires more tax revenue to maintain public services (KRA, 2004). Because taxes are so important, a lot of research has been done in the subject of revenue collection (Wawire, 2000; Muriithi and Moyi, 2003; Wawire, 2003). Several studies indicate that Kenya has not always collected taxes as efficiently as it could have. Thus, the purpose of this study was to ascertain how Kenya's revenue collection is affected by foreign direct investment, inflation, compliance levels, and tax rates.

2.4.2 Green Investments on Tax Revenue Collection

A study on the impact of tax incentives on the sales of environmentally friendly vehicles in Japan was conducted by Alhulail (2014). The researcher selected ten automobiles in

Japan that were classified as environmentally friendly between April 2006 and March 2013. According to the report, tax incentives significantly increased the number of eco-friendly cars sold in Japan. But in order to assist other researchers in assessing the study's feasibility, the author neglected to specify the study population.

Maffini, Xing, and Devereux (2016) incorporated data from private tax returns in the United Kingdom to their analysis of the effects of tax motivating policies, such as depreciation awards, on profitability. The researchers assessed the 2004 minimal criterion for first-year emoluments change using a difference-in-difference technique. According to the study's findings, businesses that were eligible for tax incentives outperformed those that weren't in terms of their financial performance. The analysis also found that the rise in profitability happened after an exogenous adjustment to the company's assets, not because of an increase in available cash. The researcher also found that, within a year or two, the commercial entities responded quickly to FYAs. The study also found that the low qualifying requirements' cost of capital gave importance to the key characteristics of FYAs. The primary outcome of the investigation stemmed from the necessity to ascertain the impact of tax incentives on investments made by companies listed on the NSE, rather than the situation emphasized in earlier research reviews. The characteristics influencing depreciation advantages on attracting FDIs into the listed firms were the primary subject of the research. The study also examined how the linked taxation model affected FDI and the profits of companies listed on the Nairobi Stock Exchange. The results of the study indicated a constructive relationship between. There is no significant association between the building and investment discounts and FDIs.

Tirimba, Muturi, and Sifunjo (2016) carried out a study to ascertain how tax incentives affected stock market profitability. The method the researchers selected was appropriate for achieving their goals. Listed enterprises on the NSE are included in the study population; 61 firms were selected for the study. Questionnaires were used in the study's data collection approach. The study's findings suggested that tax incentives had little impact on the financial performance of companies listed on the NSE, which is why the government needs to create new tax laws and regulations. Rather than relying solely on tax incentives, the measure is anticipated to accelerate economic growth. Njeru and Ndimitu (2015) evaluated the impact of tax decreases on the earnings of Kenyan EPZ companies. The researchers analyzed the study data and gave the research direction by using the descriptive research approach. According to the study's findings, investment in EPZ companies was highly dependent on rising investment revenues. Furthermore, the study's conclusions demonstrated a strong correlation between investments and tax breaks. The researchers also disclosed that grants, loans, tax breaks, sales income, import tariff exemptions, tax breaks, and government subsidies had so far benefited EPZ companies.

Kuria (2017) conducted an analysis using multiple regression tests to assess how tax incentives affect the nation's businesses' performance. Two strategies were used: the distribution of workers among the businesses in the Kenyan EPZ sector and tax incentives. Results showed a positive association between the performance of firms inside the EPZ and different combinations of tax incentives. The workforce's distribution, however, had little effect on the company's performance. Ngure (2018) used a cross-sectional methodology to investigate the effects of tax incentives on the performance of manufacturing firms. The researcher came to the conclusion that 24 corporate tax incentives had a major influence on the investment plans of the companies

since they enabled the firms to maintain profitability over a specified period of time.

2.4.3 Corporation tax incentives on Tax Revenue Collection

Parys (2012) evaluated how tax incentives affect investor attraction, with a special emphasis on developing nations. The research investigated three aspects: how tax incentives are impacted by the investment climate, how tax incentives differ, and how government-to-government factors are taken into account when making investment policy. The first study found that in nations with unfavorable investment climates, Foreign Direct Investment (FDI) responded marginally to changes in corporate tax rates. According to the second study, FDI was successfully drawn to the Caribbean and Latin America but not to Africa by longer tax breaks and smaller fiscal incentives. This conclusion was largely supported by the third study, which looked at the effectiveness of tax incentives in the African CFA Franc zone and the Eastern Caribbean Currency Union. Furthermore, according to the third study, the CFA Franc zone was able to attract investment because of its more favorable legal guarantees and streamlined tax structure.

Investment decisions are influenced by capital deductions, including those for mining, industrial buildings, farm works, and investments (IEA, 2012). Agundu and Ohaka (2013) investigated how capital allowances influenced investors' decisions to participate in Nigeria's manufacturing sector. The study examined the financial parameters of 58 manufacturing companies and discovered that capital allowances had a major impact on ROE, PAT, and ROA (return on assets). This highlighted how important capital allowances are to both improving investment choices and adhering to new tax legislation.

Tirimba et al. (2015) studied stock market investing incentives, looking at whether they serve as inducements or gifts. Based on 66 carefully chosen studies from a database of ninety-three, the study found that investor opinions were a stronger predictor of stock market performance than tax breaks. The study came to the conclusion that appropriate pricing techniques required timely information regarding marketable securities. The researchers contended that although investment incentives were useful in encouraging investments, in practice, investors' viewpoints were more significant.

According to CMA (2006), the NSE and CMA recommended extending the list of capital expenditure deductions that companies might claim for incidental expenses like legal fees. With this program, NSE investors would be encouraged to provide the public 40% of their shares in exchange for five years of reduced taxes. The study emphasized how crucial it is for legislators and industry regulators to take the business community's opinions into account before enacting tax laws. It did, however, also point out that tax breaks can result in unexpected gains for stockholders.

Notwithstanding modifications, KRA (2009) noted that the government's tax incentive programs cost KShs 220.8 billion in lost revenue between 2003 and 2009. In order to fully comprehend the impact of tax breaks on different industries, especially the manufacturing and related sectors, the report suggested conducting additional research. Notwithstanding government capital allowances, it advised businesses to carefully consider their asset acquisition and growth opportunities. According to the Income Tax Act of 2015, businesses can deduct up to 150% of their investment-related costs from outside major cities. There are further benefits available for certain building materials used in technical and educational services.

Ngure (2018) discovered positive impacts of capital allowance benefits on manufacturing companies' profitability. Gumo (2013) investigated how tax breaks affected the profitability of Kenyan manufacturing firms. The study found a number of tax breaks, such as incentives for farm work and mining as well as capital investment allowances like the Industrial Building Allowance (IBA). Incentives for export and investment promotion were identified by IEA (2012) as Kenya's primary tax incentives that affect both financial and physical capital. Investment Deduction Allowance (IDA), Industrial Building Allowance (IBA), and Mining Deduction Allowance (MDA) are a few of these incentives.

Thomas (2007) found that the federal government of the United States allowed wear and tear as a means of luring investment. In a similar vein, Thomas (2007) noted that Canada had a more centralized provincial incentive structure than the US. Tax cuts resulted in revenue losses ranging from 23.5 percent in Anguilla to 53.9 percent in Grenada, according to a 1995 Bain study conducted throughout the Caribbean (quoted in Van Parys & James, 2010). According to a follow-up research by Goyal and Chai (2008), revenue losses ranged from 9.4 to 16 percent of GDP.

According to a study by the non-governmental organizations Tax Justice Network Africa (TJN-A) and Action Aid, incentives for replacing wear and tear on machinery and plants resulted in a substantial loss of Sh73.1 billion. Investment deductions, in which businesses deducted expenses for new expenditures before computing tax obligations, caused the second-largest loss.

Investors get wear and tear allowances, which are divided into five types with different rates of allowance, to account for the depreciation of machinery. Class 1, which accounts for self-propelling vehicles and heavy earthmoving equipment, has a rate of

37.5%. Class 2 (i.e., computers, photocopiers, and scanners) accounts for thirty percent. Class 3, which has a 25% weight limit, includes light self-propelled cars as well as other machinery like motorcycles, trucks under three tons, and airplanes. Bicycles, switchboards, and telephone sets are included in Class 4, which is subject to a 12.5% tax (Income Tax Act, 2015).

Githaiga (2013) examined the effects of tax benefits on FDI revenues, with particular attention to the role that depreciation, ID, and IBD play in drawing in FDI. Ten randomly selected organizations out of the sixty listed companies on the NSE were included in the study. We gathered secondary data from 2008–2011 annual performance reports and unqualified financial reports. Excel was used to evaluate the quantitative data, while a conceptual framework in SPSS helped with the analysis of the qualitative data. The results demonstrated a significant relationship between depreciation and FDI and suggested that tax incentives had an impact on FDI inflows for NSE-listed companies.

To sum up, these investigations illuminated the intricate workings of tax incentives in luring capital. The results highlight how crucial it is to take into account government policies, the efficacy of particular incentives, and economic environments when examining how tax incentives affect different businesses.

2.4.4 Value-added tax Incentives on Tax Revenue Collection

A consumption tax applied to a good where value is added at every stage of the supply chain, from the point of manufacturing to the point of sale, is known as a value-added tax, or VAT. VAT is billed and collected regardless of a business's profitability. According to Ochieng and Opondo (2012), the user must pay VAT based on the product's cost, minus any costs associated with ingredients that have already been

subject to taxes. VAT is applied to the gross margin at every stage of an item's production, delivery, and sale. This indicates that in cases where the government provides VAT incentives, the product's final price was lower than its regular prices, enabling the customer to purchase more.

Higher levels of income per capita in an economy will result in higher VAT revenue being collected in that specific nation, following the study report by Ebrill et al. (2001). The other two indicators, the percentage of agriculture and the level of literary education, both directly increase the revenue gains with their corresponding declines or improvements. The effects of the VAT incentives on macroeconomic stability, the use of fiscal instruments, and economic growth are extensive. Since VAT has been shown to be the most effective instrument for collecting revenue, improvements in VAT will result in an overall rise in the amount of revenue collected.

A study by Ironkwe and Peterus (2015) sought to determine how VAT incentives affected the corporate finance performance of Nigerian listed companies. The results showed that, although the effect was negligible, VAT had a detrimental influence on agribusinesses' investment decisions. In order to encourage the expansion of agriculture in Nigeria, the governments should make sure that an appropriate VAT incentive plan is created and adequately executed.

Kigera and Wahithe (2015) researched on effect of the VAT threshold on small business performance in Nairobi County through studies conducted in Kenya. The study's eleventh-century results suggested that the VAT threshold had a significant impact on small companies. Significant effects on efficiency were seen since businesses grouped their activities slightly below the cutoff. It was discovered that altering the tax incentives at the threshold had no appreciable impact on the magnitude of the reaction.

This suggested that the observed response could be explained in part by compliance expenses. The lack of evidence of tax fraud or avoidance in the study led to the theory that businesses reduced output in response. Furthermore, bunching behavior was shown to be very persistent, indicating that the threshold slowed the expansion of tiny enterprises. Comparing the VAT to other options with more obvious shortcomings, it is by far the best option for revenue collection due to its nature. First off, the vast scope of the VAT and its ability to increase both tax compliance and enforcement—achieved through many invoices—give it promise for revenue collection. Second, a drawback of the turnover tax is the cascading problem, which VAT can readily eliminate. The VAT has been successfully drawn in for sale tax collection in the majority of OECD nations, following a generally well-defined and consistent trend (Heady, 2002).

2.4.5 Customs tax incentives on Tax Revenue Collection

Excise, as it relates to East Africa Custom (EAC), is a tax imposed on products made by a manufacturer and sold in the host nation. Excise duty is the indirect tax imposed on the sale of an item, according to KRA. Concurrently, the importing nation levies customs tax on commodities that are primarily imported for domestic consumption. Customs and excise are considered indirect taxes since they are included in the costs and are therefore passed on to the customer (EAC, 2010). A review of Ohaka and Dagogo's (2015) study revealed a significant impact on the relationship between Nigerian manufacturing businesses' performance and custom duty tax incentives.

A study conducted in Kenya on the relationship between taxes and business performance found that different modes of influence were at play: income taxes and value-added taxes encouraged investment, but excise and customs taxes had a detrimental impact on performance (Ombuki & Wawire, 2013). In a similar vein,

Musyoka (2012) found no impact from custom duty tax incentives on business performance in Kenya. Custom duty incentives must be used extensively to provide a nation with a competitive edge in order to boost exports. An increase in exports helped a nation's trade balances, which in turn filled any gaps that would have hampered its development objectives. Increasing customs duty incentives can have a number of effects, such as promoting the balance of payments, enhancing production and competitiveness, boosting foreign direct investment, resolving regional disparities, and promoting the spread of technology. Economic progress was a result of these aggregate variables improving.

A 2014 study by Regional Plan Policy Research in the European Union found that the excise duty had a detrimental impact on the economies of the member states. The study's goal was to establish a connection between the economies of member states and high excise duty incentives. Across the nations under investigation, the amount of government income received decreased as excise duty incentives increased. Lower pricing for commodities helped consumers in such nations.

2.5 Conceptual Framework

A conceptual framework is described by Mugenda & Mugenda (2003) as a methodical presentation that identifies variables. In essence, the relationship between independent and dependent variables is fundamentally delineated by a conceptual framework. The literature has been guided by independent variables. These variables collectively determine investment decisions, the dependent variable when integrated, these variables elucidate the subject under consideration, illustrating the relationship between dependent and independent variables, as depicted in Figure 2.1

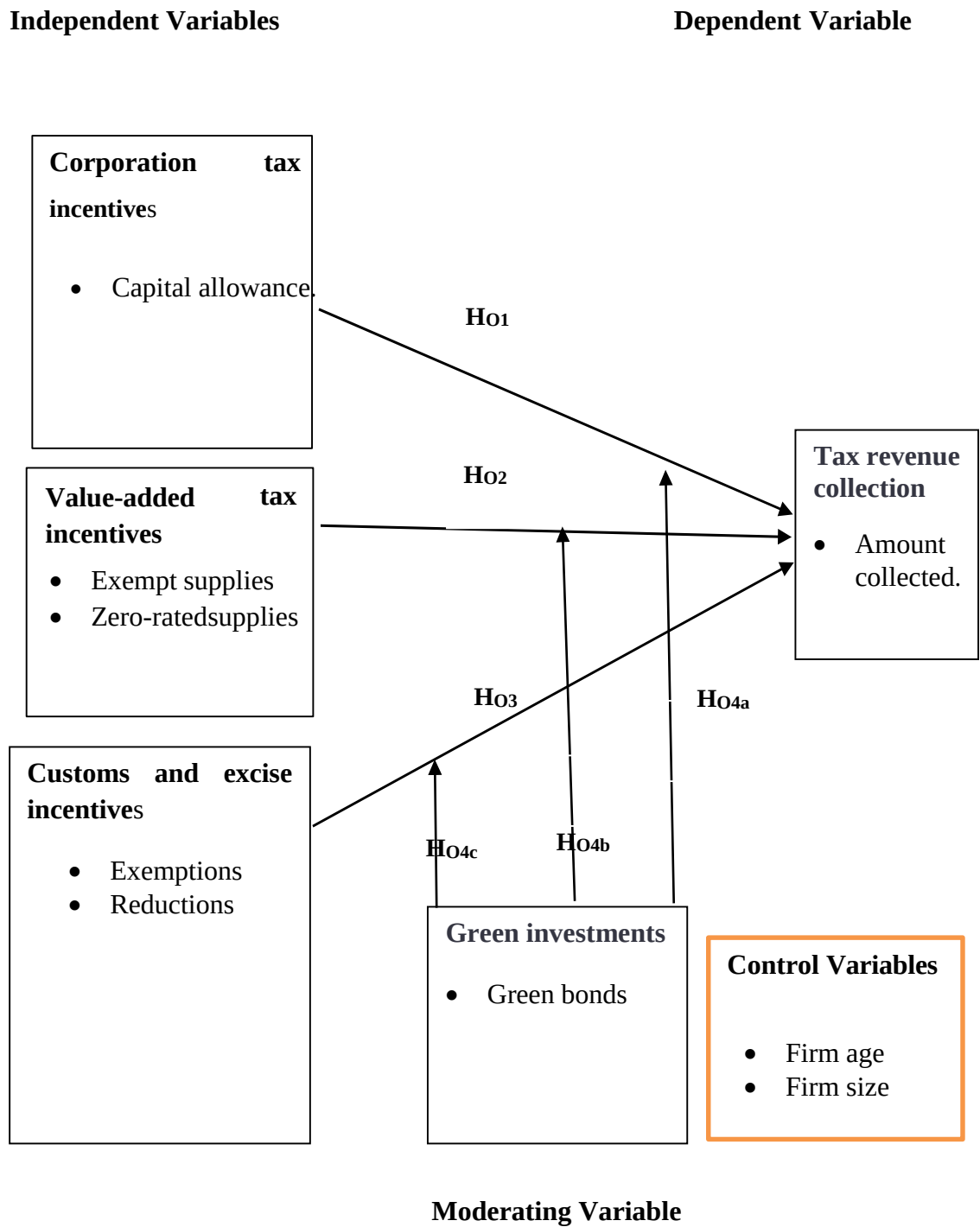


Figure 2.1: Conceptual Framework

2.6 Critique of the Literature Review

The literature review highlights several studies that explore the moderating effect on the relationship between tax incentives and. Noteworthy, contributions include works by Alhulail(2014), Mayende (2013), and Kholer (2012), Parys (2012) Maffini, Xing and Devereux (2016). The majority of these studies have concentrated on export promotion and investment promotion incentives, with limited attention given to green investment. The analysis reveals a gap in the depth of research on the direct correlation between tax incentives and green investments, with existing discussions tending to be general in nature. Moreover, there was a lack of thorough research examining the precise effect of tax breaks on the green investments made by companies listed on the Kenyan Stock Exchange (NSE). The empirical studies on the effects of tax incentives on green are relatively scarce, and the existing evidence from these studies presents conflicting results. This disparity highlights the need for additional study to fully comprehend the complex relationship between tax breaks and green investments made by Kenyan companies listed on the NSE.

2.7 Summary of the Literature Review

Empirical research, conducted on both a local and international scale, reveals varied effects of tax incentives on different dependent variables, including investment, foreign direct investment (FDI), performance, research and development (R&D) expenditure, economic development, sales, and firm performance across diverse industries. Numerous research have examined the effect of tax incentives on a range of dependent variables, both locally and internationally. International academics have made contributions to this topic, including Alhulail (2014), Mayende (2013), and Kholer (2012). Onyango (2015), Githaiga (2013), Gumo (2013), and Njeru (2012) are just a few of the local scholars who have looked into the impact of tax incentives on the

performance of financial firms. No one has, however, carefully evaluated how tax breaks affect green investments made by businesses that are listed on the Nairobi Stock Exchange.

By providing data on the impact of tax incentives on green investment firms listed on the NSE, this study seeks to enhance empirical literature. Four studies that attempt to clarify the connection between tax incentives and green investments are included in the review of literature. The results of the theoretical review are inconsistent and varied, which emphasizes the need for more research.

There are conflicting findings from empirical studies on how tax incentives affect investment choices. On the one hand, Adekunle (2009), Onaolapo & Kajola (2010), and Pouraghajan & Malekian (2012) propose a negative relationship; on the other hand, Chepkemai (2013), Masiega et al. (2013), and Kuria (2013) defend a positive impact. These disparities serve as the driving force for the current study and demonstrate the necessity for additional theoretical framework and empirical research studies. Therefore, by supplying information on the impact of tax incentives on listed businesses' green investments on the NSE, this study hopes to advance our understanding.

2.8 Research Gaps

Robinson et al. (2011) define a research gap as a topic or area where it is challenging to draw conclusions due to missing or insufficient knowledge. A research requirement is a gap in knowledge that prevents decision-makers from making well-informed decisions. This study aims to rectify methodological, conceptual, and contextual flaws that it has found. Many of the studies have a contextual gap because their research was done outside of Kenya. The following are some innovative aspects of this paper: This article quantifies policy effects using the B-index (Warda, 1996), in contrast to

studies that use the DID technique. In contrast to the previous literature (Ren et al., 2021; Zheng et al., 2022), which primarily uses single variables like R&D investment and patents to measure company innovation, this research presents an evaluation framework for green investments and adds to the body of knowledge about corporate green innovation under the endogenous growth hypothesis. It evaluates businesses' performance in green innovation from a variety of angles. This fills in the conceptual and methodological vacuum left by Ren et al., 2021, and Zgeng et al., 2022, which examined subsidies' function as a significant additional government access tool. The study established a relationship between green investment and tax breaks. When businesses innovate below the point at which the market is at its best, government intervention is necessary to keep supply and demand in check. This not only demonstrates the empirical validity of Keynesian theory. The study offered fresh perspectives on how developing nations like Kenya might enhance their intervention strategies and encourage green investment.

Table 2.1: Research Gaps

Author/s & Year	Focus of the study	Research Gap	Focus on the current study
Bernstein and Anwar (2014)	Examine the impact of tax laws on the supply of inputs and output for products in specific industries in Pakistan, Turkey, and Mexico.	Contextual gap: other nations, not Kenya, were used for the study's execution.	The focus was on the moderating effect of green investments and was done in Kenya.
Alhulail (2014)	The effect of tax incentives on sales of environmentally friendly vehicles in Japan.	Conceptual gap: the variables used were sales tax incentives. A contextual gap: since it did not focus on Kenya or developing economies. Methodological: since he did not include the study population	The variables were CIT, VAT and customs incentives. Focus was in Kenya. The study included the population.
Maffini, Xing and Devereux (2016)	impacts on profitability in the UK of tax incentives such as depreciation payments.	Methodological: The study used difference-in-difference methodology. Contextual gap: The study was conducted in UK.	The study used triple bottom line methodology and it was done in Kenya.
Olaleye, Riro and Memba (2016)	Impact on foreign direct investment in listed Nigeria n manufacturing companies of business income tax incentives.	Contextual gap: Focused on manufacturing companies in Nigeria.	Focus was on listed companies in the NSE.
Devani, (2017)	Tax policy incentives and how they affect investments made in Pakistan.	Conceptual gap: The study does not focus on green investments. Contextual gap: The study was conducted in Pakistan.	The study focused on the moderating effect of green investment on tax revenue collection. The study was done in Kenya
KIdjiw (2013)	The efficiency of tax incentives in drawing in foreign direct investment to Ethiopia.	Conceptual gap : The study does not focus on green investments. Contextual gap: The study was conducted in Ethiopia.	The study focused on green investments. The study was done in Kenya.
zyk (2018),	One of the main things that draws foreign direct investment to Poland is tax benefits.	Conceptual gap: The study does not focus on green investment. The study did not specifically focus on custom duty incentives.	The study focused on green investments. The study focused on custom duty incentives

Oyedokunyi (2019)	One of the main things that draws foreign direct investment to Poland is tax benefits.	Contextual gap: The study was conducted in Nigeria.	The study was done in Kenya.
Odukeli (2018)	Tax incentives' role in attracting foreign direct investment to South Africa, Ghana, and Nigeria	Contextual gap: Focused on other countries in Africa.	The study was done in Kenya.
Chelonga (2017)	The effect of the VAT and corporate income tax incentives on the performance of EPZ enterprises in Kenya	Conceptual gap: since it focused on performance of EPZ firms and not FDI inflows to Kenya.	Focus was on green investments in Kenya.

(Source: Research 2024)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section covered the steps and procedures that were used in data collection and data analysis. The chapter discussed the research design, population, and sample size approach as well as the sampling procedure.

3.2 Research Design

This study employed an explanatory longitudinal research design, which facilitates the process of identifying demographic characteristics. According to Cooper and Schindler (2006), this research approach can quantify and clarify the cause-and-effect relationship between variables. In addition, it explains behavior, values, features, attitude, and similar factors (Mugenda & Mugenda, 2003). The study adopted this research design because of its robustness in handling huge quantities of data for the population of studys.

3.3 Target Population

A population is defined by Mugenda and Mugenda (2003) as all the items, events, or individuals that have the same observable characteristics. The target demographic consists of the 60 companies listed in Nairobi Securities Exchange's Appendix 1 (NSE, 2023) listing list. The populace helped create a model to show how tax incentives will affect these companies' green investment decisions. This was a census study of all firms listed in the Nairobi Securities Exchange in Kenya which is $67 \times 5 = 335$ firm yearly observations data. (Population et al., n.d.)

3.4 Inclusion and Exclusion Criteria

The study considers both companies with complete and incomplete data particularly from their audited financial reports and sustainability reports. Data from 60 companies was analyzed, resulting in 300 observations, as only 60 companies had complete data.

3.5 Research Instrument

The study utilized secondary data from 2019 to 2023 obtained from NSE, KRA, EPC, KNBS, and CMA. The study obtained data on predictor variables from KRA, NSE, and KNBS, and the outcome variables from financial reports of each of the firms to reflect the corporation tax incentives, value-added tax incentives, customs incentives, green investments, and tax revenue collection. The longitudinal data for the five years were sufficient to address instability factors and thus allowed the study to identify patterns and trends in the data.

3.6 Data Collection Instruments and Procedure

The study obtained secondary data from the NSE handbook, particularly the audited financial reports sustainability reports published by the sixty-seven firms as per the requirements of CMA.

3.7 Data Type and Source

The study primarily relied on secondary data spanning from 2019 to 2023 sourced from reputable institutions such as the Nairobi Securities Exchange (NSE), Kenya Revenue Authority (KRA), Export Promotion Council (EPC), Kenya National Bureau of Statistics (KNBS), and Capital Markets Authority (CMA). The data was extracted from audited financial reports and sustainability reports accessible on the firms' websites, as well as from the NSE, chosen for its regulatory oversight by the CMA, ensuring reliability. This longitudinal approach over a five-year period will adequately capture

fluctuations and allow the research team to discern patterns and trends within the data.

3.8 Data Preparation Procedure for Panel Data Analysis

3.8.1 Data Cleaning and Validation

The first step in preparing panel data for analysis involved cleaning and validating the data. This included examining for and addressing any data entry errors, inconsistencies, or duplicates, which can otherwise lead to biased or misleading results (Pallant, 2020). For panel data, which combines cross-sectional and longitudinal elements, it is crucial to ensure that the identifier for each entity (e.g., person, firm, or country) and the time variable are correctly formatted and consistently coded (Wooldridge, 2010). Missing or mislabeled identifiers can compromise the validity of longitudinal comparisons and should be resolved before further analysis (Hsiao, 2014).

3.8.2 Handling Missing Data

Missing data is a common issue in panel datasets and requires careful handling to avoid introducing bias. First, the type of missingness (Missing Completely at Random (MCAR), Missing at Random (MAR), or Missing Not at Random (MNAR)) were assessed to determine the best treatment approach (Rubin, 1976). Techniques such as multiple imputation or maximum likelihood estimation are generally recommended for data that are MAR, as these methods have been shown to produce more reliable estimates in the presence of missing data (Enders, 2010). Simply omitting cases with missing data, or listwise deletion, can lead to a significant loss of information, especially in longitudinal datasets with repeated measures (Little & Rubin, 2002).

3.8.3 Outlier Detection and Treatment

Identifying and addressing outliers was another essential step in preparing panel data. Outliers can significantly distort parameter estimates, especially in small samples or

when using models sensitive to extreme values. Diagnostic measures such standardized residuals and Boxplots, or leverage values can identify cases with an undue influence on the model (Belsley, Kuh, & Welsch, 1980). Depending on the analysis objectives, outliers were removed, or analyzed separately to assess their impact on the results (Aguinis, Gottfredson, & Joo, 2013).

3.8.4 Testing for Stationarity and Time-Related Patterns

For longitudinal data with time-specific measurements, it is critical to assess stationarity and other time-related patterns. Non-stationary variables, which exhibit trends over time, can lead to spurious regression results (Baltagi, 2008). Common stationarity tests such as the Augmented Dickey-Fuller (ADF) test or the Phillips-Perron test help determine whether variables are stationary or require differencing (Greene, 2018). Addressing non-stationarity ensures that analyses accurately capture relationships over time without spurious effects (Hsiao, 2014).

3.8.5 Addressing Serial Correlation and Heteroscedasticity

Lastly, panel data may exhibit serial correlation and heteroscedasticity, violating assumptions of panel regression models. Serial correlation, or correlation of errors across time within the same entity, can lead to underestimated standard errors, whereas heteroscedasticity, or variance inconsistency, can affect result reliability (Wooldridge, 2010). Techniques such as cluster-robust standard errors, feasible generalized least squares (FGLS), or generalized estimating equations (GEE) are commonly applied to mitigate these issues and ensure robust parameter estimates (Arellano, 1987).

Once these steps are complete, the final dataset can be constructed with consistent formats and labeled variables that align with research objectives. Clear documentation of any modifications, such as imputation methods, handling of outliers, and

transformations, is essential for replicability and transparency (Cameron & Trivedi, 2005).

3.9 Data Analysis

According to Arel-Bundock (2022) data analysis refers to the use of statistical techniques to derive answers through analysis and interpretation of data collected. The data was subjected to sorting, editing, and verification for accuracy in preparation for analysis. Robust statistical and spreadsheet packages were utilized to analyse the secondary data using descriptive statistics. To ensure that the results are reliable and viable robust inferences were used such as stationarity and unit root tests. The tests ensured that the relationships are not spurious by ensuring accuracy in parameter estimates. Barada (2013)

3.9.1 Correlation and Model Specification

Regression and correlation analysis were used to confirm a test designed to ascertain the nature of the connection between tax incentives, green investments, and the green investments from companies listed on the NSE. A solid foundation for prediction was provided by using the Pearson correlation analysis to assess the degree of the linear relationship between the variables. Multiple regression analysis was used given its robustness in analyzing data with more than two independent variables (Nachmias and Nachmias, 1996). Graphs and tables were utilized to present the findings particularly trends for the five-year period. To verify the effect of tax incentives on the green investments from companies' regression listed in the NSE; multivariate linear regression model was utilized.

Regression model Specification Equation (i),

$$y_t(i) = \beta_0 + \beta_1 FA_1 + \beta_2 FS_2 + \mu_t. \text{Equation (ii)}$$

$$y_t(i) = \beta_0 + \beta_1 FA_1 + \beta_2 FS_2 + \beta_3 CTI_{3t} + \beta_4 VATI_{4t} + \beta_5 CUI_{5t} + \mu_t.$$

Equation (iii)

$$y_t(i) = \beta_0 + \beta_1 FA_1 + \beta_2 FS_2 + \beta_3 CTI_{3t} + \beta_4 VATI_{4t} + \beta_5 CUI_{5t} + \beta_6 M + \mu_t.$$

Equation (iv)

$$y_t(i) = \beta_0 + \beta_1 FA_1 + \beta_2 FS_2 + \beta_3 CTI_{3t} + \beta_4 VATI_{4t} + \beta_5 CUI_{5t} + \beta_6 M + M * CTI_{3t} + \mu_t$$

Equation (v)

$$y_t(i) = \beta_0 + \beta_1 FA_1 + \beta_2 FS_2 + \beta_3 CTI_{3t} + \beta_4 VATI_{4t} + \beta_5 CUI_{5t} + \beta_6 M + M * CTI_{3t} + M * VATI_{4t} + \mu_t$$

Equation (vi)

$$y_t(i) = \beta_0 + \beta_1 FA_1 + \beta_2 FS_2 + \beta_3 CTI_{3t} + \beta_4 VATI_{4t} + \beta_5 CUI_{5t} + \beta_6 M + M * CTI_{3t} + M * VATI_{4t} +$$

$$M * CUI_{5t} + \mu_t$$

Where: $y_t(i)$ Y = Tax revenue collection

α = Constant Term $\beta_1, 2, 3 \dots n$ = Beta coefficients FA_1 = Firm Age

FS_2 = Firm Size

CTI_3 = Corporation tax incentives.

$VATI_4$ = Value- added tax incentives. CUI_5 = Customs incentives.

μ = Error terms

t = Timeseries

M is green investment (Moderator variable)

$M * CTI_{1t}$ = Green investment * Corporation tax (interaction term) $M * VATI_{2t}$ = Green investment * Value-added tax (interaction term) $M * CUI_{3t}$ = Green investment * Custom tax incentive (interaction term)

3.10 Diagnostic Test

The study incorporated diagnostic tests of stationarity, linearity, multicollinearity, normality, heteroskedasticity and autocorrelation.

3.10.1 Stationarity

Gimeno et al. (1999) defined a stationary time series as one in which the process's behavior remains constant over time. If for every choice of time points $t_1; t_2 \dots t_n$ and every choice of time lag k , the joint distribution of $y_{t_1}, y_{t_2} \dots y_{t_n}$ is the same as that of $y_{t_1-k}, y_{t_2-k} \dots y_{t_n-k}$, then the process $\{y_t\}$ is considered strictly stationary. For all t and k , the (univariate) distribution of y_t is therefore the same as that of y_{t-k} when $n = 1$. The mean function is constant over time since $E[y_t] = E[y_{t-k}]$ for all t and k . In order to ensure that the variance remains constant over time, $\text{Var}(y_t) = \text{Var}(y_{t-k})$ for all t and k . If the variance and auto covariance of a stochastic process $\{y_t\}$ remain constant throughout time, and the mean function is not affected by time, the process is considered weakly/second order stationary.

The Augmented Dickey Fuller (ADF) test on stationarity was conducted since financial data involves observations recorded over time. The test ensured that the results were not spurious by ensuring mean and variances are stable. $P\text{-value} < 0.05$ indicates stationarity.

3.10.2 Linearity

The deviation from linearity is used to confirm that the data satisfies the following assumptions of the linear regression model: the predictors (x) and the outcome (y) have a linear relationship; the predictors (x) are independent and observed with negligible error; the residual errors have a constant variance, a mean value of zero, and they are independent of the predictors (x) and each other. The linearity assumption was upheld

if the p value is greater than 0.05. and it is desired to determine if an ignored nonlinearity exists. The RESET test, according to Ramsey (2007), employed powers of the fit data and ϕy_i as extra regressors to determine whether the data showed signs of nonlinearity; a p-value of >0.05 denoted linearity.

3.10.3 Multicollinearity Test

When regressors have an effect on one another, this is referred to as multicollinearity (Field, 2009). In this instance, a rising tolerance analysis is indicated by the standard error and variance; yet, the parameter remains the best linear undistorted estimate. Generally speaking, research of the Variance Inflation Factor (VIF) was conducted to validate a tolerance value of greater than 0.1 and a value of less than 10 for a lack of multicollinearity (Sinclair, 2011).

3.10.4 Normality Test

To verify that the variable has a normal distribution, a normality test was performed. In this study, the alternative hypothesis for the abnormal distribution was compared to the H_0 for the normal distribution using the Jacque-Bera test. According to Fiorentini (2004), the test's conclusion was to accept the null hypothesis if the probability value was greater than 0.05.

3.10.5 Heteroskedasticity Test

According to the OLS hypothesis, the residue needs to be homoscedastic. A modified Cook- Weisberg test was employed in this investigation to verify the presence of constant error variance, which requires homoscedasticity. A p value of greater than 5%, according to Sweeten (2016), suggests that there is no heteroscedasticity.

3.10.6 Hausmann test

According to Torres (2007), the Hausman test is a statistical technique used in econometrics to evaluate an estimate's consistency in comparison to a different, less effective but consistent estimator. The Hausman test is frequently used to compare fixed effects versus random effects models when dealing with panel data. The fixed effects model were chosen if the p-value is less than 0.05; the random effects model was chosen if the p-value is 0.05 or higher.

3.10.7 Time-fixed effects test

According to Torres (2007), you should perform a joint test to see if the coefficients of the time dummies are all equal to zero in order to ascertain whether time fixed effects were required in a Fixed Effects model. Time-fixed effects won't be needed if this test verifies that they are in fact zero.

3.10.8 Autocorrelation Test

To ascertain whether the residuals were associated across time, an autocorrelation test was run. The Wooldridge autocorrelation test was used, according to Barada (2013), and the null hypothesis that there was no autocorrelation is accepted if the probability value is greater than 0.05.

3.11 Operationalization and Measurement of Study Variables

It was necessary for research variables to be measurable in order to test hypotheses, draw findings, and make inferences. The operationalization of research variables was a necessary step in measurement. According to Sekaran & Bougie (2016), operationalizing a concept entailed "looking at the behavioral dimensions, facets, or properties denoted by the concept in order to operationally define it to render it measurable." These were then converted into elements that could be observed and

measured to create a concept index of measurement. Therefore, the process of operationalization involved reducing research variables to the corresponding empirical data. The variables were operationalized as follows in the study:

3.11.1 Dependent variable

The measure of tax revenue collection referred to previous studies that were different accounting measures to amount collected, which include (Raza, 2013). Due to economic expansion, taxes had a variety of effects, both positive and bad. Bofah (2003) defined taxes as the money that the government collects in order to fund its operations and offer services.

3.11.2 The independent variables

The planet metric was tracked by reductions in greenhouse gas emissions, measured by comparing emissions from previous processes with anticipated changes in new processes. Additionally, the amount of waste generated, measured in pounds, was monitored, including any recycled materials over a specified time period. Energy consumption were also betracked, with adjustments made for seasonal variations. Furthermore, fossil fuel consumption was measured, potentially adjusted on a per-employee or per-sales led basis to account for company growth. These metrics provided insights into the company's environmental impact and guide efforts to mitigate its carbon footprint and resource consumption. This measure was used by Alhulail (2014) in his research on the effect of tax incentives on eco-friendlycars in Japan.

$$\text{Green house emission ratio} = \frac{\text{Green house emission}}{\text{Total Assets.}}$$

The people-centric measures encompassed individuals associated with the company, including employees, vendors, and customers. Operational costs were assessed against

total assets. To demonstrate commitment to fair compensation, the average employee payroll were evaluated to ensure wages exceed local expectations for livable pay. Additionally, the average employee benefits per employee, beyond monetary compensation, were analyzed to assess the overall benefit package provided to workers. Tracking the average number of vacation hours earned and used per employee ensured that employees had the opportunity to take time off, promoting work-life balance and well-being. Alhulail (2014) employed this measure in his investigation into the impact of tax incentives on environmentally friendly automobiles in Japan.

$$\text{Operations cost ratio} = \frac{\text{Operations Cost (employment, customer, vendor)}}{\text{Total Assets.}}$$

The independent variable in this study was tax incentives. The measurement tools for the levels of tax incentives were applicable tax rates which for corporate income tax is 15% for green investments, zero rated or exemption for Value Added Tax as opposed to the applicable standard rate of 16%, and reduction of customs duty for green investment. This study used an ordinal scale as used by previous studies done by Arbatli (2011).

Corporate tax incentives

0- 30% Corporation tax rate

0- 15% corporation tax rate Value added tax incentives.

1- 16% supplies

2- 0% supplies

3- exempt supplies Customs incentives

0- standard duty rate payable 1- Exemption

2- Duty drawback

Table 3.1 presented a schematic representation of the measurement of the independent and dependent variables that were measures in the study.

Table 3.1: Operationalization and measurement of variables

Variables	Indicators	Source/ Author	Data Collection	Measurement scale	Data Analysis
Dependent Variable	Tax revenue collection	Combs, Crook, Shook(2005)	Secondary data	Ordinal	Correlation analysis Multiple regression Analysis
Moderating Variable	Green Investments	Xing (2017).	Secondary data	Ordinal	Correlation analysis Multiple regression Analysis
Independent Variable	Corporation Tax Incentives. Value-added tax incentives. Customs incentives	Parys (2012) Thomas (2007) Madani&Mas- Guix(2011)	Secondary data	Ordinal	Correlation analysis Multiple regression Analysis

3.12 Ethical Considerations

Following the proposal's approval and the university's authorization to move on with data collecting, the process began. The study further obtained a research permit from NACOSTI and an introductory letter to the firms the study researched on to ensure it does not violate any research ethics.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This section deliberated on the study's interpretation and breakdown of the findings, as delineated in the research objective and procedure. The study's main objective was to determine the moderating effect of green investment tax incentives on tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.

4.1.1 Test for outliers

The Standardized Residuals, were used to determine outliers, they were calculated by dividing each residual by the estimated standard deviation of residuals. Residuals with large absolute values $\text{Residual} > 2$ or 3 were considered outliers. The box plot visually showed potential outliers for each of the variables the, specific outliers were identified if their records appeared outside the top or bottom whiskers of the box plots.(Marshall & Karadimitriou, 2018)

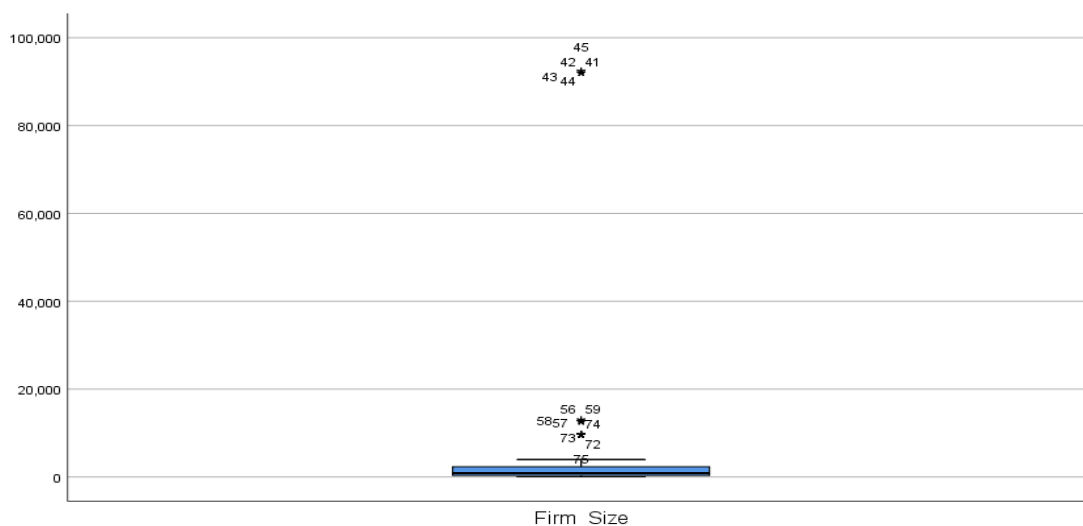


Figure 4.1: Firm size outliers

(source; Research 2024)

4.1.2 Missing Values tests

The missing completely at random test was conducted to determine if there is presence of missing data within the study population, If the reason that these observations are missing is purely unrelated to outcomes (observed or not) then the missing data are called MCAR, Missing completely at Random . However, if the observed data are predictive of missingness then the missing data are called MAR, If data are MCAR then both the missing and the observed outcomes are representative of the source population. Therefore, when data are MCAR standard statistical summaries based on the observed data remain valid. However, if data are MAR or NI then summaries based on the available cases may be biased. (Marshall & Karadimitriou, 2018). Table 4.1 showed that the data was not missing completely at random since the P-value was <0.05 , to resolve the missing data, the Multiple Imputation method was used, This technique involves creating multiple complete datasets by imputing missing values based on a model that accounts for the uncertainty associated with the missing data.(Garson, 2012).

Table 4.1: Littles MCAR's Test

tax Rev	corporation tax incentives	VAT incentives	custom duty incentives	green investment	Firm Age	Firm Size
.18	.64	1.42	1.43	2338.78	62.40	3454.51

a. Little's MCAR test: Chi-Square = 66.803, DF = 20, Sig. = .000

4.2 Descriptive Statistics Analysis

Descriptive statistics offer a way to understand, clarify, and consolidate research data in a coherent and practical fashion. The study analyzed the gathered data to determine the mean, standard deviation, skewness and Kurtosis values, as well as the distribution of the numbers.

4.2.1 Descriptive statistics for Independent Variables

Table 4.1 shows descriptive statistics for Corporation tax incentives indicating a mean of 0.64, indicating that on average companies listed in the NSE remitted taxes closer to 30% with significant incentives the standard deviation of 0.480 indicates that the scores for the corporation tax incentives indicates scores closer to the mean for the sample, the skewness and Kurtosis were -0.599 suggests that there are fewer extreme low values in the data set. And -1.762, the Kurtosis indicates a platykurtic distribution.

It appears that the value-added tax benefits deviate somewhat from the mean based on the standard deviation of 0.796. The value-added tax incentive distribution is negatively skewed, as indicated by the skewness value of -0.906. This indicates that the distribution's tail points in the direction of higher values and that there are more observations with lower incentive values. It is suggested that the distribution of value-added tax incentives is platykurtic by the kurtosis value of -0.820. This indicates that extreme values (both high and low) are less likely in this dataset. Customs duty tax incentive has a mean value for the "customs duty tax incentives" is 1.44. This represents the average level of these incentives. The customs duty tax incentives deviate moderately from the mean, as indicated by the standard deviation of 0.767. The distribution's tail stretches toward higher values, and the skewness value of -0.935 shows that more observations have lower incentive values. The distribution of the customs duty tax incentive implies that extreme values—both high and low—are less common in this dataset, according to the kurtosis value of -0.672. Providing the moderator's green investment with descriptive statistics. The mean value for the customs duty tax incentives is KES 2342.35 million. The standard deviation of 1257.758, which suggests that the customs duty tax incentives vary significantly from the mean. The skewness value of -0.201 indicates that there are more observations with

lower values of incentives, and the tail of the distribution extends slightly toward higher values. Since the distribution is flatter and has thinner tails than a normal distribution, the kurtosis score of -1.198 indicates that extreme values are less common in this dataset. The study's NSE listed firms' mean age, or the average age of all the firms in the sample of 300 observations, was 62.40 years, which served as the descriptive value for the control variable firm age. The high levels of variability for various enterprises are indicated by the standard deviation of 33.485, which quantifies the amount by which the ages of the firms vary from the average age. Given the skewness score of 0.575, it can be inferred that the company age distribution is slightly positively skewed. This suggests that the distribution's tail points slightly in the direction of higher ages and that there are more observations with lower ages. The kurtosis value of 0.196 indicates that the distribution of firm ages is mesokurtic meaning that extreme values are less likely in this dataset. The study shows that firm size has a mean of 3806 employees showing that the mean number of employees in the firms listed in the NSE is 3806. There is a high level of variability in firm sizes, with a standard deviation of 13730.78. The distribution is highly right-skewed, indicating a few firms are significantly larger than the majority. Skewness is 6.10, the Kurtosis of 36.85 indicates that the distribution has very heavy tails, with extreme values far from the mean.

Table 4.2: Descriptive statistics Independent Variables

Variable	N	Mean	Std. Dev	Skewness	Kurtosis
Corporation tax incentives	300	0.64	0.480	-0.599	-1.652
value-added tax incentives		1.42	0.796	-0.906	-0.820
customs duty taxincentives		1.44	0.767	-0.935	-0.672
customs duty taxincentives		1.44	0.767	-0.935	-0.672
green Investment		2342.35	1257.758	-0.201	-1.198
Firm Age		62.40	33.485	0.575	0.196
Firm Size		3806	13730.78	6.10	36.85

(Source: Research 2024)

4.2.2 Descriptive statistics for tax revenue collection

Table 4.3 shows descriptive details for tax revenue collection among listed Firms in the NSE. The mean value for the Tax Revenue Collection is KES 114800.372 million. This represents the average tax revenue collected for firms across the sample of 300 observations.

The standard deviation of 554520.963 indicates a high variability from the mean since there are different firms in the study. The skewness value of 10.408 suggests that the distribution of tax revenue collection is highly positively skewed. This insinuates that there are more observations with lower tax revenue values, and the tail of the distribution extends significantly toward higher revenue values. The kurtosis value of 116.007 indicates that the distribution of tax revenue collection is leptokurtic. Extreme values are more likely in this dataset.

Table 4.3: Descriptive statistics for Tax Revenue Collection

Variable		Mean	Std. Dev	Skewness	Kurtosis
Tax	Revenue	114800.372	554520.963	10.408	116.007
Collection					
N		300			

(Source: Research 2024)

4.3 Diagnostic tests

The results of tests examining normality, multicollinearity, heteroscedasticity, autocorrelation, and stationarity are displayed in this portion.

4.3.1 Normality test

A Jarque-Bera test for normality, coupled with normal distribution histogram for residuals were used to determine whether the data is normally distributed. Table 4.4 shows J-B tests' with null hypothesis that data is normally distributed.

The JB test result for corporation tax incentives indicated a p-value of 0.236, which is greater than the significance threshold of 0.05. This implies that the residuals for corporation tax incentives followed a normal distribution. The normality of this variable enhances the validity of parametric statistical analyses, such as regression modeling, by ensuring that assumptions regarding the distribution of residuals are met. Consequently, this supports reliable hypothesis testing and accurate estimation of relationships involving corporation tax incentives.

The p-value for VAT incentives was 0.125, again exceeding the 0.05 threshold. This finding implies that the residuals of VAT incentives were normally distributed, which strengthens the robustness of statistical inferences drawn from this variable. Normal distribution of VAT incentives ensures that any results obtained are not skewed or biased, enabling researchers to generalize findings with confidence.

The p-value for customs duty incentives was reported as 0.089, which also exceeds 0.05. This suggests that the residuals for customs duty incentives adhered to a normal distribution. The normality of this variable facilitates its integration into statistical models, ensuring reliable and valid interpretations of its effects within the broader context of the study. This also implies that the analysis can adequately capture the influence of customs duty incentives on the outcomes of interest.

The moderator variable, green investment, demonstrated a p-value of 0.099, indicating that the residuals followed a normal distribution. The normality of the moderator variable is critical because it ensures that any moderating effects identified in the analysis are accurately represented without distortions arising from non-normality. This strengthens the validity of conclusions regarding how green investment interacts with other variables in influencing the study's outcomes.

For firm age, the J-B test yielded a p-value of 0.091, suggesting that the data was normally distributed. Normality in firm age enhances the interpretability of statistical results, particularly when analyzing its role as a control variable or independent factor. This result underscores the appropriateness of including firm age in parametric analyses, as it ensures unbiased estimation of its potential effects.

The p-value for firm size was 0.190, also indicating normal distribution. The normality of firm size supports its use in regression and other parametric analyses. This finding ensures that relationships involving firm size are free from biases due to non-normal distributions, which could otherwise compromise the reliability of statistical inferences.

The confirmation of normality across all tested variables has significant implications for the study. First, it validates the use of parametric tests, such as linear regression, as the assumptions of normality are met. Second, it enhances the credibility of the findings

by reducing the likelihood of Type I or Type II errors that could arise from non-normal data. Third, the normality of residuals supports the robustness of the model, ensuring that inferences drawn from the analysis are both reliable and generalizable. Finally, these results set the stage for further exploration of relationships between the variables, with confidence that the underlying data distribution will not adversely affect the outcomes.

Table 4.4: Jarque Bera test for Normality

	T	Sig.
Corporation Tax Incentives	0.546	0.236
Value-Added Tax Incentives	0.1846	0.125
Customs Duty Incentives	0.224	0.089
Green Investment	1.335	0.099
Firm Age	0.957	0.091
Firm Size	1.011	0.190

(Source: Research 2024)

4.3.2 Normal distribution Histogram

According to Figure 4.2, the data demonstrates a normal distribution characterized by a sharp peak, suggesting minimal extreme variations within the dataset. The bell-shaped curve observed in the figure supports this interpretation, providing clear evidence of the data's normal distribution. This finding implies that the dataset adheres to the assumptions of normality, which is crucial for conducting many statistical analyses, such as parametric tests.

The sharp peak further indicates that the data points are concentrated around the mean, suggesting a relatively homogeneous dataset with limited outliers or anomalies. This observation is significant because it validates the reliability of the statistical models that require normality as a foundational assumption. Moreover, the absence of extreme

variations enhances the generalizability of the findings, as the results are less likely to be influenced by skewed or unusual data points.

The implications of this normal distribution extend to subsequent stages of analysis. For instance, regression analysis, ANOVA, or t-tests, which assume normality, can be confidently applied to this dataset without necessitating data transformation or alternative non-parametric methods. Furthermore, the adherence to a normal distribution suggests that the dataset's central tendency and variability metrics, such as the mean and standard deviation, are appropriate representations of the data's overall characteristics.

The normal distribution observed in Figure 4.2 not only confirms the suitability of parametric statistical methods but also ensures that the findings derived from the data are robust, reliable, and applicable within the context of the research objectives. These implications underscore the importance of normality in reinforcing the validity of the analysis conducted at each stage of the study.

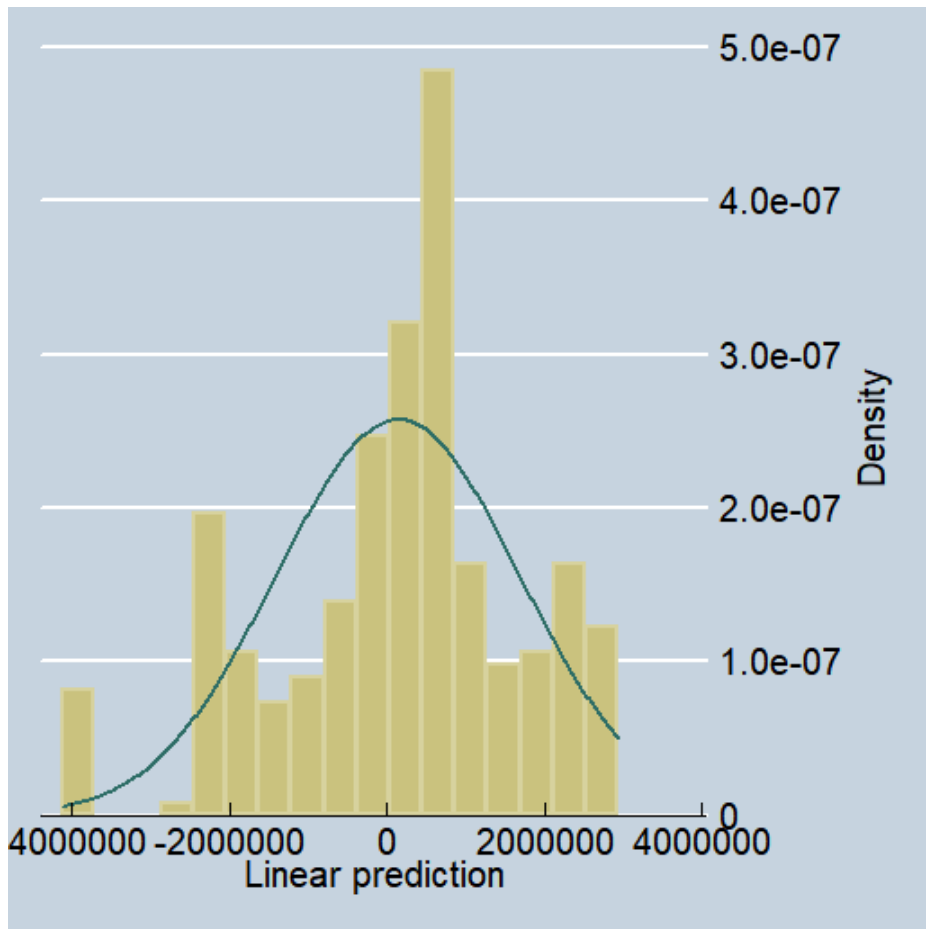


Figure 4.2: Normal Distribution Histogram

(Source: Research 2024)

4.3.3 Test for Heteroskedasticity

The test for whether the variance of errors from a regression model is constant was conducted using the Cook-Weisberg test for heteroscedasticity. As presented in Table 4.5, the p-value of 0.5624 exceeds the threshold of 0.05. This result indicates that the null hypothesis stating that the variance of the errors is constant cannot be rejected. Therefore, the data is homoscedastic, meaning that the variability of the residuals remains consistent across all levels of the independent variables.

The implication of this finding is critical for the validity of the regression analysis. Homoscedasticity is one of the key assumptions of ordinary least squares (OLS) regression. When this assumption holds, it ensures that the standard errors of the

coefficients are unbiased and efficient, leading to reliable hypothesis tests and confidence intervals. In this case, the confirmation of homoscedasticity implies that the regression model is robust and can be used to draw meaningful inferences about the relationships between the variables.

Furthermore, the absence of heteroscedasticity enhances the interpretability of the model. It suggests that the observed variance in the dependent variable is not systematically influenced by specific ranges of the independent variables. This consistency supports the generalizability of the findings across the dataset. Had heteroscedasticity been present, it would have necessitated remedial measures, such as transformation of variables or the application of robust standard errors, to address potential biases in the estimates. Thus, the result of this test affirms the reliability of the model's outputs and supports the integrity of subsequent analyses and conclusions.

Table 4.5: Test for Heteroscedasticity

	Chi2(1)	Df	Probability
H0 Constant Variance:	0.34	60	0.5624
LR test summary:	Value	Df	
Restricted LogL	427.1534	285	
Unrestricted LogL	481.3333	285	

(Source: Research 2024)

4.3.4 Stationarity test

A Test for Stationarity was conducted on the data presented in Table 4.6 to determine the presence of a unit root for the variables under study. The stationarity of the data is a crucial assumption in time series analysis, as it ensures that statistical properties such as mean and variance remain constant over time, thus enabling reliable modeling and inference. Each variable was tested at its level, and the results are interpreted as follows:

The t-statistic for Tax Revenue was -59.543 with a p-value of 0.000, showing a very strong evidence against the null hypothesis of a unit root. The result confirms that the data for tax revenue is stationary at its level. This finding suggests that the series in tax revenue is stochastically stable over time, and hence it can be replicated in the subsequent modeling without further transformation.

The t-statistic for Corporation Tax Incentives was -10.1650, and the p-value was 0.000 (< 0.05), which confirmed stationarity. This will imply that observable variations in corporation tax incentives are consistent overtime, and therefore, no differencing is necessary to achieve stationarity. This becomes very important, as it satisfies assumptions when one runs the analysis regarding how changes in corporation tax incentives influence dependent variables.

The variable VAT Incentives is stationary according to the t-statistic -14.5012 and p-value 0.0000, which is less than 0.05. The data, therefore, do not have temporal distortions, meaning the information regarding VAT incentives is fundamentally stable and may easily be interpreted without such distortions.

In a comparable manner, Customs Duty Incentives exhibited stationarity, reflected by a t-statistic of -12.7510 and a p-value of 0.0000 (which is less than 0.05). This finding indicates that customs duty incentives display consistent trends over time, thereby rendering the variable dependable for integration into econometric models without necessitating further modifications.

The moderator variable, Green Investment, had a t-statistic of -20.7690 with a p-value of 0.0000 (less than 0.05), thus confirming that the data is stationary. This finding is very important because it ascertains that there exist potential interaction effects between green investment and other independent variables in the testing of moderating effects.

Similarly, the t-statistic for Firm Age is -5.33638 with a p-value of 0.0000, which shows stationarity at its level, thus not having trends or patterns that might compromise its use in the analysis, as is the case with this variable to be used as a control variable.

Lastly, the firm size was also stationary with a t-statistic of -12.255 and a p-value of 0.0000 (< 0.05). The result indicates the firm size data is consistent over time, hence proving to be a perfect stable control variable in the study.

In summary, the findings indicate that none of the analyzed variables show any violation of the assumption of stationarity. It actually ensures that any subsequent analyses, such as regression or causal modeling, will consistently replicate these findings since it ensures the stationarity of the variables. The findings carry considerable implications in establishing that any relationships or effects identified in the later analyses can be properly attributed to the modeled interactions and not spurious correlations that may arise due to non-stationary data. This lays up a very strong foundation for investigating the relationships between tax incentives, firm characteristics, and environmentally sustainable investments within the scope of the research objectives.

Table 4.6: Test for Stationarity

	At-Level		At 1st Difference	
	t-Statistic	Sig.	t-Statistic	Sig.
Tax Revenue Collection	-59.5954	0.0000	-12.0461	0.0000
Corporation Tax Incentives	-10.1650	0.0000	-19.7058	0.0000
Value-Added Tax Incentives	-14.5012	0.0000	-33.6870	0.0000
Customs Duty Incentives	-12.7510	0.0000	-41.6717	0.0000
Green Investment	-20.7690	0.0000	-13.2072	0.0000
Firm Age	-5.33638	0.0000	-2.38197	0.0086
Firm Size	-12.255	0.000	-3.1153	0.0015

(Source: Research 2024)

4.3.5 Test for Multicollinearity

The test for multicollinearity was conducted to assess whether the independent variables in the regression time series model were highly correlated with each other. Multicollinearity can distort regression estimates and compromise the interpretability of a model; therefore, this step was critical in ensuring the robustness of the analysis.

The results presented in Table 4.7 showed that corporation tax incentives had a tolerance value of 0.248 (>0.1) and a VIF of 4.028 (<10), while VAT incentives displayed a tolerance value of 0.303 (>0.1) and a VIF of 3.297 (<10). Similarly, customs duty incentives had a tolerance of 0.346 (>0.1) and a VIF of 2.890 (<10). These findings indicate that the levels of multicollinearity for the tax-related incentives were within acceptable limits. This suggests that the independent variables did not exhibit problematic intercorrelations that could hinder the regression model's interpretive validity. These results also confirm the distinct contribution of each tax incentive variable in explaining variations in the dependent variable, enhancing confidence in the model's explanatory power. Green investments were found to have a tolerance value of 0.651 (>0.1) and a VIF of 1.535 (<10), while firm age and firm size demonstrated tolerance values of 0.988 and 0.943 respectively, both exceeding 0.1, and VIF values of 1.012 and 1.060 respectively, both below 10. According to Sinclair (2011), tolerance values greater than 0.1 and VIF values below 10 indicate that multicollinearity is not a concern. These results imply that the control variables (firm age and firm size) and green investments also contribute independently to the model without being overly correlated with other variables. This further strengthens the overall reliability of the regression analysis by confirming that the influence of these predictors on the dependent variable is not confounded by their relationships with other independent variables.

Table 4.7: Test for Multicollinearity- Collinearity Statistics

Model	Tolerance	VIF
Corporation Tax Incentives	.248	4.028
Value-Added Tax Incentives	.303	3.297
Customs Duty Incentives	.346	2.890
Green Investment	.651	1.535
Firm Age	.988	1.012
Firm Size	.943	1.060

a. Dependent Variable: Tax Revenue Collection

(Source: Research 2024)

4.3.6 Serial Correlation test

The test examines whether there is a correlation between the values of a variable across different time periods in a time series, assessing the presence of serial correlation. Serial correlation occurs when residuals (errors) in a regression analysis are not independent across time, potentially violating the assumptions of ordinary least squares (OLS) regression. The Durbin-Watson statistic is a widely used measure to detect such autocorrelation, with values ranging from 0 to 4. A value between 1.5 and 2.5 typically indicates an acceptable level of independence in the residuals, suggesting no significant autocorrelation.

In this study, Table 4.8 reports a Durbin-Watson statistic of 1.517, which is slightly above the lower threshold of the acceptable range. This result suggests the presence of low levels of autocorrelation in the data. Low levels of autocorrelation imply that the residuals are relatively independent, and the regression model's estimates remain reliable. However, it also indicates that some degree of dependence might still exist between the residuals across time periods, warranting careful interpretation of the model results. The implications of this finding are noteworthy. First, the low level of autocorrelation observed does not invalidate the regression results but suggests a need

for cautious application of the model's outcomes, particularly in forecasting or time-series analysis. Second, while the statistic is within an acceptable range, researchers should consider potential improvements to the model by investigating the sources of this residual dependency. Adjustments such as including lagged variables or applying alternative modeling techniques (e.g., autoregressive models) could help refine the analysis. Ultimately, the Durbin-Watson statistic of 1.517 supports the validity of the regression model to a reasonable extent but also highlights areas for potential methodological refinement.

Table 4.8: Test for Autocorrelation

Durbin-Watson	1.517
---------------	-------

Source: Research 2024)

4.4 Correlation Analysis

Regression and correlation analysis were used to confirm a test designed to ascertain the nature of the relationship between tax incentives, green investments, and the tax income collected by companies listed on the NSE. A solid foundation for prediction was provided by using the Pearson correlation analysis to assess the degree of the linear relationship between the variables. With a p-value of $0.000 < 0.05$ and a substantial and positive correlation of 52.9% between tax revenue collection and company tax incentives, Table 4.9 demonstrates this. With a p-value of less than 0.05 and a positive and significant correlation of 49.0%, the tax revenue collection and custom duty tax incentives are positively correlated. With a p-value of less than 0.05 and a positive and significant correlation of 50.1%, tax revenue collection and VAT incentives are related. The analysis also suggests that there is a strong and positive correlation between tax revenue collection and green investment at 64.6% and $p\text{-value} < 0.05$. At

12.0% and with a p-value less than 0.05, firm age and tax revenue collection have a positive and significant association. At 5.6% and p-value =0.018<0.05, there is a statistically significant positive association between firm size and tax revenue collection.

Table 4.9: Correlation Analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Tax Revenue	1.000						
(2) Corporation Tax Incentives	0.529*	1.000					
(3) Value-Added Tax Incentives	0.490*	0.497*	1.000				
(4) Customs Duty Incentives	0.499*	0.129*	0.741*	1.000			
(5) Green Investment	0.646*	0.261*	0.540*	0.505*	1.000		
(6) firm age	0.120*	0.049	-0.030	-0.005	-0.005	1.000	
(7) firm size	0.056	0.018	-0.007	0.034	0.099	0.180*	1.000

, ** $p < 0.05$,

(Source: Research 2024)

4.4.1 Test for Linearity

The null hypothesis for linearity, according to Csorgo (1985), is that there is no discernible departure from a linear relationship between the predictor and predicted variables. Table 4.10 was used for the linearity test, and the Ramsey RESET statistic's P-value was 0.3188>0.05. The significant value of the RAMSEY RESET test indicated a linear relationship between the dependent and independent variables.

Table 4.10: Ramsey RESET Test

Ramsey RESET test using powers of the fitted values of Tax Revenue		
Ho: model has no omitted Variables		
Prob > F	=	0.3188

4.4.2 Time-fixed effects test

Options (1978) states that when using a Fixed Effects model, it is important to test whether time fixed effects are necessary. This involves checking if the coefficients for the time dummies are all equal to zero. If they are, time fixed effects are not required. However, if the test shows statistical significance, it implies that time fixed effects exist and should be included in the model. As shown in Table 4.10, F-Statistic value for the joint significance of the time dummies is 1.978075 the p-value is $0.0012 < 0.05$, this suggests that time fixed effects are significant and should be included in the model, aligning with the results mentioned in the original description.

Table 4.11: Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	1.978075	(43,164)	0.0012
Cross-section Chi-square	89.412688	43	0.0000

(Source: Research 2024)

4.4.3 Hausmann Test

When choosing between fixed effects and random effects models, the Hausman test is frequently used as a guide. We employ the fixed effect model in cases where the p value is less than 0.05. We apply the random effect model in cases where the p value is higher than or equal to 0.05. Table 4.12 Hausmann test suggested that there is a significant

difference (p- value $0.0079 < 0.05$) between the fixed-effect model and random effects. This leads us to reject the null hypothesis and determine that the fixed effect is suitable.

Table 4.12: Hausmann Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.	
Cross-section random	17.402069	6	0.0079	
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
Corporation_Tax_Incentives	0.002531	0.003993	0.000010	0.0455
Value_Added_Tax_Incentives	0.006545	0.006969	0.000002	0.0225
Custom_Duty_Incentives	0.011380	0.014231	0.000004	0.0229
Green_Investment	0.000041	0.000038	0.000000	0.0211
Firm_Age	0.003145	0.000267	0.000003	0.0197
Firm_Size	0.000019	0.000000	0.000000	0.0208

(Source: Research 2024)

4.5 Fixed-Effect Regression Analysis

The impacts of tax incentives on tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya, were investigated using regression analysis. A summary of the Fixed Effect Model that examined the impact of company age and business size as control variables on tax revenue collection.

4.5.1 Testing Effect of Control Variables

The coefficient analysis was conducted to determine the effects of tax incentives on tax revenue collection. Table 4.13 under appendix I indicates the overall model was statistically significant (F- Statistic =15.870) p-value =0.000, The value of the overall R-square is 0.0056 in fixed effect model which insinuates that the control variables explain 0.56% of the variation of tax revenue collection, while the remaining 99.4% is caused by factors that are not captured within this model.

The regression equation for the effects of control variable, firm age and firm size on tax revenue collection was as follows;

$$y_{it}(i) = 0.4698444 + 0.0055532FA_{1t} + 0.0000698FS_{2t}$$

Table 4.12 shows that unit change in Firm age results in increase in tax revenue collection, $\beta = 0.0055532$ $p < 0.05$, while a unit change in firm size causes a significant increase in tax revenue collection. $\beta = 0.0000698$ $p < 0.05$. The positive relationship between firm age and tax revenue collection suggests that older firms tend to contribute more to tax revenues. This could be due to several factors older firms are likely to have more established business practices, better accounting systems, and more experience in navigating regulatory environments, leading to higher compliance with tax obligations. The significant positive relationship between firm size and tax revenue collection indicates that larger firms contribute more significantly to tax revenues. Larger firms benefit from economies of scale, leading to higher profitability and larger taxable bases. This results in greater tax contributions.

Table 4.13: Effects of Control Variables

Fixed-effects (within) regression		Number of obs	=	300		
Group variable: firmcode		Number of groups	=	60		
R-sq:	within = 0.0218	Obs per group: min	=	2		
	between = 0.0226	avg	=	4.9		
	overall = 0.0056	max	=	5		
corr(u_i, Xb) = -0.9995		F(2,168)	=	15.87		
		Prob > F	=	0.0000		

TaxRev		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]

firm_age		.0055532	.0023532	2.36	0.039	-.0010666 .012173
firm_size		.0000698	.0000284	2.47	0.030	-.0001246 .0002641
_cons		.4698444	.2136206	2.24	0.043	-1.286408 .3467191

sigma_u		1.0159626				
sigma_e		.06903401				
rho		.9954041	(fraction of variance due to u_i)			

F test that all u_i=0:		F(43, 168) =	1.13	Prob > F = 0.2904		

(Source: Research 2024)

4.5.2 Testing the Direct Effect

Following the effects of the control variables on tax revenue collection the study examined the direct effects of corporation tax incentives, value-added tax incentives, customs duty incentives on tax revenue collection.

The overall model was statistically significant, as shown by Table 4.14 under Appendix 1. The overall R-square in the fixed effect model is 0.0056, suggesting that tax incentives account for 0.11% of the variation in tax revenue collection, with the remaining 99.89% being explained by factors not included in this model. This shows an increase in the variation, from the previous model. This implies that the variation is attributed to the inclusion of the tax incentives in the model.

The regression equation for model II was as follows

$$yt(i) = 0.1612211 + 0.0060911FA_{1t} + 0.0000374FS_{2t} + 0.0290453CTI_{3t} + 0.022397VATI_{4t} + 0.0157045CUI_{5t}$$

According to Table 4.13 in Appendix I, there was a substantial and positive impact on

tax revenue collection ($\beta = 0.0290453$, $p < 0.05$) from corporation tax incentives. This indicates that a unit change in company tax incentives results in a 0.029 rise in tax revenue collection. This positive relationship implies that tax incentives designed to benefit corporations are effective in increasing overall tax revenues. This could be due to increased economic activity spurred by the incentives, which in turn generates more taxable income and consumption. corporation tax incentives can stimulate investment by reducing the effective tax burden on businesses. This can lead to increased business activities, higher employment, and greater consumer spending, all of which contribute to higher tax revenues. Further the study found that Value Added Tax incentives causes has a positive and significant $\beta = 0.022397$, $p < 0.05$ effect on tax revenue collection meaning a unit change in VAT incentive causes 0.022 increase in tax revenue collection. The finding that VAT incentives have a positive and significant effect on tax revenue collection underscores the importance of carefully designed tax policies that can stimulate economic activity and improve compliance, thereby enhancing overall tax revenue. The results of the study indicated that the collection of taxes was positively and significantly impacted by custom duty incentives ($\beta = 0.0157045$, $p < 0.05$). indicating that a 0.016 increase in tax revenue collection results from a unit change in custom duty incentives. Custom duty incentives might encourage higher compliance among importers and exporters. When businesses perceive that they can benefit from lower duties, they might be more willing to declare their goods accurately and pay the necessary taxes, thereby increasing overall tax revenue collection. The control variables showed that that the firm age maintains a positive and significant effect $\beta = 0.0060911$, $p < 0.05$ on tax revenue collection at 0.609%. While Firm size had a positive and significant $\beta = 0.0000374$, $p < 0.05$ effect on tax revenue collection at 0.00374%.

Table 4.14: Testing the Direct Effect

Fixed-effects (within) regression		Number of obs	=	300		
Group variable: firmcode		Number of groups	=	60		
R-sq:	within = 0.4224	Obs per group: min	=	2		
	between = 0.0001	avg	=	4.9		
	overall = 0.0011	max	=	5		
corr(u_i, Xb) = -0.9951		F(5,165)	=	24.13		
		Prob > F	=	0.0000		

	TaxRev	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]

	firm_age	.0060911	.0026013	2.34	0.020	.000955 .0112272
	firm_size	.0000374	.0000176	2.18	0.031	-.0001905 .0001158
	corporation_tax_incentives	.0290453	.0063668	4.77	0.000	-.00327 .0613606
	value_added_tax_incentives	.022397	.0085459	2.62	0.010	.0055235 .0392705
	customduty_incentives	.0157045	.0069791	2.24	0.032	-.0020199 .033429
	_cons	.1612211	.0340683	4.50	0.000	-.8010764 .4786342

	sigma_u	.52450014				
	sigma_e	.05352937				
	rho	.98969156	(fraction of variance due to u_i)			

F test that all u_i=0:	F(43, 165) =	2.09	Prob > F = 0.0005			

(Source: Research 2024)

4.5.3 Test the effects of Moderating Variable Green Investment

The hierarchical regression was used to determine the moderating effect of green investment tax incentives on tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.

According to Baron & Kenny (1986) shows the following steps for moderation to occur; Determining the direct effects of the independent variables on the dependent variable is the first step effects of tax incentives on tax revenue collection.

The second step is to investigate whether the moderator has a significant effect on dependentvariable by conducting a regression analysis with green investment as one of the independent variables and tax revenue collection as the dependent variable.

Thirdly the regression must introduce the interaction terms hierarchically. These interactions terms are the product of the scores for each independent variable and the moderator. In our study these are corporation tax incentives* green investment, VAT

incentives* green investment custom duty tax incentives* green investment.

The interaction terms are examined to determine whether their effects on the dependent variable are significant through a hierarchical regression model.

An overview of the findings from the Hierarchical Regression Analysis, which was done to find out how green investment might moderate the relationship between corporation tax incentives, value-added tax incentives, customs tax incentives, and tax revenue collection by Kenyan companies listed on the NSE. If the interaction terms are significant, it suggests that green investment moderates the relationship between (corporation tax incentives, value-added tax incentives, customs duty incentives.) and the dependent variable (tax revenue collection)

The study used green investment as the moderator, a Series of regression models Model 1 showing effects of the control variables, models 2 showing the direct effects of the predictor variables model 3 introduced the moderator variables and Models 4 to Model 6 the interaction terms effects. Table 4.15 under appendix I, indicates the overall model for introduction of the moderator was statistically significant (F-Statistic =67.12) p-value =0.000, The value of the overall R-square is 0.512 in fixed effect model test for moderation which insinuates that the tax incentives explain 51.2% of the variation of tax revenue collection, while the remaining 48.8% variation is caused by factors that are not captured within this model. This shows an increase in the variation, from the previous model. This implies that the variation is attributed to the inclusion of the green investment in the model. The model showed that green investments have a positive and significant effect on tax revenue collection $\beta = 0.0000403$ $p < 0.05$. This implies that unit change in green investments results in a 0.0000403 increase in on tax revenue collection.

Table 4.15: effects of Moderating Variable Green Investment

Fixed-effects (within) regression		Number of obs	=	300			
Group variable: firmcode		Number of groups	=	60			
R-sq:	within = 0.7106	Obs per group:	min =	2			
	between = 0.0315		avg =	4.9			
	overall = 0.0370		max =	5			
		F(6,164)	=	67.12			
corr(u_i, Xb) = -0.9855		Prob > F	=	0.0000			

	TaxRev	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	

	firm_age	.0030767	.0013618	2.25	0.040	-.0005994	.0067529
	firm_size	.0000229	.0000113	2.01	0.047	-.0000862	.000132
	corporation_tax_incentives	.0017757	.0008017	2.23	0.041	-.0252077	.0216563
	value_added_tax_incentives	.0069549	.0029549	2.12	0.044	-.0052601	.0191699
	customduty_incentives	.0103683	.0043868	2.62	0.016	-.0022426	.0229792
	greeninvestment	.0000403	3.15e-06	12.78	0.000	.0000341	.0000465
	_cons	.2322499	.030138	7.31	0.000	-.6866653	.2221655

	sigma_u	.35352439					
	sigma_e	.03800294					
	rho	.98857633	(fraction of variance due to u_i)				

F test that all u_i=0:	F(43, 164) =	4.35	Prob > F = 0.0000				

(Source: Research 2024)

4.5.4 Testing the effect of the first Interaction

The study introduced the first interaction between the first independent variable and green investment corporation tax incentives* green investment, The test results in table 4.16 under appendix I, showed that after adding the first interaction term the model is significant (F

=57.63, p=0.000), In regards to the positive standardized beta coefficient for the interaction between corporation tax incentives and green investment $\beta = 5.77e-06$, p=0.012<0.05, indicating that the on the first interaction is significant. This implies that a unit change in the interaction between green investment and corporation tax incentives causes a 5.77e-06 increase in tax revenue collection.

Table 4.16: Effect of the first Interaction

Fixed-effects (within) regression		Number of obs	=	300		
Group variable: firmcode		Number of groups	=	60		
R-sq: within = 0.7122		Obs per group: min	=	2		
between = 0.0422		avg	=	4.9		
overall = 0.0625		max	=	5		
corr(u_i, Xb) = -0.9699		F(7,163)	=	57.63		
		Prob > F	=	0.0000		

	TaxRev	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]

	firm_age	.0030925	.0013624	2.26	0.039	-.0005849 .00677
	firm_size	.0000144	.000006	2.40	0.021	-.0000962 .0001249
	corporation_tax_incentives	.0125756	.0044081	2.84	0.010	-.0449755 .0198243
	value_added_tax_incentives	.0066652	.0031955	2.09	0.048	-.0055685 .0188989
	customduty_incentives	.0110387	.0044271	2.49	0.020	-.0016525 .0237299
	greeninvestment	.0000361	5.39e-06	6.70	0.000	.0000255 .0000468
	cti_greeninvestment	5.77e-06	2.06e-06	2.80	0.012	-6.18e-06 .0000177
	_cons	5.77e-06	.0935927	2.03	0.047	-.6556994 .2668165

	sigma_u	.24254266				
	sigma_e	.03801349				
	rho	.97602492	(fraction of variance due to u_i)			

F test that all u_i=0:		F(43, 163) =	4.34	Prob > F = 0.0000		

Source: Author (2024)

4.5.5 Testing the effect of the Second Interaction

Model 5 on table 4.17 under appendix I shows that that the interaction between value added tax incentive and green investment has a positive beta coefficient, $\beta = 9.78e-06$, $p < 0.05$, this implies a unit change in the interaction between value added tax incentive and green investment causes a $9.78e-06$ increase in tax revenue collection. The model is statistically significant in explaining the variation on tax revenue collection ($F = 51.25$, $p = 0.000$).

Table 4.17: Effect of the Second Interaction

Fixed-effects (within) regression		Number of obs	=	300			
Group variable: firmcode		Number of groups	=	60			
R-sq:	within = 0.7168	Obs per group:	min =	2			
	between = 0.0398		avg =	4.9			
	overall = 0.0596		max =	5			
		F(8,162)	=	51.24			
corr(u_i, Xb) = -0.9716		Prob > F	=	0.0000			

	TaxRev	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	

	firm_age	.0029676	.001455	2.04	0.049	-.0006955	.0066306
	firm_size	.0000152	.0000067	2.27	0.040	-.0000949	.0001252
corporation_tax_incentives		.0126187	.0026288	4.80	0.000	-.0320668	.0573042
value_added_tax_incentives		.0106367	.0034001	3.13	0.007	-.0351233	.0138499
customduty_incentives		.0089607	.0035253	2.54	0.020	-.0039249	.0218463
greeninvestment		.000031	6.23e-06	4.98	0.000	.0000187	.0000433
cti_greeninvestment		7.43e-06	.0000022	3.38	0.003	-.0000275	.0000127
VATi_greeninvestment		9.78e-06	4.08e-06	2.40	0.024	-2.23e-06	.0000218
_cons		.1786893	.0826701	2.16	0.048	-.6381477	.280769

	sigma_u	.25044831					
	sigma_e	.03782986					
	rho	.97769327	(fraction of variance due to u_i)				

F test that all u_i=0:	F(43, 162) =	4.40	Prob > F = 0.0000				

Source: Author (2024)

4.5.6 Testing the Complete Effect of Moderation

Table 4.18 shows the process of moderation with model five showing the final model for using standardized coefficients, model 1 through to model 6 shows that there was a change in R-square to model 6, 0.7181 indicating that in the overall regression model 71.81% variation is caused on tax revenue collection. The remaining 28.190% variation is caused by factors not captured in the fixed effect model. The overall fixed effect model was statistically significant ($F = 45.57$, $p = 0.000$).

Corporation tax incentives have a positive and significant influence on tax revenue collection ($\beta = 0.0226592$, $p = 0.043 < 0.05$) according to the fixed effects model. Additionally, the research revealed that the value-added tax had a noteworthy and favorable impact on tax revenue collection ($\beta = .0093434$, $p = 0.011 < 0.05$). Additionally, the model demonstrates that tax incentives for custom duties have a considerable beneficial impact on tax revenue collection ($\beta = 0.0000221$, $p < 0.05$). It

was discovered that the moderator variable green investment had a significant and favorable impact on tax revenue collection ($\beta = 0.0000289, p = 0.000 < 0.05$). The table further indicates that green investment positively moderates the relationships between corporation tax incentives and tax revenue collection $\beta = 0.0000123$ ($p\text{-value} = 0.010 < 0.05$), value-added tax incentives and tax revenue collection $\beta = 8.81 \times 10^{-6}$ ($p\text{-value} = 0.000 < 0.05$) and lastly customs duty incentives and tax revenue collection $\beta = 4.76 \times 10^{-6}$ ($p\text{-value} = 0.004 < 0.05$). The age of the firm as a control for the relationship between green investment, tax incentives and tax collection $\beta = 0.0027685$ ($p\text{-value} = 0.049 < 0.05$). Lastly Firm size acts as a control for the relationship between green investment, tax incentives and tax collection $\beta = 0.0000217$ ($p\text{-value} = 0.048 < 0.05$).

Table 4.18: Complete Effect of Moderation

Fixed-effects (within) regression		Number of obs	=	300		
Group variable: firmcode		Number of groups	=	60		
R-sq:	within = 0.7181	Obs per group:	min =	2		
	between = 0.0305		avg =	4.9		
	overall = 0.0396		max =	5		
corr(u_i, Xb) = -0.9835		F(9,161)	=	45.57		
		Prob > F	=	0.0000		

	TaxRev	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]

	firm_age	.0027685	.0013702	2.02	0.049	-.0009248 .0064618
	firm_size	.0000217	.0000103	2.10	0.048	-.0000894 .0001328
	corporation_tax_incentives	.0226592	.0102812	2.20	0.043	-.0274638 .0727822
	value_added_tax_incentives	.0093434	.0032961	2.83	0.011	-.0340216 .0153349
	customduty_incentives	.0000221	.0000021	10.00	0.000	-.0240318 .0239876
	greeninvestment	.0000289	6.69e-06	4.32	0.000	.0000157 .0000421
	cti_greeninvestment	.0000123	.0000043	2.86	0.010	-.0000353 .0000106
	VATi_greeninvestment	8.81e-06	2.19e-06	4.02	0.000	-3.41e-06 .000021
	CDI_greeninvestment	4.76e-06	1.44e-06	3.32	0.004	-5.97e-06 .0000155
	_cons	.1863232	.093001	2.00	0.049	-.6464555 .2738092

	sigma_u	.33288109				
	sigma_e	.03785707				
	rho	.98723165	(fraction of variance due to u_i)			

F test that all u i=0:	F(43, 161) =	4.38	Prob > F = 0.0000			

(Source: Research 2024)

4.6 Discussion of Findings

This section represents the discussion of findings per objectives to compare the findings with past literature discoveries.

4.6.1 Corporation Tax Incentives on Tax Revenue Collection

The study's primary goal was to ascertain how corporate tax incentives and tax revenue collection from Kenyan companies listed on the NSE relate to one another. The study discovered a positive correlation ($r = 0.529$; $p\text{-value} = 0.000 < 0.05$) between corporation tax incentives and tax revenue collection. This suggests that tax revenue collection tends to increase in tandem with increases in business tax benefits. A unit change in the company tax incentive has a favorable and significant influence on tax revenue collection, according to the study coefficient analysis ($\beta = 0.0226592$; $p\text{-value} = 0.043 < 0.05$). This indicates that there was a comparable effect on tax revenues for each increase in tax incentives. The study is in line with one by Parys (2012), who evaluated how tax incentives affected investor attraction, with a special emphasis on developing nations. The first study found that in nations with unfavorable investment climates, Foreign Direct Investment (FDI) responded marginally to changes in corporate tax rates. The study also supports the findings of Tirimba et al. (2015), who investigated the role of stock market investing incentives as gifts or motivators in their investigation. Based on 66 carefully chosen studies from a database of ninety-three, the study found that investor opinions were a stronger predictor of stock market performance than tax breaks. The study emphasized how crucial it is for legislators and industry regulators to take the business community's opinions into account before enacting tax laws. It did, however, also point out that tax breaks can result in unexpected gains for stockholders.

4.6.2 Value-Added Tax Incentives on Tax Revenue Collection

The second objective of study was to determine the relationship between value-added tax incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya. The study discovered a $r = 0.490$ ($p\text{-value} = 0.000 < 0.05$) favorable correlation between tax revenue collection and VAT incentives. A unit change in the VAT incentive has a positive and substantial effect on tax revenue collection, according to the study's coefficient analysis ($\beta = 0.0093434$; $p\text{-value} = 0.011 < 0.05$). Improving VAT incentives has a positive influence on tax revenue collection for NSE enterprises, as seen by the positive connection. The analysis is in line with that of Ironkwe and Peterus (2015), who looked into how VAT incentives affected the corporate finance performance of Nigerian listed companies. The results showed that, although the effect was negligible, VAT had a detrimental influence on agribusinesses' investment decisions. In order to encourage the expansion of agriculture in Nigeria, the governments should make sure that an appropriate VAT incentive plan is created and adequately executed.

4.6.3 Customs Duty Incentives on Tax Revenue Collection

The third objective of the study was to determine the relationship between customs duty incentives and tax revenue collection from companies listed on the NSE, Kenya. Customs duty incentives and tax revenue collection were found to have a positive and statistically significant association ($r = 0.501$; $p\text{-value} = 0.000 < 0.05$). The study coefficient analysis indicated that unit change in customs duty incentives have a positive and significant effect on tax revenue collection $\beta = 0.0000221$ ($p\text{-value} = 0.000 < 0.05$). The positive correlation shows that increasing customs duty incentives has a beneficial effect on tax revenue collection for NSE businesses. This implies that changing the incentives for customs duties may have an effect on total tax receipts. The

study contrasts with a study by Ombuki & Wawire (2013) but agrees with Ohaka and Dagogo's (2015) study on the relationship between custom duty tax incentives and manufacturing enterprises' performance in Nigeria, which found a substantial impact. There is a variation in the manner of effect between taxes and a firm's performance; income taxes and value-added taxes encourage investment, whereas customs and excise taxes have a negative impact on performance.

4.6.4 Moderating effect of Green Investment on the relationship between Corporation Tax Incentives, Value-Added Tax Incentives, Customs Tax Incentives and Tax Revenue Collection

The fourth objective of the study was to determine the moderating effect of green investment on the relationship between corporation tax incentives, value-added tax incentives, customs tax incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya. The study looked into the relationship between tax revenue collection and green investment and discovered that there was a substantial positive relationship ($r = 0.646$; $p\text{-value} = 0.000 < 0.05$). This suggests that when green investments increase in NSE companies, so does the collection of taxes. The relationship between corporation tax incentives and tax revenue collection from companies listed on the NSE, Kenya, is found to be moderated by green investment, according to the study. $P\text{-value} = 0.010 < 0.05$, with $\beta = 0.0000123$. The degree of green investment affects how company tax incentives affect revenue collection (figure 4.3).

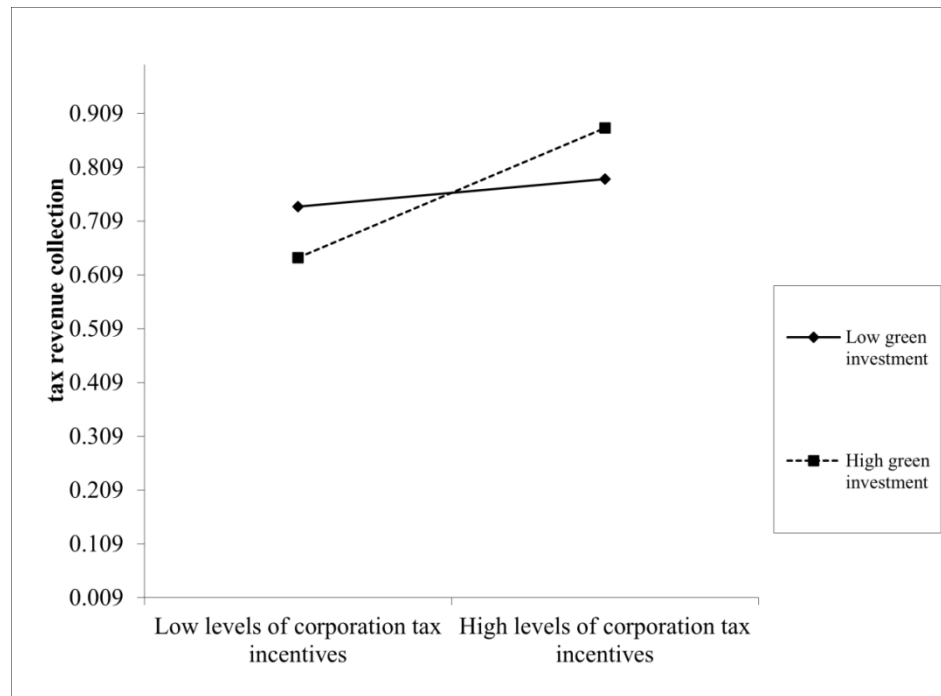


Figure 4.3: Modi graph Corporation tax incentives * green Investment

(Source: Research 2024)

The study also discovered that the relationship between value-added tax incentives and tax revenue collection from Kenyan companies listed on the NSE is moderated by green investment. Beta = 8.81e-06; p-value < 0.05. This clarifies that as green investments have a favorable effect on the connection between tax revenue collection and value-added tax incentives (figure 4.4).

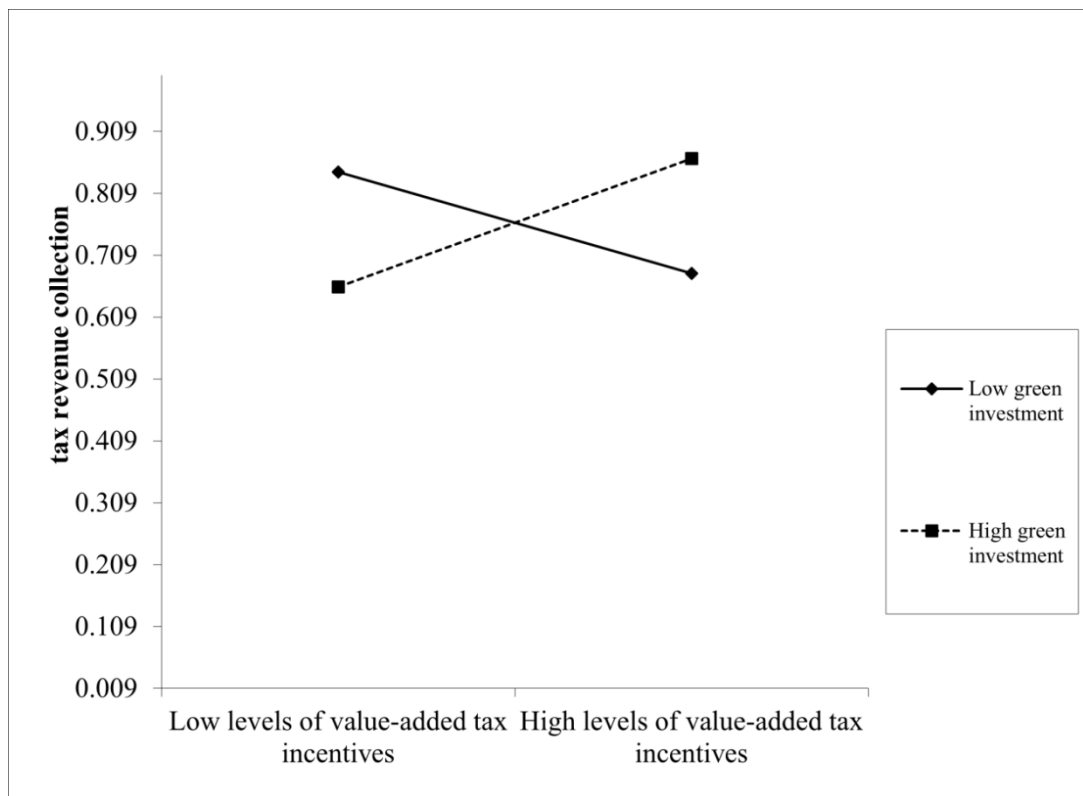


Figure 4.4: Modi graph VAT incentives* green investment

(Source: Research 2024)

Finally, the analysis discovered that the association between tax income from companies listed on the NSE, Kenya and customs incentives is moderated by green investment ($\beta = 4.76e-06$; $p\text{-value} = 0.004 < 0.05$). The degree of green investment affects how customs incentives affect revenue collection (figure 4.5).

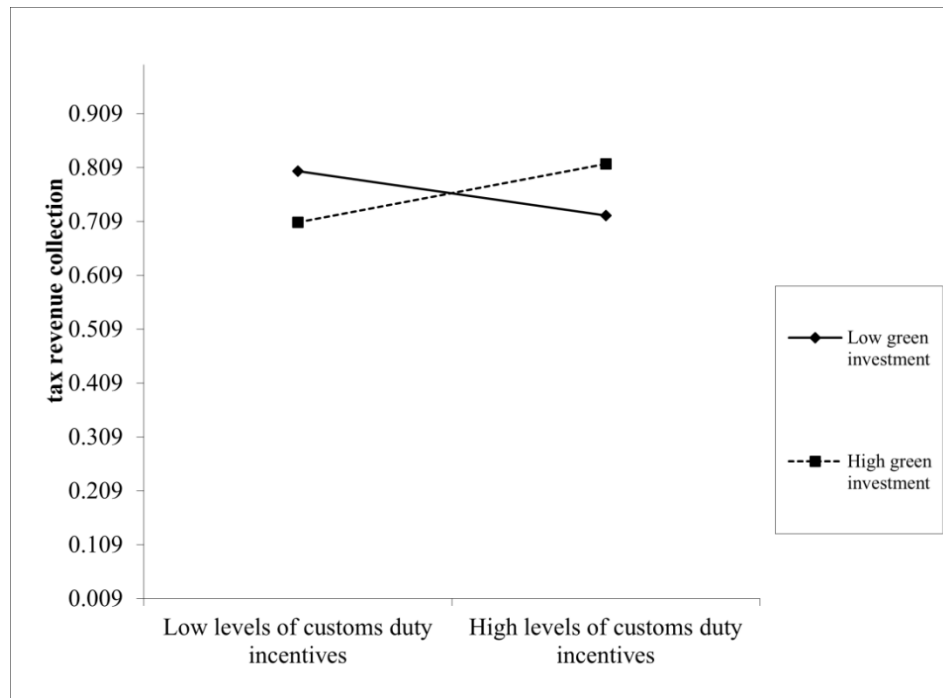


Figure 4.5: Modi graph Customs duty incentives* green investment

(Source: Research 2024)

The research aligns with a study conducted in 2015 by Njeru and Ndimitu, which evaluated the impact of tax reductions on the earnings of EPZ companies in Kenya. For guidance and data analysis, the researchers employed descriptive research approach. According to the study's findings, investment in EPZ companies was highly dependent on rising investment revenues. Furthermore, the study's conclusions demonstrated a strong correlation between investments and tax breaks. The researchers also disclosed that grants, loans, tax breaks, sales income, import tariff exemptions, tax breaks, and government subsidies had so far benefited EPZ companies. First, the study's conclusions show that tax laws protecting the environment gradually and considerably encourage companies to improve their environmental performance.

4.6.5 Firm age and Firm size on Tax Revenue collection

The study found that firm age has a positive correlation with tax revenue collection of $r = 0.120$ ($p\text{-value} = 0.042 < 0.05$). Indicating as the listed firm gets older the tax revenue collection tends to increase, thus larger remittances. Further investigation found that firm age significantly affects tax revenue collection from of NSE listed firms $\beta = 0.0027685$ ($p\text{-value} = 0.049 < 0.05$). The study also found that firm size has a positive correlation with tax revenue collection of $r = 0.056$ ($p\text{-value} = 0.018 < 0.05$). Indicating that the higher the number of employees in the firm the higher levels of tax remittances in the NSE listed firms. The study also discovered that, for NSE listed enterprises, firm size has a substantial impact on tax revenue collection ($\beta = 0.0000217$; $p\text{-value} = 0.048 < 0.05$). The results support the assertions of Serghiescu et al. (2014) and Abdou et al. (2012) that a number of variables, such as profitability, liquidity, tangibility, business size, and asset turnover, may influence the debt-ratio. Profitability and liquidity are predicted to have a negative impact on the capital structure (debt-ratio), but tangibility, business size, and asset turnover are predicted to have a positive impact (Serghiescu et al., 2014). In a 2005 study, Daskalakis and Psillaki examined the factors influencing the capital structure of SMEs in French and Greek businesses. Between 1997 and 2002, a six-year period, 1,252 Greek enterprises and 2006 French companies were the subjects of this study. The study employed various factors to determine the capital structure of the organization, including its size, growth prospects, profitability, and assets structure (specifically, the ratio of tangible to total assets). The findings indicated that while company size and growth prospects had a positive relationship with Capital Structure, profitability and assets structure had a negative relationship with debt ratio (Capital Structure) in both nations.

Results presented in Table 4.18 indicated the summary of both multiple and hierarchical regression models. Thus, the table shows (R^2) and Δ in (R^2) the changes in the R square indicates moderation is causing a significant change.

4.7 Hypotheses Testing

The hypotheses testing was conducted and summarized on table 4.19

The first hypothesis of the study was that corporation tax incentives do not have a significant effect on the tax revenue collection from companies listed on the NSE, Kenya. The study found that corporation tax incentives have a significant effect on the tax revenue collection $p\text{-value} = 0.043 < 0.05$, the null hypothesis is rejected.

The second null hypothesis was that value-added tax incentives do not have a significant effect on the tax revenue collection from companies listed on the NSE, Kenya. The study results showed that VAT compliance has a significant effect on the tax revenue collection. $p\text{-value} = 0.011 < 0.05$. The null hypothesis is therefore rejected.

The third hypothesis that was tested stated that customs duty incentives do not have a significant effect on the tax revenue collection from companies listed on the NSE, Kenya. The study shows that customs duty incentives have a significant effect on the tax revenue collection $p\text{-value} = 0.000 < 0.05$.

The fourth hypothesis stated that green investment does not significantly moderate the relationship between

- a) Corporation tax incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.

- b) Value-added tax incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.
- c) Customs duty incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.

The research found that green investment significantly moderates relationship between Corporation tax incentives and tax revenue collection $p\text{-value} = 0.010 < 0.05$, the null hypothesis is rejected.

The study further shows that green investment significantly moderates relationship between Value-added tax incentives and tax revenue collection $p\text{-value} = 0.000 < 0.05$, the null hypothesis is rejected.

Lastly the study shows that green investment significantly moderates relationship between Customs duty incentives and tax revenue collection $p\text{-value} = 0.004 < 0.05$, the null hypothesis is rejected.

Table 4.19: Hypotheses Tests

Research Hypothesis	B	Sig	Verdict
H01 corporation tax incentives do not have a significant effect on the tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.	0.0226592	0.043	Reject
H02 value-added tax incentives do not have a significant effect on the tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.	0.0093434	0.011	Reject
H03 customs duty incentives do not have a significant effect on the tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.	0.0000221	0.000	Reject
H04a green investment does not moderate the relationship between Corporation tax incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya	0.0000123	0.010	Reject
H04b green investment does not moderate the relationship between Value-added tax incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.	8.81e-06	0.000	Reject
H04c green investment does not moderate the relationship between customs incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.	4.76e-06	0.004	Reject

Source: Research 2024)

The Hypotheses Tests were summarized on table 4.19

The Equations for each of the model in the research were as follows Model (i),

$$y_t(i) = 0.4698444 + 0.0055532FA_{1t} + 0.0000698FS_{2t}$$

Model (ii)

$$y_t(i) = 0.1612211 + 0.0060911FA_{1t} + 0.0000374FS_{2t} + 0.0290453CTI_{3t} + 0.022397VATI_{4t} + 0.0157045CUI_{5t}$$

Model (iii)

$$y_t(i) = 0.2322499 + 0.0030767FA_{1t} + 0.0000229FS_{2t} + 0.0017757CTI_{3t} + 0.0069549VATI_{4t} + 0.0103683CUI_{5t} + 0.0000403M$$

Model (iv)

$$y_t(i) = 0.1944414 + 0.0030925FA_{1t} + 0.0000144FS_{2t} + 0.0125756CTI_{1t} + 0.0066652VATI_{2t} + 0.0110387CUI_{3t} + .0000361M + 5.77e-06M*CTI_{5t}$$

Model (v)

$$y_t(i) = 0.1786893 + 0.0029676FA_{1t} + 0.0000152FS_{2t} + 0.0126187CTI_{3t} + 0.0106367VATI_{4t} + 0.0089607CUI_{5t} + 0.000031M + 7.43e-06M*CTI_{7t} + 9.78e-06M*VATI_{8t}$$

Model (vi)

$$y_t(i) = 0.1863232 + 0.0027685FA_{1t} + 0.0000217FS_{2t} + 0.0226592CTI_{3t} + 0.0093434VATI_{4t} + 0.0000221CUI_{5t} + 0.0000289M + 0.0000123M*CTI_{7t} + 8.81e-06M*VATI_{8t} + 4.76e-06M*CUI_{9t}$$

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter outlines the summary of findings, conclusion of the study, recommendations and suggestions for further research.

5.2 Summary of Findings

5.2.1 Corporation Tax Incentives on Tax Revenue Collection

The first objective of study was to determine the relationship between corporation tax incentives and tax revenue collection from companies listed on the NSE, Kenya. The study's findings indicate that there is a positive correlation between corporation tax incentives and tax revenue collection; ($r = 0.529$; $p\text{-value} = 0.000 < 0.05$) that is, as these incentives rise, so does tax revenue collection. The study's coefficient analysis also shows that there is a positive and significant relationship between unit changes in corporation tax incentives and tax revenue collection; ($\beta = 0.0226592$; $p\text{-value} = 0.043 < 0.05$). that is, for every incremental change in tax incentives, there is a corresponding impact on tax revenues.

5.2.2 Value-Added Tax Incentives on Tax Revenue Collection

The second objective of study was to determine the relationship between value-added tax incentives and tax revenue collection from companies listed on the NSE, Kenya. The research study found that there was a positive relationship between VAT incentives and tax revenue collection. $r = 0.490$ ($p\text{-value} = 0.000 < 0.05$). The study coefficient analysis indicated that unit change in VAT incentive has a positive and significant effect on tax revenue collection ($\beta = 0.0093434$; $p\text{-value} = 0.011 < 0.05$). The positive relationship indicates that improving VAT incentives positively impacts tax revenue

collection for firms in theNSE.

5.2.3 Customs Duty Incentives on Tax Revenue Collection

The third objective of the study was to determine the relationship between customs duty incentives and tax revenue collection from companies listed on the NSE, Kenya. The research study found that there was a positive and significant relationship between customs duty incentives and tax revenue collection. ($r = 0.501$; $p\text{-value} = 0.000 < 0.05$) The study coefficient analysis indicated that unit change in customs duty incentives have a positive and significant effect on tax revenue collection. $\beta = 0.0000221$ ($p\text{-value} = 0.000 < 0.05$). The positive relationship indicates that improving customs duty incentives positively impacts tax revenue collection for firms in the NSE This means that adjusting customs duty incentives can impact overall tax revenues.

5.2.4 Moderating effect of Green Investment on the relationship between Corporation Tax Incentives, Value-Added Tax Incentives, Customs Tax Incentives and Tax Revenue Collection

The fourth objective of the study was to determine the moderating effect of green investment on the relationship between corporation tax incentives, value-added tax incentives, customs tax incentives and tax revenue collection from companies listed on the NSE, Kenya. The study investigated the correlation between green investment and tax revenue collection and found that there was a positive and significant relationship. ($r = 0.646$; $p\text{-value} = 0.000 < 0.05$). This implies that as green investments in NSE firms the tax revenue collection improves as well.

The study found that green investment moderates the relationship between corporate tax incentives and tax revenue collection from companies listed on Kenya's Nairobi Securities Exchange., with $\beta = 0.0000123$ $p\text{-value} = 0.010$. The results suggested that

the amount of green investment affects how company tax incentives affect revenue collection.

The study also discovered that the relationship between value-added tax incentives and tax revenue collection from Kenyan companies listed on the Nairobi Securities Exchange is moderated by green investment. $\beta = 8.81 \times 10^{-6}$; p-value 0.000. This clarifies that green investments have a favorable effect on the connection between tax revenue collection and value-added tax incentives.

Lastly, the research found that green investment moderates the relationship between customs incentives and tax revenue collection from Kenyan companies listed on the Nairobi Securities Exchange. ($\beta = 4.76 \times 10^{-6}$; p-value = 0.004). The amount of green investment affects how customs incentives affect revenue collection.

5.2.5 Firm age and firm size on Tax Revenue collection

The study found that firm age and firm size both have a positive correlation to tax revenue collection, $r = 0.120$ (p-value = 0.042) and $r = 0.056$ (p-value = 0.018) respectively. With beta coefficient table showing positive and significant effects of firm age and firm size on tax revenue collection. $\beta = 0.0027685$ (p-value = 0.049) and ($\beta = 0.0000217$; p-value = 0.048 < 0.05) respectively. This implied that as the listed firm gets older the tax revenue collection tends to increase, also the higher the number of employees the tax revenue collection tends to increase thus larger remittances. Subsequent research revealed that the moderating effects of green investment on the relationships between tax incentives and tax revenue collection of NSE listed firms are considerably controlled by firm age and firm size.

5.3 Conclusion of the Study

The study sought to determine the moderating effect of green investment tax

incentives on tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya.

The first objective was to determine the relationship between corporation tax incentives and tax revenue collection from companies listed on the NSE, Kenya. It was determined that there exists a positive relationship between corporation tax incentives and tax revenue collection.

Similarly the second objective was to determine the relationship between value-added tax incentives and tax revenue collection from companies listed on the NSE, Kenya. VAT incentives were found to positively impact tax revenue collection among NSE-listed firms.

Third specific objective was to determine the relationship between customs duty incentives and tax revenue collection from companies listed on the Nairobi Securities Exchange, Kenya. Customs duty incentives were found to positively impact tax revenue collection among NSE-listed firms.

These results indicate that improvements in tax incentives, whether related to corporation tax, VAT, or customs duty, can contribute to increased tax revenue collection by these firms.

Moreover, the study uncovered a moderating effect of green investment on the relationships between tax incentives and tax revenue collection. Specifically, green investment was found to influence the relationship between corporation tax incentives, VAT incentives, customs duty incentives, and tax revenue collection. This suggests that the level of green investment within NSE-listed firms can alter the impact of tax incentives on tax revenue collection, highlighting the importance of environmentally

conscious investments in shaping fiscal outcomes.

Furthermore, the investigation revealed a positive correlation between firm age and tax revenue collection, indicating that as listed firms mature, their tax revenue tends to increase. Notably, firm age was identified as a significant factor controlling for the moderating effects of green investment on the relationship between tax incentives and tax revenue collection.

The findings of this study underscore the importance of tax incentives, green investment, and firm age in shaping tax revenue collection among companies listed on the NSE. The study conclusions aligned with the principles of the TBL theory, emphasizing the integration of economic, social, and environmental objectives. The moderating effect of green investments on tax incentives and tax revenue collection demonstrates how firms can achieve sustainability goals while improving their fiscal contributions.

5.4 Recommendations

5.4.1 Recommendations to Policy Makers

The study findings highlight the critical role of tax incentives in enhancing tax revenue collection from companies listed on the Nairobi Securities Exchange (NSE). Consequently, the government of Kenya should focus on strengthening tax incentive programs, particularly those targeting corporation tax, value-added tax (VAT), and customs duties. These programs should be streamlined and effectively administered to ensure compliance and encourage broader participation among firms. Moreover, the government should introduce targeted policies that promote green investments, as these were found to significantly influence the relationship between tax incentives and tax revenue collection. Specific measures such as tax credits or deductions for

environmentally friendly initiatives can incentivize firms to adopt sustainable practices while contributing to fiscal goals. Lastly, policies that support firm growth and maturity, such as access to financing, market linkages, and business support services, are crucial, as firm age was identified as a significant determinant of tax revenue collection.

5.4.2 Recommendations to Companies' Management

Management of NSE-listed companies should actively leverage the available tax incentives to optimize financial performance and compliance with tax regulations. Strategic utilization of corporation tax, VAT, and customs duty incentives can enhance revenue generation and operational efficiency. Additionally, companies should integrate green investments into their business strategies, as these investments not only improve their environmental impact but also enhance the benefits of tax incentives. By aligning their operations with sustainability goals, companies can position themselves favorably in both regulatory and market contexts. Finally, firms should focus on initiatives that promote organizational growth and longevity, such as innovation, diversification, and robust governance structures, which are associated with higher contributions to tax revenue over time.

5.4.3 Practical Implications

The study provides actionable insights for both policymakers and corporate stakeholders. For the government, refining tax policies to incorporate and promote green investments can lead to enhanced tax revenue while advancing environmental sustainability. Companies, on the other hand, can use the findings to align their investment strategies with available incentives, ensuring both compliance and improved financial performance. Collaboration between government and businesses in

promoting sustainable practices is key to achieving long-term fiscal and environmental goals.

5.4.4 Theoretical Implications

The findings of the study have important theoretical implications.

The study supports the principles of the TBL theory, emphasizing the integration of economic, social, and environmental objectives. The moderating effect of green investments on tax incentives and tax revenue collection demonstrates how firms can achieve sustainability goals while improving their fiscal contributions. This underscores the importance of policies and strategies that balance these three dimensions.

The positive relationship between tax incentives and tax revenue collection aligns with optimal tax theory, which advocates for designing tax systems that maximize revenue without distorting economic activity. The study highlights how well-structured tax incentives can effectively encourage compliance and investment, enhancing overall fiscal outcomes.

The findings support neoclassical economic principles, which posit that incentives influence efficient resource allocation. By showing that tax incentives stimulate investment and increase tax revenue, the study reinforces the notion that strategic tax policies can foster market efficiency and economic growth.

The emphasis on green investments aligns with normative theory, which focuses on the ethical and societal implications of policies. Encouraging firms to adopt environmentally sustainable practices through tax incentives reflects the societal responsibility to address climate.

5.5 Limitations of the Study

The current longitudinal study sought to determine whether the green investment tax incentives moderated the collection of tax revenue among listed companies on the Nairobi Securities Exchange in Kenya. The approach gave considerable insight into the temporal relationships and trends, though it also exposed a number of limitations.

First of all, relying on secondary data from publicly available financial statements and reports may have introduced some errors or inconsistencies, since the data is subject to various reporting standards and practices followed by the companies. This dependence limits the potential of the study in pinpointing those fine, qualitative aspects that may have an effect on the relationship between tax incentives and the collection of tax revenues.

Lastly, the longitudinal approach focused on historical data, which may not fully capture recent changes in tax policy or economic conditions that may affect the impact of tax incentives and green investment. In that case, the results may not fully represent the current fiscal or regulatory environment, thus being of limited applicability to current or future scenarios.

Third, by focusing on NSE-listed firms, the study was targeting larger and more established firms. This may not allow for a generalization of the findings to include SMEs and other unlisted companies, whose behavior and response to tax incentives may be radically different from those of NSE-listed firms. The results, therefore, may not be representative of the broader business environment in Kenya.

Finally, only three types of tax incentives were considered: corporation tax, VAT, and customs duty, while green investment is a moderating factor. This may have overlooked other relevant incentives or moderating variables, thus bringing out of the scope of

analysis other potentially important tax credits innovation-based, for instance or firm-specific characteristics relevant to governance quality or financial health that could also potentially impact tax revenue collection outcomes.

5.6 Suggestions for Further Research

The Study should be conducted to investigate the impact of tax reforms of tax revenue collection in Kenya. A study on the impact of digitization of tax systems on tax revenue collection could be conducted. Furthermore, although green investment was identified as a moderating factor, the current study did not explore the different categories of green investments or their differential impacts on tax revenue generation. Further research could work on detailing the importance of specific types of green investments, such as renewable energy projects or sustainable supply chain practices, to give more specific recommendations for policy and corporate strategies. Addressing these limitations would make future findings more rigorous and relevant.

REFERENCES

- Amariati, S. N. (2013). The extent to which financial factors affect profitability of manufacturing firms listed in the Nairobi stock exchange (Doctoral dissertation, Kenyatta University).
- Amendola, A., Boccia, M., Mele, G. and Sensini, L. (2018). Fiscal incentives and firm performance evidence from Dominican Republic.
- Archel, P., Fernandez, M., & Larrinaga, C. (2008). The Organizational and Operational Boundaries of Triple Bottom Line Reporting: A Survey. *Environmental Management*, 41, 106–117.
- Arel-Bundock, V. (2022). modelsummary: Data and Model Summaries in R. *Journal of Statistical Software*, 103(1). <https://doi.org/10.18637/jss.v103.i01>
- Atawodi, O. W., & Ojeka, S. A. (2012). Factors that affect tax compliance among small and medium enterprises (SMEs) in North Central Nigeria. *International Journal of Business and Management*, 7(12), 87.
- Barada, V. (2013). Sarah J. Tracy, Qualitative Research Methods: Collecting Evidence, Crafting Analysis, Communicating Impact. *Revija za sociologiju* (Vol. 43, Issue 1). <https://doi.org/10.5613/rzs.43.1.6>
- Barbour, P. (2005). An Assessment of South Africa's investment incentive regime with a focus on the manufacturing sector, ESAU Working Paper 14, Overseas Development Institute, London.
- Boadway, R. & Shah, A. (1995). Perspectives on the Role of Investment Incentives, in A. Shah (ed.), *Fiscal Incentives for Investment and Innovation*, Washington, DC: World Bank.
- Borssoi, J. A., Paula, G. A., & Galea, M. (2017). Elliptical linear mixed models with a covariate subject to measurement error. *Statistical Papers*, 1-39.
- Capital Markets Authority (2002). Guidelines on corporate governance in public listed companies in Kenya. Kenya Gazette Notice No. 369, 122-128.
- Chua, D. (1995). Tax Incentives, in P. Shome (ed.), *Tax Policy Handbook, International Monetary Fund, Fiscal Affairs Department*, Washington, DC: World Bank.
- Clark, S., Cebreiro, A., & Bohmer, A. (2007). Tax incentives for investment- a global perspective: Experiences in MENA and non-MENA countries. MENA-OECD Investment Programme.
- Cochran, M. (1999). *Normative theory in international relations: a pragmatic approach* (Vol. 68). Cambridge University Press.
- Cooper, R. & Schindler, P. (2006). *Business research methods*. Singapore: McGraw-Hill.
- Easson, A., & Zolt, E. M. (2013). Tax incentives. *World Bank Institute*, 1-36.

- Ferreira, C. S., & Paula, G. A. (2017). Estimation and diagnostic for skew-normal partially linear models. *Journal of Applied Statistics*, 44(16), 3033-3053.
- Fletcher, K. (2003). An Evaluation of Marginal Effective Tax Rates on Domestic Investment in South Africa between 1994 and 2002, MA thesis, University of Witwatersrand.
- Gatsi, J. G., Gadzo, S. G., & Kportorgbi, H. K. (2013). The effect of corporate income tax on financial performance of listed manufacturing firms in Ghana. *Research Journal of Finance and Accounting*, 4(15), 118-124.
- Githaiga, I. (2013). The impact of tax incentives on foreign direct investments inflows of firms listed at the Nairobi Securities Exchange. Unpublished MBA Project, University of Nairobi.
- Gumo, O. M. (2013). The effect of tax incentives on foreign direct investments in Kenya. An unpublished MBA project, University of Nairobi.
- Harju, J., Kosonen, T. (2012). The impact of tax incentives on the economic activity of entrepreneurs, Working Paper 18442, National Bureau of Economic Research.
- Institute of Economic affairs. (2012). Tax incentives and exemption regime in Kenya: Is it working? A Publication of the IEA Budget Information Programme Issue No. 30
- International Bank for Reconstruction and Development (IBRD). (1998). Report No. EC – 102, 1998. Kaplan, D. (2001). Rethinking Government Support for Business Sector R&D in South Africa: The Case for Tax Incentives. *The South African Journal of Economics*, 69(1), 72-73.
- International Monetary Fund (IMF).(2009). IMF Working Paper Fiscal Affairs Department Causes, Benefits, and Risks of Business Tax Incentives
- Kelley. H. S. (2004). Making trade policy in a new democracy after a deep crisis: Indonesia. *The World Economy*, 31(7), 947-968
- Klemm, A., Parys, S. V. (2009). Empirical evidence on the effects of tax incentives
- Kothari, C.R. (2004). *Research methodology: Methods and techniques. Second Revised Edition*. New Delhi: New Age in International Publisher.
- KRA (2009). Taxation and foreign direct investment a synthesis of empirical research: CPB Discussion Paper. Hague:
- Kuria, J. (2017). Effects of Tax Incentives on the Performance of Export Processing Zone (EPZ) Firms in Kenya. Unpublished PhD Thesis at United States International University Africa.
- Mackinsey Global Institute (2022). Manufacturing the future: The next era of global growth and innovation.
- Madani, D.H., & Mas-Guix, N. (2011). The impact of export tax incentives on performance evidence from the automotive sector in South Africa.

- Mainassara, Y. B., & Amir, A. I. (2018). Multivariate portmanteau tests for weak multiplicative seasonal VARMA models. *Statistical Papers*, 1-32.
- Mayende, S. (2013). The Effects of Tax Incentives on Firm Performance: Evidence from Uganda. *Journal of Politics and Law*, 6(3), 95-108.
- Miocevic, M. (2020). Bayesian Moderation Analysis. 1–10.
- Mugenda, O. and Mugenda, A. (2003). *Research Methods: Quantitative and Qualitative Approaches*. 2nd Rev. ed. Nairobi: Act press.
- Murage, J.D. (2012). The effects of Tax Incentives on investments of export processing zones firms in Kenya: University of Nairobi.
- Musyoka, K. (2012). The relationship between tax incentives and foreign direct investment in Kenya. Unpublished MBA Project, University of Nairobi.
- Ngure, P. (2018). Tax Incentives and Performance of Selected Manufacturing Firms in Kenya. Unpublished MBA thesis at Kenyatta University.
- Njeru, D. M., & Ndimitu, P. N. (2015). The effect of tax incentives on investment among Export Processing Firms (EPZs) in Kenya. *Prime Journal of Business Administration and Management*, 5(3), 1798-1806.
- Njuru, S. G., Ombuki, C., Wawire, N., & Susan, O. (2013). Taxation and private investment: evidence for Kenya.
- Oghoghomeh, T. (2014). An assessment of agribusiness tax incentives in Nigeria. *International Journal of Business and Economic Development*, 2(1), 129-137.
- Ohaka, J., & Agundu, P. U. C. (2012). Tax incentives for industry synergy in Nigeria: A pragmatic proprietary system advocacy. *African Research Review*, 6(3), 42-58.
- Ohaka, J., & Dagogo, D. W. (2015). Re-investment allowance, investment tax credit, and the reality of corporate cash flow in Nigeria. *Journal of Economics and Finance*, 6(2)
- Okauru I. (2009). How Corporate Nigerians Can Maximize on the Provisions of Tax Incentives for Private Sector Contribution to Sports Development in Nigeria. Paper Presented at the National Sports Commission Stakeholders Conference Abuja.
- Olaleye, M. O., Riro, G. K., & Memba, F. S. (2016). Effect of reduced company income tax incentives on foreign direct investment in listed Nigerian manufacturing companies. *European Journal of Business, Economics and Accountancy*, 4(1), 39- 54.
- Ondabu I., Muturi, W., & Kisaka E. (2016). Effects of Tax Incentives on Performance of Listed Firms in Kenya. *International Journal of Scientific and Research Publications*, 6(7), 678- 691.

- Onyango, M. (2015). The Effect of Tax Incentives on Financial Performance of Five-Star Hotels in Nairobi County. Unpublished MBA thesis at University of Nairobi.
- Options, D., Quick, A., Stored, R. M., & Methods, S. (1978). Quick start.
- Philips, E. (2010). *Tax Incentive and employment opportunities in an economy*, Washington, DC: World Bank.
- Pouraghajan, A., Malekian, E., Emamgholipour, M., Lotfollahpour, V., & Bagheri, M. (2012). The relationship between capital structure and firm performance evaluation measures: Evidence from the Tehran Stock Exchange. *International Journal of Business and Commerce*, 1(9), 166–181.
- Qu, X., Cui, W. and Xing, J. (2017). Local tax incentives and behavior of foreign enterprises:evidence from a large developing country.
- Rapuluchukwu, E. U., Belmondo, T. V., & Ibukun, B. (2016). Incentives and firm's productivity: Exploring multidimensional fiscal incentives in a developing country (No. 1606). OCP Policy Center.
- Raza, S. A., Ali, S. A., & Abassi, Z. (2011). Effect of corporate income tax and firm's size on investment: Evidence by Karachi stock exchange.
- Relvas, C. E. M., & Paula, G. A. (2016). Partially linear models with first-order autoregressive symmetric errors. *Statistical Papers*, 57(3), 795-825.
- Rumina, U.A, Balandina, A.S. and Bannova, K.A (2019). Evaluating the effectiveness of tax incentives in order to create modern tax mechanism innovation development.
- Saez, E., & Stantcheva, S. (2016). Generalized social marginal welfare weights for optimaltax theory. *The American Economic Review*, 106(1), 24-45.
- Sweeten, G. (2016). Lecture 8: Heteroskedasticity Assumption MLR5: Homoskedasticity. *Class Lecture*.
- Tembur, N. (2016). Effect of Tax Incentives on Financial Performance of Export Processing Zone Firms In Kenya. Unpublished MBA thesis at University of Nairobi.
- Teraoui, H., Kaddour, A., Chichti, J., & Jaleleddine, R. (2011). Impacts of Tax Incentives on Corporate Financial Performance: The Case of the Mechanical and Electrical Industries Sector in Tunisia, 3(6), 117-129.
- Terry F. Buss (2001). The Effect of State Tax Incentives on Economic Growth and Firm Location Decisions: An Overview of the Literature, *Economic Development Quarterly*, 15:1 (2001): 99
- Tirimba, O. I., Muturi, W., & Sifunjo, K. E. (2016). Effects of tax incentives on performance of listed firms in Kenya. *International Journal of Scientific and Research Publications*, 6(7), 678-690.

- Torres-Reyna, O. (2007). Panel Data Analysis Fixed and Random Effects using Stata (v. 4.2). December. <http://dss.princeton.edu/training/>
- UNCTAD. (2000). *Tax incentives and foreign direct investment: A global survey*, United Nations. New York and Geneva: United Nations Publications.
- United Nations Climate Change conference, (COP26), (2021). Together for our planet Glasgow, Scotland, United Kingdom, from 31 October to 13 November 2021: United Nations Publications
- Wachira, D.W. (2011). A survey of tax avoidance and incentives schemes adopted by Kenya Airways. (Unpublished MBA Project, University of Nairobi).
- Zee, S., & Ley, (2001). Tax Incentives for Business Investment: A Primer for Tax Policy Makers in Developing Countries”, IMF.

APPENDICES

Appendix I: Fixed-Effect Regression Control Variables

Fixed-effects (within) regression	Number of obs	=	300			
Group variable: firmcode	Number of groups	=	60			
R-sq: within = 0.0218	Obs per group: min	=	2			
between = 0.0226	avg	=	4.9			
overall = 0.0056	max	=	5			
	F(2,168)	=	15.87			
corr(u_i, Xb) = -0.9995	Prob > F	=	0.0000			

TaxRev	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
firm_age	.0055532	.0023532	2.36	0.039	-.0010666	.012173
firm_size	.0000698	.0000284	2.47	0.030	-.0001246	.0002641
_cons	.4698444	.2136206	2.24	0.043	-1.286408	.3467191
-----+-----						
sigma_u	1.0159626					
sigma_e	.06903401					
rho	.9954041	(fraction of variance due to u_i)				
-----+-----						
F test that all u_i=0:	F(43, 168) =	1.13	Prob > F = 0.2904			

(Source: Research 2024)

Appendix II: Fixed-Effect Regression on Direct effects of Tax incentives on Tax Revenue collection

Fixed-effects (within) regression		Number of obs	=	300			
Group variable: firmcode		Number of groups	=	60			
R-sq: within	= 0.4224	Obs per group: min	=	2			
between	= 0.0001	avg	=	4.9			
overall	= 0.0011	max	=	5			
corr(u_i, Xb) = -0.9951		F(5,165)	=	24.13			
		Prob > F	=	0.0000			
-----+-----							
	TaxRev	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----							
	firm_age	.0060911	.0026013	2.34	0.020	.000955	.0112272
	firm_size	.0000374	.0000176	2.18	0.031	-.0001905	.0001158
corporation_tax_incentives		.0290453	.0063668	4.77	0.000	-.00327	.0613606
value_added_tax_incentives		.022397	.0085459	2.62	0.010	.0055235	.0392705
customduty_incentives		.0157045	.0069791	2.24	0.032	-.0020199	.033429
_cons		.1612211	.0340683	4.50	0.000	-.8010764	.4786342
-----+-----							
	sigma_u	.52450014					
	sigma_e	.05352937					
	rho	.98969156	(fraction of variance due to u_i)				
-----+-----							
F test that all u_i=0:		F(43, 165) =	2.09	Prob > F = 0.0005			

(Source: Research 2024)

Appendix III: Moderating effect of Green Investment

Fixed-effects (within) regression		Number of obs	=	300			
Group variable: firmcode		Number of groups	=	60			
R-sq: within	= 0.7106	Obs per group: min	=	2			
between	= 0.0315	avg	=	4.9			
overall	= 0.0370	max	=	5			
corr(u_i, Xb) = -0.9855		F(6,164)	=	67.12			
		Prob > F	=	0.0000			

	TaxRev		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]

	firm_age		.0030767	.0013618	2.25	0.040	-.0005994 .0067529
	firm_size		.0000229	.0000113	2.01	0.047	-.0000862 .000132
corporation_tax_incentives		.0017757	.0008017	2.23	0.041	-.0252077 .0216563	
value_added_tax_incentives		.0069549	.0029549	2.12	0.044	-.0052601 .0191699	
customduty_incentives		.0103683	.0043868	2.62	0.016	-.0022426 .0229792	
greeninvestment		.0000403	3.15e-06	12.78	0.000	.0000341 .0000465	
_cons		.2322499	.030138	7.31	0.000	-.6866653 .2221655	

	sigma_u		.35352439				
	sigma_e		.03800294				
	rho		.98857633	(fraction of variance due to u_i)			

F test that all u_i=0:		F(43, 164) =	4.35	Prob > F = 0.0000			

(Source: Research 2024)

Appendix IV: Test for First Interaction

Fixed-effects (within) regression		Number of obs	=	300		
Group variable: firmcode		Number of groups	=	60		
R-sq:	within = 0.7122	Obs per group:	min =	2		
	between = 0.0422		avg =	4.9		
	overall = 0.0625		max =	5		
		F(7,163)	=	57.63		
corr(u_i, Xb) = -0.9699		Prob > F	=	0.0000		

	TaxRev	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]

	firm_age	.0030925	.0013624	2.26	0.039	-.0005849 .00677
	firm_size	.0000144	.000006	2.40	0.021	-.0000962 .0001249
	corporation_tax_incentives	.0125756	.0044081	2.84	0.010	-.0449755 .0198243
	value_added_tax_incentives	.0066652	.0031955	2.09	0.048	-.0055685 .0188989
	customduty_incentives	.0110387	.0044271	2.49	0.020	-.0016525 .0237299
	greeninvestment	.0000361	5.39e-06	6.70	0.000	.0000255 .0000468
	cti_greeninvestment	5.77e-06	2.06e-06	2.80	0.012	-6.18e-06 .0000177
	_cons	5.77e-06	.0935927	2.03	0.047	-.6556994 .2668165

	sigma_u	.24254266				
	sigma_e	.03801349				
	rho	.97602492	(fraction of variance due to u_i)			

F test that all u_i=0:	F(43, 163) =	4.34	Prob > F = 0.0000			

(Source: Research 2024)

Appendix V: Testing the effect of the Second Interaction

Fixed-effects (within) regression		Number of obs	=	300			
Group variable: firmcode		Number of groups	=	60			
R-sq:	within = 0.7168	Obs per group:	min =	2			
	between = 0.0398		avg =	4.9			
	overall = 0.0596		max =	5			
		F(8,162)	=	51.24			
corr(u_i, Xb) = -0.9716		Prob > F	=	0.0000			

	TaxRev	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	

	firm_age	.0029676	.001455	2.04	0.049	-.0006955	.0066306
	firm_size	.0000152	.0000067	2.27	0.040	-.0000949	.0001252
	corporation_tax_incentives	.0126187	.0026288	4.80	0.000	-.0320668	.0573042
	value_added_tax_incentives	.0106367	.0034001	3.13	0.007	-.0351233	.0138499
	customduty_incentives	.0089607	.0035253	2.54	0.020	-.0039249	.0218463
	greeninvestment	.000031	6.23e-06	4.98	0.000	.0000187	.0000433
	cti_greeninvestment	7.43e-06	.0000022	3.38	0.003	-.0000275	.0000127
	VATi_greeninvestment	9.78e-06	4.08e-06	2.40	0.024	-2.23e-06	.0000218
	_cons	.1786893	.0826701	2.16	0.048	-.6381477	.280769

	sigma_u	.25044831					
	sigma_e	.03782986					
	rho	.97769327	(fraction of variance due to u_i)				

F test that all u i=0:		F(43, 162) =	4.40	Prob > F = 0.0000			

(Source: Research 2024)

Appendix VI: Testing the Complete Effect of Moderation

Fixed-effects (within) regression		Number of obs	=	300		
Group variable: firmcode		Number of groups	=	60		
R-sq:	within = 0.7181	Obs per group:	min =	2		
	between = 0.0305		avg =	4.9		
	overall = 0.0396		max =	5		
		F(9,161)	=	45.57		
corr(u_i, Xb) = -0.9835		Prob > F	=	0.0000		
	TaxRev	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	firm_age	.0027685	.0013702	2.02	0.049	-.0009248 .0064618
	firm_size	.0000217	.0000103	2.10	0.048	-.0000894 .0001328
	corporation_tax_incentives	.0226592	.0102812	2.20	0.043	-.0274638 .0727822
	value_added_tax_incentives	.0093434	.0032961	2.83	0.011	-.0340216 .0153349
	customduty_incentives	.0000221	.0000021	10.00	0.000	-.0240318 .0239876
	greeninvestment	.0000289	6.69e-06	4.32	0.000	.0000157 .0000421
	cti_greeninvestment	.0000123	.0000043	2.86	0.010	-.0000353 .0000106
	VATi_greeninvestment	8.81e-06	2.19e-06	4.02	0.000	-3.41e-06 .000021
	CDI_greeninvestment	4.76e-06	1.44e-06	3.32	0.004	-5.97e-06 .0000155
	_cons	.1863232	.093001	2.00	0.049	-.6464555 .2738092
	sigma_u	.33288109				
	sigma_e	.03785707				
	rho	.98723165	(fraction of variance due to u_i)			
F test that all u_i=0:		F(43, 161) =	4.38	Prob > F = 0.0000		

(Source: Research 2024)

Appendix VII: Companies listed in the Nairobi Securities Exchange, Kenya

 nairobi securities exchange <i>Discover Opportunity</i>				
NO.	SECURITIES	ISIN CODE	TRADING SYMBOL	TOTAL NUMBER OF ISSUED SHARES
AGRICULTURAL				
1	Eaagads Ltd	KE0000000208	EGAD	32,157,000
2	Kakuzi Ltd	KE0000000281	KUKZ	19,599,999
3	Kapchorua Tea Co. Ltd	KE4000001760	KAPC	7,824,000
4	The Limuru Tea Co. Ltd	KE0000000356	LIMT	1,800,000
5	Sasini Ltd	KE0000000430	SASN	228,055,500
6	Williamson Tea Kenya Ltd	KE0000000505	WTK	17,512,640
AUTOMOBILES & ACCESSORIES				
7	Car & General (K) Ltd	KE0000000109	C&G	40,103,308
8	Marshalls (E.A.) Ltd	KE0000000364	MASH	14,393,106
9	Sameer Africa Ltd	KE0000000232	FIRE	278,342,393
BANKING				
10	Barclays Bank of Kenya Ltd	KE0000000067	BBK	5,431,536,000
11	CFC Stanbic of Kenya Holdings Ltd	KE0000000091	CFC	395,321,638
12	Diamond Trust Bank Kenya Ltd	KE0000000158	DTK	266,321,115
13	Equity Group Holdings Ltd	KE0000000554	EQTY	3,773,674,802
14	Housing Finance Group Ltd	KE0000000240	HFCK	352,416,667
15	I&M Holdings Ltd	KE0000000125	I&M	392,362,039
16	KCB Group Ltd Ord	KE0000000315	KCB	3,066,056,647
17	National Bank of Kenya Ltd	KE0000000398	NBK	308,000,000
18	NIC Group PLC	KE0000000406	NIC	639,945,603
19	Standard Chartered Bank Kenya Ltd	KE0000000448	SCBK	343,510,571
20	The Co-operative Bank of Kenya Ltd	KE1000001568	COOP	4,889,316,295
COMMERCIAL AND SERVICES				
21	Atlas African Industries Ltd	KE4000004095	ADSS	1,497,370,885
22	Express Kenya Ltd	KE0000000224	XPRS	35,403,790
23	Hutchings Biemer Ltd	KE0000000257	HBER	360,000
24	Kenya Airways Ltd	KE0000000307	KQ	1496469035
25	Longhorn Publishers Ltd	KE2000002275	LKL	369940476
26	Nairobi Business Ventures Ltd	KE5000000090	NBV	23,600,000
27	Nation Media Group Ltd	KE0000000380	NMG	188542286
28	Standard Group Ltd	KE0000000455	SGL	81,731,808
29	TPS Eastern Africa Ltd	KE0000000539	TPSE	182,174,108
30	Uchumi Supermarket Ltd	KE0000000489	UCHM	364,959,616
31	WPP Scangroup Ltd	KE0000000562	SCAN	378,865,102
CONSTRUCTION & ALLIED				
32	ARM Cement Ltd	KE0000000034	ARM	495,275,000
33	Bamburi Cement Ltd	KE0000000059	BAMB	362,959,275
34	Crown Paints Kenya Ltd	KE0000000141	BERG	71,181,000
35	E.A. Cables Ltd	KE0000000174	CABL	253,125,000
36	E.A. Portland Cement Co. Ltd	KE0000000190	PORT	90,000,000
ENERGY & PETROLEUM				

37	KenGen Co. Ltd	KE0000000547	KEGN	6,243,873,779
38	KenolKobil Ltd	KE0000000323	KENO	1,471,761,200
39	Kenya Power & LightingCoLtd	KE0000000349	KPLC	1,951,467,045
40	Total Kenya Ltd	KE0000000463	TOTL	175,028,706
41	Umeme Ltd	KE2000005815	UMME	1,623,878,005
INSURANCE				
42	Britam Holdings Ltd	KE2000002192	BRIT	1,938,415,838
43	CIC Insurance Group Ltd	KE2000002317	CIC	2,615,538,528
44	Jubilee Holdings Ltd	KE0000000273	JUB	65,884,500
45	Kenya Re Insurance Corporation Ltd	KE0000000604	KNRE	699,949,068
46	Liberty Kenya Holdings Ltd	KE2000002168	CFCI	535,707,499
47	Pan Africa Insurance Holdings Ltd	KE0000000414	PAFR	144,000,000
INVESTMENT				
48	Centum Investment Co Ltd	KE0000000265	ICDC	665,441,775
49	Home Afrika Ltd	KE2000007258	HAFR	405,255,320
50	Olympia Capital Holdings Ltd	KE0000000166	OCH	40,000,000
	s-Century Ltd	KE2000002184		281,426,593
MANUFACTURING & ALLIED				
52	A.Baumann & Co Ltd	KE0000000018	BAUM	3,840,066
53	B.O.C Kenya Ltd	KE0000000042	BOC	19,525,446
54	British American TobaccoKenya Ltd	KE0000000075	BAT	100,000,000
55	Carbacid Investments Ltd	KE0000000117	CARB	254,851,988
56	East African Breweries Ltd	KE0000000216	EABL	790,774,356
57	Kenya Orchards Ltd	KE0000000331	ORCH	12,868,124
58	Mumias Sugar Co. Ltd	KE0000000372	MSC	1,530,000,000
59	Unga Group Ltd	KE0000000497	UNGA	75,708,873
TELECOMMUNICATION & TECHNOLOGY				
60	Safaricom Ltd	KE1000001402	SCOM	40,065,428,000

Source: Nairobi Securities Exchange (2023)

Appendix VIII: Data Collection Schedule- For the Study Variable

Year	Tax Incentives (KES)									Profit (KES)	Planet	People		
Tax Incentive	Corporate tax Incentives			Value Added Tax Incentives			Customs Incentives					Vendors	Customers	Employees
			Tax payment ratio=			Vat payment ratio=			Customs payment ratio=	ROA=	Green emissions ratio	Operations ratio		
	CA	Tax holiday (15% CIT)	CIT/ Total Assets)	E	0%	(VAT paid/Total assets)	E	Duty draw back	Total duty paid/ Total Assets	Net profit after Tax/ Total Assets	Total operating cost (fossil fuels)/ Total asset	purchases admin cost/ Total asset	sales admin cost / Total asset	Employment benefit cost / Total Assets
2019														
2020														
2021														
2022														
2023														

Key:

CA- Capital Allowance 0%- Zero-rated E -Exempt

Appendix IX: KESRA – Field Work Letter**KENYA REVENUE
AUTHORITY**

ISO 9001:2015 CERTIFIED

PUBLIC

KENYA SCHOOL OF REVENUE ADMINISTRATION

REF: KESRA/NBI/036

9th May 2024

TO: WHOM IT MAY CONCERN

Dear Sir/Madam,

**RE: REQUEST FOR ASSISTANCE TO NJOGU TABITHA NDUTA OF
REGISTRATION NO.: KESRA105/0024/2022 UNDERTAKING MASTERS AT
KESRA**

This is to confirm that the above named is a student at Kenya School of Revenue Administration (KESRA) Nairobi Campus pursuing Masters in Tax and Customs Administration.

The named student is undertaking Research on TOPIC: ***"The moderating effect of green investment on the relationship between tax incentives and tax revenue collection by companies."***

The purpose of this letter is to request for your kind facilitation in enabling the student progress in her research project by allowing access to any relevant information and/or conduct interviews, which are relevant to the project.

Your support to the student in this regard will be highly appreciated.

Thank you.



Appendix X: NACOSTI

 REPUBLIC OF KENYA Ref No: 967156	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION. Date of Issue: 25/June/2024
RESEARCH LICENSE	
	
This is to Certify that Ms. Tabitha Nduta Njogu of Moi 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: THE MODERATING EFFECT OF GREEN INVESTMENT ON THE RELATIONSHIP BETWEEN TAX INCENTIVES AND TAX REVENUE COLLECTION FROM COMPANIES LISTED IN THE NAIROBI SECURITIES EXCHANGE, KENYA for the period ending : 25/June/2025.	
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Appendix XI: Awareness Certificate



SR627

ISO 9001:2019 Certified Institution

THESIS WRITING COURSE

PLAGIARISM AWARENESS CERTIFICATE

This certificate is awarded to

NJOGU TABITHA NDUTA

KESRA/105/0024/2022

In recognition for passing the University's plagiarism

Awareness test for Thesis entitled: **THE MODERATING EFFECT OF GREEN INVESTMENT ON THE RELATIONSHIP BETWEEN TAX INCENTIVES AND TAX REVENUE COLLECTION FROM COMPANIES LISTED ON THE NAIROBI SECURITIES EXCHANGE, KENYA** similarity index of 6% and striving to maintain academic integrity.

Word count:25210

Awarded by

Prof. Anne Syomwene Kisilu
CERM-ESA Project Leader Date: 22/08//2024