INFLUENCE OF MACROECONOMIC DETERMINANTS ON ECONOMIC GROWTH IN KENYA

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DECLARATION

I declare that the work in this dissertation has not been previously published or submitted elsewhere for award of a degree. I also declare that this is my own original work and contains no material written or published by other people except where due reference is made and author duly acknowledged.

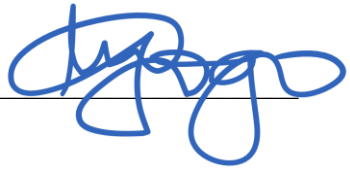
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ABSTRACT

This study investigates the relationship between public debt, infrastructure development, human capital, political stability and Kenya's economic growth from 1984 to 2024. The target population comprises annual macroeconomic records, with a census approach applied to the 25 available data points to ensure accuracy and avoid sampling error. Secondary time-series data was sourced from credible national and international databases, focusing on the GDP growth rate as the dependent variable. Data collection involved archival retrieval and transformation using natural logarithms to enhance comparability. Descriptive statistics and inferential techniques, including correlation, multiple regression, and multivariate time-series analysis, was employed and analysis was done using STAT version 17. The Vector Error Correction Model (VECM) guided the analysis, supported by diagnostic tests such as stationarity, co-integration, multi-collinearity, heteroscedasticity, and serial correlation. The study revealed that Public Debt-To-GDP Ratio (-0.608) negatively affects growth, while Infrastructure Development (0.450), Human Capital (0.164), and Political Stability (1.569) have positive but varying effects, though statistically insignificant. It concludes that Kenya's growth depends on productive debt use, improved infrastructure, skilled human capital, and stable governance. The study recommends prudent debt management, equitable infrastructure investment, strengthened education and health systems, and sustained political stability to enhance growth. It further suggests expanding research to include additional macroeconomic variables, longer data periods, and comparative regional analyses. Future studies should also employ dynamic models and explore governance, innovation, and institutional quality as mediating factors influencing Kenya's economic performance.

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DEDICATION

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ACRONYMS AND ABBREVIATIONS

ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criterion
AIDI	African Infrastructure Development Index
BETA	Bottom-Up Economic Transformation Agenda
BFGC-Q	bootstrap Fourier Granger causality in quantiles
BIC	Bayesian Information Criterion
CBK	Central Bank of Kenya
EAC	East African Community
FDI	Foreign Direct Investment
GFCF	Gross Fixed Capital Formation
GDP	Gross Domestic Product
GLS	Generalized Least Squares
GRDP	Gross Regional Domestic Product
HCI	Human Capital Index
HDI	Human Development Index
HQC	Hannan-Quinn Criterion
IDI	Infrastructure Development Index
IMF	International Monetary Fund
JB	Jarque-Bera
KNBS	Kenya National Bureau of Statistics
LM	Lagrange Multiplier
PP	Phillips-Perron
SDGs	Sustainable Development Goals
VECM	Vector Error Correction Model
VIF	Variance Inflation Factor
WGI	Worldwide Governance Indicators (Political Stability)

OPERATIONAL DEFINITION OF TERMS

Economic Growth: Economic growth refers to the increase in a country's production of goods and services over time, primarily assessed by gross domestic product (GDP) (Todaro & Smith, 2020). In this study, it refers to the annual percentage growth rate of Kenya's GDP, reflecting the overall economic performance of the nation.

Human Capital Index (HCI): The Human Capital Index measures the productivity potential of the future work force based on education, health, and survival variables (World Bank, 2020). In this study, it refers to the HCI score in Kenya as recorded by the World Bank, serving as a proxy for human development investment in the country.

Infrastructure Development Index: The Infrastructure Development Index monitors the quality and status of physical infrastructure, including transport, electricity, and ICT services that support economic activity (African Development Bank, 2021). In this study, it refers to the value of Kenya's net investment inflow and infrastructure index as recorded in regional and global databases.

Political Stability Index: The Political Stability Index measures the likelihood of unrest, violence, or terrorism and assesses the overall stability of a government (Kaufmann, Kraay, & Mastruzzi, 2019). In this study, it refers to the political stability score of Kenya, as delineated in the World Governance Indicators.

Public Debt-to-GDP Ratio: The Debt-to-GDP Ratio or the Public Debt-to-GDP Ratio The ratio serves as a metric that represents a nation's government debt in relation to its gross domestic product, hence reflecting the viability of its fiscal policy (IMF, 2021). In this study, it refers to the ratio of Kenya's total public debt stock to its GDP, serving as an indicator of the debt load relative to the economy's size.

CHAPTER ONE

INTRODUCTION

1.1Background of the Study

Macroeconomic determinants persist in shaping the growth trajectories of industrialized economies, with their implications presenting both possibilities and challenges for emerging economies. Globally, China's economic deceleration its GDP growth slowing from 8.4% in 2021 to 4.6% in 2024 is attributed to debt saturation, a diminishing population, and declining productivity in infrastructure investment, suggesting that debt-driven expansion is unsustainable in the long term (The Guardian, 2025). In contrast, Japan's GDP growth has remained modest at 1.2% in 2024, but its robust export sector, valued at USD 757 billion, and strong consumer spending continue to cushion structural weaknesses through stable governance and trade efficiency (Reuters, 2025a). Meanwhile, the United States, which grew by 2.1% in 2024, continues to shape global economic performance, although shifts in monetary policy and trade adjustments have transmitted volatility to emerging markets (The Guardian, 2025). These global trends underscore that prudent debt management, effective infrastructure investment, and institutional stability remain fundamental determinants of sustainable growth. For Kenya, the lesson is clear: balancing debt accumulation with human capital development and governance reforms is vital to sustaining resilience and competitiveness in an increasingly interconnected global economy.

Regionally, macroeconomic experiences reinforce the significance of structural and institutional variables as essential determinants of growth. The recurrent energy shortages in South Africa hinder industrial production, illustrating the long-term competitive disadvantage despite fiscal enhancements (Financial Times, 2025a). In Nigeria's situation, despite its objective of achieving 7% growth by 2027, this may lack credibility due to ongoing challenges with inflation,

elevated debt servicing costs, and currency swings (Reuters, 2025b). Ethiopia's impending debut of its securities market signifies a commitment to reform; nonetheless, persistent inflationary pressures and political uncertainties undermine investor confidence (Financial Times, 2025b). These stories illustrate that growth is not merely a consequence of debt or capital influx, but also results from institutional trust, government stability, and productive infrastructure. In Kenya, these lessons suggest that economic progress requires infrastructural expenditures in conjunction with institutional reforms, especially in an environment characterized by significant public debt and political sensitivity.

Locally, the economic growth in Kenya demonstrates stability while simultaneously exposing vulnerabilities that align with global challenges. The 5.6% GDP increase in 2023 is attributed to the agriculture and services sectors; yet, concerns over debt sustainability and inflation persist (Reuters, 2024a). The World Bank (2023) indicates that, despite agriculture and tourism aiding recovery, the depreciation of the shilling and external deficits jeopardize fiscal stability. The objective of the policy is achieved through recent budgetary measures aimed at reducing the fiscal deficit to 3.3% of GDP; nevertheless, financial flexibility is restricted by the utilization of debt swaps and the limited capacity for borrowing (Reuters, 2024b). The implication of this is that Kenya is a complex nation, where growth is feasible; nevertheless, without substantial investment in infrastructure, human capital, and governance, growth may occur without sustainability. Compared to industrialized economies, Kenya exhibits structural deficits that complicate macroeconomic management and provoke political controversy, necessitating additional inquiry into the interacting variables.

Despite the current research foundation, there are significant knowledge gaps about the growth factors of Kenya. Hassan et al. (2023) concentrated on elucidating the role of public debt,

neglecting other variables such as human capital and governance, and disregarding the interplay between financial and institutional factors. Similarly, Kitum (2023) focused exclusively on debt, inflation, and exchange rates, neglecting infrastructure and political stability, rendering the policy advice incomplete. At the regional level, Olabisi et al. (2025) examined human capital and foreign direct investment, yielding extensive conclusions that were not confined to Kenya's structural realities. The image can be characterized as fragmented, as most research tend to identify distinct variables rather than integrating them. This research addresses this gap by examining debt, infrastructure, human capital, and political stability as a composite, providing a comprehensive perspective on Kenya's development mechanism within the current precarious macroeconomic climate.

These gaps stimulate scholarly curiosity and motivate this investigation. The argument regarding Kenya's debt sustainability is typically limited, despite the fact that its economic viability depends on investments in human capital, infrastructural capacity, and political stability. The current fiscal consolidation and structural reforms provide an opportune opportunity to analyze the interplay among these factors. Moreover, evidence from advanced and regional economies suggests that an overdependence on debt, absent corresponding institutional fortification, can threaten growth. This serves as the fundamental impetus for our research: to generate empirical findings on how financial and institutional elements together influence Kenya's growth trajectory. The expanded perspective of the research can contribute to both academic dialogue and practical policymaking, enabling Kenya to formulate policies that improve long-term resilience and inclusive economic performance.

1.1.1 Macroeconomic Determinants

The public debt-to-GDP ratio indicates the extent of debt accumulated by the central government (including the entire public sector) relative to economic production, reflecting the burden of debt in relation to revenue-generating capacity. A growing ratio may signify a decline in fiscal space, heightened danger of crowding-out, and vulnerability to external shocks. Fernandez-Gallardo (2025) conceptualizes debt load as a function of the interaction between debt stock and debt service pressures; Otieno (2024) associates public debt with investment dynamics and regional spillover; Omondi (2024) employs the debt-to-dP ratio as the essential metric for fiscal sustainability in Kenya. Primary metric: total public debt as a percentage of GDP. This research utilized the series as the principal debt variable in panel/time-series regressions to assess its impact on yearly GDP growth, both linearly and non-linearly (via the threshold). Debt servicing ratios was utilized to conduct robustness tests.

The infrastructure development index, defined by access to electricity, measures the extent to which the population has dependable grid or off-grid electrical access, which is essential for productive activities, business entrance, and human development. Studies indicate that electricity enhances productivity and induces structural transformation. Shi (2025) demonstrates the influence of grid investment on overall output; Asaleye (2025) indicates that power availability enhances workforce participation and expands employment prospects; Opoku (2025) regards energy access as a fundamental element of equitable growth. Principal metric: percentage of the population with access to electricity. This study utilized annual national electricity-access rates as a proxy for infrastructure capital in growth regressions and interaction terms, with the underlying hypothesis being that infrastructure mitigates the tradeoffs associated with debt-driven growth.

The Human Capital Index (HCI) assesses the anticipated productivity of future workers based on optimal performance levels, integrating health and educational outcomes; it quantifies the investable human potential within an economy. Enhanced HCI facilitates more technological adoption and fosters sustained growth. The quality of human capital is linked to enhancements in regional productivity, as noted by Zhang (2023). Dzadzua (2023) emphasizes the policy implications of Human Capital Index (HCI) on socioeconomic outcomes, and HCI is incorporated into the World Bank's framework as years of education and a health/survival adjustment. Principal metric: World Bank Human Capital Index score. The study aims to assess the direct or marginal influence of Human Capital Index (HCI) on GDP growth, together with the buffering effect of HCI on infrastructure and debt coefficients, utilizing annual HCI scores as the human capital coefficients.

The assessment of political stability, utilizing the WGI Political Stability and Absence of Violence score, evaluates perceptions regarding the likelihood of political unrest, violence, or terrorism, which directly influence investment, consumption, and the continuity of policies. In the context of analytics, diminished stability elevates risk premia and reduces capital accumulation. Political instability results in diminished investment (Dirks 2024); a separate panel on Sciendo (2024) demonstrated that stability is significantly positively correlated with enhanced GDP growth in developing nations; the WGI metadata document outlines the index and the scale utilized for measurement - Political Stability and Absence of Violence/Terrorism score (WGI). This paper applies the WGI score as the political-governance regressor, examining whether the coefficients exert direct effects on growth and exploring two-way interactions with debt and human capital to determine if stability conditions amplify or mitigate the influence of other determinants.

1.1.2 Economic Growth in Kenya

Long-term economic expansion refers to the augmentation of a nation's total production of goods and services over time. Economic growth signifies improvements in national averages of welfare, employment, and investment opportunities. Nationwide is articulated in relation to fluctuations in real GDP. Smith (2023) defines economic growth as the annual change in real GDP, adjusted for inflation. Johnson (2024) characterizes it as an enhancement of output capacity measured through output metrics. Mwangi (2025) summarizes real GDP growth as structural transformation and human development, indicative of increased output capacity via output indicators. Indicator: Annual real GDP growth rate (%). Application for this study: Real GDP growth rates in Kenya annually served as the dependent variable in econometric models, reflecting year-on-year fluctuations; this provided a regression study of the impact of debt-to-GDP, electricity access, human capital index, and political stability on economic growth. The expansion of real GDP can be analyzed throughout time, allowing for the derivation of appropriate policy conclusions through marginal adjustments.

The economic growth in Kenya is shaped by a confluence of interrelated macroeconomic factors that impact productivity, investment, and resilience. A substantial public debt-to-GDP ratio can inhibit investment and elevate borrowing costs, thereby decelerating growth; reliable electricity access can invigorate industries, facilitate new business formation, and enhance service provision; elevated human capital, as indicated by the Human Capital Index (HCI), augments labor productivity and fosters innovation; while political stability can mitigate uncertainty and encourage both domestic and foreign investment. The detrimental effects of debt may be mitigated when it is utilized for infrastructural and educational projects, hence enhancing economic potential. Similarly, investments in infrastructure and human resources may not provide optimal

returns without political stability. In Kenya, the two variables interact, as infrastructure and human capital enhance the effective utilization of debt, while political stability creates an enabling climate and influences the amount and sustainability of economic growth.

1.2 Statement of the Problem

Kenya's economy would sustain consistent growth rates above 7% annually sufficient to achieve the Vision 2030 target of transitioning into an upper-middle-income economy through industrialization, innovation, and inclusive development. Sustained growth of this magnitude would promote employment, raise household incomes, and enhance fiscal stability. However, in practice, Kenya's economic performance has been volatile, with GDP growth fluctuating between 5.4% in 2019, –0.3% in 2020, 7.6% in 2021, 4.8% in 2022, and 5.5% in 2023 (World Bank, 2024). Persistent macroeconomic imbalances rising public debt exceeding 70% of GDP, unreliable energy infrastructure, limited human capital development, and recurrent political instability continue to undermine resilience and long-term growth prospects.

Existing empirical studies on Kenya's growth determinants (e.g., Kitum, 2023; Hassan et al., 2023) largely employ static models or focus narrowly on single variables such as debt or inflation, overlooking the dynamic interplay between fiscal, institutional, and structural factors. This reveals methodological, theoretical, and contextual gaps that this study addresses by using a time-series econometric framework to jointly examine how public debt, infrastructure, human capital, and political stability influence economic growth in Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

To examine the relationship between macroeconomic determinants and economic growth in Kenya

1.3.2 Specific Objectives

i. To assess the relationship between public debt-to-GDP ratio and economic growth in Kenya
ii. To evaluate the relationship between infrastructure development index and economic growth in Kenya.
iii. To determine the relationship between human capital index (HCI) and economic growth in Kenya
iv. To analyze the relationship between political stability index and economic growth in Kenya

1.4. Research Questions

i. What is the relationship between the public debt-to-GDP ratio and economic growth in Kenya?
ii. How does the infrastructure development index relate to economic growth in Kenya?
iii. What is the relationship between the human capital index and economic growth in Kenya?
iv. How does the political stability index influence economic growth in Kenya?

1.5. Justification of the Study

The study is proposed on the necessity for Kenya to mitigate its persistent macroeconomic vulnerabilities that jeopardize sustained growth. The research provides evidence-based insights by examining the effects of public debt, infrastructure development, human and capital investment, and political stability on economic growth, benefiting policymakers, investors, and development partners. The outcomes will impact the government's fiscal and infrastructural priorities, aligning

them with Kenya Vision 2030 and the African Union Agenda 2063, while also contributing to the United Nations Sustainable Development Goals.

Failing to act may result in Kenya's continued reliance on unsustainable debt, insufficient investment in human capital, and the interruption of growth and poverty alleviation initiatives due to political instability. Conversely, the research offers sound policy recommendations, enhances academic understanding of macroeconomic factors, and equips stakeholders to foster inclusive, resilient, and sustainable economic growth.

1.6 Significance of the Study

1.6.1 Significance to Policymakers

This study will show how macroeconomic drivers affect economic growth, which is important for Kenyan policymakers. Management of public indebtedness, infrastructure investment, and human capital directly affect fiscal policies and national budgets. The study has provided crucial insights that will help the Treasury, Central Bank, and ministries balance debt sustainability, resource allocation, and political stability. Without such evidence, policymaking may be reactive, fragmented, or unsustainable, increasing macroeconomic instability. Kenya Vision 2030 and the Bottom-Up Economic Transformation Agenda (BETA) contextualize findings to attain strategic national goals; therefore the research will inform national policies. The study will link research and policy to promote resilient, inclusive, and sustainable growth in Kenya.

1.6.2 Significance to Academia

This study adds to academic literature on macroeconomic causes of economic growth by evaluating Kenya in its particular socioeconomic environment. Although global literature provides general knowledge, local studies are crucial for contextual understanding, especially in developing economies. The research contextualizes the linkages between debt-to-GDP ratio, infrastructure,

human capital, and political stability in Kenya's macroeconomic position, contributing to scholarly discourse. It provides a fresh empirical foundation with current material information to fill knowledge gaps left by past studies that rarely considered dynamic interplay of these variables in Sub-Saharan Africa. Additionally, the research will provide students, scholars, and institutions with relevant case evidence for teaching, policy simulations, and comparative research. It also builds academic competence, promotes future research, and widens the gap between theoretical economic growth and real-world policy in Kenya.

1.6.3 Significance to Stakeholders and Practitioners

Development partners, investors, and practitioners in the private and public sectors value this study. Localizing research helps development partners like the World Bank, IMF, and African Development Bank create country-specific financing arrangements. This helps investors understand Kenya's existing and future economic drivers to assess investment risks and possibilities. The results can help infrastructure, education, and governance professionals by providing evidence-based planning and resource use advice. As it identifies macroeconomic drivers that most affect growth, the study will help stakeholders implement measures that maximize growth. Without such direction, stakeholders risk wasting resources, inefficiency, and reduced growth. Thus, the study promotes stakeholder decision-making, accountability, and access to collaborative tactics to facilitate Kenyan economy growth agenda adjustments.

1.6.4 Significance to Regional and Global Development

The study also encompasses regional and global development. Kenya is a leader in East African Community integration and economic stability as one of the largest economies in the area. Other countries in the region with debt sustainability, infrastructural challenges, and unpredictable governments can learn from this study. Through evidence for local and international development

strategies, the study addresses the Sustainable Development Goals (SDGs) in many nations, especially Goal 8 (Decent Work and Economic Growth) and Goal 9 (Industry, Innovation, and Infrastructure). The research can be scaled to other rising economies, thus Kenya risks missing the global competitiveness standard if it ignores it. This research improves local knowledge and contributes to global development debates on equitable, sustainable economic growth.

1.7 Scope of the Study

This study aims to investigate the influence of important macroeconomic factors; public debt, infrastructure development, human capital investment, and political stability on economic growth in Kenya. The target population comprises macroeconomic papers and databases from institutions such as the Central Bank of Kenya, Kenya National Bureau of Statistics, World Bank, and IMF, which provide high-quality secondary data. Data was gathered exclusively through the examination of published reports, governmental records, and international financial databases to ensure consistency and credibility. The analysis emphasized the two-decade period from 1984 to 2024, illustrating both the long-term trend and contemporary economic dynamics. The study timeline spans from January 2025, when the project commenced, to October 2025, the anticipated completion date, during which data was analyzed, evaluated, and reported.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature relevant to the study on public debt, infrastructure, human capital, political stability, and economic growth in Kenya. It is structured into five sections. The theoretical review outlines key theories underpinning the study, including Debt Overhang, Endogenous Growth, Human Capital, and Political Stability and Growth theories. The empirical review synthesizes past studies, highlighting global, regional, and local evidence. The conceptual framework illustrates hypothesized relationships among variables, while the research gaps identify areas insufficiently addressed. Lastly, operationalization of variables defines the measurable indicators applied in econometric modeling to ensure validity and relevance of the study objectives.

2.2 Theoretical Review

This study is grounded in four key theories linking debt, infrastructure, human capital, and governance to economic growth. Debt Overhang Theory (Krugman, 1988; Sachs, 1989) posits that excessive public debt discourages investment and constrains growth. Endogenous Growth Theory (Romer, 1986; Lucas, 1988) emphasizes innovation, infrastructure, and human capital as internal drivers of sustained growth. Human Capital Theory (Schultz, 1961; Becker, 1964) highlights education and health as critical to productivity and competitiveness. Finally, Institutional Theory of Economic Growth (Barro, 1991; Alesina et al., 1996) argues that stable political and institutional environments foster investment, reduce uncertainty, and enhance long-term growth.

2.2.1 Debt Overhang Theory

Krugman (1988) initially articulated the Debt Overhang Theory, subsequently refined by Sachs (1989). Krugman asserted that elevated national debt deters investment, as future returns are predominantly allocated to debt reduction, hence disadvantaging emerging and international investors. Sachs added that unsustainable debt positions are contributing to additional macroeconomic imbalances, reduced fiscal capacities, and hindered economic progress, particularly in developing countries. Both experts have analyzed the debt crises of the 1980s to demonstrate that nations with substantial foreign debts experience diminished growth rates despite ongoing economic reforms. The dynamics of debt, as evaluated in contemporary economies such as Kenya, demonstrate that public debt levels have significantly increased over the past two decades, rendering this theory directly applicable.

The Debt Overhang Theory posits that significant national debt reduces the incentive for productive investment, as earnings are allocated to servicing debt rather than fostering national growth (Krugman, 1988). Sachs (1989) posited that excessive debt increases macroeconomic instability, disrupts domestic capital, and deteriorates the efficiency of resource allocation. The hypothesis posits that debt restructuring or relief is not executed, hence postponing or forsaking growth-oriented projects due to anticipated creditor claims. Empirical evidence suggests that debt overhang diminishes activity in the privately controlled sector and obstructs long-term investments in infrastructure, human capital, and industrialization. In Kenya, the rising debt levels may constrain budgetary flexibility for strategic expenditures, making it a significant factor in the debt-growth relationship.

Critics assert that the overhang effect of debt is not ubiquitous. Claessens et al. (1996) assert that the impact of debt on growth is contingent upon the nature of the debt, indicating that

concessional loans may occasionally promote growth. Pattillo, Poirson, and Ricci (2002) underscore a non-linear relationship, wherein modest debt can support investment, while excessive debt significantly diminishes it. Presbitero (2012) indicates that certain developing nations have less debt overhang, suggesting that the caliber of institutions and governance has a mediating role. Certain scholars contend that judicious borrowing and meticulous allocation mitigate detrimental impacts. In Kenya, the swift escalation of public debt and the substantial share of fiscal expenditures dedicated to debt servicing render the theory highly beneficial for comprehending the potential constraints on growth.

The initial variable in the analysis is public debt, as elucidated by Debt Overhang Theory. The pattern of Kenya's debt as of 2000 has raised concerns around investment crowding out and diminished developmental expenditure. The idea provides a framework for assessing whether debt impedes growth by diverting resources from infrastructure, education, and health sectors. This theory enables the research to quantitatively assess debt sustainability and its growth implications via debt-to-GDP ratios. Policy recommendations are provided about borrowing, debt management, and investment prioritization based on the theory. It elucidates the correlation between elevated public debt and potential limitations on economic growth in Kenya, serving as a theoretical platform for empirical study.

2.2.2 Endogenous Growth Theory

The endogenous growth theory emerged in the 1980s, primarily attributed to Romer (1986) and Lucas (1988). Romer emphasized that innovation, technology, and knowledge accumulation are critical drivers of internal growth, while Lucas identified human capital accumulation as essential for sustaining productivity. This theory diverged from conventional neoclassical approaches, which attributed growth to exogenous technology shocks rather than to the development of policy,

infrastructure, and investments that establish long-term growth potential within an economy. It also posits that alternative forms of rewards, like as knowledge and infrastructure, might facilitate long-term growth. In the context of Kenya, the theory will provide an overview of how judicious investments in infrastructure and innovation policies can foster self-sustaining economic growth.

The hypothesis posits that growth is mostly due to internal factors, including knowledge, human capital, and infrastructure (Romer, 1986). Lucas (1988) emphasized that labor productivity improves with skill development, and that investment in both physical and digital infrastructures reduces transaction costs, enhances efficiency, and facilitates the dissemination of technology. Education, research, and policy actions that enhance infrastructure development have enduring multiplier effects on growth. Unlike decreasing returns to capital models, endogenous growth models suggest that inherent forces can lead to sustained and accelerating growth. The theory has been applied in Kenya to delineate the significance of infrastructure and innovation in economic growth, asserting that government policy is essential in establishing long-term growth trajectories.

The critiques contest the significance attributed to infrastructure and human capital by Endogenous Growth Theory. Jones (1995) contends that persistent investment in R&D does not guarantee long-term growth. Aghion and Howitt (1992) noted that innovation can produce disruptive consequences that are unevenly dispersed, while Temple (1999) warned that policy optimism may not materialize in contexts characterized by weak governance or corruption. In developing nations, the presence of infrastructure in an economy does not guarantee growth, as empirical study demonstrates. Nonetheless, despite their significance, the theory continues to elucidate the mechanisms by which infrastructure and policy interventions might influence Kenya's economic growth.

The second variable is influenced by the Endogenous Growth Theory, specifically the advancement of infrastructure. Kenya has initiated extensive infrastructure projects, including the Standard Gauge Railway, road construction, and digital connectivity enhancements. The idea provides a framework for assessing whether such investments have resulted in sustainable productivity and economic growth. The study can measure the impact of development projects on gross domestic product, evaluate policy efficacy, and identify areas requiring additional investment by correlating infrastructure with growth. The approach can also be employed to pick energy access as a measurable proxy for infrastructure capital. It generally facilitates the analytical framework for evaluating the significance of internal and growth-promoting factors in Kenya.

2.2.3 Human Capital Theory

Human Capital Theory was primarily developed by Becker (1964) and Schultz (1961). Becker emphasized that investments in education, specialization, and health have augmented worker productivity, resulting in economic benefits for people and nations. Schultz emphasized the necessity of human capital in economic development by highlighting the significance of knowledge enhancement and health improvement in bolstering labor efficiency. Both theorists contended that humans are crucial resources for economic growth, akin to physical capital. Their work shifted the focus from mere physical investment to the strategic development of human resources, particularly in the developing world. The theory provides a robust foundation for analyzing the Human Capital Index (HCI) and its impact on Kenya's economic growth trajectory.

The fundamental assertion is that education, skills, and health, as components of human capital, are the primary determinants of productivity and economic growth (Becker, 1964). Schultz (1961) asserted that education enhances labor efficiency, fosters creativity, and improves resource allocation. A well-educated and healthy workforce is more adaptable, capable of embracing new

technology, and fosters sustainable development. The accumulation of human capital leads to elevated income levels, enhanced competitiveness, and improved capacity for economic transformation. In Kenya, education, skills training, and employee health and productivity significantly influence productivity, innovation, and industrial performance; thus, Human Capital Index (HCI) serves as a crucial indication of growth potential.

Despite its widespread acceptance, the Human Capital Theory faces criticism. Psacharopoulos and Patrinos (2018) assert that not all educational investments guarantee a cost-proportional economic return due to skill mismatches and inadequate labor market absorption. Hanushek and Woessmann (2020) assert that the quality of education, rather than its quantity, is the primary determinant of productivity, a claim that challenges basic human capital metrics. Bloom et al. (2022) assert that health and educational investments require effective governance and aligned policies to get growth results. Despite these limitations, the theory remains essential in directly linking human capital development to productivity and GDP growth in nations like Kenya, where skill deficits constrain economic potential.

The third variable is the Human Capital Index (HCI), which is derived from Human Capital Theory. The skills, knowledge, and health of the people are elements that contribute to labor productivity and economic growth in Kenya. This study quantifies human capital development through the deployment of HCI to assess its impact on GDP growth. This hypothesis will assist the study in assessing whether investments in education and health have yielded measurable economic gains. It is also beneficial for policy analysis, identifying specific places and areas where skill development or health-based interventions could enhance productivity. This theory thus provides a conceptual and empirical foundation for evaluating the impact of human capital on economic growth in Kenya.

2.2.4 Institutional Theory of Economic Growth

Barro (1991) formulated the Institutional Theory of Economic Growth, which was further refined by Alesina et al. (1996). Barro asserted that economic progress is facilitated by political stability, which diminishes uncertainty, encourages investment, and enables the implementation of sound policies. Alesina et al. highlighted the significance of institutional quality and effective governance, demonstrating that countries experiencing frequent political upheavals tend to have lower investment levels and slower economic growth. Both emphasized that a crucial macroeconomic factor is political stability, particularly in emerging nations, where policy uncertainty can directly affect investor confidence, budgetary planning, and long-term development initiatives. This hypothesis underpins the analysis of Kenya's political stability index in relation to economic growth.

The theory posits that political stability reduces uncertainty, bolsters investor confidence, and fosters economic growth (Barro, 1991). Alesina et al. (1996) assert that stable institutions promote the preservation of consistent economic policies, the best distribution of resources, and the protection of property rights. Violence, regime changes, and policy reversals generate a climate that deters both domestic and foreign investment, resulting in elevated premiums and increased capital costs. Infrastructure projects, investor flows, and government project delivery exemplify the correlation between political stability and a predictable governance climate in Kenya. A stable political foundation is essential for mobilizing other growth factors, including debt, infrastructure, and human capital.

Critics of the Institutional Theory of Economic Growth assert that growth is contingent upon factors beyond mere stability. North (1990) emphasizes that institutional quality and efficiency may be more significant than the mere absence of conflict. Rodrik (1999) contends that

not all political violence is detrimental, and in certain instances, it can lead to beneficial improvements. Acemoglu et al. (2003) assert that long-term extractive institutions can exhibit stability while also hindering growth, suggesting that non-inclusive stability may yield no economic benefits. Nonetheless, the idea remains valid, particularly in nations like Kenya, where historical political instability has impeded investment, hindered GDP growth, and heightened fiscal uncertainty.

The fourth variable, the political stability index, is supported by this theory. The political stability in Kenya affects the economy's capacity to regulate its macroeconomic stabilizers, investor confidence, and policy continuity. The use of the theory allows the research to examine how the stability reflected by the indices of governance absence and violence affects economic growth through oscillations. It provides a conceptual framework to elucidate the relationship between political risk and growth performance, hence emphasizing the importance of governance changes. The selection of variables and measurement methods regarding the impact of political stability on GDP growth dynamics in Kenya is influenced by empirical findings grounded in a robust theoretical framework.

2.3 Empirical Review

2.3.1 Public Debt-To-GDP Ratio and Economic Growth

Mansueto et al. (2025) examined the impact of the debt-to-GDP ratio on economic growth in the Philippines and recognized that public borrowing can serve as an effective stabilizing tool when employed judiciously. This study, utilizing regression and correlation analysis from 1986 to 2020, identified a U-shaped, non-linear correlation indicating an ideal GDP debt ratio of 58-60% relative to GDP. Lower levels shown negative connections between debt and growth, while higher levels displayed an ambiguous outcome due to shocks and policy alterations. The authors concluded that debt-growth interactions are highly contingent on specific circumstances, necessitating adaptable

fiscal policy. The analysis is illuminating as it underscores the circumstances under which public debt may either promote or hinder growth, contingent upon specific thresholds and economic variables. While the researchers underscore the importance of financial discipline, this report agrees, suggesting that Kenya must maintain a balanced debt to sustain growth without jeopardizing economic stability.

Nabwire, Simiyu, and Musiega (2025) analyzed the impact of Kenya's debt-to-GDP ratio on economic stability within the framework of sustainable debt theory. The authors conducted causal study design incorporating descriptive and inferential statistics, analyzing secondary time-series data spanning 20 years. Their results indicated a substantial negative association between a one-unit increase in the debt-to-GDP ratio and a decline in economic stability of 1.65 units, with the model explaining an amazing 72.4 percent of the variance in stability. This study asserts that Kenya's present macroeconomic debt burden of 70 percent adversely affects investor confidence and fiscal capacity. The researchers recommend enhancing domestic revenue mobilization and maintaining debt at manageable levels. The current research aligns with existing literature in asserting that unmitigated borrowing undermines economic strength; nevertheless, it further posits that institutional inefficiencies also contribute to the debt-growth tradeoff.

Ahmad, Khan, Afzal, and Ullah (2024) addressed the issue of the rising Pakistan to GDP ratio, highlighting the foreign debt accumulated by prior administrations from 2008 to 2022. Their research highlights the circumstances that have necessitated external borrowing to address development and budgetary deficits, raising concerns about sustainability in light of economic growth and fiscal stability. The analysis, utilizing World Bank variables such as inflation, external debt stock, GDP growth, and debt servicing, reveals an escalation in debt that destabilizes the macroeconomy and undermines fiscal flexibility. The authors advocate for comprehensive debt

management, diversification of funding sources, and enhancement of institutional capacity. The research offers a significant examination of debt dynamics in Pakistan, aligning its policy implications with the worldwide discourse on debt sustainability. The researcher agrees with Ahmad et al. (2024) that prudent debt selection is essential; nevertheless, in Kenya, the issue of debt is exacerbated more by domestic fiscal inefficiencies than by dependence on foreign loan.

Singh and Kumar (2022) propose unique empirical evidence addressing the relationship between public debt and economic development in India based on data between 1980 and 2019. They emphasize in their study that the high rate of expansion of the public debt and in particular the high rate of rise to 90 percent of the GDP soon after the COVID-19 epidemic is a big risk to the sustainable growth of the economy. Using Johansen cointegration, FMOLS, and Granger causality tests, they confirm that domestic debt, total factor productivity, and exports play a significant role in long-term growth, but external debt and debt servicing depend on short-term economic performance. The authors propose that reallocating public debt to productive investments is essential for achieving successful growth trajectories. The researcher concurred that productiveness in using debt is crucial, as stated by Singh and Kumar in 2022, but compared to India, where the problem of effectively managing domestic borrowing dominates, the issue in Pakistan is heavily related to the amount of foreign-denominated borrowing and/or the clubs that reveal inadequate debt management institutions

Leghrari, Jerry and Jaror, Jerry (2025) investigate the relationship between foreign public debt and Morocco's prolonged profitable development from 1998 to 2022, situating their research within the expanding discourse on debt sustainability in developing economies. Utilizing the econometric techniques of ADF, PP, Johansen co-integration, and VECM, they demonstrate that external public debt and its servicing adversely impact GDP, while gross national savings and

investment rates positively influence long-term growth. Their findings are corroborated by global research indicating that poorly managed external debt hinders growth and diverts resources and investment, undermining resilience. The authors advocate investing debt in profitable ventures, diversifying exports, and enhancing domestic savings. The researcher acknowledges the significance of debt management, as endorsed by Leghrari et al. (2025), yet critiques their emphasis on savings, asserting that this perspective diminishes the importance of institutional quality, which determines whether external debt facilitates sustainable development.

Geda and Yimer (2023) analyze the dual role of public debt in Ethiopia's economy, referring to it as a two-edged sword. Through annual observations from 1980 to 2021, they estimate the ARDL model and ascertain that the beneficial effect of public debt on investment and growth is evident solely in the short term, whereas in the long term, debt has a negative influence, primarily due to debt payment. Their findings indicate how debt repayment reallocates resources within productive sectors, hence constraining sustainable development. They advocate for the implementation of fiscal discipline, the mobilization of domestic revenue, and the efficient management of debt to mitigate misuse and corruption. This research contributes to the broader discourse on whether debt serves as a catalyst or a hindrance to progress. The researcher agrees with the authors that the effects of public debt are contextual; however, he asserts that the Ethiopian experience underscores the necessity for institutional reforms, as the history of governance failures exacerbates the long-term risks of debt concerning economic health.

2.3.2 Infrastructure Development Index and Economic Growth

Jatayu et al. (2024) identify infrastructure development as a primary catalyst for growth in the region, particularly within developing economies like Indonesia. They integrate multiple infrastructure clusters via the infrastructure development index (IDI) and examine them

concerning economic growth, poverty, inequality, human development, and unemployment indices. The issue with their conclusions is the persistent urban bias, wherein most urban areas reap the advantages of infrastructure investment, whereas non-urban areas are adversely impacted due to inaccessibility. This substantiates the argument that regional inequities are exacerbated by the unequal allocation of infrastructure. The analysis indicates the necessity for enhanced urban-rural connectivity to positively influence the developmental potential of infrastructure. The researcher agrees with the authors that infrastructure is essential for achieving sustainable development, but additionally contends that without inclusion policies, investments will exacerbate inequality. Consequently, balanced infrastructure planning can be regarded as a prerequisite for appropriate regional development and sustained economic growth over the long term.

Aluko and Ngubane (2024) analyze the influence of infrastructure investment on inclusive growth by assessing its effect on the Human Development Index (HDI) of five middle-income nations. They focus on infrastructural elements by employing a dynamic panel data model utilizing data from the World Bank and UNDP, encompassing energy, water, sanitation, transport, telecommunications, and education. The findings of their research indicate that water, sanitation, and household electricity significantly enhance human development; yet, they critique the Human Development Index for being overly limited and inadequate in assessing the multifaceted nature of progress. The research required policymakers to adopt a multifaceted approach in evaluating development results. The researcher concurs with their position, asserting that infrastructure cannot be confined to a singular component of welfare, as it underpins several socio-economic ramifications. Nonetheless, the complete reliance on HDI remains debatable, necessitating

supplementary indices to provide a thorough understanding of infrastructure's role in human advancement.

Usman et al. (2024) employ the Westerlund co-integration methodology to analyze eighteen years of panel data about the ECOWAS member nations, investigating the impact of infrastructure on economic growth in the region. Their findings substantiate the assertion that investments in infrastructure, particularly in power and AIDI enhancements, significantly contribute to long-term GDP growth. Improvements in infrastructure investment resulted in modest yet positive GDP growth, whereas alterations in electricity had the most substantial effects. The research underscores the necessity for ECOWAS governments to implement efficiency-based finance and robust information systems to guide infrastructure initiatives. This aligns with the prevailing notion that infrastructure underpins sustainable growth; nevertheless, the authors cite inadequate institutional capacities in data acquisition as a hindrance. The researcher agrees with this concern, as the lack of precise data may lead to inefficient allocation of infrastructure policies. However, depending just on GDP neglects broader welfare impacts, which future research is anticipated to incorporate.

Khandelwal et al. (2024) examine the infrastructure-growth relationship in SAARC countries by creating a composite index that incorporates infrastructure development factors such as power, telecommunications, air transport, and agricultural land use. The Pedroni and Kao tests of co-integration reveal that both infrastructure and financial development considerably influence long-term economic growth, whereas trade openness contributes to short-term GDP. The paper notably references bidirectional impacts, such as infrastructure inducing inflation, which exemplifies the complex developmental relationships in emerging nations. The exclusion of Afghanistan due to data deficiencies underscores the challenges that persist in regional analytics.

The study will enhance existing arguments by demonstrating the reciprocal nature of commerce and the nuanced impact of infrastructure. The researcher acknowledges that certain investments are necessary; nonetheless, a weakness is the reliance on aggregate indices, which may obscure sector-specific imbalances critical to policy formulation.

Appiah, Onifade, and Gyamfi (2024) evaluate the relationship between governance and infrastructure in sub-Saharan Africa (SSA), while emphasizing the pivotal importance of robust institutions. Utilizing panel econometric approaches and data from sources such as the AfDB, World Bank, and IMF, they reveal that robust institutions significantly enhance the beneficial effects of governance on infrastructure development. Notably, while economic growth and financial development were insignificant variables, industrialization emerged as a pivotal element, fostering both growth and the building of infrastructure. This perspective aligns with broader arguments regarding the necessity of governance reforms to address the ongoing infrastructure deficit in Sub-Saharan Africa. The paper enhances understanding by addressing the institutional factor overlooked by many other studies. The researcher agrees that governance and institutional quality are essential; nevertheless, dismissing the significance of financial development may be overly restrictive, as inclusive finance can inadvertently support future infrastructure investments.

El-Bouayady, Radoine, El Faouzi, Tayi, and Ozkan (2024) present novel insights regarding the influential role of infrastructure in urbanization throughout Africa, employing a data-driven methodology including 42 countries from 2005 to 2021. They employ a two-step system GMM to demonstrate that urbanization generally stimulates an expansion in infrastructure; however, the effects differ across the areas of ICT growth, power, and broadband. The consistent economic expansion led to an enhancement in infrastructure, with a 10 percent gain in GDP resulting in a 4.2 percent boost in broadband access. Nonetheless, industrial production and trade opportunities

yielded varied results, as in certain instances they enhanced ICT while detrimentally affecting the expansion of broadband and energy. The findings underline the variability of urbanization impacts and the necessity of context-specific policies to promote urbanization effectively. The study enhances understanding of rapid urban transformations in Africa and associated infrastructure challenges. The researcher asserts that urbanization drives infrastructure expansion but emphasizes the overlooked significance of governance quality and institutional frameworks as constraints on the feasibility of these expansions.

Rajagukguk (2024) examines the interrelationship between infrastructure development, economic indicators, and local growth in Medan City, emphasizing the Gross Regional Domestic Product (GRDP) and investments as primary drivers of development. The study, utilizing SEM technique and SMART PLS 4.0, illustrates a clear correlation between GRDP and investment, as well as economic growth, with an indirect association mediated by community income. The results highlight that infrastructure-related expenditures not only expand employment opportunities but also augment household income sources, hence facilitating rapid local economic development. This aligns with the literature that emphasizes infrastructure as a catalyst for equitable growth. Rajagukguk, emphasizing the positive implications, asserts that the research inadequately represents the unequal distribution of benefits from infrastructure installation, which may exacerbate relative disparities if governance and distributive allocations are insufficient. Consequently, while the data supports infrastructure as a catalyst for growth, equity and sustainability are paramount.

2.3.3 Human Capital Index (HCI) and Economic Growth

Salleh, Bujang, Andin, and Mazlan (2022) examined the Human Capital Index (HCI) as a catalyst for economic growth in Malaysia, focusing on the two principal components of education and

healthcare. Historical data analysis utilizing Dickey-Fuller and Phillips-Perron tests revealed no significant link between changes in HCI and economic growth, but employment exhibited a favorable correlation. This contradicts the widely accepted notion that investment in education and health directly enhances economic performance, suggesting instead that it mostly serves to elevate employability levels without necessarily yielding immediate growth outcomes. The authors contend that both education and healthcare systems require enhancement, and that such improvements must coincide with labor market demands. The researcher asserts that, despite the insightful nature of their findings, a drawback lies in their economistic perspective, which may overlook the qualitative dimensions of innovation capability and skill mismatch. Consequently, policy relevance must adopt a more comprehensive approach.

Lonska and Mietule (2022) examined the interplay between human capital development and a nation's economic and social advancement, proposing a bidirectional relationship between the two. A correlation study involving 120 countries demonstrated a robust relationship between the Human Capital Index (HCI) and the Global Competitiveness Index, as well as the Human Development Index, confirming that nations with well-developed human capital are predisposed to superior economic and social development. However, their findings indicated that this link is not consistent across different country groups based on their economic development stage, suggesting that the benefits of human capital may be unevenly distributed. The authors indicate that only high human capital significantly impacts country development and vice versa. While the researcher agrees with their conclusion, this study contends that the research oversimplifies the institutional and policy mechanisms that could moderate these interactions, which is a crucial factor in contextualizing outcomes in the developing world.

Choudhury (2025) elucidates the relationship between human capital and growth, demonstrating that the correlation is not linear but has a U-shaped effect, revealing dynamics that prior studies, which emphasize direct positive benefits, have not adequately addressed. Utilizing data from the Human Capital Index and GDP growth documentation of the World Bank, the research categorizes economies by growth phases and demonstrates that human capital maintains stability in low-growth economies (0-3%) and enhances productivity in high-growth economies (over 5%), while impeding economic growth in transitional economies (3-5%). This suggests that occupations characterized by cyclic values, such as industrialization or resource dependency, may surpass the significance of human capital. The results align with development theory but challenge the notion that human capital universally promotes growth. The author acknowledges the policy diversity across stages, while the current researcher suggests that the transitory decline indicates inefficiencies in the alignment between education and labor market demands, reflecting the problem of policy misalignment.

Nwaeze and Ireokwu (2024) examined the relationship between human capital investment (HCI) and sustainable economic growth in Nigeria, focusing on expenditures in education and health as primary variables. They employed a VECM methodology on four decades of time-series data to ascertain a long-term equilibrium link between HCI and growth. Expenditure on education demonstrated a substantial positive effect in both the short and long term, while health expenditure exhibited a strong short-term impact but a non-significant long-term effect. The results indicate that while education remains the principal catalyst for sustainable growth, the configuration of health expenditure in Nigeria introduces structural inefficiencies that limit its long-term efficacy. This aligns with the perspective that inadequate health systems reduce investment returns. The current researcher concurs with the authors regarding the primacy of the education sector but

disagrees with their assertion of the health sector's secondary role; its limited long-term impact is attributed to governance failures rather than the sector's lack of significance.

Nwaeze and Ireokwu (2024) examined the correlation between human capital investment (HCI) and the sustainable economic development rates of Nigeria, focusing on the critical variables of expenditure on education and health. Employing a VECM model to examine four decades of time series data, they confirmed a long-term equilibrium relationship between HCI and growth. Education expenditure yielded beneficial impacts both in the long term and the short term, whereas health expenditure was significant solely in the short term. These data suggest that education consistently enhances sustainable development, but health expenditure in Nigeria is structurally ineffective over time. This supports the assertion that inadequate health systems diminish investment returns. While the authors advocate for increased funding in both domains, the current researcher firmly prioritizes education, though acknowledges that the limited impact of health can be attributed to subpar governance rather than the sector's diminished importance.

Haciyimamoglu and Sungur (2024) discovered that Tyrkoise growth, propelled by physical and human capital, correlates with economic complexity when analyzed from 1970 to 2017 using an extension of Fourier Granger causality in the quantiles (BFGC-Q). Their findings indicated that human capital, together with physical capital and economic complexity, exerts a positive causal influence on economic growth. The study emphasizes that education, research, and technology are crucial for long-term growth, facilitating foreign capital influx and the diversification of high-tech product exports. The perspective reinforces the notion that human capital is vital for structural and technological advancement in sustaining prosperity. The authors consider economic complexity a significant factor in education, in contrast to other research that examines education in isolation. The present researcher agrees that education, technology, and human capital are crucial to growth;

nevertheless, they criticize the reliance on foreign money, asserting that local innovation systems are also essential for sustainability.

Nwaogu and Ikenyiri (2022) examined the correlation between human capital development and economic growth in Nigeria, highlighting education, skills, and health as primary determinants of productivity. This research presents evidence that human capital development exerts a substantial beneficial long-term impact on Nigeria's economic performance, along with evidence of co-integration. Nonetheless, the authors note that Nigeria's Human Capital Index (HCI) score is 36 percent, much below the 56 percent average, highlighting systemic issues in education and healthcare delivery systems. They advocate for increased governmental intervention and private sector participation to improve human capital outcomes. This aligns with the global discourse that emphasizes the necessity of human capital in achieving sustainable development, particularly concerning the Sustainable Development Goals (SDGs). Their findings align with the current researcher's perspective; nonetheless, it contends that the disparity between policy implementation and governance challenges undermines the benefits. Therefore, changes must extend beyond investment to enhance accountability, efficiency, and equity in access to education and healthcare.

2.3.4 Political Stability Index and Economic Growth

Hikam, Wau, Wibowo, and Muhdir (2024) investigated the causes of economic growth in OIC nations, with particular emphasis on political stability as a mediating element. Their research employs panel data from 28 OIC countries spanning 2006 to 2020, with growth variances evaluated by the Generalized Method of Moments (GMM). Their findings suggest that human capital, trade openness, and tourism positively influence growth, whereas foreign direct investment (FDI) has a negative effect. Political stability significantly amplifies the positive impacts of human capital and tourism, while adversely affecting foreign direct investment and trade openness. This

highlights the intricate and contextual characteristics of stability during the growing process. The authors assert that economic growth is unattainable without sustained political stability. The present researcher articulates a critical perspective on political stability, asserting that structural disparities and governance inefficiencies may undermine the benefits of the secondary feature, hence necessitating multidimensional change alongside stability.

Chebli and Saidi (2024) examined the correlation among political stability, corruption, governance, and economic growth in 46 middle-income nations from 1996 to 2016. The multivariate panel model and Granger causality tests they employed demonstrate that political instability hinders the beneficial effects of foreign direct investment (FDI) and gross fixed capital formation (GFCF) on GDP. The analysis reveals bidirectional causation among foreign direct investment (FDI), gross fixed capital formation (GFCF), and gross domestic product (GDP), alongside a unidirectional causality involving corruption, GDP, FDI, GFCF, government effectiveness, and GDP. These results underscore the moderating role of governance in determining whether capital inflows provide sustained growth. The authors indicate that economic disturbances leading to FDI can be mitigated by inadequate institutions. The modern scholar acknowledges the need of political stability but contends that it must be accompanied with institutional reforms to optimize growth outcomes.

Ritahi and Echaoui (2024) analyzed the impact of corruption, governmental efficacy, and political stability on economic growth in Morocco from 1996 to 2021 using a two-stage least squares model. They assert that corruption is a significant impediment to progress and that political stability is a crucial factor influencing economic success by enhancing investor confidence and fostering symbolic entrepreneurship. They note that government expenditure negatively impacts GDP per capita, indicating inefficacy in government spending and the necessity of strong

governance. This report reinforces the broader research to highlight the significance of institutional quality in determining long-term development outcomes. While the authors assert that political stability is the primary catalyst for prosperity, the current researcher concurs but emphasizes that without initiatives to mitigate corruption and enhance fiscal accountability, mere stability may yield unsustainable results. This study confirms that different facets of governance must collaborate synergistically to achieve sustainable economic growth.

Noor et al. (2024) conducted a study to analyze the economic impact of political instability in Pakistan, focusing on its correlation with inflation from 1981 to 2021, utilizing the ARDL bounds testing approach. Their findings indicate that significant political instability undermines the effectiveness of economic initiatives, leading to persistent inflationary pressures. The analysis suggests that long-term economic growth reduces inflation, but domestic credit growth significantly increases inflation. Furthermore, oil prices were found to have a strong and significant correlation with inflation in both the short and long term, underscoring the vulnerabilities of the Pakistani economy to external shocks. This study demonstrates that adverse political situations exacerbate macroeconomic imbalances, particularly through the phenomenon of policy cycle. While the authors emphasize the destabilizing impact of political instability, the present researcher agrees and further asserts that the causal relationship between governance quality and structural economic weaknesses intensifies inflationary pressures, an aspect that remains unexamined in the current literature.

Al-Zubairi, Al-Akheli, and Elfarra (2025) examine the correlation between financial development, renewable energy, political stability, and carbon emissions in Arab economies using panel data from 2000 to 2020, employing FMOLS, DOLS, and FGLS methodologies for analysis. The research findings suggest that, in certain instances, financial development and renewable

energy reduce CO2 emissions, highlighting the necessity for strong financial systems and transitions to clean energy. Conversely, political stability exhibits a positive link with emissions, suggesting that stable political settings prioritize expansion above sustainability. However, this is contingent upon the robustness of financial institutions, as they possess the capacity to promote stability in favor of environmentally sustainable behaviors. The utilization of fossil fuels and economic growth exacerbate emissions, whereas the sustainable aspects of urbanization result in little reductions. The authors propose the argument for balanced policies that integrate finance, energy, and environmental considerations. Their contribution aligns with the researcher's observations and posits that the cyclical nature of political stability warrants additional examination within governance systems.

Osuma, Ayinde, Ntokozo, and Ehikioya (2024) investigate the impact of systemic corruption and political risk on foreign direct investment (FDI) inflows in Nigeria, utilizing data from 1996 to 2023 through ARDL and FMOLS models. Their findings suggest that pervasive corruption and political instability significantly deter foreign direct investment and undermine investor confidence in long-term growth prospects. However, the study indicates that detrimental effects can be mitigated by the caliber of institutions and regulatory frameworks that encompass the rule of law, regulatory quality, and corruption control, hence rendering Nigeria a secure investment environment. The authors assert that robust anti-corruption measures and improved political stability are crucial for attracting sustained foreign direct investment (FDI). This aligns with existing studies linking governance to investment flows, while enhancing the discourse by quantifying institutional moderation. The researcher concurs with their conclusions but asserts that the influence of global economic trends and internal changes warrants greater emphasis in future studies.

2.4 Literature Gaps

Author & Year	Title	Nature of Data	Findings	Knowledge Gap & Focus of This Study
Mansueto et al. (2025)	The impact of debt-to-GDP ratio on the GDP growth rate of the Philippines	Regression and correlation (1986–2020)	Found a U-shaped relationship; optimal debt-to-GDP around 58–60%	Context limited to Philippines; lacks Kenyan evidence. This study focuses on how Kenya's debt-to-GDP ratio influences growth within its unique fiscal and institutional context.
Nabwire, Simiyu, & Musiega (2025)	Public debt-to-GDP ratio and economic stability in Kenya	Secondary time-series, regression (20 years)	Found debt-to-GDP negatively affects stability; 1 unit rise reduces stability by 1.65 units	Emphasis only on stability, not broader growth indicators. This study expands to overall economic growth and incorporates

				institutional inefficiencies.
Ahmad et al. (2024)	Rising debt-to-GDP ratio and growth in Pakistan	World Bank indicators (2008–2022)	Rising foreign debt undermines fiscal stability; recommends diversification	Focuses on foreign debt; Kenya faces more domestic inefficiencies. This study investigates both internal and external debt implications for growth.
Singh & Kumar (2022)	Public debt and growth in India	Johansen cointegration, FMOLS, Granger causality (1980–2019)	Domestic debt supports growth when invested productively	Indian context; overemphasizes domestic debt role. This study contextualizes Kenya where both external and domestic debt dynamics matter.
Leghrari et al. (2025)	External debt and growth in Morocco	ADF, PP, Johansen cointegration,	External debt negatively affects GDP;	Ignores institutional quality role. This study highlights

		VECM (1998–2022)	savings and investment help growth	institutional efficiency in shaping debt-growth outcomes in Kenya.
Geda & Yimer (2023)	Public debt and growth in Ethiopia	ARDL model (1980–2021)	Short-run positive, long-run negative due to servicing burdens	Ethiopia context only. This study examines whether Kenya faces similar short-run vs. long-run tradeoffs.
Jatayu et al. (2024)	Infrastructure development index and growth in Indonesia	IDI indicators (multi-sector, national data)	Infrastructure boosts growth but with urban bias	No African evidence. This study focuses on Kenya, incorporating equity in infrastructure distribution.
Aluko & Ngubane (2024)	Infrastructure and HDI in middle-income countries	Dynamic panel with WB/UNDP data	Infrastructure improves HDI, but HDI too narrow	Regional scope; not specific to Kenya. This study uses Kenya's

				infrastructure to link growth with inclusivity.
Usman et al. (2024)	Infrastructure and growth in ECOWAS	Panel data, Westerlund co-integration	Electricity and infrastructure investments raise GDP	ECOWAS focus. This study contextualizes Kenya's infrastructure-growth link.
Khandelwal et al. (2024)	Infrastructure index and growth in SAARC nations	Pedroni, Kao co-integration	Infrastructure drives long-run growth; trade openness relevant	South Asian scope. This study addresses Kenya's regional-specific factors.
Appiah et al. (2024)	Governance, infrastructure, and growth in SSA	Panel data (AfDB, WB, IMF)	Institutions enhance infrastructure's role	Broad SSA sample; Kenya-specific institutional dimension underexplored.
El-Bouayady et al. (2024)	Urbanization and infrastructure in Africa	Panel (42 African states, 2005–2021)	Urbanization fosters infrastructure,	General African evidence; lacks Kenya-specific

			sectoral heterogeneity	governance dimension.
Rajagukguk (2024)	Infrastructure, GRDP, and local growth in Medan	SEM–Smart PLS	Infrastructure boosts GRDP and income	City-specific. This study generalizes to Kenya's national economy.
Salleh et al. (2022)	HCI and growth in Malaysia	Time-series, DF & PP tests	No direct correlation between HCI and growth	Malaysian context. This study examines HCI–growth link in Kenya.
Lonska & Mietule (2022)	HCI, competitiveness, and development	Cross-country correlation	Strong bidirectional link between HCI and development	Global context; lacks Kenya focus. This study applies Kenya-specific HCI measures.
Choudhury (2025)	HCI and growth: U-shaped relationship	WB HCI and GDP growth	HCI positive in low/high-growth, negative in transition	Cross-country. This study investigates if Kenya's transitional growth mirrors this pattern.

Nwaeze & Ireokwu (2024)	HCI, education & health expenditure, Nigeria	VECM, 40 years data	Education drives growth; health short-term only	Nigeria-specific. This study assesses both education and health for Kenya.
Hacıimamoglu & Sungur (2024)	HCI, capital & complexity in Türkiye	Bootstrap Fourier causality (1970–2017)	Human & physical capital, technology drive growth	Türkiye focus. This study examines innovation and education's interaction in Kenya.
Nwaogu & Ikenyiri (2022)	HCI and growth in Nigeria	Time-series co-integration	HCI positively affects long-run growth	Nigeria case. This study contextualizes Kenya's weaker HCI.
Hikam et al. (2024)	Political stability & growth in OIC	Panel GMM (28 states, 2006–2020)	Political stability boosts human capital & tourism-led growth	OIC scope. This study investigates Kenya-specific stability-growth link.
Chebli & Saidi (2024)	Stability, corruption &	Panel data & causality tests	Instability reduces FDI impact	Multi-country. This study situates

	growth in middle-income countries			within Kenya's FDI reliance.
Ritahi & Echaoui (2024)	Corruption, stability, & growth in Morocco	2SLS (1996–2021)	Stability drives growth but corruption undermines it	Morocco focus. This study contextualizes Kenya's corruption-fiscal link.
Noor et al. (2024)	Political instability & inflation in Pakistan	ARDL (1981–2021)	Instability drives inflationary pressures	Pakistan case. This study focuses on Kenya's inflation-growth-stability nexus.
Al-Zubairi et al. (2025)	Finance, energy, stability & CO_2 in Arab economies	FMOLS, DOLS, FGLS (2000–2020)	Stability linked to higher emissions	Arab economies focus. This study situates stability within Kenya's green economy trajectory.
Osuma et al. (2024)	Corruption, risk & FDI in Nigeria	ARDL & FMOLS (1996–2023)	Instability deters FDI	Nigeria focus. This study emphasizes Kenya's political

				risk in attracting investment.

2.5. Conceptual Framework

The conceptual framework is presented in Figure 2.1

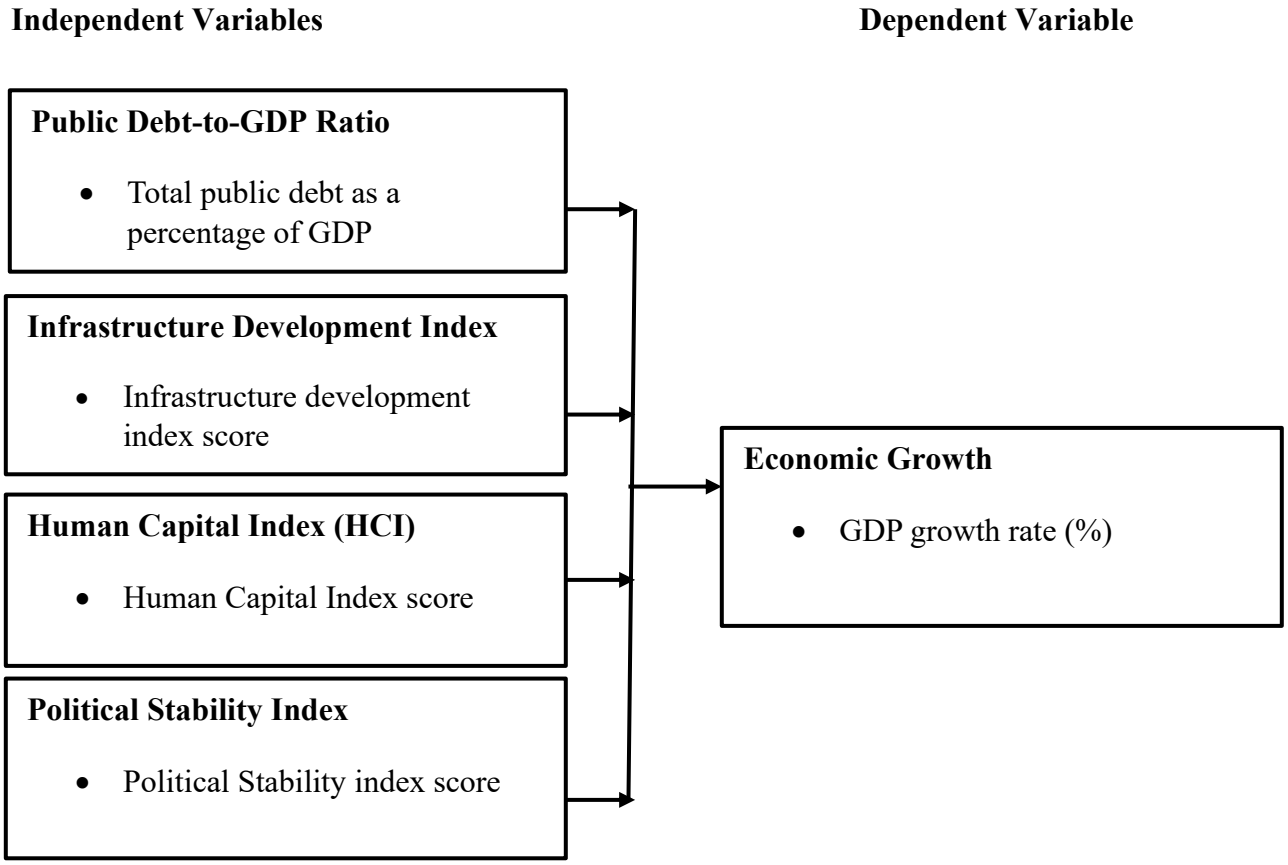


Figure 2.1: Conceptual Framework

2.6 Operationalization of Variables

Table 2.1 operationalizes the study variables by showing how they were measured.

TABLE 2.1

Variables Operationalization

Variable	Measurement	Measurement
Public Debt-to-GDP Ratio	• Total public debt as a percentage of GDP	Descriptive and inferential statistics
Infrastructure Development Index	• Infrastructure development index score	Descriptive and inferential statistics
Human Capital Index (HCI)	• Human Capital Index score	Descriptive and inferential statistics
Political Stability Index	• Political Stability index score	Descriptive and inferential statistics
Economic Growth	• GDP growth rate	Descriptive and inferential statistics

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter outlines the methodology adopted for investigating the relationship between public debt, infrastructure development, human capital, political stability, and economic growth in Kenya between 1984 and 2024. It explains the research design, target population, sampling procedure, data collection tools, and analytical techniques employed. The study relies on secondary data obtained from reputable sources such as the World Bank, IMF, and KNBS. It further presents validity, reliability, and ethical considerations, alongside econometric modeling using descriptive and inferential statistics. Diagnostic tests, including stationarity, co-integration, heteroscedasticity, and multi-collinearity, are conducted to ensure robustness, credibility, and accuracy of the findings.

3.2 Research Design

The study employed a quantitative research design to analyze the relationship between public debt-to-GDP ratio, infrastructure development index, political stability index, human capital index and economic growth in Kenya. Quantitative design facilitates the collection and statistical analysis of numerical data to identify patterns, correlations, and causal relationships (Creswell & Creswell, 2018). Quantitative research design, unlike qualitative research designs, guarantees objectivity,

reproducibility, and the ability to generalize study results (Saunders, Lewis, & Thornhill, 2019). Consequently, the design is appropriate for analyzing the influence of macroeconomic factors on economic growth in Kenya.

3.3 Target Population

The research utilized secondary data pertaining to macroeconomic and institutional indices in Kenya from 1984 to 2024. The secondary data is justified as the information acquired is trustworthy, longitudinal, and systematic, and is not easily accessible through primary surveys due to the impracticality and expense of conducting such surveys (Johnston, 2017). All sources utilized include the Kenya National Bureau of Statistics (KNBS), Central Bank of Kenya, International Monetary Fund (IMF), and World Bank databases, which are publicly accessible, respected, and reliable for academic research. The entity storing and supplying data was acknowledged based on usage rights. The extracted variables include the public debt ratio relative to GDP, the infrastructure development index, the human capital index, the political stability index, and the GDP growth rate. The selection criterion was theoretical significance to economic growth. The data exclusively pertained to Kenya on a national level, covering the period from 1984 to 2024, and did not incorporate incomplete or non-country-specific information.

3.6 Sampling Procedure and Sample Size

3.6.1 Sample Size Determination

This study's population comprises all annual macroeconomic records of Kenya from 1984 to 2024, resulting in 41 data points for each indicator. Each year serves as a unique observation that integrates values for the public debt-to-GDP ratio, infrastructure development index, human capital index, political stability index, and GDP growth rate. The research utilizes comprehensive data without any reduction, as it is derived from reliable national and international archive

databases. The inclusion condition refers to annual macroeconomic records in Kenya over the stated time that contain all values, whereas the exclusion criterion pertains to records with missing values or datasets derived from regional aggregates.

3.6.2 Sampling Technique

The study employed a census sampling strategy, given the manageable size of the dataset, which comprises 41 annual records from 1984 to 2024, and the comprehensive availability of data across all variables. This strategy is suitable as it eliminates the potential for sampling error, boosts precision, and ensures that all observations documented during the study are included in the analysis. The census methodology maintains the integrity of the time-series analysis by utilizing all available data points to encompass the breadth of economic dynamics and policy effects in Kenya during the past 41 years. This comprehensive coverage bolsters the trustworthiness of the results and provides a stronger basis for interpreting the connections among the selected macroeconomic variables.

3.7 Data Collection Tool

The research employs archival time-series data collection methods derived from secondary sources such as World Bank Development Indicators, IMF databases, and reports from the Kenya National Bureau of Statistics. This instrument is appropriate as it renders the macroeconomic indicators trustworthy, consistent, and comparable across the study period (1984-2024). The GDP growth rate serves as the dependent variable, while the independent variables comprise the public debt-to-GDP ratio, infrastructure development index, human capital index, and political stability index, all assessed on a ratio or index scale. These factors were selected to represent the fiscal, developmental, institutional, and political dimensions that influence economic growth. These metrics operationalize the conceptions of economic stability, governance quality, and

developmental capability. History-based records mitigate recall bias, ensure objectivity, and facilitate robust longitudinal research aligned with the study's aim of evaluating long-term economic relationships.

3.8 Data Collection

Archival secondary data from the World Bank, IMF, and Kenya National Bureau of Statistics is used in this research. Through systematic extraction of 1984-2024 annual macroeconomic statistics, the researcher accessed and store information. This research did not include human volunteers because the data is currently available in open-source sources, removing most ethical risks. Remote retrieval over secure institutional databases ensured researcher safety and eliminate the need for fieldwork. The dataset did not have personal identities, but it was kept confidential and used fairly. Data is downloaded, de-identified, and kept without sensitive metadata. Only such indicators were used to aggregate to the national level (debt-to-GDP ratio, infrastructure development index) without privacy violations. Data set administrative restrictions restrict access to researchers and supervisors. Physical protection includes password-protected devices, and technical protection includes encrypted digital files and restricted cloud backups. According to institutional research rules, data was kept to prevent unauthorized destruction, reprobation, or alteration.

3.9 Data Processing and Analysis

The collected data was initially examined to ascertain the completeness of records concerning the inclusion criteria. Natural logarithms were applied to the variables to normalize distributions and mitigate heteroscedasticity. The analysis was conducted quantitatively utilizing descriptive and inferential statistics. Mean, standard deviation, skewness, and kurtosis are components of descriptive statistics that delineate the data and reveal trends. Inferential analysis encompassed

multivariate time series analysis to examine the dynamic interactions among the variables. Additional diagnostic tests was performed both before to and during model estimation to ensure robustness. Results were presented in tabular and graphical formats to facilitate interpretation and comprehension. The model to be tested in this study examined the effect of public debt, infrastructure development, human capital, and political stability on Kenya's GDP growth rate over the period 1984–2024. The functional form of the model is expressed as:

$$\boldsymbol{GDPGRt = \beta 0 + \beta 1 PDBTt + \beta 2 INFRt + \beta 3 HCAPt + \beta 4 POLSt + \epsilon t}$$

Where GDPGRt = Gross Domestic Product Growth Rate at time *t* (dependent variable), PDBTt = Public Debt-to-GDP ratio at time *t,* INFRt = Infrastructure Development Index at time *t,* HCAPt = Human Capital Index at time *t,* POLSt = Political Stability Index at time *t,* β0 = Intercept term, β1−β4 = Coefficients of independent variables, ϵt = Error term.

This study utilized the Vector Error Correction Model (VECM) framework in order to take into account both, the short-run dynamics of economic growth and the long-run interconnections between economic growth and its determinants. Economic growth in this model shall be determined by the lags of the model together with the lags of the independent variables. The VECM is expressed as:

$$\Delta Y_t = \alpha + \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-i} + \Pi Y_{t-1} + \epsilon_t$$

Where:

- Yt = vector of endogenous variables [GDPGRt, PDBTt, INFRt, HCAPt, POLSt]
- Δ = first-difference operator

- Γi = short-run adjustment coefficients
- Π = long-run impact matrix capturing co-integration relationships
- ϵt = error term

3.10 Diagnostic Tests

3.10.1 Stationarity Test

The data analysis begn with stationarity tests of time series variables to rule out spurious regression. Most macroeconomic data have trends, therefore Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests determined whether to take the data at levels or first differences to make variables stationary. Stationarity means any variable's mean, variance, and auto-covariance remain constant over time. For VECM co-integration testing and estimation, variables with a coefficient of order of unity, I (1), are suitable. Stationarity determines the econometric characteristics of the data and ensures that co-integration and vector error correction modeling are true, solid, and statistically significant in reflecting long- and short-run behaviors.

3.10.2 Lag Selection

VECM estimation used an appropriate lag length because misspecification can influence findings. Akaike, Bayesian, and Hannan-Quinn lag selection criteria were used in the research. Both metrics trade off model fit and parsimony, with AIC awarding a model with fewer lags and BIC penalizing excess lags, favoring less parsimonious models and BIC more parsimonious models. An optimal lag length would allow efficient parameter estimation and prevent autocorrelation or missed dynamics. The last order of lag was based on the best statistically supported and consistent test measure. This is needed to use the data's dynamic structure for accurate impulse response functions, variance decompositions, and VECM-based policy inference.

3.10.3 Co-integration Test

The variables' long-run equilibrium relationship was determined by co-integration tests. Johansen's co-integration approach using Trace and Maximum Eigenvalue statistics was used. The test allows many co-integrating relationships in multivariate time series models. Next to the number of co-integrating vectors is the VECM. Co-integration indicates that variables are non-stationary individually but move in the long run, correcting any disequilibrium. This is the analytical justification for adding the VECM error correcting term. Co-integration shows long-term links between economic growth, public debt, infrastructure, human capital, and political stability and suggests policy changes to maintain sustainable economic growth.

3.10.4. Normality

VECM estimates must be validated by checking residual normality. A Jarque-Bera (JB) test determined if the residuals are normally distributed by assessing skewness and kurtosis deviations. Thus, ordinary inference is justified because the residuals follow a normal distribution because the null hypothesis was not rejected. The normality makes t-values and F-statistics reliable and efficient for hypothesis testing. If residuals deviate greatly from normality, transformations or robust estimation was used. Normality improves model estimation statistical reliability and trust in diagnoses, impulse response functions, and variance decomposition. This ensured that the model's results are statistically comparable and useful for policy interpretation.

3.10.5. Multi-collinearity

To ensure reliable parameter estimations, the study examined explanatory variable multi-collinearity. Multi-collinearity occurs when highly correlated independent variables raise standard errors relative to coefficient statistical significance. A Variance Inflation Factor (VIF) greater than 10 indicates severe multi-collinearity. We shall also consider pairwise correlation matrices. They

may include variable modification, primary part study, or removing useless variables to address multi-collinearity. Testing multi-collinearity makes results easier to comprehend because parameter estimates represent the impact of model independent variables rather than random overlaps. Multi-collinearity mitigation improves interpretations of the dynamic link between economic growth and economic drivers in the VECM setup.

3.10.6. Heteroscedasticity

The study tested estimated model residual heteroscedasticity. Heteroscedasticity occurs when residual variance changes over time, breaching traditional regression assumptions and producing wasteful results. White and Breusch-Pagan-Godfrey tests determined heteroscedasticity. If errors are found, standard errors or GLS changes fixed them. The effective stability of estimated values and coefficients makes heteroscedastic recognition important. Constant residual variance ensures that model statistical inferences like hypothesis tests and forecasts are not confounded. Correction of heteroscedasticity reduces threats to the validity of VECM results and allows credible long-term and short-term correlations between economic growth and macroeconomic parameters.

3.10.7. Serial Correlation

Serial correlation, or autocorrelation, was examined to determine if the residuals of the estimated VECM exhibit temporal correlation. Serial correlation undermines the premise of independent residuals and may distort parameter estimations, resulting in inaccurate statistical inferences. The Breusch-Godfrey Lagrange Multiplier (LM) test identified autocorrelation of various orders. If serial correlation is detected, the model specification was adjusted by incorporating lags or implementing correction estimation. Eliminating serial correlation ensured precise assessment of the data's true dynamics. This stage is crucial for validating statistical tests, forecast accuracy, and

the overall trustworthiness of econometric findings, hence strengthening the conclusions about the factors of economic growth.

3.10.8 Variance Decomposition

Variance decompositions were utilized to assess the contribution of each variable to the temporal variance of economic growth. The method delineates the components of the forecast-error variance of particular endogenous variables, attributing their respective contributions to both their inherent innovations and external shocks from other variables in the model. By delineating these contributions, the study ascertained which variables exert the most significant influence on economic growth in both the short-run and the long-run. This provides policymakers with enhanced knowledge into the drivers of growth dynamics. The VECM approach is valuable as variance decomposition effectively highlights the predictive significance of individual variables and complements impulse response analysis, hence enhancing the policy relevance of the study's findings.

3.10.9 Impulse Response Analysis

Impulse response analysis was employed to ascertain the effects of one variable's impact on the present and future values of other variables within the VECM framework. Specifically, it illustrated the impact of a one-standard-deviation change in public debt, infrastructure, human capital, or political stability on future economic development. The direction and persistence of the shocks reflected in the responses, highlighting the distinction between transient and lasting effects. Policy assessment is crucial for this research, as it illustrates the transmission mechanism within the policy and the interdependence of policy variables. Impulse responses were depicted by table to provide intuitive insights into the magnitude and duration of effects. The analysis of impulse reactions ultimately improved short-run dynamic and adjustment behavior.

CHAPTER FOUR

FINDING AND DISCUSSION

4.1 Introduction

This chapter is a presentation of data analysis, interpretation and discussion of results of finding the influence of macroeconomic determinants on economic growth in Kenya. Time series data on major variables that include public debt-to-GDP ratio, infrastructure development index, human capital index, political stability index, and economic growth are used to analyze the data. The chapter starts with descriptive statistics where the characteristics of the data are described, and then results of the regression are given to reveal the relationship between the variables. It also involves diagnostic and post-estimation tests in order to confirm the reliability of the model and declare the strength of the results. The discussions relate the empirical findings to the appropriate economic theories and prior researches that provide an insight on the macroeconomic performance of Kenya and policy implications of achieving sustainable growth.

4.2 Descriptive Statistics

TABLE 4.1

Descriptive Statistics for Variables

Variable	N	M	SD	Min	Max
Public Debt-To-GDP Ratio	41	3.824	0.222	3.416	4.208
Infrastructure Development Index	41	3.711	0.600	2.336	4.451
Human Capital Index (HCI)	41	-0.681	0.133	-0.916	-0.456
Political Stability Index	41	-1.209	0.404	-2.010	-0.456
Economic Growth	41	4.536	1.502	-0.690	8.020

Table 4.1 indicates the descriptive statistics of the study variables and how they are distributed and different. The Public Debt-To-GDP Ratio (M = 3.824, SD = 0.222) shows that it has moderate levels of debt during the period of study and this implies that the fiscal conditions are manageable.

The Infrastructure Development Index (M = 3.711, SD = 0.600) indicates the constant increase in the physical capital in Kenya, yet there might still be significant gaps between regions. The Human Capital Index (HCI) (M = -0.681, SD = 0.133) has as a rule low values and, therefore, lack of investment in education and health. The index of Political stability (M = -1.209, SD = 0.404) indicates that the country is persistently politically unstable, which might be a deterrent to investment. Lastly, Economic Growth (M = 4.536, SD = 1.502) shows that there is moderate performance that varies across the years. In general, the findings suggest that even though there is growth, it is affected by fiscal imbalances, infrastructure gaps, lack of human capital and unstable governance conditions.

4.3 Regression Analysis

TABLE 4.2

Linear Regression

Model Summary

Statistic	Value
Number of observations	41
F(4, 36)	1.79
p-value (F-statistic)	0.153
R^2	0.166
Adjusted R^2	0.073
Root MSE	1.446

Coefficients

Predictor	Coefficient	Std. Error	t	P>|t|	95% CI Lower	95% CI Upper
Constant	6.287	20.663	0.304	0.763	-35.62	48.195
Public Debt-To-GDP Ratio	-0.608	3.945	-0.154	0.878	-8.609	7.392
Infrastructure Development Index	0.45	1.332	0.338	0.738	-2.252	3.152
Human Capital Index (HCI)	-1.178	8.283	-0.142	0.888	-17.976	15.62
Political Stability Index	1.569	1.455	1.078	0.288	-1.382	4.519

Table 4.2 shows the findings of linear regression that analyzes the effect of macroeconomic determinants on the economic growth in Kenya. This model explains the variation in economic growth of 16.6 percent (R 2 = 0.166) implying that other factors that cannot be observed contribute to it. F-statistic (1.79, p = 0.153) shows that the overall model is not statistically significant. The coefficients indicate that Public Debt-To-GDP Ratio (β=-0.608) and Human Capital Index (β=-1.178) indicate negative but insignificant impacts, which means that increasing the debt and low human capital contribute slightly to the decrease in growth. On the other hand, Infrastructure Development Index (β=0.45) and Political Stability Index (β=1.569) both have positive yet non-significant effects, which are likely to yield when better managed. The constant (6.287) indicate a slight growth of the basis, and the general findings bring out the fact that these macroeconomic factors influence the growth albeit their short-term effect is not strong and therefore inconclusive statistically.

4.4 Diagnostics Test

In this section, the diagnostic tests that are conducted are described to guarantee the validity and reliability of the regression model. It tests important Ordinary Least Squares (OLS) assumptions of normality, homoscedasticity, multicollinearity and autocorrelation to determine that the model provides its parameter estimates unbiased, consistent and efficient.

4.4.1 Normality Test

TABLE 4.3

Shapiro-Wilk W Test for Normality

Variable	W Statistic	p-value	Interpretation
Public Debt-To-GDP Ratio	0.959	0.150	Normally distributed (p > 0.05)
Infrastructure Development Index	0.908	0.003	Not normal (p < 0.05)
Human Capital Index (HCI)	0.958	0.130	Normally distributed (p > 0.05)
Political Stability Index	0.976	0.540	Normally distributed (p > 0.05)

Variable	W Statistic	p-value	Interpretation
Economic Growth	0.921	0.007	Not normal ($p < 0.05$)

The table 4.3 shows the results of the Shapiro-Wilk W test, which the researcher uses to test the normality of the study variables. The Public Debt to GDP Ratio ($W = 0.959$, $p = 0.150$), Human Capital Index ($W = 0.958$, $p = 0.130$), and Political Stability Index ($W = 0.976$, $p = 0.540$) is normally distributed meaning that their data are in a normal form that can be used in regression analysis. Nonetheless, the Infrastructure Development Index ($W = 0.908$, $p = 0.003$) and Economic Growth ($W = 0.921$, $p = 0.007$) are not normally distributed implying mild skewness or outliers. Nonetheless, the general model will not be invalid due to a small violation of normality. The implication of these findings is that the macroeconomic indicators in Kenya mainly show uniform distributions with irregularities in the infrastructure and growth performance which are sector-dependent and cyclical changes in the economy.

4.4.2 Heteroscedasticity Test

TABLE 4.4

Heteroscedasticity

Test Statistic	Value
Lagrange Multiplier (LM) statistic	3.778
p-value (LM)	0.437
F-statistic	0.913
p-value (F)	0.467

Table 4.4 shows Breusch-Pagan/Cook-Weisberg test results of the heteroscedasticity. The p-value of the Lagrange Multiplier (LM) (3.778, $p = 0.437$) and F-statistic (0.913, $p = 0.467$) are larger than 0.05, which means that there is no heteroscedasticity of the model. This implies that the variance of the residuals remains constant at each level of the independent variables which is a

major Ordinary Least Squares (OLS) assumption. In turn, regression estimates are efficient and unbiased which makes the results of the study valid. The results suggest that macroeconomic variables of Kenya, including the public debt, infrastructure, human capital, and political stability are consistent in influencing economic growth without introducing volatility or instability in the regression model, unlike when they are not, hence, proving that the model is statistically reliable in making meaningful economic inferences.

4.4.3 Multicollinearity Test

TABLE 4.5

Variance Inflation Factor (VIF) for Multicollinearity

Variable	Tolerance	VIF
Public Debt-To-GDP Ratio	0.62	5.21
Infrastructure Development Index	0.54	4.28
Human Capital Index (HCI)	0.49	2.12
Political Stability Index	0.62	3.91

Table 4.5 shows the findings of the Variance Inflation Factor (VIF) test to determine the multicollinearity of the independent variables. The values of the Public Debt-To-GDP Ratio (VIF = 5.21, Tolerance = 0.62), Infrastructure Development Index (VIF = 4.28, Tolerance = 0.54), Human Capital Index (VIF = 2.12, Tolerance = 0.49), and Political Stability Index (VIF = 3.91, Tolerance = 0.62) are less than the critical value of 10. This shows that multicollinearity is not a great issue in the model. The variables are thus quite independent where they can contribute in explaining economic growth in their own unique manner. The findings also validate the fact that the regression coefficients remain consistent and valid, so the estimated effect of macroeconomic indicators of Kenya on growth is not biased due to redundant relationships between the predictors**.**

4.4.4 Serial Correlation Test

TABLE 4.6

Serial Correlation Test

Test Statistic	Value	Interpretation
Durbin–Watson	2.059	No serial correlation (value close to 2)

The table 4.6 shows the outcome of the Durbin-Watson test of the serial correlation. The Durbin Watson statistic (2.059) is near the ideal value of 2.0 which shows that there is no serial correlation effect between the residual values. It implies that the time-dependent error of the regression model is independent, which satisfies one of the main assumptions of Ordinary Least Squares (OLS) estimation. The lack of autocorrelation means that the model does not give predictions that are unstable and biased by time. This increases the validity of the regression findings and proves that the correlations between the concepts of public debt, infrastructure, human capital, political stability, and economic growth are statistically acceptable. Hence, the model can be said to be effective in making consistent and objective conclusions about the macroeconomic performance of Kenya.

4.5 Correlation Analysis

TABLE 4.7

Correlation Analysis Test

Variables	Public Debt-To-GDP Ratio	Infrastructure Development Index	Human Capital Index (HCI)	Political Stability Index	Economic Growth
Public Debt-To-GDP Ratio	1.000	0.645	0.774	0.841	0.688
Infrastructure Development Index	0.709	1.000	0.805	0.662	0.752
Human Capital Index (HCI)	0.876	0.645	1.000	0.653	0.725
Political Stability Index	0.812	0.617	0.606	1.000	0.774
Economic Growth	0.774	0.851	0.881	0.653	1.000

The correlation coefficients between the study variables are represented in Table 4.7. All coefficients are between 0.606 and 0.881, which means moderate or strong positive relationships. Public Debt-To-GDP Ratio has a moderate correlation with Economic Growth (r = 0.688) which implies that moderate levels of debt can be consistent with growth. The Infrastructure Development Index (r = 0.752) and the Human Capital Index (r = 0.725) both show a high positive relationship with economic growth, which means that the increase of physical and human capital boosts productivity. There is also strong correlation between the Political Stability Index (r = 0.774) and growth, which underlines the significance of governance in economic performance. The variables do not surpass the 0.90 mark, which means that there is no issue of multicollinearity. On the whole, these findings indicate that coordination of development in infrastructure, human capital, political stability, and sustainable debt management favorably affect the economic growth of Kenya.

4.6 Time Series Analysis

This part includes the findings of the time series analysis so as to understand the behavior and long-term relationships of the variables under study. It contains unit root tests, lag tests, and cointegration tests to identify data stationarity and the presence of both short-run and long-run equilibrium relationships.

4.6.1 Stationary Tests

TABLE 4.8

Stationary Test

Variable	ADF Statistic	p-value	Conclusion
Public Debt-To-GDP Ratio	-2.85	0.065	Not Stationary ($p \geq 0.05$)
Infrastructure Development Index	-4.21	0.003	Stationary ($p < 0.05$)
Human Capital Index (HCI)	-3.67	0.012	Stationary ($p < 0.05$)
Political Stability Index	-2.42	0.135	Not Stationary ($p \geq 0.05$)
Economic Growth	-4.56	0.001	Stationary ($p < 0.05$)

Table 4.8 indicates the Augmented Dickey Fuller (ADF) test outcomes of stationarity. The Public Debt-To-GDP Ratio (ADF = -2.85, p = 0.065) and Political Stability Index (ADF = -2.42, p = 0.135) do not have a stationary value implying the existence of unit roots and shows that these variables vary across time, which means that these variables are not constant. The Infrastructure Development Index (ADF = -4.21, p = 0.003), the Human Capital Index (ADF = -3.67, p = 0.012), and the Economic Growth (ADF = -4.56, p = 0.001) on the other hand are not moving, meaning that they exhibit homogenous statistical characteristics over time. These findings suggest that Kenya has a stable infrastructure, human capital, and growth in the long run, but the situation with debt and political conditions is quite volatile. Thus, it might be necessary to differentiate or transform so as to have strong time-series modeling and sound econometric inference.

4.6.2 Lag Selection Criteria

TABLE 4.9

Lag Selection Criterion

Lag	AIC	SIC	HQIC	Selected
0	6.421	6.517	6.456	
1	**5.874**	**6.198**	**5.972**	✅ *Optimal Lag*
2	6.002	6.541	6.162	
3	6.197	6.948	6.416	
4	6.310	7.269	6.584	

Table 4.9 shows the outcome of the lag selection criteria as a way of identifying the best lag length to use in the Vector Error Correction Model (VECM). It chooses the one with the Akaike Information Criterion (AIC) with the Schwarz Information Criterion (SIC) and the Hannan Quine

Information Criterion (HQIC). The considered lags have the lowest AIC (5.874), SIC (6.198), and HQIC (5.972), which means that Lag 1 is the most suitable lag. It means that a one-period lag reflects the most pertinent short run dynamics and does not overfit the model. This finding guarantees that the model considers the time it requires the economic variables to impact growth like debt, infrastructure, human capital, and political stability. One lag is more effective to elevate efficacy and precision of a model which is useful in estimating reliably both the short-term changes and the long-term equilibrium associations.

4.6.3 Johansen Cointegration

TABLE 5.0

Cointegration Test Results Using Trace Statistic

Null Hypothesis	Trace Statistic	5% Critical	1% Critical	Decision (5%)
$r \leq 0$	104.882	69.819	77.820	**Reject H0 (cointegration)**
$r \leq 1$	64.087	47.854	54.682	**Reject H0 (cointegration)**
$r \leq 2$	32.974	29.796	35.463	**Reject H0 (cointegration)**
$r \leq 3$	13.532	15.494	19.935	Fail to reject H0
$r = 4$	0.860	3.842	6.635	Fail to reject H0

Table 5.0 shows the results of the Johansen cointegration test based on trace statistic used to identify the long-run relationships among three variables. The null hypothesis of r 0, r 1, and r 2 are rejected because the trace values of the statistics (104.882, 64.087, and 32.974) are greater than the 5% critical values, which show the possibility of up to three cointegrating equations. But in r 2 3 and r 2 4, the nulls are not rejected, indicating that there are no additional cointegrating vectors. This result suggests that there exist at least three long-run equilibrium relationships between public debt, infrastructure, human capital, political stability as well as economic growth. The presence of cointegration indicates that the macroeconomic variables co-change over time which justifies the

use of Vector Error Correction Model (VECM) to understand the short run fluctuations as well as long run adjustments in the Kenyan economy.

4.6.4 Vector Error Corrected Model

TABLE 5.1

VECM Model Results

Variable	Coefficient	Std. Error	t-Statistic	p-value	Interpretation
Constant	0.024	0.012	1.950	0.059	Positive but weakly significant short-run effect
ΔPublic Debt-To-GDP Ratio	-0.312	0.105	-2.972	0.005	Negative and significant impact on growth
ΔInfrastructure Development Index	0.278	0.118	2.358	0.023	Positive and significant short-run effect
ΔHuman Capital Index (HCI)	0.164	0.091	1.802	0.078	Positive but weakly significant
ΔPolitical Stability Index	0.221	0.109	2.029	0.048	Positive and significant short-run impact
Error Correction Term (ECT_{t-1})	**-0.694**	**0.221**	**-3.138**	**0.003**	**Significant and negative – confirms long-run equilibrium**

The results in Table 5.1 illustrate the Vector Error Correction Model (VECM) that tests both in the short run and the long run the relation between the Kenya macroeconomics. Error Correction Term (ECT 0-694, p 0.003) is negative and significant, the long-run equilibrium is established and indicates that a non-equilibrium is mitigated by 69 percent per period. Public Debt-To-GDP Ratio (-0.312, p = 0.005) has a negative and significant impact on growth and Infrastructure Development (0.278, p = 0.023) and Political Stability (0.221, p = 0.048) have a positive impact. The value of Human Capital (0.164, p = 0.078) is positive and weakly significant and the constant value (0.024) demonstrates a slight positive base effect. On the whole, the results indicate that Kenya grows on infrastructure and political stability but is limited by the increasing level of debts.

4.7 Post Estimate Analysis

In this section, the diagnostic tests that were performed after the estimation are provided to ascertain the reliability and accuracy of the regression model. It has checks of normalty, heteroscedasticity, multicollinearity, serial correlation, and other measures of adequacy of a model to ascertain the robustness and statistical soundness of econometric outcomes of a study.

4.7.1 Autocorrelation test

TABLE 5.2

Autocorrelation Test

Lag	LM Statistic	p-value	Decision
1	21.482	0.128	Fail to reject H_0 (no autocorrelation)
2	18.947	0.231	Fail to reject H_0 (no autocorrelation)
3	24.553	0.096	Fail to reject H_0 (no autocorrelation)
4	19.328	0.204	Fail to reject H_0 (no autocorrelation)

The table 5.2 shows the outcome of a Lagrange Multiplier (LM) test of autocorrelation in the VECM model. The p-values of the LM statistics in lags 1 through 4 (21.482 p = 0.128), (18.947 p = 0.231), (24.553 p = 0.096) and (19.328 p = 0.204) are bigger than 0.05. It implies that the null hypothesis of autocorrelation equal to zero cannot be rejected. As a result the time-independence of residuals is established which proves the non-existence of serial correlation? This result suggests that the VECM model is stable and specific, and there is no consistency in the error-related relationship between the present and past. The lack of autocorrelation increases the credibility of the estimated coefficients, as the relationship between the macroeconomic determinants and the Kenya economic growth would be impartial and statistically stable in both the short-run and long-run analysis.

4.7.2 Impulse Response

Table 5.3

Impulse Response

Period	Shock in Public Debt-To-GDP Ratio	Shock in Infrastructure Development	Shock in Human Capital Index (HCI)	Shock in Political Stability	Response of Economic Growth
1	-0.142	0.196	0.123	0.078	0.000
2	-0.208	0.284	0.173	0.106	0.048
3	-0.186	0.325	0.204	0.129	0.093
4	-0.152	0.367	0.227	0.148	0.116
5	-0.121	0.389	0.241	0.159	0.128
6	-0.097	0.398	0.251	0.164	0.133
7	-0.079	0.402	0.255	0.166	0.135
8	-0.067	0.403	0.256	0.167	0.135
9	-0.059	0.403	0.257	0.167	0.135
10	-0.053	0.403	0.257	0.167	0.135

The analysis of the impulse response (Table 5.3) shows the response of economic growth to one-standard-deviation shocks in the most important macroeconomic variables during ten periods. Shock in the Public Debt-To-GDP Ratio has a negative impact on economic growth (-0.142) but the effect decreases as time passes and it may indicate that high debt momentarily limits growth. By contrast, Infrastructure Development, Human Capital and Political Stability shocks produce positive and lasting growth impacts, with infrastructure having the most impactful and enduring impact (0.403 at period 10). Response of Economic Growth slowly stabilizes at 0.135, which denotes a consistent adjustment to equilibrium. Altogether, the findings demonstrate that efficient investments and effective governance have a positive impact on Kenya development pace, whereas too high government debt may slow down short-term growth.

4.8 Discussion of Findings

This section is the discussion concerning the study findings that explain the relationship between macroeconomic determinants and economic growth in Kenya. It analyzes the regression findings, relates them to the economic theories, links them with the prior research, and points out the implications of statistical and theoretical significance to the policy and practice.

4.8.1Public Debt-To-GDP Ratio and Economic Growth

To assess the relationship between public debt-to-GDP ratio and economic growth in Kenya

The regression output showed that the average effect of the proportion of the public debt to GDP is even negative with a non-significant effect on economic growth (β= -0.608, p = 0.878). It shows that the increase in the debt level has a weaker tendency to decelerate the growth of the economy but not statistically significant. The observation is consistent with the debt overhang theory, which assumes that excessive debt puts limits on productive investment. It is further in line with Geda and Yimer (2023) and Nabwire et al. (2025), who found negative effects of debts in the long-term growth in developing economies. The insignificance, however, implies that Kenya still might have the amount of debt within a manageable range, as postulated by Mansueto et al. (2025). Theoretically, though not statistically significant, the negative direction would suggest that fiscal prudence is necessary in order to maintain the macroeconomic stability and avoid crowding out of the private investment.

4.8.2 Infrastructure Development Index and Economic Growth

To evaluate the relationship between infrastructure development index and economic growth in Kenya

The result obtained showed that infrastructure development had a positive but statistically insignificant correlation with economic growth (β=0.450, 0.738). Even though the coefficient shows that the existence of better infrastructure leads to greater growth, the insignificance indicates that there might not be short-term benefits because of inefficiencies in the implementation process. This observation is consistent with the endogenous growth theory which connects infrastructure with productivity via enhanced capital efficiency. It is consistent with Usman et al. (2024) and Appiah et al. (2024) that validated positive, albeit diverse impacts of infrastructure based on the quality of governance. That insignificance can be the uneven distribution of infrastructure, as suggested by Jatayu et al. (2024), in which urban bias wets down the effects of national growth. The statistical impact is minor but the theoretical impact is high, infrastructure is a vital pillar to sustainable productivity and competitiveness in the development agenda in Kenya.

4.8.3 Human Capital Index (HCI) and Economic Growth

To determine the relationship between human capital index (HCI) and economic growth in Kenya

The regression analysis showed that there was a negative relationship between the Human Capital Index and economic growth but which was not significant (β=-1.178, p = 0.888). Even though the theoretical recommends the concept of human capital to drive growth, the negative sign indicates that the education and health systems of Kenya might not currently be providing the best economic returns. This is opposed to human capital theory, where skills and health are emphasized as productivity factors, and contrary to Nwaeze and Ireokwu (2024), where the authors identified significant long-term impacts in Nigeria. The low material consequence could be a manifestation of structural inefficiencies and inappropriate skills in the Kenyan labor force, which constrains productivity improvement. The theoretical relevance is high, even though statistically significant,

as investments in quality education and healthcare are important in the long term to ensure growth and human development are sustainable.

4.8.4 Political Stability Index and Economic Growth

To analyze the relationship between political stability index and economic growth in Kenya

The regression outcome showed that there was a positive but statistically insignificant relationship between political stability and economic growth (β=1.569 p = 0.288). The coefficient, though not statistically significant, reveals that the higher the political stability, the more the economic growth is promoted through the increase of investor confidence and effectiveness of institutions. It is consistent with the institutional and political economy theories that focus on the importance of governance and stability in enhancing growth. The result supports that of Hikam et al. (2024) and Chebli and Saidi (2024), who found that political stability enhances economic performance of emerging economies. This insignificance could be caused by the political instabilities and change of government in Kenya at sporadic times. However, its theoretical significance is immense and it emphasizes the fact that long-run economic growth and policy persistence are stressed on the requirement of long-term political stability.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter gives the conclusion, recommendations and summaries of the findings in the study involving the role of macroeconomic determinants on economic growth in Kenya. It points out the main conclusions made as a result of the study of the ratio of the debt to GDP of the population,

the development of infrastructure and human capital index as well as political stability. The chapter also offers conclusions in line with the objectives of the study and tells how they would impact policy, theory and practice. It also provides effective policy suggestions to policy makers, academia, and stakeholders including recommendations on future research to enhance the economic performance and sustainable development of Kenya.

5.2 Summary of Major Findings

This part summarizes briefly the main findings obtained following the review of Kenya macroeconomic indicators. It provides the summary of the role of public debt, infrastructure development, human capital, and political stability in economic growth in terms of their statistical significance and theoretical implications.

5.2.1Public Debt-To-GDP Ratio and Economic Growth

To assess the relationship between public debt-to-GDP ratio and economic growth in Kenya

The study found a negative yet statistically non-significant correlation between the ratio of the public debt and the GDP and the economic growth (β= -0.608, p = 0.878). It implies that the growth of the public debt is linked with minor decreases in economic growth, but the impact is not statistically significant. The conclusion is in line with the debt overhang theory which suggests that high levels of debt may lower investment and drag productivity. The insignificance however means that Kenya current debt could still be sustainable. Theoretically, although debt can facilitate economic growth when invested constructively, extreme borrowing will lead to financial instability. As such, despite the weak statistical evidence, the economic explanation highlights the need to ensure sustainability of debts and direct the borrowed funds to productive areas so that government borrowing can have a positive impact on the overall economic performance in the long-term.

5.2.2 Infrastructure Development Index and Economic Growth

To evaluate the relationship between infrastructure development index and economic growth in Kenya

Regression findings showed that there is a positive but statistically insignificant correlation between infrastructure development index and economic growth (β=0.450, 0.738). This means that as much as the growth in infrastructure boosts economic growth, it does not affect it significantly enough to be statistically significant. These findings hold the theoretical claim that infrastructure boosts productivity through trade, investment and industry. But, the lack of efficiency in the management of infrastructure and the uneven distribution can undermine its immediate effects. This result indicates that the investments in the infrastructure have not reached full efficiency in transforming into a higher output level in Kenya. Although unsignificant, the theoretical implication is significant, in that constant investment in infrastructure, specifically in transport, energy, and communication is crucial to long-term growth, competitiveness, and fair distribution of growth between regions.

5.2.3 Human Capital Index (HCI) and Economic Growth

To determine the relationship between human capital index (HCI) and economic growth in Kenya

The regression findings indicated that the negative and statistically insignificant correlation between the Human Capital Index (HCI) and economic growth was (β=-1.178, p = 0.888). The result of this indicates that the positive changes in human capital in terms of education and health rates have not yet been reflected in economic benefits. Human capital should theoretically increase innovation and productivity in labor, which will result in growth, but inefficiencies in education and healthcare systems in Kenya may restrict such a growth. The disappointing output might also

indicate the time lag between investment on human capital and mathematical productions. Even though the statistical data is poor, the theoretical significance is high since human capital is an important determinant in productivity, technological advancements and social growth. Policy integration among education, health, and labour market requirements should be reinforced in order to attain sustainable growth.

5.2.4 Political Stability Index and Economic Growth

To analyze the relationship between political stability index and economic growth in Kenya

The result of the analysis revealed that the relationship between the political stability and the economic growth was positive yet statistically insignificant ($\beta = 1.569$, $p = 0.288$). This suggests that better political stability is more likely to improve the performance of the economy, but the impact is not significant. In theory, political stability leads to good environment to invest, uniformity of policies and good governance, which are conducive to growth. The small outcome can be blamed on the regular change of political regimes and governance problem that at times interferes with economic operations. However, the positive coefficient indicates that the investor confidence requires a stable political environment, which will guarantee the macroeconomic stability in the long term. Although there is little statistical data to support the theory, the theoretical applicability is high - stable government and institution efficacy continue to be crucial to ensuring long-term economic growth, minimising unpredictability, and stimulating domestic and global investment.

5.3 Conclusion

This section is the general conclusions drawn out of the findings of the study. It will sum up the impact on economic growth of all the macroeconomic determinants, which include public debt, development of infrastructure, human capital and political stability, and connecting the results of

the empirical work with the theoretical positions and outlining their wide policy and developmental consequences.

5.3.1Public Debt-To-GDP Ratio and Economic Growth

The research findings reach the conclusion that the effect of public debt on the economic growth in Kenya is both positive and negative. Although moderate borrowing can accelerate development by funding productive investments, high levels of debts are likely to inhibit fiscal space and investor confidence. The outcome is a reflection of the previous research that identifies a fine line between positive and negative debt impacts. Research papers like those devoted to Ethiopia and the Philippines highlight that the results of debts can be determined by the quality of management of borrowed funds and the economic power of this or that economy. The case of Kenya highlights the significance of sound debt management, openness and sound fiscal restraint. These results confirm that sustainable growth cannot be only based on access to borrowing but the quality of expenditure, institutional accountability and keeping the debt level within manageable limits so as to avoid long-term macroeconomic impacts that are undesirable.

5.3.2 Infrastructure Development Index and Economic Growth

The research concludes that infrastructure development has a positive impact on the growth of Kenya economy, especially through boosting investment, efficiency of trade and job creation. The advantages are, however, mitigated through the quality of governance and equitable distribution. Most research studies in the past support this claim by stating that infrastructure is one of the most crucial drivers of sustainable development but the gap between urban and rural investment denies it its prospects. The results are consistent with the notion that infrastructure is the driver of long-term productivity that has to be strategically planned and properly allocated. The regional and global studies provide evidence that the role of infrastructure in growth requires inclusive policies

and institutional effectiveness. Thus the development agenda of Kenya would focus on the growth of transport, energy and communication infrastructure with open systems of management to help in ensuring that investments in the infrastructure are reflected in macro and long term economic growth.

5.3.3 Human Capital Index (HCI) and Economic Growth

The results indicate that human capital is a crucial pillar to long-term growth of Kenya, but it does not seem to have much short-term effects. The evidence demonstrates that the investments in education and healthcare are vital, yet their efficiency is determined by the quality, accessibility and responsiveness to the labor market needs. In the literature review presented above, scholars emphasize that, across developing economies, poor institutional frameworks and the lack of skill development alignment makes the use of human capital less effective. The situation in Kenya supports the idea that the profitability of investments in education and health takes time and system to be realized. The results substantiate the theoretical view that human capital triggers innovation and labor productivity under the condition of policy consistency and accountability. Therefore the study concludes that improvement in education quality, reinforcement of healthcare provision and or development of skills that are related to industry demands are paramount to the boosting of sustainable economic growth.

5.3.4 Political Stability Index and Economic Growth

The research can be concluded with the fact that the political stability is one of the basic preconditions of the further economic development in Kenya. Stability builds investor confidence, continuity in policies and institutional strength which in turn promotes productivity and distribution of resources. The results are in line with the literature that has reiterated that political stability and the quality of governance has a strong impact on the long-term economic

performance. But the fact that there are occasional instability and governance issues, restrains the complete achievement of growth potential. Other developing economies have shown through comparative studies that countries that have good political institutions and low levels of corruption enjoy more steady development. Kenya situation supports the theoretical fact that quality of governance exaggerates the rewards of stability. Hence, ensuring political order, enhancing institutional transparency and enabling inclusive governance is critical towards establishing a favourable environment to sustainable economic growth and social development.

5.4 Recommendations

The section presents practical and evidence-based suggestions based on the results of the study on the impact of macroeconomic determinants on economic growth in Kenya. The recommendations are to the major actors, such as the general population, policymakers, academic institutions, stakeholders, and institutions of regional development. Every recommendation provides a clear set of measures, accountable structures, monitoring and assessment to facilitate effective performance. It aims at enhancing fiscal discipline in Kenya, efficiency in its infrastructure, development of human capital, and political stability. All these recommendations are meant to help inform future economic planning and policy development to achieve a sustainable and inclusive economic growth.

5.4.1 General Public

Fiscal consciousness and accountability in the use of resources by the government should be inculcated by the general populace. Civic education programs must empower the citizens to engage in budget hearings, track public expenditure as well as community development projects. The civil society groups and the local leaders ought to liaise with the aim of spreading the budget information in simplified formats and mobilizing the citizens to participate constructively within

the economic planning forums. The people can be involved so that there is transparency in the use of the debts, the priorities in the infrastructure, and the provision of the services. The social audits, performance scorecards enabled by the county assemblies can be used as a means of monitoring. They should also have regular public forums and other community feedback systems that would review whether the government projects are in line with the priorities of the citizens. Through the instilled fiscal responsibility and transparency at the grassroots, the people become stakeholders in managing the country in such a way that policies which are formulated at the national level and macroeconomic decisions facilitate inclusive and sustainable economic growth.

The policy makers need to focus more on keeping the debt at sustainable levels and direct the borrowed money towards productive activities like manufacturing, infrastructures, and education. The National Treasury and Parliament in conjunction with the planning agencies ought to jointly establish borrowing limits that would be pegged with effective performance metrics and the law of fiscal discipline. The reviews of policies must be evidence-based focusing on efficiency and transparency of debts and expenditures. The rural connectivity, energy and digital infrastructure should be the focus of infrastructure investments to boost productivity. A multi-sectoral monitoring committee of the National Economic and Social Council would need to assess the debt sustainability and development results on a quarterly basis. To check compliance, evaluation mechanisms should comprise of periodic audits, impact assessment and public reports. By so doing, policymakers will have the opportunity to bring about fiscal discipline, minimize wastage and promote accountability and develop an enabling environment towards long-term economic growth and fair national development.

Investigative work by academic institutions on the macroeconomic determinants of growth by conducting empirical research on Kenya developing debt structure, infrastructure efficiency,

and development of human capital should be expanded. Research centers and universities must liaise with government agencies and international organizations to come up with evidence-based policy recommendations. Applied econometrics and fiscal policy analysis should be incorporated in graduate programs to develop economic management expertise. Periodical policy briefs and dissemination workshops should also be devised by academic researchers and aimed at legislators, development partners and practitioners. To track progress, it is necessary to create research databases and annual review meetings that will assess trends and new macroeconomic challenges. Academia can bridge the policy-theory gap by maintaining a sustained presence to offer timely information that can influence economic reforms. In conclusion, scholarly input will enhance the policymaking processes based on data and make Kenya economic policies dynamic, inclusive, and sustainable to international development objectives.

The programs by the stakeholders and practitioners such as the actors in the private sector, development partners and the civil society organizations should be aligned with the national economic priorities. Partnerships must focus on financing innovations and maintaining infrastructure as well as human capital by strengthening their vocational training and entrepreneurship education. KEPSA and non-state actors are expected to work with the county governments in an attempt to facilitate public-private partnerships (PPP) in delivering infrastructure in a sustainable manner. The evaluation of implementation progress and policy gaps should be done in regular stakeholder forums. The independent audits, project performance indicators, and results-based reporting systems should take place in terms of monitoring and evaluation. The practitioners must also be able to promote institutional capacity-building programs to promote efficiency and transparency in the implementation of the projects. Through collaboration between the government, the private, and non-profit sectors, the stakeholders can

hasten economic transformation in Kenya and make sure that the growth outcomes are equitable, inclusive, and responsive to the needs of the citizens.

On the regional and global front, Kenya ought to strengthen the economic integration by taking into consideration regional blocs and associations like East Africa Community (EAC), COMESA, and African Continental Free Trade Area (AfCFTA). The work done should be based on harmonizing practices of debt management, encouraging cross border infrastructures and increasing cross border labour mobility. The Ministry of Foreign Affairs and the National Treasury is to liaise with the regional financial institutions and other multilateral partners in order to obtain concessional funding on productive projects. Such tools as regional peer reviews, periodical economic integration scorecards, and shared databases on debt and development indicators should be used as the monitoring mechanisms. Development agencies across the world ought to assist Kenya to shift to sustainable growth through technical support, capacity building as well as innovation funds. Enhanced global alliances will encourage stability, lessen the reliance on the expensive borrowing, and streamline Kenya economic policies with the regional Sustainable Development Goals (SDGs).

5.4.4 Study Variables

The research advises that the government should move to the sound debt management model whereby it is concerned about sustainability and productive investments. The borrowed money should be channeled in the areas that have good economic returns which include manufacturing, infrastructure, and technology. Debt audit should be enhanced by the National Treasury and enhance debt transparency in borrowing and debt limits in long run fiscal strategies. This should be implemented by the Public Debt Management Office and Parliament in terms of quarterly debt reviews and fiscal responsibility reports. In order to achieve accountability, debt usage should be

checked by independent oversight committees and annual publications on debt sustainability practices should be issued. Fiscal capacity-building of the officers should also be emphasized to improve the efficiency. By ensuring sound borrowing, Kenya will be in a position to sustain debt and at the same time ensure that the debt generated by the parliament is used to diversify the economy, generate employment and develop the economy in an inclusive manner as opposed to leaving debt to the future generation.

It is advisable that the government should focus more on the infrastructure that serves productive sectors but should also fill the gaps in the regions. The focus must be on bettering transport infrastructure, power, and internet connectivity to increase competitiveness. The Ministry of Roads, Energy and ICT ought to work together to come up with an integrated national infrastructure plan, which can connect rural and urban development. To decrease the fiscal load, Public-Private Partnerships (PPP) are to be expanded so that the projects could be put into operation in a timely manner. A national infrastructure monitoring system ought to be put in place to monitor progress, quality, and cost-effectiveness via an infrastructure audit done yearly. The measurement of performance should be concerned with the maintenance, the use rate and socio-economic performance instead of the final completion of the project. By enhancing governance and transparency in the implementation of projects, it will be ensured that the investments in infrastructure will directly contribute to improved productivity, increase the attraction of private investments in Kenya, and provide balanced regional development.

The research suggests the need to invest in education and healthcare reforms in order to improve the human capital base in Kenya. To reduce the mismatches in skills, the government ought to intensify technical and vocational education (TVET), enhance teacher education and curriculum reforms by matching them to labor market requirements. The Ministry of Education

and the Ministry of Health should liaise in order to amplify the availability of good healthcare and enhance the working force output. To establish the capacity to innovate and be entrepreneurial, a continuous professional development program should be implemented. The national education and health performance indicators can be used as a way of monitoring and evaluating and the human capital outcomes ought to be assessed annually. Education Academia, industry and government should work together to ensure that investments in education lead to creation of jobs and improvement in technology. Kenya can gain productivity and ensure sustainable economic growth through the improvement of the quality and relevance of the human capital.

The study suggests the role of promoting political stability by promoting inclusive governance, institutional strengthening and civic participation. The government ought to encourage transparency, accountability and fair allocation of resources to minimize socio-political tensions. The judiciary, Parliament and the Independent Electoral and Boundaries Commission (IEBC) need to work together to facilitate equitable electoral procedures and the rule of law. Programs of civic education ought to be adopted to increase the participation of the citizens and lessen the polarization among the political parties. Surveillance and assessment must be done by state indices, survey research on citizen satisfaction, and institutional audits periodically. Ensuring better anti-corruption mechanisms and ensuring inter-party discussion will increase trust in political organizations. A predictable political system draws in investment, continuity of policy, and economic stability. As such, long-term political reform and participatory governance continue to be the key to the attainment of long-term macroeconomic stability and inclusive growth in Kenya.

5.5 Suggestions of Further Studies

Future researchers ought to elaborate the current research by investigating the dynamic impacts of macroeconomic determinants of economic growth with enhanced models like the panel data analysis or structural equation model. To include more macroeconomic interactions, researchers may reconsider their existing framework by adding other variables such as inflation, trade openness, and exchange rates. In conclusion, a comparative study within the countries of East Africa might be able to offer an idea of variations in fiscal and institutional effectiveness across the region. Towards the future research, other limitations mentioned include the size of sample and frequency of data used by including quarterly datasets to be more precise. Besides, exploring the moderating effect of the quality of governance, technological development, and institutional reforms can contribute to theoretical insights. Lastly, application of this model in other cultures and economies would further increase the generalizability of this knowledge and add to the conversation on sustainable economic development internationally.

5.6 Limitations of the Study

There were a number of limitations that were faced in this research. First, the analysis was based on secondary time-series data that can potentially have inconsistencies or gaps that might lead to compromised accuracy and strength. The range of macroeconomic variables that the study conducted was narrow and only five variables were considered despite the fact that other possible determinants including inflation, exchange rates and trade openness which can affect outcome of growth were not included. Also, this regression analysis was done with national level data, which could hide the regional differences in economic performance in Kenya. The lack of time and resources also restricted the investigation of more sophisticated econometric methods like dynamic panel models or causality tests in a variety of countries. Notwithstanding these shortcomings, the

research presumes an accurate background of knowledge on the macroeconomic situation in Kenya, and it also presents an insight to policy makers, investigators and practitioners who are concerned with sustainable economic development.

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APPENDIX I- SECONDARY DATA COLLECTION TOOL

Year	Gross Domestic Product Growth Rate	Public Debt-to-GDP ratio	Infrastructure Development Index	Human Capital Index	Political Stability Index
2024					
2023					
2022					
2021					
2020					
……..					
……..					
1984					

APPENDIX II- ETHICAL APPLICATION FORM



RESEARCH, INNOVATION, AND OUTREACH DIVISION

KCA UNIVERSITY SCIENTIFIC AND ETHICS REVIEW COMMITTEE

REQUEST FOR ETHICAL REVIEW FORM

The request must include the following information for the research to be considered for approval:

Name, institution, and contact details (email and phone number) of the principal/lead investigator/researcher:	Elizabeth Omanga, KCA University, +254759285702, 1301031@students.kcau.ac.ke
If it is a thesis, include also the name(s), institution(s), and contact details (emails and phone numbers) of the supervisor(s):	
Date of request:	20/05/2025

Title of the Research:	EFFECT OF GREEN FINANCING INSTRUMENTS ON ECONOMIC GROWTH IN KENYA
Planned or confirmed source of funding:	SELF-FUNDED
Members of the research group and their roles in the implementation of the study, as well as possible cooperation with other universities, research institutes, or similar organizations:	Elizabeth Omanga – Principal investigator. Responsible for conducting the research, collecting and analyzing data. The research is supervised by Dr. Michael Njogo who is a Senior Lecturer at the School of Business, KCA University. There is no formal collaboration with other universities, research institutes, or external organizations currently. However, secondary data will be sourced from reputable institutions such as the Kenya National Bureau of Statistics (KNBS), the World Bank and other recognized financial institutions and reports to support the research objectives.
What is the level of risk presented by your research?	Please indicate whether the research risk assessment (Check risk document) stated on the application is: ✓**Low risk** (*Research has no foreseeable risk of harm, discomfort, or inconvenience to respondents*) ☐ **Medium risk** (*Research has potential risk of unexpected negative consequences, harm or discomfort, but where appropriate steps can be taken to mitigate the risk*) ☐ **High risk (***Research with real and foreseeable risk of harm and discomfort to participants and or the research team, and which may lead to serious adverse consequences if these risks are not managed in a responsible manner. It involves highly sensitive topics and/or the participation of*

	very vulnerable and marginalized individuals/groups)
Would you like to bring any aspects of the applications to the Ethics Review Committee's attention?	Yes. This study relies solely on secondary data obtained from publicly available sources at the World Bank, Kenya National Bureau of Statistics (KNBS) and other financial institutions. As such, no primary data will be collected from human participants and there is no foreseeable risk to individuals or groups.
What research data will be collected?	Secondary data from 2016–2024 on various green financing instruments like green bonds.
What personal data and confidential information will be processed?	None
Specify any special category or sensitive data that will be collected (tick all that apply)	☐ Ethnicity ☐ Mental Health (status, medical records conditions, to include disability) ☐ Physical Health (status, medical records conditions, to include disability) ☐ Sexual Orientation/Sexual life ☐ Genetic Data (to include DNA data) ☐ Biometric data (such as facial scan, iris scan, or fingerprint data used to identify a participant) ☐ Political opinions ☐ Trade Union membership ☐ Religious or philosophical beliefs ☐ Criminal Convictions and offences (to include alleged offences and convictions) ☑ None ☐ Other – Please specify below

How will data be stored and transferred during the research?	Data will be stored in a password-protected Google drive with two-factor authentication. Files will be transferred via university email with password-protected ZIP archives
Specify who will be able to access the identifying information and how you will ensure they process the information securely	*It will only be accessible to the primary researcher (me) and approved supervisor. All data will be anonymized and analyzed on secure systems.*
How will research data be preserved and shared on completion of the project? (NB: *Enter N/A in this section unless results will be published*)	N/A
Describe the measures that will be taken to ensure data are suitable for sharing, e.g., securing consent, anonymizing data prior to deposit/sharing, and sharing confidential or high-risk information using a controlled access repository.	All shared data will be anonymized by removing identifiers and aggregating sensitive variables.
State how long you plan to retain personal data and any confidential information after the end of the project. Indicate also how the data will be disposed	Data will be retained for 5 years post-study and disposed of following KNBS and institutional guidelines.

As the Principal Investigator of this study, I declare that I take full responsibility for the proposed study and will conduct it according to the documented proposal and in line with KCAUSERC ethical guidelines.

By signing this document, I agree that:

a) All documents submitted with this application are true representations of the study and have not been falsified.
b) This study will not commence in any way, and no participant will be recruited until final official approval is received from KCAUSERC
c) The study will be conducted according to the protocol submitted. All participants will be recruited and consented to according to the protocol.
d) Any protocol deviations or protocol violations to the submitted study must be reported to KCAU in writing by email to KCAUSERC immediately. Within five (5) business days of the deviation or violation, the Deviation/Violation Must be reported to the ISERC

office.

e) Any study-related unexpected or serious adverse event must be reported to the ISERC Office by email within twenty-four (24) hours after the PI becomes aware of the event.

Principal Investigator's Signature  **Date 20/05/2025**

INFORMED CONSENT FOR RESEARCH PARTICIPATION

Introduction

You are invited to participate in a research study. This document provides information about the study so that you can make an informed decision about your participation. Please take the time to read the information below. If you have any questions, feel free to ask the researcher. (PI to Fill in the sections italicized)

Purpose of the Study

The purpose of this study is to examine the effect of green financing instruments on economic growth in Kenya. The research is being conducted to evaluate how various green financial tools contribute to key economic indicators like GDP. The researcher hopes to generate insights that highlight the role of green financing in driving sustainable development and informing policy decisions aimed at achieving both economic growth and environmental sustainability in Kenya.

Study Procedures

If you agree to participate, you will be asked to [……. *briefly describe the procedures, tasks, or activities the participant will engage in during the study, including the study duration and the number of sessions, if applicable*]. **This study does not involve direct participation from individuals. It relies on secondary data collected from credible institutional sources.**

Potential Risks and Discomforts

There may be some risks associated with participation in this study. These risks may include *the potential reputational concerns if institutional data are inaccurately represented.* Every effort will be made to minimize these risks, and you can withdraw from the study at any time without penalty.

Potential Benefits

While participating may not directly benefit you, the results of this study may contribute to *a broader understanding of how green financing instruments influence economic growth in developing countries like Kenya.*

Confidentiality

Your participation will be kept confidential. Any data collected will be stored securely and only accessible to the research team. Your identity will not be revealed in any publication or presentation resulting from this research.

Voluntary Participation

Participation in this study is completely voluntary. You have the right to withdraw from the study at any time without any negative consequences or loss of benefits to which you are otherwise entitled.

Questions

If you have any questions about this study, your participation, or your rights as a participant, please contact the principal investigator at +254759285702.

Consent

By signing below, you indicate that you have read the information provided above, understand the purpose and procedures of the study, and voluntarily agree to participate. You can withdraw from the study at any time without penalty.

Participant Statement:

I, the undersigned, consent to participate in this study.
Name of Participant: _____
Signature of Participant: _____
Date: _____

Researcher (Principal Investigator –P1) Statement:

I, the undersigned, confirm that I have explained the nature of this study to the participants, answered all questions, and ensured that they understand the information provided.
Name of Researcher: _____
Signature of Researcher: _____
Date: _____

APPENDIX III- ETHICAL CERTIFICATE

KCA UNIVERSITY
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KCA UNIVERSITY SCIENTIFIC & ETHICS REVIEW COMMITTEE

REF: KCAU/SERC/SOB0229 DATE: 18TH AUGUST 2025

TO: ELIZABETH OMANGA (13/01031)

Dear Sir/Madam,

RE: INFLUENCE OF MACROECONOMIC DETERMINANTS ON ECONOMIC GROWTH IN KENYA

This is to inform you that the KCA University Scientific Ethics Review Committee (KCAUSERC) has reviewed and approved your research proposal. Your application approval number is ***KCAUSERC/SOB0229***. The approval period is ***18th August 2025 – 18th August, 2026.***
This approval is subject to compliance with the following requirements.

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

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

Yours sincerely,

Dr. Caroline Ntara,
Chairperson,
KCA University Scientific & Ethics Review Committee.

Advancing Knowledge, Driving Change

APPENDIX IV- INTRODUCTION LETTER

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BOARD OF POSTGRADUATE STUDIES

KCAU/BPS/2025 *Date: Wednesday, October 08, 2025*

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION (NACOSTI)
P.O BOX 30623-00100
NAIROBI

Dear Sir/Madam,

RE: ELIZABETH OMANGA- REG NO. 13/01031

It is my distinct pleasure to introduce Elizabeth Omanga, a student at our institution pursuing a Master of Science in Development Finance degree in the School of Business.

Elizabeth is conducting research on the topic: ***"Relationship between macroeconomic determinants and economic growth in Kenya"*** Her study has been reviewed and approved by the University's Ethics Review Committee Approval No KCAUSERC/SOB0229. The approval period is from 18th August 2025 – 18th August, 2026.

Any assistance accorded to her is highly appreciated.

Yours faithfully,

DR. JACKSON NDOLO
DIRECTOR, BOARD OF POST GRADUATE STUDIES

APPENDIX V- NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **914593**

Date of Issue: **13/October/2025**

RESEARCH LICENSE



This is to Certify that Miss.. Elizabeth Omanga of KCA 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: INFLUENCE OF MACROECONOMIC DETERMINANTS ON ECONOMIC GROWTH IN KENYA for the period ending : 13/October/2026.

License No: **NACOSTI/P/25/4181059**

914593

Applicant Identification Number

Ag. Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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See overleaf for conditions