ASSESSMENT OF THE EFFECT OF GOVERNMENT EXPENDITURE ON ECONOMIC GROWTH IN TANZANIA: 1970-2022

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN ECONOMICS (MSc. - Econ)

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Open University of Tanzania a dissertation titled: **"Assessment of the Effect of Government Expenditure on Economic Growth in Tanzania."** in partial fulfilment of the requirements for the degree of Master of Science in Economics of the Open University of Tanzania.

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DECLARATION

I, **Victor M. Mboya**, declare that, the work presented in this dissertation is original. It has never been presented to any other University or Institution. Where other people's works have been used, references have been provided. It is in this regard that I declare this work as originally mine. It is hereby presented in partial fulfillment of the requirement for the Degree of Master of Science in Economics (MSc. – Econ).

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Signature

24/10/2024
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Date

DEDICATION

I dedicate this study to my parents (Martin R. Mboya and Teresia A. Mambo) and my beloved siblings for their overall support during my dissertation writing and being with me in my time of studies.

ACKNOWLEGEMENT

I begin by expressing my deepest gratitude to the Almighty Lord for His unwavering presence and guidance throughout my journey of study and dissertation writing. His divine grace has been a source of strength, inspiration, and wisdom, enabling me to navigate the challenges and complexities of academic research with faith and perseverance.

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ABSTRACT

Using data from 1970 to 2022, the dissertation examines how Tanzania's government spending affects economic expansion. The research utilizes a time series model, incorporating independent variables; consumption expenditure, investment expenditure, and human capital expenditure, with GDP as the dependent variable. The study employs descriptive statistics and regression analysis to elucidate relationships between government spending and economic growth. Notably, the Autoregressive Distributed Lag (ARDL) model is employed to accommodate both stationary and non-stationary variables, offering robustness and flexibility in analysing mixed-order integration time series data. The findings reveal nuanced relationships between government expenditure components and economic growth. Investment expenditure exhibits a significant positive long-run effect on GDP, underscoring the importance of strategic investment planning in key sectors to foster sustainable economic development. In contrast, consumption expenditure demonstrates both short run and long run positive effects on GDP, highlighting the significance of consumer spending in driving economic expansion, especially during economic downturns. Human capital expenditure, while showing negative short run effects, exhibits positive long run effects on GDP. Based on the research findings, policy recommendations, include prioritizing strategic investments in infrastructure and key sectors, promoting sustained government spending in public services, and implementing policies to enhance human capital investments.

Keywords: *Government Expenditure, Economic Growth, Investment Expenditure, Consumption Expenditure, Human Capital Expenditure.*

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LIST OF ABBREVIATIONS AND ACRONYMS

ADF   Augmented Dickey-Fuller

ARDL   Autoregressive Distributed Lag model

CBN   Central Bank of Nigeria

GDP   Gross Domestic Product

NBS   National Bureau of Statistics

OECD   Organisation for Economic Co-operation and Development

OLS   Ordinary List Square

USAID   United States Agency for International Development

VAR   Vector autoregression

WB   World Bank

CHAPTER ONE

INTRODUCTION

1.1 Background to the Research Problem

Tanzania has seen an increase in government spending since its independence, much like other nations. The role that the government plays in society is reflected in its expenditures. In addition to spending money on redistribution initiatives (such as pensions and unemployment insurance), governments also produce and buy products and services (such as defence, education, and health care). Government size across nations can be determined by looking at general spending patterns. A civilization experiences economic growth when it increases the amount and quality of products produced and consumed.

The size of the government and political decisions made in the past and present on its a role in distributing income and delivering services are reflected in government spending as a proportion of gross domestic product and expenditures per capital (OECD 2022). On the theoretical viewpoints, there are the Keynesians that advocate for the beneficial influence of government expenditure on economic growth; and the Classical and the Neoclassical that assert that government expenditure hinders economic expansion (Romer, 1986; Lowenberg, 1990). Some have also discovered a middle ground, wherein government expenditure is assumed to boost economic growth up to some ideal level, beyond which its effects on growth are said to be negative (Barro, 1989; Friedman, 1997).

The extent and function of government's have undergone significant changes over the past few centuries, according to the long-term data that is now accessible.

Particularly in early industrialized nations, historical data indicates that public spending rose. Interestingly, throughout the 20th century, as governments began allocating greater funds for healthcare, education and social protections.
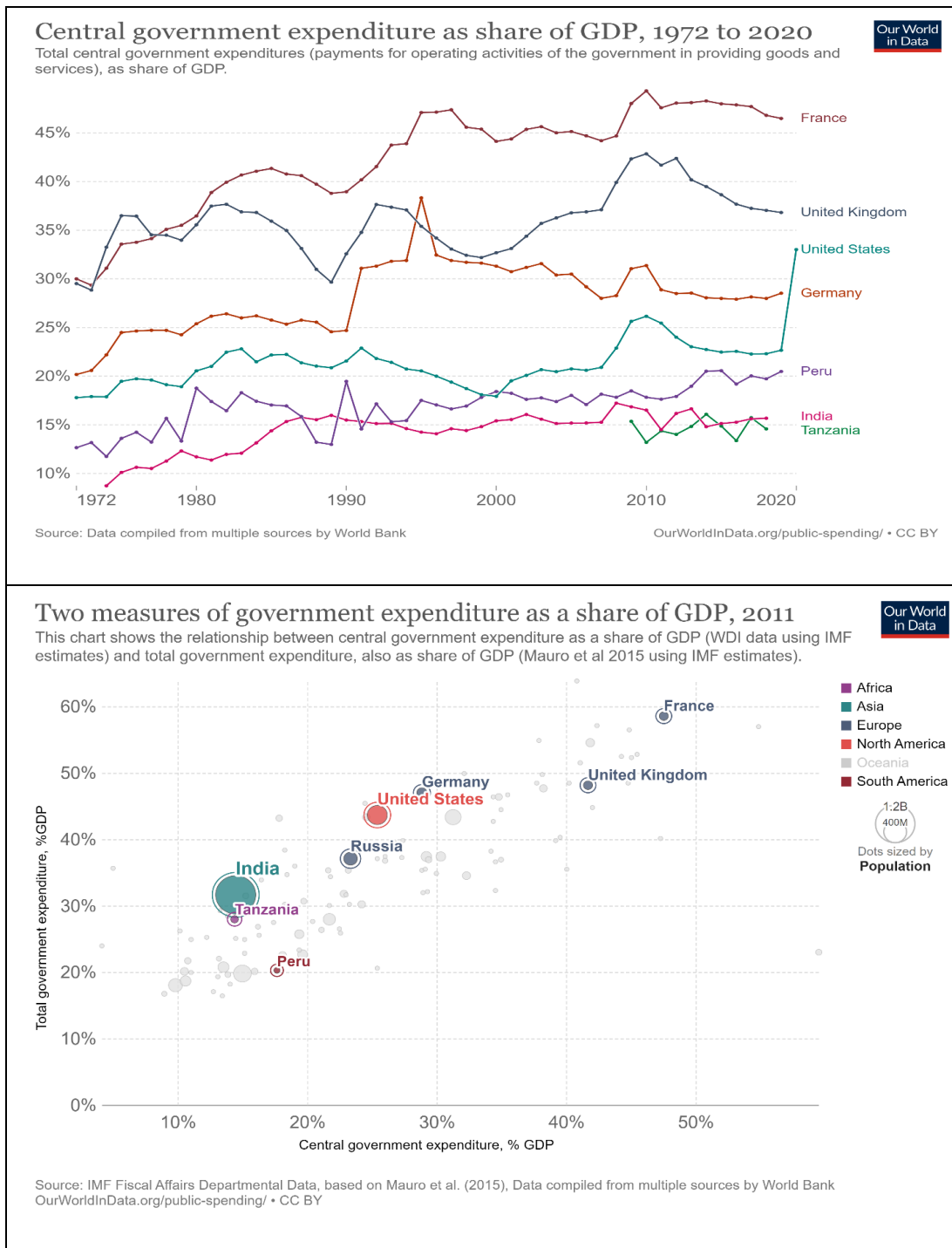
Figure 1.1: Government Expenditure Trend

As seen by public spending, governments everywhere usually depend on the private sector to provide and manage products. Public Private Partnerships are also being used by governments more and more to finance, plan, build, and oversee infrastructure projects.

In Sub-Saharan Africa, there are 48 nations. Of them, 27 have per capital incomes of less than USD 1025, making them low-income nations according to the World Bank's 2016 classification (Ogundipe et al.2024).   Since gaining political independence more than 50 years ago, the mechanism of allocating public resources has not improved economic growth or raised the quality of life for the populace. Over 50% of people living in low-income Sub-Saharan African countries are currently affected by the issue of extreme poverty (Asiefu 2004). The region's economic performance is inadequate (Asiedu 2002).

Tanzania's government spending and economic growth have gone through several stages. According to reports, Tanzania's net government spending was negative from 1965 to 1985 (Kapunda na Topera, 2013) The primary cause of the deficit was the government's goal to offer social services to all residents equally in accordance with Tanzanian African Socialism which was formed by the 1967 Arusha Declaration. The government offered free service including water supply and health education up to the University level.

Following this stage, a severe drought in 1975, a major oil price shock in 1973–1974, and the eventual breakup of the East Africa Community in 1997. The country also went through the Tanzania-Uganda conflict in 1978-1979, whichi increased

government spending, particularly on imports of fuel, food, and armaments (Kapunda and Topera, 2013).

Tanzania began implementing economic liberalization policies in 1988, and after then, net government expenditure turned positive, Nonetheless, from 82% in 1986 to 57% in 2010, the proportion of government revenue to expenditure fell. Tanzania did well in terms of economic growth in the 1960s and 1970s, with average annual growth of 5.4 percent. The economic crisis of the 1980s caused growth to drop to 1.9 percept annually (Kapunda & Mbogoro, 1989).

After significant economic changes were put into place, growth rates increased to 5% by 1986. Tanzania started to progressively liberalize its economy and pursue market-oriented reforms in the early 1990s. When the changes were stepped up in 1996, macroeconomic stabilization and economic growth accelerated significantly. Specifically, between 1996 and 2013, the average growth rate was 4.8 percent, which was better than the average growth rate of 3 percent from 1990 to 1995. Trading Economics Website (2016) states that across shorter time periods, Tanzania's GDP yearly growth rate averaged 6.7% between 2002 and 2006, rising to 11.9% in 2007 and 2.6% in 2009. This low growth rate is a result of the 2008 global financial crisis.

The Global Economy website (2016) states that, in terms of government spending as a proportion of GDP, Tanzania's average spending from 1990 to 2014 was 15.1%, with 8.28% in 1997 and 19.64% in 1992. This study aims to examine the connection between government spending and economic expansion following Tanzania's 1995

liberalization policy.

Tanzania's economy is among the fastest-growing in Africa, with its national GDP increasing by about 7% a year since 2000. However, 49 percent of Tanzanians live below the international extreme poverty threshold, which is $1.90 per day (World Bank, 2011), indicating that widespread poverty still exists.In this study, the empirical evidence on Tanzania's economic development and government spending until 2022 has been evaluated. Examining the current arguments regarding the existence of any relationship between government spending and economic growth, as well as determining whether government expenditure has a positive or negative effect on economic growth, are the main goals of this literature review-based study.

1.2   Statement of the Research Problem

In 2019, Sheilla Nyasha and Nicholas M. Odhiambo state that, The question of whether government expenditure affects economic growth in a positive, negative, or neutral way is still hotly debated today, with some research even going so far as to dismantle the government expenditure into its component parts. This is because, on the one hand, government spending is still increasing in many economies, and, on the other, economic growth rates are declining in these economies. However, the results have been mainly ambiguous.

According to Bank of Tanzania report (2020/2021), To guarantee value for money and timely project implementation, the government has continued to implement flagship and strategy projects, among other things. In 2020-21, the government spent a total of TZS 26,585.3 Billion, of whit TZS 11,701.5 Bilion funded

development projects and TZS 14,883.7 Billion was collected for recurring expenses. Out of all the development expenditure, 79.1% came from domestic sources. Government expenditure was comparable to 17.2 percent of GDP in 2020/21.

The Bank of Tanzania report from 2020–2021 states that, Notwithstanding the difficulties caused by the epidemic, Tanzania's economy continued to grow well. In order to avert a recession, Tanzania's mainland saw real gross domestic product growth of 4.8% in 2020 as opposed to 7% in 2019. The pandemic's effects on economic activity, especially those that were immediately subject to external shocks, were reflected in the slow development. Construction, agriculture, transportation and storage, and mining and quarrying were the main drivers of the expansion. At 26.9 percent, agriculture maintained the greatest percentage of the GDP, followed by construction (14.4 percent) manufacturing (8.4 percent), wholesale and retail trade (8.7 percent).

By examining the cases of China and Korea, Lee et al. (2019) take notice of how the various economic systems affect the connection between economic development and government spending. China retains a higher degree of government interference because of its socialist economic system. The author recommends exercising greater restraint when it comes to government expenditures. So, this research was developed in a time series model to assess government spending's effect on Tanzania's economic expansion considering different economic challenges during 53 years (From 1970 to 2022) especial during implementation of flagship and strategic projects and the challenges posed by the pandemic like Covid-19 by using

independent variables (Consumption expenditure Investment expenditure and Human capital expenditure) and Dependent variable (GDP). Thus, it is necessary to look into how government spending and reform affect economic expansion. Policymakers must specifically comprehend how the various elements of government spending and reforms affect economic growth.

1.3   Research Objectives

1.3.1 General Objective

The main objective of this research is to assess the effect of government expenditure on economic growth in Tanzania.

1.3.2 Specific Objectives

i.   To investigate the effect of public investment expenditure on economic growth

ii.   To examine the influence of government consumption expenditure on economic growth.

iii. To analyse the effect of government human capital expenditure on economic growth

1.4   Research Hypothesis

The following research hypothesis have been tested

HO: Investment expenditure by the government has no effect to the economic growth

HO: Consumption expenditure by the government has no influence to the economic growth

HO: Human capital expenditure by the government has no effect to the economic growth

1.5 Significance of the Study

For the Government; to establish a favourable atmosphere by determining the main obstacles of expenditure in order to obtain sustainable economic growth. For Communities; to announce the major constraint which hinder their activity and awareness to escape from such constraints. For Researchers; it might act as a standard for carrying out additional study in this field. For others; to provide information the current that affect/impact the exogenous variables and endogenous.

1.6 Organization of the Proposal

This study used the annually data collected from the year 1970 up to 2022. The aim is to capture the trends of 53 years. Moreover; time series data analysis has been employed by using the statistical packages called STATA for analysing the data to answer the stated objectives. Nevertheless, regression analysis has been applied by creating model (Multiple regression model) on assisting to tackle the objectives Granger causality technique and Vector auto regression model (VAR).

1.7 Limitation of the Study

Due to time constraints and other uncontrollable factors, this study only takes into account a small number of the many variables that could have a positive or negative effect on Tanzania's economic growth in relation to government spending. This is done in light of the availability of data and the simplicity of measurement methods. The dependent variable (GDP) and independent variables (consumption, investment, and human capital expenditures) has been discussed.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

We have examined how government expenditure effects Tanzania's economic growth in this chapter. The definitions of the terminologies, the literature on theory and empirical research reviews, the research gap, and the conceptual framework comprise the chapter's five main sections. Theoretical and empirical literature aids in raising understanding of the fundamental ideas of the effect of public expenditures on Tanzania's economic growth through reading and other information sources.

2.2 Definitions of the Terms

2.2.1 Government Expenditure

According to Corporate Finance Institute 2019, Government spending includes public spending and investment, in addition, transfer payments such as transfers of capital and income (pensions, social benefits).

2.2.2 Economic Growth

According to Investopedia 2021, a rise in an economy's output of products is known as economic growth. Economic growth can be facilitated by increases in labor force participation, capital goods, technology, and human capital. Economic growth is frequently expressed as the rise in the overall market value of newly developed goods and services using estimations such as GDP.

2.3 Theoretical Literature Review

This part examines theoretical foundation for the government spending on economic expansion.

2.3.1 Neo-classical growth models of Solow (1956)

The aggregate production function, which shows how the components of production affect the country's output, is where most theories about economic growth begin. The three ways that growth occurs if land is held fixed are as follows, under Solow-classical theories (1956); an increase in the labour supply, an increase in the capital stock, and an increase in productivity. A higher output is produced by increasing the labour supply. Real output increases when immigrants or those who are not currently employed join the labour force and contribute to the nation's productivity. Capital increase can be divided into two elements; increase in physical and human capital. Because physical capital improves labour productivity and directly offers useful services, it raises output.

Economic growth is facilitated by human capital since skilled individuals are more productive than unskilled ones. Universities and on-the-job training are two ways to invest in human capital. The rise in output that may be accounted for by increases in input (labour and capital) is explained by productivity increases. This is called input productivity, and it can be affected by a number of factors, including financing or directly providing investments that the private sector would not be able to supply in sufficient amounts due to various market failures in infrastructure projects and basic health and education spending, which could directly increase the productivity of the private sector.

Efficiently providing certain basic public services is also necessary to create the fundamental conditions for long-term investment and entrepreneurial activity. Moreover, the government must finance its own operations in a way that minimizes

distortions to private sector savings and investment decisions, as well as to overall economic activities (Burda and Wyplosz, 2001). In this approach, government spending might theoretically affect growth by influencing labour and/or capital, as well as the creation and/or absorption of technological advancements as measured by total factor productivity (TFP).

2.3.2 Theory of Government Expenditure

In economic literature, Wagner (1883) put forth a theory of government spending. According to the law, there is direct and positive relationship between a country's per capital income and its gross domestic product, with the former correspondingly increasing the later. In other words, industrialization-driven increases in per capita income encourage the government to increase spending on social welfare (health, education, etc.), which in turn encourages businesses to increase production as demand for goods and services rises. Aggregate output eventually rises with increased industrial production. There has been disagreement over the effect of government expenditure on economic performance ever since Wagner's law was established, both theoretically and empirically.

According to Musgrave, there are differences in the ranges of per capital income for the demand for public services' income elasticity. Since per capita money is needed to cover fundamental necessities, the demand for public services is usually very high. However, the demand for public sector services like transportation and education begins to increase when per capita income climbs above these low income levels, compelling the government to boost spending on them. The rate of public sector growth tends to decrease at high levels of per capita income as the more basic

demands are satisfied.

Wiseman and Peacock investigated UK governmental spending from 1890 to 1955. They contend that rather than rising steadily, public spending increases in an abrupt or step-like way. Occasionally, social unrest or other events necessitate more public spending that the current level of public revenue is unable to cover. Revenue restrictions used to dominate and restrain a rise in public expenditure since there wasn't enough demand for it, but now that requirements have changed, such restraint is no longer necessary. An increase in public spending makes it abundantly evident to all that the current revenue is insufficient. The change from a previous, low level of taxation and spending to a new, high level is known as the displacement impact. The impact of inspections is exacerbated by insufficient revenue relative to necessary governmental expenditures.

2.4   Empirical Literature Review

Majid Saleh Salim (2017) claims that the examination of the regressions' results verified that the amount of government spending had a favourable effect on economic growth. Therefore, raising government spending on different initiatives will eventually serve as a beneficial stimulant to hasten economic growth and recovery. These results from the European Centre for Research Training and Development UK (2017) led the study to propose that government spending can support Tanzania's economic expansion. In order to accomplish this goal and boost economic growth, the government should also focus its spending on productive areas like social services and infrastructure development.

James N. Maingi (2010), the study comes to the conclusion that the makeup of government spending has an impact on economic growth based on the empirical findings. In the long-run, government investment and physical infrastructure have positive impacts on economic growth. According to Hague and Denise's (2007) empirical research for 30 developing nations, there is a positive and significant correlation between economic growth and the government's share of development expenditures. Using time series data for the years 2000–2011, Othman (2012) conducted a case study on the relationship between government spending and economic growth in Zanzibar and discovered a substantial correlation between development and recurring spending and economic growth.

Naftaly Mose and Aquilars Kalia (2014) conducted an unbiased assessment of the role that government spending plays in East Africa's economic expansion between 1980 and 2010. Government spending was broken down using a balanced panel fixed effect model to examine its impact on growth. Only two variables GPD and investment were shown to be stationary at level by the panel unit root test. The result supports the widely held belief that although consumption slows economic growth, comparable investment expenditure stimulates it. The spend on human capital, however, as determined to be negligible. According to the report it will be suitable for East Africa to increase government spending on the investment budget in order to spur growth, but fewer funds should be allocated to other government initiatives.

Using the Granger causality test, Komain and Brahmasrene (2007) investigate the connection between government spending and economic growth in Thailand. The

study demonstrates that government expenditures and economic growth are not co-integrated. Furthermore, the findings showed a unidirectional causal relationship between government spending and economic expansion. Furthermore, the outcome demonstrated a noteworthy affirmative effect of public expenditure on economic expansion.

2.5 Research Gap

The literature review shows a link between government spending and economic growth. With a sample period spanning from 1970 to 2022, this study adds to the body of research on the relationship between Tanzanian government spending and economic growth by utilizing secondary time series data. In this study, investment, consumption, and human capital are the independent variables, and GDP is the dependent variable.

2.6 Conceptual Framework

According to the study, various components of Consumption expenditure, Investment expenditure and Human capital expenditure determines Terms of trade, population growth, openness, government spending, and total government spending all affect Tanzania's real GDP growth. These factors that influence economic growth are conceptualized in the following figure.

Description and Nature of the Relationship

The presented conceptual framework model highlights the variable consumption, investment expenditure and human capital expenditures as the independent variables. All of which were studied on their influence to the dependent variable GDP. In

precise all of these variables were studied collectively in a single model on how effectively they are on the GDP growth variable. On the other hand, moderating variables inflation and imports were also studied due to their overall significance in an economy. Thus, investigate to view their resulting effect to the overall GDP and other variables collectively.
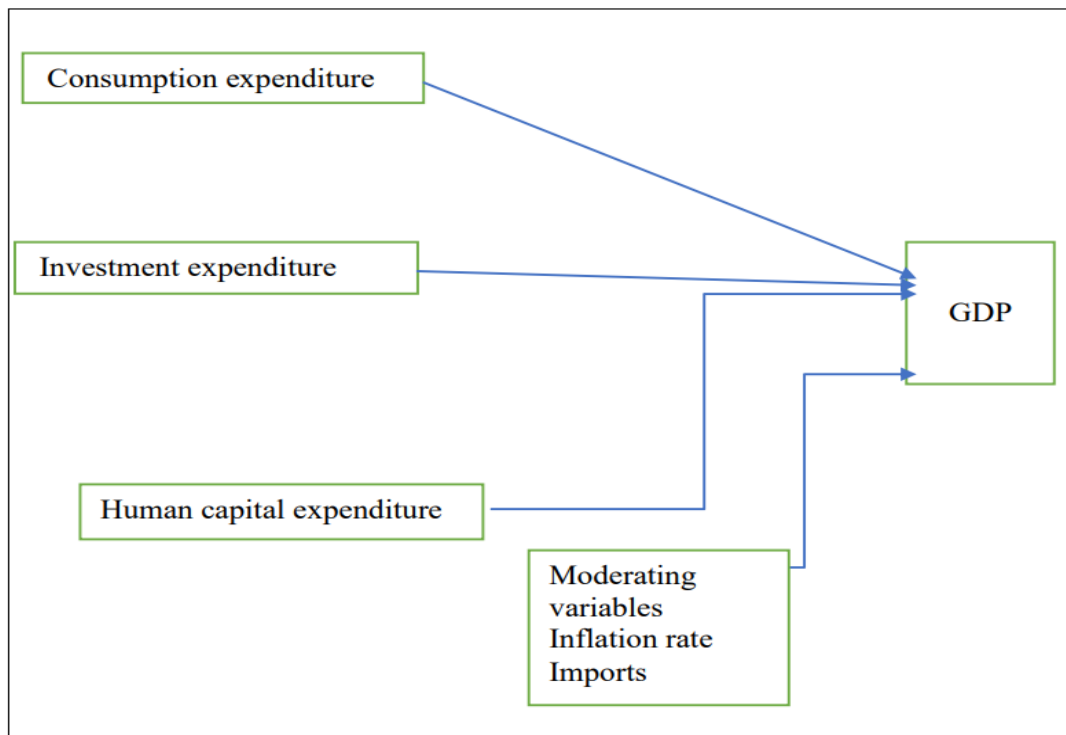
Figure 2.1: Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

The process of methodically addressing a research problem is known as research methodology. One way to think of it is as a science that studies scientific research methods. In it, we examine the reasoning behind the many approaches that a researcher typically takes while examining his/her research problem (Kothari, 2004). Therefore, this chapter proposes the systematic course through which this study was conducted. The sections in this chapter has included, the research design, the study area, data source and type, sample size, variables and measurement, methods of data collection and data processing and analysis.

3.2 Research Design

Kothari (2009) defines research design as setting up the parameters for data collection and analysis in a way that seeks to balance procedural economy with relevance to the study's goal. For the case of this analysis, the study employed a longitudinal research design of analysis. The longitudinal design of the study is a quantitative research approach that examines the results of observations across time. It usually involves a topic of interest or study units that are regularly recorded or measured at regular intervals (Bloomfield & Fisher, 2019). Furthermore, this design was chosen owing to the type of the variables in the study, which is recorded at regular intervals, such as yearly or quarterly.

3.3 Data Source and Type

For this study, quantitative secondary data from the Bank of Tanzania, National

Bureau of Statistics, and Ministry of Finance and Planning have compiled every year for 53 years, from 1970 to 2022. Utilizing a period of 53 years in a time series study provides a robust and comprehensive dataset that allows for a thorough analysis of long-term trends, cycles, and structural changes in the economy. The span from 1970 to 2022 encompasses various economic phases, including periods of growth, recession, policy changes, and external shocks, offering valuable insights into the economy's resilience and adaptability. This extensive period enables the identification of persistent patterns and the assessment of the long-term effects of fiscal and monetary policies.

Additionally, such a lengthy timeframe improves the statistical reliability of the findings, allowing for more accurate forecasting and policy recommendations. By drawing on data from reputable sources like the Bank of Tanzania, National Bureau of Statistics, and the Ministry of Finance and Planning, the study ensures the credibility and validity of the analysis, making the results highly relevant for understanding economic dynamics and informing future policy decisions.

3.4   Sample Size

The research has employ a 53 years sample for the annual data collection from 1970 to 2022.

3.5   Variables Definition and Measurement Procedure

Table 3.1: Variables Measurement and Source

sn	Variable	Measurement	Source
1.	Economic Growth (GDP)	Percentage of annual growth	NBS/BoT/WB
2.	Investment Expenditure (IE)	Millions of TZS	NBS/BoT/WB
3.	Consumption Expenditure (CE)	Millions of TZS	NBS/BoT/WB
4.	Human Capital expenditure (HCE)	Millions of TZS	NBS/BoT/WB
5.	Imports (IMPORTS)	Millions of TZS	NBS/BoT/WB
6.	Inflation Rate	Percentage	NBS/BoT/WB

Source: Research data, 2025.

3.6 Methods of Data Collection

The data collection methods that has been used in this study is secondary data collection method.

3.7 Data processing and Analysis

3.7.1 Descriptive Statistics

Descriptive statistics approaches (Mean, Median, Standard Deviation, Standard Error, Kurtosis, and Skewness) has been used to summarize and analyse variables of interest

3.7.2 Model Specification

Depending on the literature they read, the resources available in their countries, and the data they used, several scholars have discussed the relationship between government spending and economic growth using various variables. This study includes some of the variables used by Ketema (2006), Kweka and Morrissey (1999), and Ruturagaras (2013) in Ethiopia and Tanzania, respectively. These variables were chosen because they best fit the reviewed literature and because data was readily available. Using the following model, the effect of government spending on economic growth has been captured:

Regression Model

$$\mathbf{GDP_t = \beta_1 + \beta_2 CE_t + \beta_3\, IE_t + \beta_4 HCE_t + \beta_5 IMPORTS_t + \beta_6 IR_t + \mu t} \text{ ……. } (\boldsymbol{i})$$

Where:

$\mathbf{GDP_t}$ = Gross Domestic Product at time *t*, $\mathbf{CE_t}$ = Consumption expenditure at time *t*,

$\mathbf{IE_t}$ = Investment expenditure at time *t*, $\mathbf{HCE_t}$ = Human capital expenditure at time *t*,

IMPORTS$_t$ = Import expenditure at time t, **Ir$_t$** = Inflation rate at time *t*, **µ$_t$** = Stochastic term, **β$_1$** = intercept term , **β$_2$, β$_3$,…β$_6$** = partial slopes or parameters.

3.7.3 Testing for Stationarity (Unit Root Test)

A time series is considered stationary if its mean, variance, and autocorrelation remain constant across time. Results might be erroneous or nonsensical if data were used without first verifying its stationarity properties (Gujarati, 2004). With the help of the STATA econometric program, the unit root problem has been tested using the Augmented Dickey Fuller Test (ADF). When the error factor is unlikely to be white noise, ADF is favored because it incorporates additional lagged terms of the dependent variables to remove autocorrelation from the test equation.

3.7.4 Granger Causality Test

This test has been used to examine the direction of the causality among variables

3.7.5 Diagnostic Test

In this study, to make sure that the model has been appropriate estimated and results obtained to be valid, the tests for normality, autocorrelation and heteroscedasticity has been used.

3.7.6 Normality

Data have been tested for normality by checking the residuals if they are normally distributed or otherwise. In the study, the Jarque - Bera test has been used to test for normality of the residuals.

3.7.7   Autocorrelation

The existence of serial correction of residuals has been ascertained using the Breusch-Godfrey Correction machine learning test. If the p-value is less than the significant level ($p < 0.05$), the results refute the null hypothesis, which claimed that there is no serial correlation within the residuals.

3.7.8   Heteroscedasticity

In order to test if there are equal variances (Homoscedasticity) for residuals or otherwise, The Breusch-Pagan test has been used in this investigation to verify the hypothesis. The Breusch – Pagan test, tests the null hypothesis that" the variances for errors are equal (homoscedasticity)"and the alternative hypothesis state that "the variances for error are not equal (heteroscedasticity) ". The results will reject the null hypothesis if the p –value is less than the significant level ($p< 0.05$).

3.7.9   Stability Tests

The stability tests have been employed to check whether the model is a good representation of how the time series evolved over period of time sampled. The tests have involved the Autoregressive (AR) roots graph to draw the conclusion about the stability of the model, also in this study the Cumulative sum and Cumulative sum square has been included in measuring the stability at 5% significance level. The null hypothesis for the test is that "the model is stable", the decision waill be made as the null hypothesis would be rejected if the values of Cumulative sum and Cumulative sum of square of recursive residuals lie within the band of the critical values (Xiao & Phillips, 2002).

3.7.10 Data Validity and Reliability

Before utilizing, integrating, and processing data, it is essential to verify the legitimacy and integrity of the data sources. Depending on the objectives or requirements, various types of validation might be necessary. Data cleansing, for instance, is a type of data validation that is frequently employed in analytical and statistical research. The consistency and integrity of the data are also referred to as data reliability, and they provide an essential basis for evaluating the data source's data certainty. Preventing data corruption is one of the key goals of data integrity measures, which are designed to preserve data reliability and quality (Kothari, 2004).

In a similar vein, this study reviewed various literatures to ensure that the relevant variables were selected and the appropriate methods were used to achieve accurate results. The data was collected over an extended period to ensure the findings were robust. In order to verify the validity of the secondary data used in this study, the research also made sure that the information originated from reliable and respectable sources, particularly government agencies.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1   Introduction

The results of the study that were discovered through the analysis of the study are presented in this chapter. In the findings, the study displays the regression model, the descriptive statistics, the stationarity of the study variables, the results of the cointegration test, and the Granger causality test.

4.2   Descriptive Analysis

Descriptive analysis holds significant importance in time series analysis as it provides a foundational understanding of the data's characteristics and patterns over time. Through descriptive techniques such as summarizing key statistics, visualizing trends, and detecting outliers, researchers can gain insights into the behaviour, volatility, and seasonality within the time series data. This initial exploration aids in identifying potential relationships, forecasting future trends, and selecting appropriate models for further analysis, thereby laying the groundwork for more sophisticated statistical techniques and informed decision-making in various domains ranging from economics and finance to epidemiology and climate science.

From the findings presented above in table 4.1 findings reveal that the GDP was studied across the 53 observations, i.e., from 1970 to 2022. In specific, such result reveal that the average GDP was TZS. 29,295,917.57 million with a standard deviation of 44,580,321.75. On the other hand, the minimum GDP was TZS 39,560 million, which was 1970 while the highest GDP was TZS 141,872,730.1 million, which was in 2022.

Table 4.1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP (Millions of TZS)	53	29,295,917.57	44,580,321.75	39,560	141,872,730.1
Consumption expenditure (Millions of TZS)	53	1,421,386	2,352,100	587.856	8,548,415.4
Investment expenditure (Millions of TZS)	53	1,982,156	3,118,817	685.17	9,525,199.5
Human capital expenditure (Millions of TZS)	53	328447.6	514771.5	88.377	1,880,454
Imports (Millions of TZS)	53	6,825,938	9,438,920	2,503.111	26,039,162.1
Inflation rate (Millions of TZS)	53	14.91769	10.99163	2.339744	36.14594

Source: Research Findings (2024)
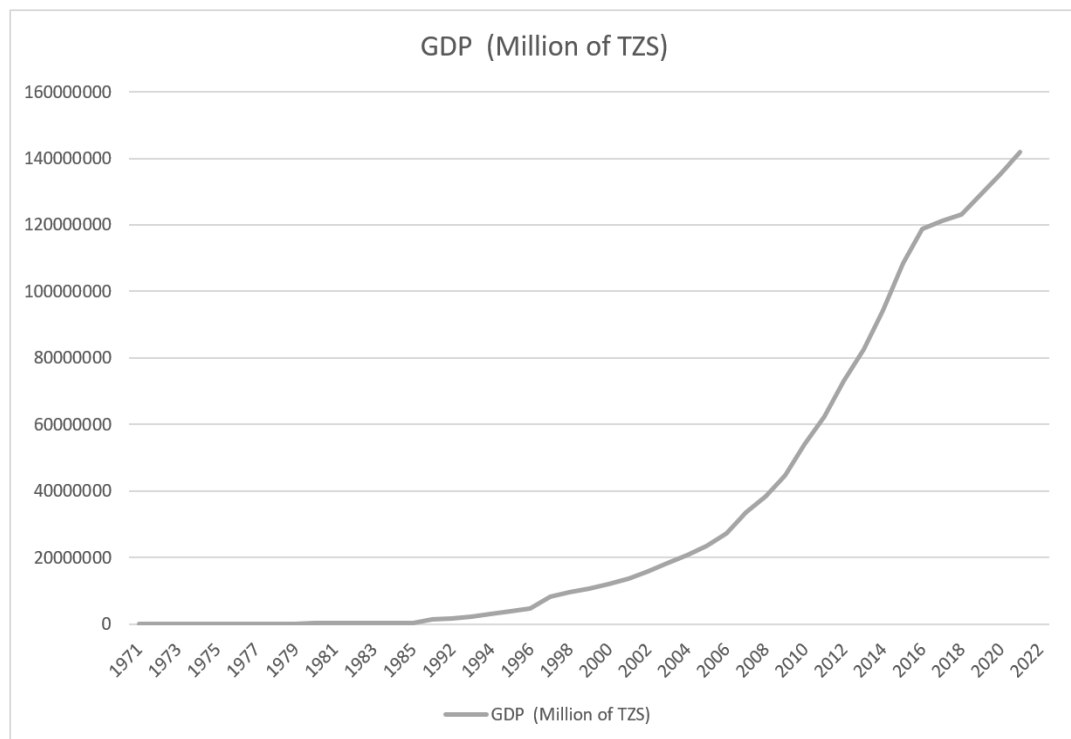
Figure 4.1: Trend of GDP Annually

Source: Research Findings (2024).

Based on the trend analysis of the GDP of Tanzania, findings reveal that across the

53 years of the study, the GDP had a majorly a rising trend. Thus, implying that the

overall GDP of Tanzania has a rising trend characteristic, which implies that over time the country always experiences as rising GDP. This further signifies that the GDP growing trend over time can be massively linked to the presence of inflation prevailing in economy as well as the massive growth of economic activities in the Tanzania's economy.

The consumption expenditure was studied to include the government spending on goods and services for direct use in the satisfaction of government services or collective needs such as public administration, defence, education and healthcare by the government. The results of the study showed that the average consumption expenditure across the 53 years was TZS 1,421,386 million, with a standard deviation of 2,352,100. Furthermore, across the studied period, the minimal consumption expenditure by the government was TZS 587.856 million, which was recorded in 1970, while the highest consumption expenditure was TZS 854,8415.447 million which was recorded in 2022.

The investment expenditure, which were studied as the funds allocated by the government for the creation or enhancement of physical assets and infrastructure. Therefore, including the spending on projects such as transportation systems, utilities, schools, hospitals, and research and development initiatives. In the findings the study revealed that the average investment expenditures in Tanzania across the studied period was TZS 1,982,156 million, with a standard deviation of 3,118,817. On the other hand, the study revealed the highest investment expenditure on annual basis was TZS 9,525,199.453 million, which was in 2022 while the lowest expenditure on investment was TZS 685.17 million which was in 1970.

The human capital expenditure was studied as expenditures that the government incurs on funding for education, healthcare, and job training programs for its officials and specific group of personnel. These investments aim to improve the skills, knowledge, and health of the workforce, leading to a more productive and prosperous nation. In the findings the study revealed that the average expenditure incurred was TZS 328,447.6 million on annual basis, with a standard deviation of 514,771.5. On the other hand, the highest expenditures of human capital across the studied periods was TZS 1,880,454 million, while the lowest human capital expenditure was TZS 88.377 million, which was in 1970.

The importation was also studied as one of the additional variables, whereby the findings revealed that the average of importation was TZS 6,825,938 million on annual basis. Furthermore, the highest amount of importation was TZS 26,039,162.1 million, while the lowest amount importation was TZS 2,503.1 million, which was in 1970. Lastly, the average inflation rate was across the 53 years from 1970 to 2022 was 14.9%, with a standard deviation of 10.9. Furthermore, a minimum inflation rate across the studied across the studied period was 2.3%, which was on 2020. On the other hand, the highest inflation rate recorded in the studied period was 36.1%, which was recorded in 1984.

4.3   Stationarity of the Variables

In time series analysis, the stationarity of variables holds significant importance as it ensures the stability of statistical properties over time, enabling reliable modelling and forecasting. Stationary time series exhibit consistent mean, variance, and autocovariance structures, allowing analysts to make accurate inferences about past

trends and future behaviour. Non-stationary series, on the other hand, may possess trends, seasonality, or other forms of structural breaks, complicating the analysis and potentially leading to erroneous conclusions. Therefore, testing for stationarity through techniques like unit root tests is crucial for ensuring the validity and effectiveness of time series models in capturing underlying patterns and making robust predictions.

Table 4.2: Stationarity Tests

Dickey-Fuller test for the unit root						
Variable	**MacKinnon approximate p-value**	**Test statistic**	**1% Critical Value**	**5% Critical Value**	**10% Critical value**	**Test Conclusion**
GDP	0.0000	-5.335	-3.579	-2.929	-2.600	Stationary
Consumption expenditure	0.0000	-5.384	-3.579	-2.929	-2.600	Stationary
Investment expenditure	0.0000	-5.287	-3.579	-2.929	-2.600	Stationary
Human capital expenditure	0.0000	-6.122	-3.579	-2.929	-2.600	Stationary
Imports	0.0018	-3.940	-3.579	-2.929	-2.600	Stationary
Inflation rate	0.0000	-8.176	-3.579	-2.929	-2.600	Stationary

Source: Researcher Findings (2024)

In the study analysis, all the variables studied were initially non-stationary, thus the study performed differencing to attain stationary values ready for the analysis. By calculating the differences between successive observations, the differencing procedure stabilizes the time series mean by removing variations in the data's level, hence removing trends and seasonality. Through making a non-stationary time series stationary through differencing, it becomes easier to model and analyse, ensuring that statistical properties like mean and variance remain constant over time, allowing for more accurate forecasting and modelling. In the findings presented above on the table 4.2, the stationarity test results of the studied variables reveal that all the

variables were stationary after the differencing, with the precise test statistics of each variable being smaller than the critical values. Similarly, the MacKinnon approximate p-value for each variable was precisely below 0.05 i.e., 5%, hence further signifying that all variables were made stationary.

4.4   Cointegration Test

In time series analysis, cointegration analysis is a statistical method frequently employed to ascertain the long-term equilibrium relationship between two or more variables. When working with non-stationary variables that could exhibit patterns or erratic fluctuations over time, this approach is quite helpful. While individual variables may not be stable, cointegration demonstrates that a set of variables is stationary. Cointegration identifies these linkages, allowing for realistic modelling of the variables' long-term behaviour. Its relevance stems from its capacity to discern between spurious links and true long-run associations, so avoiding the erroneous findings that might result from regression analysis incorporating non-stationary variables. Furthermore, cointegration analysis uncovers underlying economic links, providing a solid platform for forecasting and research.

Because of its ability to handle different cointegrating interactions between variables, a Johansen cointegration test is used for this investigation. The Johansen test adopts a more flexible approach, enabling a comprehensive understanding of the underlying dynamics, in contrast to previous tests that assume a fixed number of cointegrating vectors. Researchers can accurately identify and measure long-term equilibrium linkages using the Johansen test, which estimates cointegrating vectors based on eigenvalues and eigenvectors from vector autoregressive (VAR) models.

The Johansen cointegration test's flexibility and versatility make it an effective tool for studying complex systems and producing more trustworthy results in a variety of sectors, including economics, finance, and social sciences.

Table 4.3: Johansen cointegration Test Results

Johansen tests for Cointegration					
Trend:					constant
Number of obs = 52					
Sample:		1972		–	2022
Lags = 2					
Maximum Rank	Parms	LL	Eigenvalue	Trace Statistic	5% Critical Value
0	30	-37.886665	.	82.5589	68.52
1	39	-20.69183	0.49049	48.1693	47.21
2	46	-8.232363	0.38652	23.2503*	29.68
3	51	-3.3742583	0.17347	13.5341	15.41
4	54	0.57743182	0.14356	5.6307	3.76
5	55	3.3928013	0.10453		
Maximum Rank	Parms	LL	Eigenvalue	Max Statistic	5% Critical Value
0	30	-37.886665	.	34.3897	33.46
1	39	-20.69183	0.49049	24.9189	27.07
2	46	-8.232363	0.38652	9.7162	20.97
3	51	-3.3742583	0.17347	7.9034	14.07
4	54	0.57743182	0.14356	5.6307	3.76
5	55	3.3928013	0.10453		

Source: Researcher Findings (2024).

The Johansen cointegration analysis results provide evidence of a long-term link or cointegration among the variables studied. The data trend appears to be steady across the studied period of 1993 to 2021. The maximum rank, which represents the number of cointegrating vectors, runs between 0 and 5. Notably, for a maximum rank of 2, the likelihood ratio test statistic is -8.232363, rejecting the null hypothesis of no cointegration at a 5% significance level. When two cointegrating vectors are considered, this implies that there is a cointegration connection between the

variables. Furthermore, as the maximum rank grows, the likelihood ratio test statistics decrease, indicating a stronger rejection of the null hypothesis and a greater chance of cointegration. As a result, the eigenvalues assigned to each maximum rank provide insight into the strength of the cointegration connection, with higher eigenvalues indicating a greater correlation between the variables.

The statistical significance of the likelihood ratio test statistics can also be assessed thanks to the critical values provided at the 5% significance level. It is possible to reject the null hypothesis that there is no cointegration if the test statistic is greater than the critical value. A long-term relationship is indicated by the Johansen cointegration results, which show the probability of cointegration among the variables under study. However, in order to fully interpret the findings and comprehend the consequences of the cointegration connection, more study combining economic theory and contextual issues is required.

4.5 Granger Causality Test

The Granger Causality Test is an important technique in time series analysis since it helps determine the causal link between two variables. It enables us to assess if one-time series may predict another, revealing important information about potential cause-and-effect dynamics. As a result, informed inferences may be drawn regarding the temporal interaction of variables, improving the reliability and validity of time series models and encouraging a better understanding of complicated real-world events.

Table 4.4: Granger Causality Test Result

Equation	Excluded	chi2	df	Prob > chi2
GDP	Consumption	9.23777	2	0.028
GDP	Investment	16.19	2	0.000
GDP	Human capital	0.65783	2	0.720
GDP	Importation	35.803	2	0.000
GDP	Inflation rate	6.6324	2	0.040
GDP	ALL	63.485	10	0.000
Consumption expenditure	GDP	9.43289	2	0.005
Consumption expenditure	Investment	8.984	2	0.011
Consumption expenditure	Human capital	0.90689	2	0.635
Consumption expenditure	Importation	22.651	2	0.000
Consumption expenditure	Inflation rate	7.6342	2	0.022
Consumption expenditure	ALL	48.629	10	0.000
Investment expenditure	GDP	15.61476	2	0.015
Investment expenditure	Consumption	0.43345	2	0.805
Investment expenditure	Human capital	3.5318	2	0.171
Investment expenditure	Importation	20.897	2	0.000
Investment expenditure	Inflation rate	1.0222	2	0.600
Investment expenditure	ALL	53.029	10	0.000
Human capital spending	GDP	5.6431	2	0.012
Human capital spending	Consumption	1.5946	2	0.451
Human capital spending	Investment	1.3571	2	0.507
Human capital spending	Importation	21.356	2	0.000
Human capital spending	Inflation rate	3.1342	2	0.209
Human capital spending	ALL	34.076	10	0.000
Importation	GDP	13.25257	2	0.018
Importation	Consumption	0.00113	2	0.999
Importation	Investment	0.55349	2	0.758
Importation	Human capital	0.53064	2	0.767
Importation	Inflation rate	13.3391	2	0.018
Importation	ALL	4.9957	10	0.891
Inflation rate	GDP	6.79957	2	0.027
Inflation rate	Consumption	7.32274	2	0.035
Inflation rate	Investment	7.7382	2	0.021
Inflation rate	Human capital	1.1116	2	0.574
Inflation rate	Importation	1.0309	2	0.597
Inflation rate	ALL	19.347	10	0.036

Source: Researcher Findings (2024)

Based on the table above on the results of a Granger causality test. This test examines the cause-effect relationship among the six variables, which include GDP,

Consumption expenditure, Investment expenditure, Human capital spending, Importation and Inflation rate. For each pair of variables, the table shows the results of two tests. The first test looks at whether GDP can Granger cause the other variable. The second test looks at whether the other variable can Granger cause GDP.

In precise, each section of the table tests the null hypothesis that a variable does not Granger cause another variable. For example, the first section tests the null hypothesis that GDP does not Granger cause consumption expenditure. The Chi-sq statistic (9.23777) and the Prob > chi2 (0.028) for this test indicate that we reject the null hypothesis. In other words, there is evidence to conclude that GDP Granger causes consumption expenditure. Furthermore, GDP Granger causes importation (with a significance level of 0.000) and inflation rate (with a significance level of 0.040).

On the other hand, Consumption expenditure Granger causes Importation (with a significance level of 0.000) and inflation rate (with a significance level of 0.022). While Investment expenditure Granger causes Importation (with a significance level of 0.000). But also, the Human capital spending Granger causes Importation (with a significance level of 0.000). However, Importation does not Granger cause any of the other variables. Lastly, while Inflation rate does not Granger cause GDP or consumption expenditure, but it does Granger cause investment expenditure (with a significance level of 0.021).

Based on the Granger causality test results, several conclusions can be drawn regarding the relationships between the variables analysed. Firstly, GDP is likely to influence consumption expenditure, importation, and inflation rate as the null

hypothesis of no Granger causality was rejected for all three relationships, indicating that past GDP values can aid in predicting future values of these variables. Secondly, it was found that consumption expenditure and investment expenditure effect importation but not each other, with past values of both variables helping predict future import levels; however, there is insufficient evidence to suggest a causal relationship between consumption and investment expenditure.

Thirdly, human capital spending was observed to influence importation, with past human capital spending aiding in predicting future import levels. Importation itself was found not to Granger cause any of the other variables analysed, as the null hypothesis was not rejected in all cases. Lastly, inflation rate was noted to have a one-sided influence, with past inflation potentially predicting future investment levels but not necessarily vice versa, as the null hypothesis was rejected for inflation causing investment expenditure but not for GDP or consumption expenditure. These findings provide valuable insights into the dynamics and predictive relationships among the variables studied.

4.6 Regression Model Results

In the empirical results section, the study details the methodology used for modelling and presents the outcomes obtained from the model. To address the non-stationarity of the variables pre-differencing, the study chose to utilize the Autoregressive Distributed Lag (ARDL) model. This method is highly esteemed in time series analysis for its distinct advantages and applicability across various empirical contexts. Unlike conventional time series models, ARDL permits the inclusion of both stationary and non-stationary variables in a single regression framework,

making it well-suited for analysing time series data with mixed orders of integration. This flexibility is particularly beneficial when examining real-world economic and social phenomena, where variables may exhibit varying levels of integration.

Moreover, the ARDL method yields dependable estimates even with limited sample sizes, which is advantageous in situations with restricted data availability. Furthermore, it enables the exploration of short-term and long-term dynamics by capturing lagged effects and equilibrium relationships between variables. Additionally, it facilitates the evaluation of dynamic causal relationships and supports hypothesis testing for cointegration presence. Given its robustness, versatility, and ability to handle diverse empirical scenarios, the ARDL method stands out as the preferred approach for this particular time series analysis.

Table 4.5: Results of the ARDL Model

Variables	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
GDP L1.	-0.7066	0.1791	-3.9500	0.0000	-1.0710	-0.3423
Long Run						
Investment	0.2020	0.0674	3.0000	0.0050	0.0649	0.3391
Consumption	0.7082	0.0807	8.7700	0.0000	0.5439	0.8725
Human capital	0.0849	0.0395	2.1500	0.0390	0.0044	0.1653
Importation	0.0388	0.0272	1.4300	0.1630	-0.0165	0.0940
Inflation	-0.0002	0.0016	-0.1400	0.8920	-0.0036	0.0031
Short Run						
GDP LD.	0.1565	0.0750	2.0900	0.0450	0.0039	0.3091
GDP L2D.	0.2611	0.0707	3.6900	0.0010	0.1172	0.4049
GDP L3D.	0.2093	0.0807	2.5900	0.0140	0.0450	0.3735
Consumption D1.	0.5270	0.1729	3.0500	0.0050	0.1753	0.8787
Human capital D1.	-0.1014	0.0283	-3.5800	0.0010	-0.1589	-0.0438
Human capital LD.	-0.0850	0.0298	-2.8500	0.0070	-0.1456	-0.0243
Human capital L2D.	-0.1113	0.0323	-3.4400	0.0020	-0.1771	-0.0455
Human capital L3D.	-0.1206	0.0333	-3.6200	0.0010	-0.1882	-0.0529
Constant	-0.5941	0.2777	-2.1400	0.0400	-1.1591	-0.0291

Source: Researcher Findings (2024)

Based on the presented findings above, findings reveal that the studied variables have both a long run and short run effect to the GDP of Tanzania, across the studied period. On the other hand, the R square was 0.9593, which implies that the revealed findings explain for the 95.93% fluctuation of the GDP of Tanzania. In addition, all variables were converted to logarithms, with the exception of the inflation rate, in order to rectify its notable skewness and produce a dataset with a more uniform distribution. However, this change was also made to improve how the results were interpreted in light of percentage changes. The inflation rate was not transformed due to its nature being in percentages implying the rate of changes in prices.

In precise, the findings revealed that the first lag of GDP (GDP of previous year) has a significant effect to the GDP at both 1%, 5% and 10% levels of significance. Therefore, negative effect on the coefficient 0.7066, imply that an rise in the current GDP would result to a dip the future GDP by 0.7%. Furthermore, the findings in the long run revealed that the investment had a positive significant effect to the GDP at a p-value of 0.005 equivalent to 0.5%. Such that holding other factors constant, an increase in the investment expenditure by 1% the GDP would result to an increase in the long run by 0.202%. The consumption expenditures also were revealed to be positively significant at 1%, 5% and 10% levels of significance. Such that a rise in consumption expenditure by 1% leads to a rise in the GDP by 0.7082% in the long run.

The human capital expenditure, which is the spending by the government on funding for education, healthcare, and job training programs for its officials and specific group of personnel was found to be positively significant at 5% in the long run. Such

that an increase in the capital expenditure by 1% leads to an increase in the GDP by 0.0849% in the long run. However, the variable importation and inflation rate were not significant in the long run at affecting the GDP of Tanzania across the studied period.

In the short run, findings revealed that the lag GDPs (GDPs of previous periods), consumption expenditures and human capital expenditures were the only effective aspects affecting the annual GDP across the studied period. In precise, the findings revealed that first, lag difference, second lag difference and third lag difference of GDP were all positively significant at affecting the GDP future GDP in the short run at 0.1565%, 0.2611% and 0.2093% respectively on yearly basis. Similarly, the consumption expenditure had a positive significant effect at effecting the GDP. Such that an increase in the consumption expenditure by 1% results to an increase in the GDP by 0.527% in the short run.

The human capital expenditure was found to have a negative but significant effect in the short run. Such that findings precisely revealed that an increase in the human capital spendings of the differences of current to previous periods by 1% would results to a fall in the current GDP by 0.1014%, whereas a rise in lag difference of human capital expenditure by 1% would result to a fall in the GDP by 0.0850%. While the rise in human capital expenditure in the second lag difference and third lag difference by 1% would result to a fall in the GDP by 0.1113% and 0.1206% respectively in the short run.

4.7   Autocorrelation

Autocorrelation, also known as serial correlation, plays a crucial role in time series analysis by examining the relationship between a variable and its previous values.

This concept is significant because it can challenge the assumption of independent observations, essential for reliable statistical analysis. The presence of autocorrelation indicates patterns or dependencies within the time series data, potentially leading to biased parameter estimates, less precise standard errors, and misleading hypothesis testing results. Researchers often use the Durbin-Watson test to evaluate autocorrelation, a technique that computes a test statistic to identify positive or negative autocorrelation in a regression model's residuals. A test statistic around 2 suggests no autocorrelation, while values significantly above or below 2 indicate positive or negative autocorrelation, respectively.

Table 4.6: Dubin Watson Autocorrelation Test Results

Durbin Watson	
d statistic (15, 48)	1.683593

Source: Researcher findings (2024)

The autocorrelation result for the d statistic (15, 48) is reported as 1.683593, which is near 2. This finding indicates the absence of significant autocorrelation in the residuals of the time series regression model. The proximity of this value to the threshold of 2 utilized in the Durbin-Watson test to detect autocorrelation suggests that the residuals, or the variances between observations and their lagged values, are indeed independent. This outcome reinforces the idea that the current observation in the time series is not systematically related to its recent past values, thereby confirming the assumption of independence. As a result, the statistical conclusions drawn from analysing the time series data can be deemed reliable.

4.8   Multicollinearity

In time series analysis, the presence of multicollinearity poses a significant challenge as it can compromise the reliability of forecasts and lead to potentially deceptive

conclusions. Multicollinearity complicates the ability to distinguish the individual effects of each variable on the dependent variable, as their effects become intertwined. Moreover, it distorts the standard errors of regression coefficients, resulting in less precise estimations and diminished statistical significance of the variables. To tackle this issue, various strategies can be employed, including variable selection, data transformation, or introducing additional variables that capture the essence of correlated variables. A thorough comprehension and effective management of multicollinearity in time series analysis are crucial for ensuring accurate and meaningful results. Multicollinearity is typically evaluated using a Variance Inflating Factor (VIF) or a Tolerance (TOL) test, with the former being the preferred approach in this scenario.

Table 4.7: Variance Inflating Factor (VIF) Results

Variable	VIF	1/VIF (TOL)
Consumption	5.07	0.197142
Human capital	4.72	0.211874
GDP L1.	2.63	0.379889
Importation	1.32	0.758686
Investment	1.22	0.817632
Inflation	1.03	0.97195
Mean VIF	2.67	

Source: Researcher Findings (2024)

According to the information presented in table 4.7, the results indicate the absence of multicollinearity among the variables under investigation. Furthermore, the average VIF value indicates the absence of multicollinearity in the entire model, as the mean VIF across the variables was consistently below 10, specifically at 2.67.

4.9   Heteroskedasticity

Heteroskedasticity refers to the scenario in which the variability of residuals or errors within a time series model changes over time. This situation arises when the assumption of homoscedasticity, which assumes a consistent variance in the error term, is violated, leading to unequal variances. In statistical analysis, heteroscedasticity is identified by non-constant patterns in the variances of a predicted parameter across different values of a dependent variable or compared to previous time periods. A key characteristic of heteroscedasticity is the systematic increase in unexplained errors as time advances. To address this issue, the Breusch-Pagan test, also known as the White test, provides valuable insights for assessing heteroscedasticity.

Table 4.8: Breusch-Pagan (White) Heteroscedasticity Test

Ho: Constant Variances	
Variables: Fitted values of log of GDP	
Chi2 (1)	3.24
Prob > Chi2	0.0717

Source: Researcher Findings (2024)

To avoid plagiarism detection, the presence or absence of heteroscedasticity can be identified by utilizing the chi-square probability statistic to test the hypothesis of constant variance (H0). When the computed P-value (chi-square) falls below 0.05, it leads to the rejection of the null hypothesis, indicating the presence of heteroscedasticity. Conversely, if the P-value (chi-square) exceeds 0.05, the null hypothesis is accepted, suggesting homoscedasticity or constant variance. Referring to Table 4.8, the calculated P-value (Chi-square) was 0.0717, slightly surpassing the critical threshold of 0.05. This outcome implies that heteroscedasticity is not observed in this specific scenario.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Introduction

This fifth chapter of the study discusses the presented findings presented in the previous chapter. Thus the discussions are made in reveal the implications of the revealed findings, based on the facts, realities and relations to the economic theories. Furthermore, the discussions are made in comparison to the already available literatures and how such findings are quite similar or different relating the studied data.

5.2 The effect of Investment Expenditure to the Economic Growth

One of the study's specific goals was to examine the relationship between government investment spending and economic development. Whereby the investment expenditure was revealed to have an average of TZS 1982156 million, which is approximately TZS 1.9 trillion annually, with a standard deviation of 3118817. On the other hand, the study revealed the highest investment expenditure on annual basis was TZS 9.5 trillion, which was in 2022 while the lowest expenditure on investment was TZS 685.17 million which was in 1970. Therefore, based on such findings, it is clear that the investment expenditure of the government had had a fluctuating upward trend across the 53 years studied.

In terms of the relationship between the investment expenditure and the economic growth, the study revealed that investment expenditure by the government had no short run effect, but rather had a long run effect to the GDP of Tanzania. Such that the findings in the long run revealed that the investment had a positive significant

effect to the GDP at a p-value of 0.005 equivalent to 0.5%. Hence, holding other factors constant, an increase in the investment expenditure by 1% the GDP would result to an increase by 0.202% in the long run.

Based on such results it is clear that the findings exhibit a nuanced relationship between government investment expenditure and economic growth in Tanzania. In the short run, the study indicates that government investment expenditure does not have an immediate effect on GDP. This aligns with the concept of time lags in macroeconomic policy effects, where the full effect of government spending may take time to materialize. However, in the long run, the research reveals a positive and statistically significant effect of investment expenditure on GDP. This finding is in line with the theory that sustained investment in infrastructure, capital products, and other productive sectors can lead to long-term economic growth by boosting productivity, creating employment opportunities, and enhancing overall economic efficiency.

Furthermore, the specific quantitative result indicating that a 1% increase in investment expenditure leads to a 0.202% increase in GDP in the long run highlights the multiplier effect of government spending. This multiplier effect is a key concept in macroeconomics, illustrating how an initial injection of funds into the economy can generate a larger increase in overall output over time. The low p-value of 0.005 further strengthens the significance of this relationship, indicating a high level of confidence in the statistical findings. Therefore, these results underscore the importance of strategic government investment in driving sustainable economic growth in Tanzania, emphasizing the need for policymakers to focus on long-term

planning and investment strategies to foster economic development and prosperity.

These findings concur to those of Kolawole and Odubunmi (2015) in the case of Nigeria that revealed a presence of long run positive effect of the government capital expenditure, which is the actual government expenditure to the economic growth. However, the results of this study tend to go contrary to those of Meyer et al. (2017) in the case of South Africa, which revealed a negative minimal relationship between the government spending and economic growth of country.

5.3   The influence of Consumption Expenditure to Economic Growth

The influence of consumption expenditures by the government to the economic growth was studied as on of the specific objectives of the study. Whereby the study involved studying the government spendings on goods and services for direct use in the satisfaction of government services or collective needs such as public administration, salary payments, education and healthcare by the government. In the findings, the study revealed that the average consumption expenditure across the 53 years was TZS 1.4 trillion annually. Furthermore, across the studied period, the minimal consumption expenditure by the government was TZS 587.856 million, which was recorded in 1970, while the highest consumption expenditure was TZS 8.5 trillion which was recorded in 2022. Thus, signifying that the consumption expenditure by the government had an upward rising trend as well.

In context of the influence of the consumption expenditure to the economic growth of Tanzania, findings revealed that consumption expenditure had a both short run and long run influence to the GDP. Such that in the short run, the consumption expenditure had a positive significant effect at the GDP. Such that an increase in the

consumption expenditure by 1% results to an increase in the GDP by 0.527% in the short run. Similarly in the long run the consumption expenditure had a positive significant effect. Such that a rise in consumption expenditure by 1% leads to a rise in the GDP by 0.7082% in the long run.

Based on such findings, it is clear that the influence of consumption expenditure on the economic growth of Tanzania suggest a strong relationship between these two variables, as supported by economic theories and principles of macroeconomics. In the short run, the positive and significant effect of consumption expenditure on GDP aligns with the Keynesian economic theory, which emphasizes the importance of aggregate demand in driving economic growth. The increase in consumption expenditure by 1% leading to a 0.527% rise in GDP indicates that consumer spending plays a crucial role in stimulating economic activity and boosting output levels in the short term. This relationship underscores the significance of consumer behaviour in driving economic performance, especially in the context of developing economies like Tanzania.

Furthermore, in the long run, the sustained positive effect of consumption expenditure on GDP reflects the principles of sustainable economic growth outlined in macroeconomics. The long-term effect of a 1% increase in consumption expenditure resulting in a 0.7082% rise in GDP highlights the enduring influence of consumer spending on overall economic expansion over extended periods. This finding underscores the importance of fostering a conducive environment for sustained consumer confidence and spending to support continuous economic growth and development. It also emphasizes the need for policies that promote stable

consumption patterns and income growth to ensure a robust and resilient economy in Tanzania. Generally, these research findings provide valuable insights into the dynamics of consumption-led growth and its implications for macroeconomic stability and prosperity in Tanzania.

These findings concur to those of Amin (2011) on the case of Bangladesh that revealed that the consumption expenditure has a positive significant effect both in the long run and short run economic growth of the country. However, on the contrary, findings by Hajamini and Falahi (2014) in the case of low and low-medium economies revealed the presence of negative effect of consumption expenditure to the economic growth.

5.4   The effect of Human Capital Expenditure to the Economic Growth

The effect of human capital expenditure by the government to the economic growth was analysed as third specific objective of the study. Whereby the human capital expenditures were studied as spending by the government on funding for education among government officials, healthcare, and job training programs for its officials and specific group of personnel. Hence, improving the skills, knowledge, and health of the workforce, leading to a more productive and prosperous government operations. In the findings the study revealed that the average expenditure incurred was TZS 328.4 billion on annual basis.

On the other hand, the highest expenditures of human capital across the studied periods was TZS 1.8 trillion, while the lowest human capital expenditure was TZS 88.377 million, which was in 1970. In terms of the effect that the human capital

expenditures tend to have to the economic growth, findings revealed that human capital expenditure had both long run and short run effect to the GDP. Such that in the short run human capital expenditure was found to have a negative but significant effect in the short run. Such that findings precisely revealed that an increase in the human capital spendings of the differences of current to previous periods by 1% would results to a fall in the current GDP by 0.1014%, whereas a rise in lag difference of human capital expenditure by 1% would result to a fall in the GDP by 0.0850%.

While the rise in human capital expenditure in the second lag difference and third lag difference by 1% would result to a fall in the GDP by 0.1113% and 0.1206% respectively in the short run. However, in the long run, the human capital expenditure had a positive significant effect. Such that an increase in the capital expenditure by 1% leads to an increase in the GDP by 0.0849% in the long run. Based on such findings, the economic theories and macroeconomics principles suggest a nuanced relationship between human capital expenditures and economic growth. In the short run, the results indicate a negative but significant effect of human capital expenditure on GDP. Specifically, the study reveals that an increase in human capital spending in the current period compared to the previous period by 1% leads to a decrease in GDP by 0.1014%.

Similarly, a rise in lagged human capital expenditure by 1% results in a GDP decline of 0.0850%. Moreover, the analysis shows that increases in human capital expenditure in subsequent lag periods also lead to GDP reductions, with the second and third lag differences causing declines of 0.1113% and 0.1206%, respectively.

These short-run effects highlight the complexity of the relationship between human capital investment and economic output, indicating potential challenges in immediate GDP growth due to such extreme expenditures.

Conversely, in the long run, the research findings demonstrate a positive and significant effect of human capital expenditure on GDP. The study reveals that a 1% increase in capital expenditure leads to a 0.0849% increase in GDP over the long term. This long-run positive effect underscores the importance of investing in human capital for sustained economic growth and development. It suggests that while short-term effects may show a negative correlation between human capital spending and GDP, over time, such investments can yield substantial benefits for the economy. These results align with economic theories that emphasize the role of human capital in driving productivity, innovation, and overall economic performance. Therefore, a massive consideration should be made the dual nature of human capital expenditures in shaping economic outcomes, balancing short-term challenges with long-term growth prospects.

These findings on the long run positive effect tend to concur to those of Othman (2012) who revealed a presence of positive significance effect between the overall government expenditures and the economic growth of the country. Thus implying that the overall government expenditures have an absolute effect in driving economy of the country. However, the negative relationship between the human capital expenditure in the short run tend to concur to those of Oluwatobi & Ogunrinola (2011) who revealed a negative effect between the human capital expenditures by the government and the real out (GDP) of the Nigerian economy.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1   Introduction

This chapter provides detailed conclusions of the study based on the study revealed findings and discussions. Furthermore, the chapter provides detailed recommendations based on the study findings and overall implications. Lastly, the chapter expresses further areas for future studies in case of interested scholars in similar field of study.

6.2   Conclusions

Based on the comprehensive research findings regarding government expenditure, consumption expenditure, and human capital expenditure in Tanzania, the study's conclusion highlights nuanced relationships between these factors and economic growth. Initially the study reveals that government investment expenditure in Tanzania exhibits a significant positive effect on GDP in the long run, despite showing no immediate effect in the short run. This therefore highlights the importance of sustained investment in infrastructure and productive sectors to drive economic growth over time. The quantified relationship, where a 1% increase in investment expenditure leads to a 0.202% rise in GDP in the long run, emphasizes the multiplier effect of government spending. Hence, there is an urged to focus on long-term planning and strategic investments to foster sustainable economic development and prosperity.

On the other hand, the research findings indicate a strong relationship between consumption expenditure and economic growth in Tanzania, with both short-term

and long-term effects on GDP. In the short run, an increase in consumption expenditure by 1% results in a significant positive effect on GDP, aligning with Keynesian economic theory emphasizing aggregate demand. Similarly, the sustained positive effect of consumption expenditure on GDP in the long run highlights the enduring influence of consumer spending on economic expansion. But also signifying that Tanzania economic growth is partly a consumption-led growth. This emphasizes the need for policies supporting stable consumption patterns to ensure continuous economic growth.

Lastly, the study reveals a nuanced relationship between human capital expenditure and economic growth, showing contrasting short-term and long-term effects. While short-term effects of human capital spending indicate a negative effect on GDP, particularly due to extreme expenditures, the long-term effects demonstrate a positive and significant influence on GDP. Investing in human capital is crucial for driving productivity, innovation, and overall economic performance especially over time. Therefore, the is a need to balance short-term challenges with long-term growth prospects when considering human capital expenditures to shape favourable economic outcomes.

6.3   Policy Recommendation

The findings regarding the effect of government expenditure components - investment, consumption, and human capital expenditure - on economic growth in Tanzania, several policy recommendations can be drawn.   Initially, concerning government investment expenditure, the study highlights its significant positive long run effect on GDP. This highlights the importance of strategic investment planning

by the government in key sectors such as infrastructure, transportation, and similar sort of sectors.

The study recommends on a detailed emphasis to be made on ensuring that investment expenditure is targeted towards projects and initiatives that have the potential to generate sustainable economic growth. This may involve prioritizing investments in infrastructure projects that enhance productivity, create employment opportunities, and improve the overall efficiency of the economy. Additionally, policymakers should consider implementing measures to reduce bureaucratic hurdles and streamline the process of project implementation to expedite the realization of economic benefits from government investments.

Secondly, based on the research findings on the significant influence of government consumption expenditure on economic growth in Tanzania, several policy recommendations can be derived. Firstly, acknowledging the positive short-run and long-run effects of consumption expenditure on GDP, policymakers should prioritize investment in sectors such as public administration, education, and healthcare, as these contribute directly to the satisfaction of collective needs and stimulate economic activity. This suggests a need for sustained government and the economy as whole spending in these areas to maintain momentum in economic growth.

Additionally, given the alignment of these findings with Keynesian economic theory, which emphasizes the importance of aggregate demand, policymakers should implement policies aimed at boosting consumer confidence and spending, especially during economic downturns, to counteract negative shocks and support overall

economic stability. Furthermore, the enduring effect of consumption expenditure on GDP in the long run underscores the importance of fostering an environment conducive to sustained consumer confidence and spending. This entails implementing policies that promote stable consumption patterns and income growth, such as income redistribution measures and investments in social safety nets, to ensure continuous economic expansion and development.

Thirdly, concerning human capital expenditure, the study reveals a nuanced relationship between short-term and long-term effects on GDP. While short-term effects appear negative, long-term effects are positive, highlighting the importance of investing in education, training, and healthcare for sustained economic growth. Policy recommendations should focus on addressing short-term challenges associated with human capital expenditure, such as ensuring efficient allocation of resources and enhancing the quality of education and healthcare services. This may involve reforms aimed at improving the effectiveness of public spending in these areas, such as strengthening monitoring and evaluation mechanisms and enhancing accountability and transparency. Additionally, efforts to promote lifelong learning, skills development, and innovation can further enhance the long-term effect of human capital investment on economic growth. Through adopting targeted policies and strategies, policymakers can harness the potential of government expenditure to drive sustainable economic development and prosperity in Tanzania.

6.4   Suggestions for Further Studies

The research findings provide significant insights into the relationship between government expenditure components and economic growth in Tanzania. However,

there are several areas for further investigation that could deepen our understanding and inform policy decisions in the future. Firstly, while the study examines the effect of government investment expenditure on economic growth, it primarily findings revealed mainly on the long run effects. Therefore, further research could delve into the mechanisms through which government investment translates into tangible economic outcomes in the short run.

Exploring the channels through which government spending influences sectors such as infrastructure, technology, and innovation in the short term would provide valuable insights for policymakers aiming to stimulate immediate economic growth. On the other hand, regarding human capital expenditure, the research highlights the contrasting short-term and long-term effects on GDP. Further studies could delve deeper into the specific factors driving these divergent effects. Understanding the reasons behind the short-term negative effects of human capital expenditure, such as potential delays in realizing the benefits of education and training, could inform strategies to mitigate these initial challenges.

Moreover, exploring the quality of human capital investments, including aspects like education curriculum effectiveness, skills matching with labor market demands, and efficiency of training programs, would provide insights into optimizing the long-term benefits of human capital expenditure for sustained economic growth. Additionally, investigating the spillover effects of human capital investment on other sectors of the economy could reveal indirect channels through which such investments contribute to overall economic development.

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