



Health Status and Economic Growth in Kenya

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Abstract

Economic growth is important as it measures the prosperity of a nation which indeed increases the output per person and factors like human capital, physical capital and technological change which are the main drivers towards achieving economic growth. Kenya's Vision projected an economic growth rate of 10 per cent per annum from 2008 to 2030 which has not been achieved to date. The purpose of this study was to analyze the impact of health status on economic growth in Kenya. The specific objectives of the study were to determine the effect of: nutrition status and life expectancy on economic growth in Kenya. The study adopted the endogenous growth theory and incorporated key health status into the model as a function of human capital. Research design employed was explanatory research design and relied on secondary data from World Bank from 1985 to 2018. Applying regression model, the results revealed that coefficient of life expectancy was 1.1556, which was positive and significant at 5 percent level. This implied that for every one percent increase in coefficient of life expectancy, GDP growth rate could increase by 1.1556 percent. Coefficient of nutrition status was -1.143, which was negative and insignificant at 5 percent level. This implied that for every one percent increase in coefficient of nutrition status, GDP growth rate would fall by 1.143 percent. Considering that increased life expectancy had direct effect on increase in economic growth rate, Kenya government could put in place policies promoting citizen's health. Suitable social sector policies and government interventions are required to increase life expectancy and consequently economic growth rate. Further, there is also a need for involvement of health human force in macro and micro policy-makings and critically examine other determinant of health care expenditure.

Keywords: Economic Growth, Health Status, Nutrition Status, Life Expectancy

JEL Classifications: JEL 150

1. Introduction

Globally, economies have experienced different economic growth with other developing faster and others have a sluggish economic growth rate. In America, there was a 4.2% annual GDP growth in 1985 compared with a slow growth rate of 2.3% in 2017. In Europe countries, the growth rate was 2.6% in 1985 and in 2017 there was a slight drop to 2.5%. In Asian countries, the rate of growth was at 5.3% in 1985 higher than most continents and in 2017 it improved to 6.9% in 2017 (World Bank, 2017). In Africa, Economic growth has seen a tremendous improvement in terms of GDP per capita and factors such as human capital have played a major role with the continent try to embrace technology to double its economic growth. Africa has also exhibited economic growth but with a slight improvement (IMF, Africa Economic Outlook Update, 2017). In 1985 the annual economic growth rate was 1.76

per cent with an improvement to 2.53 per cent in 2017. Mc Donald et al (2014) conducted on their study about economic growth in Africa, using a panel data of 41 African countries on the factors that inhibit economic growth. They found out that African countries have indeed potential in growth rate but due to poverty, HIV and corruption may inhibit in a slow growth rate.

The sub-Saharan countries which mostly are poor have been experiencing low economic growth due to Drought, war, lack of favorable political governments and poor health which has affected the economic growth of that region. Sub-Saharan Africa economic growth has not reached the projected economic growth annually due to poverty, poor health and corruption (Anupam Basu, 2006) and suggested these countries must increase their output to realize their economic growth rate. One health problem which has led to slow economic growth is HIV prevalence for many sub-Saharan countries. Lovasp and Schipp (2009) conducted a study on why there is a decrease in economic growth in Sub-Saharan countries factoring in human capital factors. The study found that the health indicators were worsening which affected economic growth in the Sub-Saharan region and also leading to a negative growth rate. In the study, the augmented Solow growth model was captured with physical, health and education and the health capital was the major contributor to decrease economic growth.

(Oleche, 2005) analyzed health status in Kenya and found out a negative trend on health status in Kenya. (Oleche,2005) proposed there is need for health status to be considered as it is left behind as a form of human capital. Oleche found out that under-five mortality and life expectancy have been having a negative trend and it will inhibit growth rate toward achieving vision 2030. As with the negative trend on health indicators in Kenya which could affect economic growth, the paper ought to examine the impact of health status on economic growth.

1.1. Health Status in Kenya

A healthy population transforms into greater progress in economic development because the population is productive (KIPPRA Policy Brief, 2018). A healthy workforce is a prerequisite for social and economic development in terms of employment, decent working conditions to a working population (WHO, 2018). Health indicators are a measure to tell the population of the advancing sustainable development. The right indicators for healthy development is important in measuring the progress of a human being (WHO, 2018). Health indicators are the measure of physical and emotional well -being of an individual or population (Thompson, 2000).

In Kenya, the major health status are HIV/AIDS, fertility, maternal and child health, childhood and maternal mortality, sexual activity, nutrition status (KDHS, 2014). This study will determine the impact life expectancy and nutrition status as key health status that influence changes in economic growth.

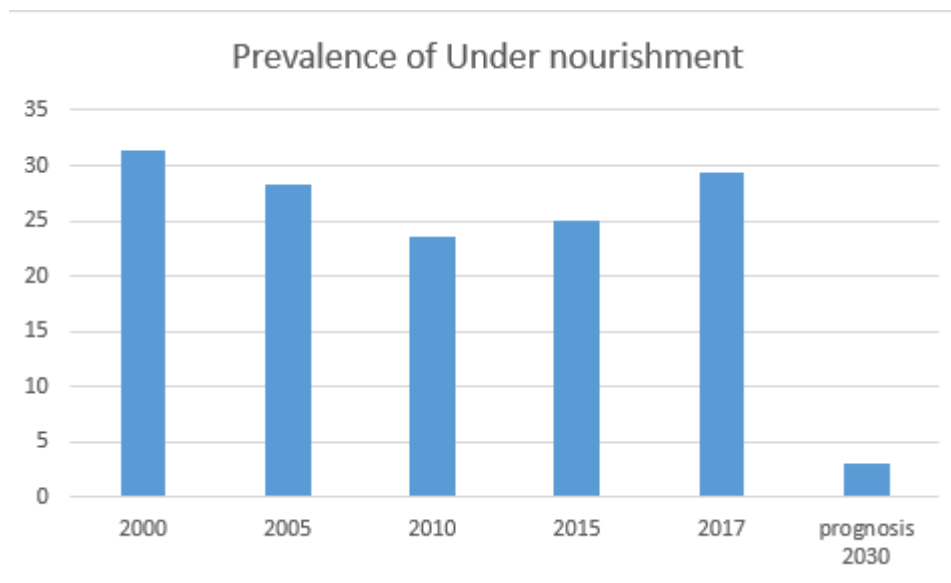


Figure 1: Prevalence of Undernourishment

Prevalence of undernourishment shows the population under the minimum level of dietary energy consumption. Prevalence of undernourishment in 2000 was 31.3 per cent of the total population, then there was a decline in 2005 at 28.2 per cent, it declined in 2010 at 23.5 per cent. Since then due to food insecurity, the prevalence has been on the rise at 29.4 per cent in 2017 due to undernourished and it is expected by 2030 to be reduced by 3 per cent of the total population. Malnutrition makes the economy not to achieve their goal as the children do poorly in school and reduce school attainment at an early stage. The adults experience low skill workforce who are not able to work and provide for their families hence economic growth is affected by malnutrition.

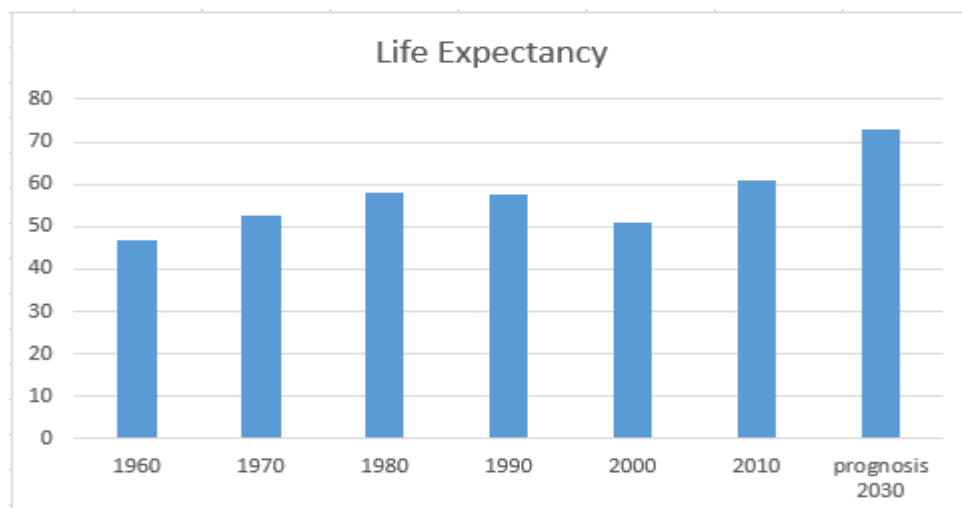


Figure 2: Life Expectancy

Kenya's life expectancy has improved since independence and currently 2019 the life expectancy is at 66.44 years. In 1960 the life expectancy was at 46.76 years, it grew until 1985 at 59.12 years. Then it started to decline from 1985 until the year 2000 at 50.92 years. Since then it has been on the rise until 2010 at 60.95 years. Life expectancy by 2019 was at 66.44 years and by 2030 it is expected to be at 73 years. The relationship between life expectancy and economic growth is compared between rich countries and poor countries. People born in a wealthy nation which have greater economic growth live longer compared to those nations which experience low economic growth and are poor.

1.2 Statement of the Problem

Despite studies have been conducted on the impact of health status on economic growth. The results have indicated a positive impact while other studies impact negatively on economic growth depending on the methodology employed with different countries. In Kenya, few studies have been done on the impact of health status on economic growth. Due to the negative trend on health indicators and slow growth rate, this study will try to analyze the impact of health status on economic growth in Kenya. This study aims to bridge this knowledge gap.

1.3 Objectives of the Study

The general objective of the study was to analyze the impact of health status on economic growth in Kenya. Specifically, the study sought to achieve the following objectives (1). To analyze the nature of the relationship between health status on economic growth. (2). To analyze the results of the study that will serve to improve policy measures in public health so as to facilitate economic growth.

1.4 Significance of the Study

The study would help the National government, County government, and other stakeholders like International donors to put measures and improvement of health status. Furthermore, the study would be expected to benefit scholars and academicians who could want to use as a reference to the findings of this study for further research and also fill the knowledge gap of this study. The study would add value to understanding the significant relationship between Gross Domestic Product life expectancy and nutrition status.

2. Literature Review

2.1 Endogenous Growth Theory

The Endogenous growth models, Lucas (1988) and (Romer P., 1989) were the key players in the development of the endogenous model. This theory assumed that the growth rate of a Nation is Endogenous and is determined within the model and gave much emphasis on productivity, efficiency, and improvement in Technology. The theory considers that if productivity increases, labour force will be provided with resources such as physical capital, human capital and technology. The school of thought of Endogenous growth believed that the Steady-state growth rate of a Nation is affected or assumed by the rate of Factors of Production which are accumulated over time with the constant return to scale in which steady-state will be influenced by the factors which are accumulated. The theory viewed that

Economic actors and government policy will be able to affect the growth rate in the long run. In this regard, the Endogenous growth rate is seen among the differences in growth rate among countries that have a different level of savings rate and Investment in what is known as Conditional Convergence or Divergence. The neo-classical Solow growth model does not give sufficient evidence on how economic growth occurs and highlights that it happens by chance. In the endogenous model, the technical change does not happen by chance but it is influenced policy decisions which are included with labour and capital with government interventions. Government interventions like subsidies, tax policies to promote economic growth.

More studies have been conducted using Life Expectancy and Nutrition status to determine Economic Growth. Many researchers have shown that those countries with good nutrition usually their population have a long life expectancy. Hence better nutrition provides a better incentive to human capital accumulation. (Arcand, 2001) compared Economic growth and Nutrition status and argued that malnutrition is a humanitarian crisis for Economic development. For any population in social investment in education and knowledge, in the long run, it will improve the Life Expectancy of the nation.

2.2. Life Expectancy and Economic Growth

According to (Mahumud et al 2013) determined the impact of Life Expectancy on Economic Growth and Health Expenditure in Bangladesh. They used multiple regression models to analyze annual time series data from 1995-2011. The results showed that Life Expectancy for females was 0.0986 more than males with annual GDP per capita increasing by 0.4488 times during the period of study and indicated there is a positive change in life expectancy and increasing income. The study recommended a policy Intervention to increase income per capita and also increase Expenditure on health for the benefit of social development and wellbeing.

(Waziri, 2016) examined the effect of HIV/AIDS and life expectancy on Economic Growth for 11 years (2002-2012) using a dynamic approach for 33 Sub-Saharan countries. From the study, they revealed that at a 1 percentage significant level HIV/AIDS is negatively correlated with GDP with a coefficient of 0.014. The study further revealed that a 10 per cent increase in HIV/AIDS prevalence causes a decrease in GDP by 0.14% in the Sub-Saharan countries. One of the recommendations by the study is that the community should put more effort into Educating school going Children on the danger of HIV/AIDS in Sub-Saharan countries.

(Opeloyeru, 2015) examined the Impact of Life Expectancy on Economic Growth from 1981 to 2014 using an Ordinary Least Square. They did a pretest analysis on the variables of two different orders of integration and also a post-test to determine the correlation of variables. The results found a long-run positive relationship between GDP per capita and life expectancy. Further, they recommended that for a sustainable Economic Growth the Economy should invest in the health sector for better health outcomes.

(Ecevit, 2013) did a study on the impact of Life Expectancy at birth on Economic Growth for 21 OECD countries for a period from 1970-2010 using a panel data in the context of cointegration and causality relationship for 21 countries. The study found out that Life Expectancy has a positive relationship with GDP and is statistically significant on real GDP

per capita providing a Granger Causality effect of Life Expectancy and GDP with an indication of unidirectional causality running from Life Expectancy and GDP per capita.

Developing countries (Manfred, 2015) analyzed the impact of Life Expectancy on Economic Growth in Developing countries over the period 2000- 2013. The data covered over 141 developing countries using dynamic panel data according to their Income Level. They estimated the model using the generalized method of moments, Causality test and adopted the descriptive and Econometric approach. The results indicated that low income Developing nations have a lower life expectancy at birth while high income developing nations have a strong performance. Hence there was a positive correlation between Life Expectancy at birth Gross National Income per capita and the effect is not significant in the middle-income nations.

2.3. Nutrition Status and Economic Growth

(Wang, 2003) investigated the impact of the nutritional status on real GDP per capita using a panel data of 114 countries over a period 1961-1999. They acquired their data from the world food survey taking into account the average daily calorie intake per capita in most countries measured in kcal/day. They used the human capital model which incorporates the nutrition index. They used econometric modelling between the short run population growth effect and long-run population growth effect in which nutrition is likely to occur in the short run than in the long run, moreover, the short run is likely to be insignificant than the long run. The results indicated that on average the long-run real GDP per capita growth rate can be increased by 0.5 % if Daily Energy supply is increased by 500 kcal/day, furthermore, they found a strong association between nutrition on growth and growth on nutrition.

(Shankar, 2008) investigated whether there is a causal relationship between calorie intake and Economic growth over a period 1965 to 2005 in Mauritius using a time series data. They used Granger causality and cointegration to test the causal relationship between two variables. The calorie intake was expressed in calories/capita/ day which data was obtained from FAO. They found out that on short and long-run causality tests between daily per capita calorie intake and GDP is absence. Also, Dawson and Tiffin (2002) found a unidirectional or bidirectional Granger causality between Nutrition and GDP per capita. They recommended that the population should reduce the intake of saturated fats, cholesterol intake and intake of refined sugars.

(Ghosh, 2018) examined the direction of causality between Economic growth and Nutrition intake in India using a time series data over a period from 1961 to 2013. They used Granger Causality to test if there is a causal relationship between Economic Growth and Nutrition intake. Nutrition was expressed in calories per capita/day obtained from national food balance sheets (FAO). The results indicated that Economic Growth causes Granger Causality with Nutrition but nutrition intake does not cause Granger causality with Economic Growth in India.

2.4. Research Gap

Kashif Raza et al (2013) analyzed the impact of health indicators on economic growth in Pakistan using times series data from 1980 to 2012. The study focused on various Indicators like life Expectancy, fertility rate and health expenditures. As for this study, it will incorporate

Nutritional status and access to health services as an Independent variable. Andrew Essig et al (2015) analyzed the relationship GDP per Capita and HIV prevalence in African Countries using data of 2005 GDP per Capita. The study focused on various Indicators like Gross Domestic Product, Life Expectancy, Foreign Direct Investment, and HIV prevalence rate using multiple regression method at a given time. As for this study, it will incorporate nutritional status and life expectancy as an Independent variable. Most studies used other methods in data analysis. To bridge this gap, the study will adopt the OLS regression technique for data analysis and also test for Integration, Vector Error correction and Unit root test to fill this knowledge gap.

3. Methodology

The study employed an explanatory approach research design. The econometric model used was based on the Theoretical Framework using the Endogenous growth model. The study used GDP for Economic Growth for a Dependent variable while nutrition status and life expectancy as independent variables. The model was specified from the Theoretical framework as:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 \quad (1)$$

Where y is GDP; x_1 is nutritional status; x_2 is life expectancy

The estimated model was then transformed into log-linear models reducing the equation as natural logs to avoid the problem of multicollinearity among the variables in the model and also helps to reduce the variability of data and enables direct estimation of elasticities.

$$\ln GDP_t = \beta_0 + \beta_1 \ln NS_t + \beta_2 \ln LE_t + \varepsilon_t \quad (2)$$

Where $\ln GDP_t$ = Log of Gross Domestic Product (proxy for economic growth) in period t

$\ln NS_t$ = Log of Nutritional Status (proxy for Calories per capita/day) in period t $\ln LE_t$ = Log of Life Expectancy at Birth in period t ; ε_t = Error Term, which captures all factors that affect GDP but are not taken into account (Gujarati, 2004); β_0 = Intercept $\beta_1, \beta_2, \beta_3, \beta_4$ = Coefficient of the Independent Variables.

The model was adopted by Howitt (2005) and Idowu Daniel (2014). Hence in this study, the model would be improved by the inclusion of nutrition status and life expectancy in the model.

3.1 Data Source and Type

The sample of the study to be used was secondary annual time series data over a period (1985-2017) both the Dependent variable and Independent variable. The data will be obtained from Secondary data and extracted from various Institutions including KNBS, World Bank data, C.B.K and WHO, UNICEF and UNDP development Indicators.

4. Results and Discussion

The study tested for multicollinearity and a rule of thumb and produces a VIF value of each explanatory variables in the model. The results depicted that, the null hypothesis of non-multicollinearity was acknowledged as the VIF were less than 10 or the tolerance ($1/VIF$) was more than 0.1 for all the variables.

Results of the Augmented Dickey Fuller unit root was presented in Table 1

Table 1: Augmented Dickey Fuller after Differencing

Variable	ADF t-statistic	1% level	5% level	10% level	Conclusion
InGDP	-5.850	-2.654	-1.950	-1.602	I(0) Stationary
InNS	-2.508	-2.654	-1.950	-1.602	I(0) Stationary
InLE	-4.788	-2.654	-1.950	-1.602	I(0) Stationary

From the results in table 1, after differencing the ADF t-statistics log of GDP was -5.850 log of nutrition status -2.508, log of life expectancy is -4.788 and log of nutrition status was -2.508 which were greater than the critical values at 5%. This implied that the variables were stationary after differencing at 5% level of significance and concluded that there was no unit root.

The plot of log of nutrition status (InNS) after first differencing

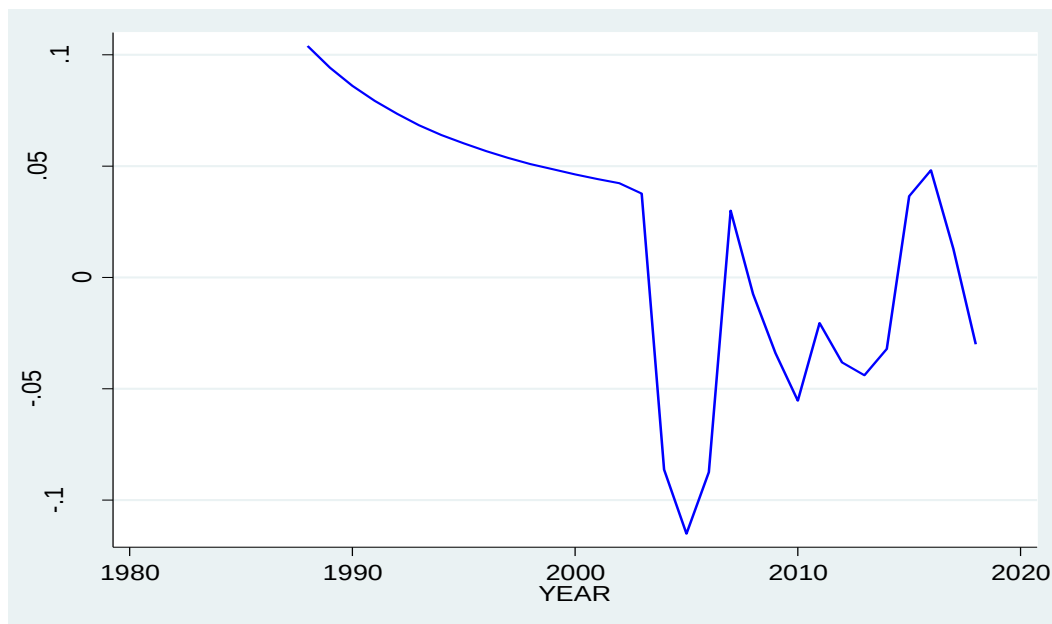


Figure 3: Nutrition Status

The first differenced variable was stationary around a trend or mean. The variable nutrition status was integrated of order 1 since it became stationary after being differenced once.

The plot of log of life expectancy (Inle) after first differencing is shown figure 4.2

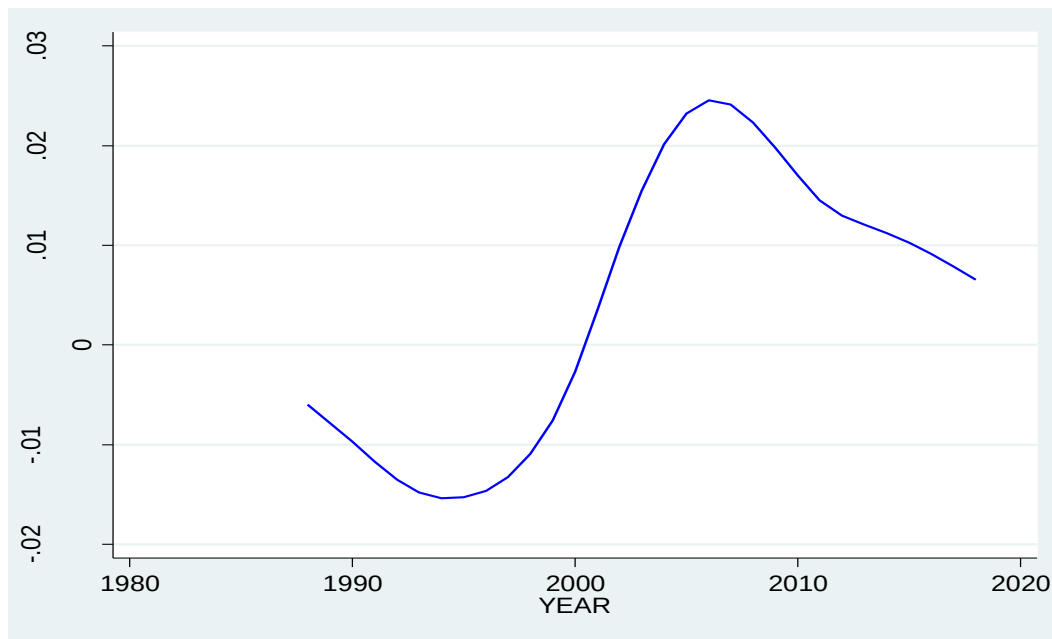


Figure 4: Life Expectancy

The first differenced variable was stationary around a trend or mean. The variable life expectancy was integrated of order 1 since it became stationary after being differenced once.

4.1 Regression results

Table 2: The results of OLS Regression,

Dependent variable is InGDP

Variable	Coefficient	Standard Error	t-value	Probability
InNS	-1.114311	0.6074503	-1.83	0.077
InLE	1.155658	0.4780424	2.42	0.022

The Durbin Watson of 2.040715 is greater than the values $R^2=0.6347$ and Adjusted $R^2=0.6260$ meaning the results can be used for analysis because the problem of correlation has been handled. The coefficient of determination (R^2) of 0.6347 means that 63.4 percent of the variation in the dependent variable, GDP growth rate is explained by the independent variables: nutrition status and life expectancy. Therefore, it indicates that 36.6 percent of the variation in GDP growth rate is due to error, other factors were not included in the model.

Nutrition status was found to be negatively related with economic growth. The coefficient of nutrition status was -1.1143 which was negative and insignificant at 5 percent level. This implied that for every one percent increase in coefficient of nutrition status, GDP growth rate would fall by 1.1143. Coefficient of nutrition status was found to be influencing negatively economic growth rate in Kenya.

Life expectancy was found to be positively related with economic growth. The coefficient of life expectancy was 1.1556 which was positive and significant at 5 percent level. This implied that for one percent increase in coefficient of life expectancy, GDP growth rate could increase by 1.1556 percent. Coefficient of life expectancy was found to be influencing positively economic growth rate in Kenya.

5. Conclusion

From the study findings, this paper concludes that there is a relationship between economic growth and life expectancy since the coefficient of life expectancy was significant. Coefficient of nutrition status was found to be insignificant.

Life expectancy was found to be statistically significant. Life expectancy depends on the standard of living and health facilities of a country. Life expectancy has been majorly affected by the emergency of life style which in the long run would make the population unhealthy and unproductive towards attaining economic growth. Therefore the government should invest in health facilities and improving standard of living for life expectancy would accelerate economic growth.

Nutrition status was found to be statistically insignificant. Nutrition status as a proxy for dietary nutrient uptake/capita which represents under-nutrition especially for developing nations like Kenya has been affected by food security. Kenya still suffers food insecurity or low dietary food uptake in the economy hence affects the health and productivity of the economy. Hence the government should increase awareness on better foods intake and training to farmers to improve on food security for better dietary nutrient uptake for better and healthy population to accelerate economic growth.

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