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THE RELATIONSHIP BETWEEN HAPPINESS AND INCOME IN THE EAST AFRICAN COMMUNITY

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DECLARATION

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

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This Research Project has been submitted for examination with my approval as the Supervisor.

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List of abbreviations

EAC – East African Community

EMA – European Medicines Agency

GDP – Growth Domestic Product

GNHI – Gross National Happiness Index

SWB – Subjective Wellbeing

UN – United Nations

WHR – World Happiness Report

ABSTRACT

This study aims at determining the impact of income on happiness in the East African Community (EAC). Happiness is measured on a ladder from 0 to 10 where 0 is very unhappy and 10 is very happy while income is measured by the log of GDP per capita. This study uses a Panel Data approach which covers four EAC member countries; Kenya, Uganda, Tanzania and Rwanda from the period 2006 to 2018. The Random Effects model is used to estimate this relationship and it was found that at the 99% confidence level, there is a statistically significant positive relationship between income and happiness. It would therefore be important for policy makers to ensure individuals have a decent income so they can meet their basic needs and improve their happiness. Similarly, life expectancy was found to have a negative relationship with happiness, holding all else constant, implying the need for quality healthcare. At the 95% confidence level, social support was found to have a statistically significant positive relationship with happiness, holding all else constant. This emphasizes the need for a strong support system through family and friends. Unemployment was also found to have a statistically significant positive relationship with happiness at the 90% confidence level, holding all else constant. Employers should therefore improve working conditions so that people can enjoy working rather than being unhappy when employed. This study encourages further research into other determinants of happiness in the EAC as well as the reasons for low happiness levels.

CHAPTER 1: INTRODUCTION

1.1. Background to the study

1.1.1. Introduction to happiness

Happiness is the ultimate end and purpose of human existence, according to Aristotle (History of happiness: Pursuit of happiness, 2018). It can be defined as a state of wellbeing or life satisfaction with one's quality of life. Therefore, the terms subjective wellbeing (SWB), life satisfaction and happiness can be taken to mean the same. Subjective wellbeing is a broad term and has both affective and cognitive elements. The affective element, also referred to as the emotional component, refers to the balance between pleasant and unpleasant feelings while the cognitive element refers to life satisfaction and evaluating the purpose of life according to one's standards (Diener, 2000).

Happiness can be determined at both the individual level and collective level via self-report. There is no sole determinant of subjective wellbeing, but some conditions are imperative for high SWB. These include positive relationships and mental health. However, they are not in themselves sufficient to cause happiness.

1.1.2. History of the happiness statistic

The happiness measure was first developed by King Jigme Singye Wangchuck of Bhutan in the early 1970s and was named the Gross National Happiness Index (GNHI). It was developed to capture general wellbeing more accurately than a monetary measure for the people of Bhutan. In other words, the index was developed as an alternative and a more comprehensive measure of progress to Gross Domestic Product (GDP) due to its ability to capture the quality of life of citizens. GDP has been criticised as a poor measure of wellbeing because "it doesn't account for the value of the by-products of production, including negative externalities such as pollution as well as positive externalities such as infrastructural improvement. It does not measure the true quality of life of citizens but is, at best, an imperfect measure of the resources available to the average person to pursue their goals. Finally, it underestimates the actual value of the work performed by a nation's citizens and specifically that of certain kinds of citizens such as the unpaid labour of stay-at-home partners" (White, 2014, p.3).

The GNHI categorises people as: deeply happy, extensively happy, narrowly happy and unhappy. It has four main pillars; sustainable socio-economic development, good governance, environmental conservation and cultural preservation. These are further categorised into nine domains; psychological wellbeing, health, education, living standards, good governance, cultural diversity and resilience, community vitality, time use and ecological diversity and resilience. Each domain is equally weighted since each is considered equally important. The analysis focuses on how policies can increase happiness and satisfaction among the unhappy and narrowly happy people based on the happiness people already enjoy.

This index was revised and the updated GNH index released in 2011. In the same year, the United Nations passed a General Assembly resolution encouraging member states to track aggregate happiness. This was followed by a meeting on "Happiness and Wellbeing: Defining a New Economic Paradigm." This meeting was designed to bring together key players in world leadership to develop a new economic model based on sustainability and wellbeing in 2012. This led to the publishing of the first World Happiness Report (WHR).

The Happiness Alliance developed the Happiness Index which can also "be used to define income inequality, trust in government, sense of community and other aspects of wellbeing. The domains measured include psychological wellbeing, material wellbeing, health, time balance, community, social support, governance, education, arts and culture, environment and work" (Musikanski, et al., 2017, p. 4). The Happiness Index has since been modified to allow for variations of the index to suite different countries, regions and social and economic groups (Musikanski, et al., 2017).

The Gallup World Poll has also been used to measure happiness. The poll generally measures individuals' attitudes to different important issues in the world. These surveys use a sample size of approximately 1000 individuals or 2000 individuals in larger countries such as China and Russia (Gallup World Poll, 2019). Examples of the questions asked in the survey are: "All things considered, how satisfied are you with your life as a whole these days?". "Please imagine a ladder with steps 0 to 10, suppose that the highest part of the ladder represents the best possible life for you and the bottom represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this point, assuming that the higher the step

the better you feel and the lower the step the worse you feel? Which step comes closest to the way you feel?" (Gallup World Poll, 2019). This is known as the 'Cantril Ladder'.

1.1.3. Happiness in Africa

Through the years, it has been reported that "happiness is less evident in Africa than in other regions of the world and that average ladder scores for over four in five African countries are below the mid-point and only two African countries have made significant gains in happiness over the past decade, that is, Algeria and Mauritius" (Møller, Benjamin, Tiliouine, & Loschky, 2017, p. 85). Of the 54 countries in Africa; Kenya has been ranked 13, Uganda 28, Rwanda 41, Tanzania 42 and Burundi 43, as f 2017. "There is a strong negative relationship between happiness and lived poverty, therefore, African countries that experience less lived poverty report higher levels of happiness" (Møller, Benjamin, Tiliouine, & Loschky, 2017, p. 95). There are considerable inequalities in life evaluations in African countries and this inequality in happiness has been on the rise over the past years. The quality of life in Africa can be observed from different aspects. Stereotypically, Africa has been associated with famine, dictatorship, war and disease. The *'Africa Rising'* narrative projected a continent with great mineral and agricultural wealth such that Foreign Direct Investments to the continent exceed Foreign Aid (Møller, Benjamin, Tiliouine, & Loschky, 2017).

1.1.4. Happiness and income in the EAC

The most common indicator for national income is GDP per capita. GDP can be defined as the value of all final goods and services produced within a country during a certain period such as a year or a quarter. Overall, annual GDP per capita growth rates for the past ten years have been relatively constant in the EAC. Rwanda has the highest average growth rate of 7.71%. The average GDP per capita growth rate in Kenya is 5.38%, 6.32% for Uganda and 6.25% for Tanzania. Figure 1 below represents the trend in GDP growth rates.

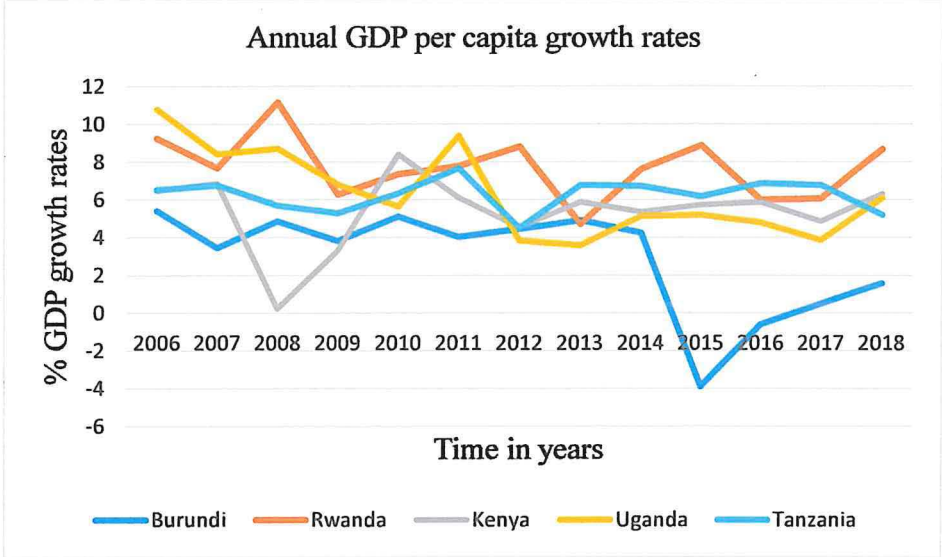

Figure 1: Annual GDP per capita growth rates from 2006 to 2018

Data source: World Bank, 2018

Previous studies such as Steven and Wolfers (2013) have found that there is significant correlation between happiness and income across countries and over time. However, other studies such as Easterlin (1974, 1995, 2001) and Layard (2003) suggest that there is a satiation point beyond which the marginal gain in happiness declines with increasing income.

This study seeks to test whether the positive relationship between happiness and income holds over time in the EAC. This study also seeks to determine whether the happiness statistic takes into consideration the state of life in these countries, that is, the levels of development, living standards, unemployment rates and other such differences. To do this, the study uses variables/measures that are better suited to African nations rather than to Western countries. Therefore, this study maintains the variables: income as measured by the log of GDP per capita, health as measured by life expectancy, social support and perceptions of corruption. It introduces the variables education proxied by education index, unemployment levels, credit access and mobile subscriptions as a proxy for infrastructural development.

1.2. Problem statement

United Nations member states have been urged to use the happiness index to measure the level of progress and satisfaction of their citizens. For this reason, there have been studies on how income impacts happiness. Researchers such as Diener et al. (2010); Inglehart and Klingemann (2000); Steven and Wolfers (2013) have found that indeed there is a robust positive relationship between happiness and income. However, some studies such as Easterlin (1974, 1995, 2001) and Di Tella and MacCulloch (2008) argue that this relationship only holds up to a certain point beyond which the marginal gain in happiness declines as income increases. This relationship has been found to be more significant for low income households and countries. Research on this relationship has been conducted for both developed countries by researchers such as Easterlin (2001) and Kahneman and Deaton (2010) and developing countries by Easterlin (2009) and Clark & Senik (2010). However, this relationship is yet to be examined for the EAC member countries. Therefore, this study tests whether this relationship holds for the EAC. In addition, this study seeks to determine whether this happiness statistic truly captures the state of life in the EAC. To do this, the study uses variables that are better suited to the concerns of East Africans. These variables include unemployment levels, credit access, mobile subscriptions and academic achievements as proxied by the education index.

1.3. Research Objectives

The main objective of this study is to determine the effect of income on happiness in the EAC.

1.4. Research Questions

What is the effect of income on happiness in the EAC?

1.5. Scope of the study

This study focuses on the EAC member countries, that is, Rwanda, Uganda, Tanzania and Kenya. South Sudan is omitted due to the political unrest in the country and as such, the living conditions cannot be said to be the same as the rest of the EAC member countries. Burundi is also omitted due to data limitations. This study covers a time period of 2006 to 2018. Happiness will be captured using the Gallup World Poll happiness statistic.

1.6. Significance of research

This study is important to policy makers to inform policies around income generating projects and in the overall process of regional integration, more specifically, labour mobility. Given the positive relationship between subjective wellbeing and income, when individuals earn a living and can afford their basic needs, their life satisfaction increases. This also reflects on the quality of life of the nations' citizens and reduces the burden placed on the government to provide for its citizens. Ultimately, job creation leads to higher GDP as well as increased tax revenues. Holding all other factors constant, the cycle continues resulting not only in economic growth but also economic development. In Kenya for instance, this study would be particularly important in informing the 'Expansion of the Manufacturing Sector' initiative under the 'Big Four Agenda' where the government aims to increase job opportunities.

This study will also be beneficial to researchers by enabling deeper understanding of life satisfaction in the EAC and to the citizens of the EAC member countries in that they will become more aware of how income impacts on their subjective wellbeing.

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

This chapter discusses previous studies on the relationship between happiness and income and their findings. This chapter is divided into two; theoretical literature review and empirical literature review. Theoretical literature review discusses proposed theories around the happiness-income relationship while the empirical literature review discusses the methodologies used by researchers and their findings.

2.2. Theoretical literature review

The idea of the 'science of happiness' was pioneered by the great philosopher Aristotle. He believed that to live a genuinely happy life, a set of conditions would have to be met. These include physical as well as mental wellbeing. He also believed that pleasure alone cannot make up happiness since human beings are rational beings. Therefore, the key factor in the strive to attain happiness is to be of good moral character. He refers to this as 'complete virtue'. To the philosopher, happiness comprises of achieving health, wealth, knowledge and friendships throughout one's life.

Socrates, another great philosopher argued that all human beings desire happiness and that the key to happiness is to turn attention towards the soul and away from the body. He argues that happiness depends on how material things are utilized. Like, Aristotle, he insists that a moral life leads to a happier life. He believed that happiness is attainable by human effort since it is the individual who gives their life a purpose. This is contradictory to reality since at times one may want to be happy but due to certain circumstances or life conditions it becomes difficult to attain complete happiness (History of happiness: Pursuit of happiness, 2018).

Wilson (1967) carried out the first broad review of happiness research. He concluded that "the happy person emerges as a young, healthy, well-educated, well-paid, extroverted, optimistic, worry-free, religious, married, with high self-esteem, high job moral, modest aspirations, of either sex and of a wide range of intelligence" (Wilson, 1967, p. 294).

2.2.1. Easterlin Paradox

Among the pioneers of the empirical studies on the happiness-income relationship is Professor Richard Easterlin after whom the *'Easterlin paradox'* was coined. This paradox asserts that at a point in time happiness varies directly with income, both among and within nations, but over time happiness remains constant despite an increase in a country's income. That is, the marginal gain in happiness declines with increasing income.

It has been proven that individuals living in wealthy countries have higher levels of life satisfaction than those living in poor countries. Similarly, within a single country, wealthy individuals experience higher life satisfaction than poor individuals.

2.2.2. 'Livability' Theory

In agreement with the Easterlin Paradox is the *'Livability Theory'* which asserts that income only boosts wellbeing to the extent that the basic human needs are met. Beyond this point, the returns on wellbeing are diminishing (Veenhoven, 1995). Brickman and Campbell (1971) explained the diminishing returns of income with reference to the psychological theory of adaptation. According to this proposition, people's material aspirations change as their circumstances improve. Over time, they adjust to the higher levels of wellbeing and with time are no longer content with their current level thereby causing them dissatisfaction.

2.3. Empirical literature review

Income has been found to affect happiness in two ways: ability to meet basic needs and material aspirations. Researchers have found that in general, people residing in wealthy nations are happier than those residing in low-income nations. As such, a substantial decline in a nation's per capita income is accompanied by a drop in the citizens' subjective wellbeing (Inglehart & Rabier, 1986). This was observed in Belgium in 1979. Similarly, within a country, high income individuals have been proven to be significantly happier than low income individuals.

In representative national surveys conducted, it has been found that there is a robust relationship between life satisfaction and earnings. To carry out this study, Easterlin (2001) conducts a survey asking the question; "Taken all together, how would you say things are these days – would you say that you are very happy, pretty happy or not too happy?" (National Opinion Research Centre, 1999, p.171). He then computed a mean

happiness rating ranging from 1 to 4 where he found that happiness varies with income within a range of 1.8 to 2.8. He then observed this relationship at the cross-sectional level (at a point in time) and throughout the life cycle. He finds that life satisfaction increases with increasing income but only up to a certain level beyond which the additional gain in happiness begins to decline. Put differently, happiness varies directly with income at a point in time but over time this relationship does not hold, both among and within nations. This was coined the *Easterlin Paradox*. This paradox asserts that at some point, those with higher income are happier than those with less but over the lifecycle, happiness remains constant despite substantial growth in income. He suggests, therefore, that if the citizens earn enough to meet their basic needs, they are content. This relationship holds for household income both unadjusted and adjusted for family size. He found a correlation coefficient of 0.2 though highly significant. This can be attributed to the introduction of control variables such as unemployment and education which impact on income.

During the Life Cycle Pattern, Easterlin (2001) finds that there is a contradiction in the positive happiness-income relationship such that over the lifecycle this relationship doesn't hold. He observed that, income and economic circumstances in general progress up to retirement age yet there is no subsequent gain in wellbeing. As such, experienced happiness was found to be constant throughout the lifecycle hence the paradox; *why at a point in time are income and happiness positively related but over the lifecycle there is no correlation*? Professor Easterlin mentions that material aspirations affect judgement of subjective wellbeing such that at certain points one feels less satisfied with life and at other times, especially after attaining certain aspirations, one feels more satisfied (Easterlin, 2001).

Kahneman and Deaton (2010) test whether income has different implications for the different aspects of wellbeing, such as, emotional wellbeing and life satisfaction. To do this, they investigated a sample of approximately half a million American citizens. They found that income was more strongly correlated with life satisfaction than with emotional wellbeing. They also found that the threshold for the effects of income on emotional wellbeing was about $75,000 per capita. Beyond that, increasing income would not result in increasing wellbeing (as cited in, Stevenson & Wolfers, 2013, p. 603).

Different researchers find different threshold levels beyond which increasing income does not result in higher satisfaction levels. For example, Layard (2003) suggests that "once a country has over $15,000 per capita, its level of happiness appears to be independent of its income" (Layard, 2003, p.17). In his subsequent work, he suggests a threshold of $20,000 per capita (Layard, 2005). Similarly, Frey and Stutzer (2002) hypothesize that "income provides happiness at low levels of development but once a threshold of around $10,000 per capita is reached, the average income level in a country has little effect on average subjective wellbeing" (Frey & Stutzer, 2002 p.416).

In contrast, researchers such as Kahneman and Deaton (2010); Sengupta, et al. (2012); Stevenson and Wolfers (2013) have found that there is indeed a robust positive association between wellbeing and income across countries and more importantly, over time.

Kahneman and Deaton (2010) argue that plotting life satisfaction against absolute income in dollars is what has led to the incorrect conclusion that there is a satiation point after which people gain little or nothing from increasing income. Instead, plotting life satisfaction against the logarithm of income, results in a linear relationship. They therefore find that an increase in income, say from $10,000 to $20,000 should have a similar effect on wellbeing as an increase from $100,000 to $200,000. This is referred to as the doubling effect of income (Kahneman & Deaton, 2010).

Sengupta, et al. (2012) model this relationship as a logarithmic function where they divide the aspects of wellbeing into four; overall happiness levels, overall stress levels, perceived ability to meet basic needs and evaluations of one's quality of life. They then test for the logarithmic relationship between each of these aspects and household income. They found that the average level of subjective wellbeing on a scale of 0 to 4 was 3.21 with a standard deviation of 0.67. When evaluating the ability to afford basic needs, participants were asked to choose from these responses; 'not enough money', 'just enough money', 'enough money' and 'more than enough money.' They found this function to be strongest for the low-income earners, where an expansion in earnings will have the most substantial effect on their ability to meet basic needs. They manage to prove then that to a certain extent, money can indeed buy happiness and good health. In this case, good health refers to low stress levels. As perceptions on the ability to meet basic needs increased, stress declined and happiness and quality of life

improved. Therefore, ability to meet basic needs has a positive linear correlation with happiness (0.10) and quality of life (0.17) but a negative correlation with stress (-0.08).

Stevenson and Wolfers (2013) reassess the Easterlin paradox and find that there is no set satiation point for both wealthy and low-income individuals and nations. They also establish that the wellbeing-income relationship is approximately log linear, such that, an additional unit (dollar) of income results in a greater increase in happiness for the poor than for the rich. They examine the cross-sectional relationships within and across countries using the log of real GDP per capita and find that each of these measures of subjective wellbeing is highly correlated with GDP per capita (0.79) for 155 countries. Finally, they represent their findings visually using scatter plots and find that the slope does not flatten out beyond any 'threshold' in any nation.

In 2017, Professor Easterlin revisited his previous theory in a paper titled 'Paradox Lost?'. He found, again, that over time happiness and real GDP per capita are not significantly positively related. He believes that the paradox still holds and that the criticism towards the Easterlin Paradox is unfounded. He also adds that critics either overlook problems of data compatibility, fail to focus on long-term rather than short-term growth rates, make errors in the measurement of economic growth or omit available data (Easterlin, 2017).

"Although these correlations have been proven to be stronger in poorer nations, research has repeatedly revealed that even wealthy countries such as Germany, Switzerland and the United States still yield significant positive relationships" (as cited in Sengupta, et al., 2012, p. 22).

In addition, Cantril (1965) established that people tend to believe that they are better off in the present than they were in the past and that they will be better off in the future than in the present. This was proven through the *Cantril Ladder survey* which was carried out in 14 representative countries. Respondents were asked to show where they currently were on the ladder, where 0 is 'completely unhappy' and 10 is 'completely happy'. They were then asked where they were 5years ago and where they supposed they would be in 5 years. Respondents reported that their experienced happiness five years ago was lower and that they expected that their projected happiness would be higher than their present happiness.

2.4. Research gap

So far, there is no published research examining the happiness-income relationship in the EAC. However, there has been research examining this relationship for developing countries as a whole (Easterlin, 2009). It was established that this relationship is more significant for developing countries. There has also been research on happiness and life satisfaction in Rwanda where it was found that health status and household financial satisfaction are key to the wellbeing of the people of Rwanda (Ngamaba, 2016). This study aims to test this happiness-income relationship for the EAC.

2.5. Conceptual framework

There is a significant positive relationship between academic achievements and happiness. This was proven by a study conducted on 18645 students selected through stratified random sampling and using the Oxford Happiness Questionnaire (OHQ). Further, the Pearson's correlation coefficient was used to establish this relationship. However, since several factors contribute to academic achievements including health, economic status, character and self-esteem. Each of these factors should be examined to see how they impact on happiness individually and collectively (Tabbodi, Rahgozar, & Abadi, 2015).

The relationship between happiness and health is bidirectional such that the happier are healthier and the healthier are happier. Happiness boosts the immune system and in turn, strong immune system improves health (Bahmani, 2010). Studies have linked subjective wellbeing to reduced mortality in both diagnosed individuals and the general population. A meta-analysis in 2017 involving more than 1,250,000 participants, showed a pooled hazard ratio (HR) of 0.92 for people with higher subjective wellbeing, compared to those with lower subjective wellbeing. Evidence has also shown that reduced mortality rates have been associated with more positive moods. The duration of these effects has also been investigated: individuals who report higher levels of wellbeing over four years have lower mortality than those who report greater wellbeing on only one occasion (Steptoe, 2018).

As for unemployment, researchers have found that the unemployed are less happy than the employed. This is due to the frustration of the inability to meet their necessities (Clark, Diener, Georgellis, & Lucas, 2002). It has also been found that within a year of finding another job, people shift back to their initial levels of wellbeing.

Siedlecki, et al., (2014) examined the relationship between subjective wellbeing and different aspects of social support using a sample of approximately 1,100 individuals between the ages of 18 and 95. They used structural equation modelling and established that life satisfaction was predicted by perceived and experienced support and family embeddedness. It was established that social support and SWB are significantly positively correlated. However, the impact of social support generally reduced when personality variables were included in a subsequent model.

Researchers have found that there is a significant negative relationship between happiness and perceived corruption. Moreover, Arvin and Lew (2014) have found this relationship to be more robust in developed countries than in developing countries. They also find this relationship to be more significant after real GDP per capita increases above approximately $10,000. This implies that at low levels of economic development, corruption may not have a significant negative effect on subjective wellbeing.

The relationship between credit access and happiness is expected to be positive, in that individuals can meet their basic needs and hence increase their life satisfaction. Beyond a certain point however, the more indebted one is, the less their subjective wellbeing.

Figure 2 below illustrates these variables and classifies them into dependent and independent variables including the control variables.

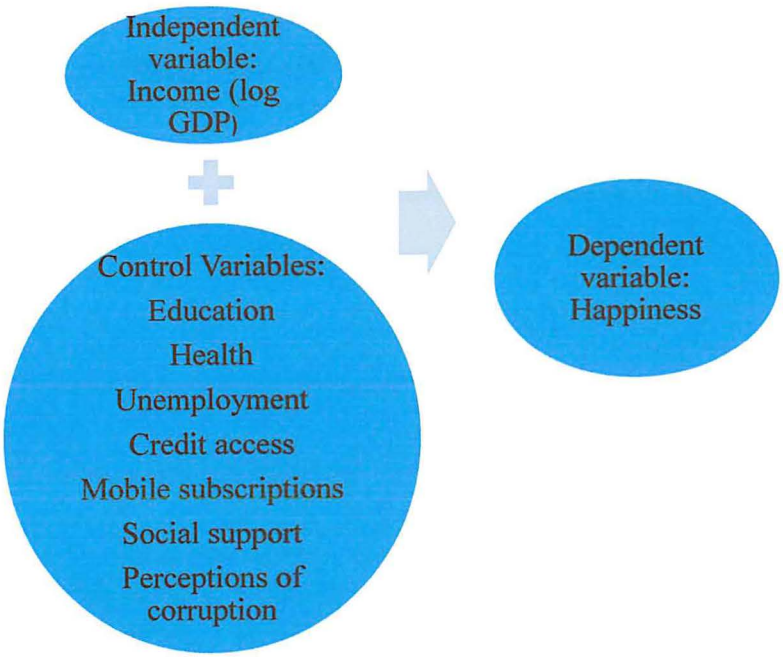

Figure 2: Conceptual Framework

CHAPTER 3: METHODOLOGY

3.1. Introduction

This chapter discusses the research method used. It describes the research design, the target population and sampling, data collection methods and finally the data analysis process.

3.2. Research Design

This study followed a descriptive research design as it describes the happiness characteristics of the EAC through the representative sample. This study also followed a causal research design as it sought to describe how income impacts on happiness in the EAC from the period 2006 to 2018.

3.3. Population and sampling

This study was based on four member countries of the EAC: Tanzania, Rwanda, Uganda and Kenya. South Sudan was omitted due to political unrest in the country hence the living conditions cannot be said to be the same as the rest of the EAC. Burundi was also omitted due to data limitations.

The happiness statistic used in this study was obtained from the World Happiness Report as collected by Gallup World Poll. The Gallup World Poll uses an area frame design where the households included in the survey are randomly selected and the survey conducted through face-to-face interviews. These surveys use a sample size of approximately 1000 individuals in each of the four EAC member countries included in this study. The final samples are then weighted to account for nonresponse, unequal selection and to match the national demographics of each country. The questions are standardized in terms of style of questioning and timing, this allows annual data trending and direct country comparisons. However, these survey findings might have errors or biases due to sampling error and practical complications in conducting surveys (Gallup World Poll, 2019). The period of study is 2006 to 2018, as this is when the happiness statistic data is available.

3.4. Data Collection Method

The variables happiness index, social support and perceptions of corruption were retrieved from the World Happiness Report (online data) as measured by Gallup World Poll surveys. The other explanatory variables; income (log of GDP per capita), health (life expectancy), unemployment levels, credit access and mobile subscriptions were

obtained from the World Bank data site. The education variable (education index) was obtained from the United Nations Development Programme (UNDP). This study used panel data of the four EAC member countries; Uganda, Rwanda, Kenya and Tanzania. Therefore, these variables were collected for each of the countries.

Table 1: Description of variables

Variable	**Description**	**Source**
Happiness	On a ladder of 0 to 10, where 0 is extremely unhappy and 10 is extremely happy	World Happiness Report – Online data
Income – ln GDP per capita	Country's economic output per citizen	World Bank
Education – Education index	Calculated from mean years of schooling and expected years of schooling	United Nations Development Programme (UNDP)
Health – Life expectancy	Average years citizens are expected to live	World Bank
Unemployment	Measured as % of total labour force	World Bank
Credit Access	Domestic credit provided by financial sector (% of GDP)	World Bank
Infrastructure- Mobile subscriptions	No. of mobile subscribers per 100 people	World Bank
Perceptions of corruption	On a scale of 0 to 1, where 0 is low corruption levels and 1 is high corruption levels	World Happiness Report – Online data
Social Support	On a scale of 0 to 1, where 0 is low social support and 1 is high social support	World Happiness Report – Online data

3.5. Data Analysis

3.5.1. Model specification

The econometric model estimated in this study is represented as:

$$Happiness_{i,t} = k + \beta_1 \log GDP_{i,t} + \delta_1 education\ index_{i,t} + \delta_2 life\ expectancy_{i,t} + \delta_3 unemployment_{i,t} + \delta_4 corruption_{i,t} + \delta_5 social\ support_{i,t} + \delta_6 credit\ access_{i,t} + \delta_7 mobile\ subscriptions_{i,t} + \varepsilon_{i,t}$$

Where:

k is the constant term

β is the coefficient to the independent variable – log of GDP per capita. It shows how much happiness changes when income changes by a percentage point, holding all other factors constant.

$\delta_1 - \delta_7$ represent the coefficients to the control variables. The coefficients show how much happiness changes when each of the variables change, all other factors held constant. The relationship could either be positive or negative.

$\varepsilon_{i,t}$ is the error term

3.5.2. Unit Root test

To begin the data analysis process, the first step is to test for unit root. In this study, the unit root tests used were Im, Pesaran and Shin (IPS) test and Fisher type tests.

Fisher type test

Hypothesis;

H_0: All panels contain unit root

H_1: Some panels are stationary while others are non-stationary

Decision rule;

If the p-value is less than the significance level (0.05), the null hypothesis is rejected. This implies that there is no unit root. Should there be unit root, the variables are differenced to eliminate non-stationarity.

Advantages of the Fisher type test;

It doesn't require balanced panels.

It can also be carried out for any unit root test derived.

Im-Pesaran-Shin (IPS) test

Hypothesis;

H_0: All panels contain unit root

H_1: Some panels are stationary while others are non-stationary

Decision rule;

If the p-value is less than the significance level (0.05), the null hypothesis is rejected. This implies stationarity. Should there be unit root, the variables are differenced to eliminate non-stationarity.

Advantages of the test;

The test does not assume all panels are stationary, that is, it allows non-stationarity in some panels in the alternative hypothesis.

3.5.3. Test for pool-ability

This test checks for any country specific or time specific factors that would bring about heterogeneity. If either of these factors are present, then Pooled OLS regression cannot be used since it does not model for heterogeneity but instead it assumes homogeneity of the countries.

Hypothesis;

H_0: Pooled OLS model is appropriate

H_1: Pooled OLS model is inappropriate

Decision rule;

If the p-value is greater than the significance level, fail to reject the null. Implying that the model can be estimated by the Pooled OLS regression model. If the null hypothesis is rejected, then the Hausman test is performed to determine which model to use between the Fixed Effects and Random Effects model.

3.5.4. Hausman Test

In order to determine which model to use between the Fixed Effects Model and the Random Effects Model, a Hausman Test is performed.

The hypothesis to be tested is:

H_0: Random Effects Model is appropriate. There is no correlation between the error term and the explanatory variables, that is, $Corr\ (\alpha_i, it) = 0$.

H_1: Fixed Effects Model is appropriate. The correlation between the error term and the explanatory variables is statistically significant, that is, $Corr\ (\alpha_i, it) \neq 0$.

3.5.4.1. Fixed Effects Model

The fixed effects model can be represented as:

$$y_{it} = \alpha_i + \beta_1 x_{1,t} + \beta_2 x_{2,it} + \cdots + \beta_k x_{k,it} + \varepsilon_{it}$$

Where;

Y is the dependent variable, happiness.

$X_1, X_2, \ldots, X_K$ are the independent variables; log GDP per capita, education index, life expectancy, unemployment, credit access, mobile subscriptions, social support and perceptions on corruption.

ε_i is the composite error term. That is, it has both the unobserved heterogeneity error and the idiosyncratic error.

This model will have a cross-section specific component (α_i) instead of a constant term, that will determine a unique intercept for each cross-section. The slopes (β) will be the same for all cross-sections. This model allows control for unobserved characteristics that might bias the happiness statistic. This unobserved heterogeneity will be modelled in the unobserved component of the composite error term.

This model makes the following key assumptions;

Exogeneity: $E\ (\varepsilon_{it}\ \boldsymbol{x}_{i,i} = 0)$. This assumption states that the independent variables and the error term are uncorrelated.

Homoscedasticity, that is, constant variance: $E\ (\varepsilon_{it}^2\ \boldsymbol{x}_{i,i} = \sigma_u^2)$

No cross section or time series correlation: $Cov\ (\varepsilon_{it,js}|\boldsymbol{X} = E(\varepsilon_{it}\varepsilon_{js}|\boldsymbol{X} = 0)$. This assumption states that the dependent and independent variables are uncorrelated over time.

Normal distribution of the error term, ε_{it}. The error term is assumed to have constant mean (μ) and variance(σ^2).

The main limitation of this model is that it assumes random variables are non-random (fixed) over time. To control for this, dummy variables can be used.3

3.5.4.2. Random Effects Model

The random effects model can be specified as:

$$y_{it} = \mu + \beta_1 x_{1,t} + \beta_2 x_{2,it} + \cdots + \beta_k x_{k,it} + u_{it},$$

Where;

μ is the average individual effect represented as, $u_{it} = \alpha_i - \mu + \varepsilon_{it}$.

y_{it} is the dependent variable

β_i represents the coefficients to the explanatory variables

$x_{i,t}$ are the explanatory variables

This model makes the following key assumptions:

Exogeneity: $(u_{it} | \boldsymbol{x_i}, \alpha_i) = 0$; $E(\alpha_i - \mu | \boldsymbol{x_i}) = E(\alpha i - \mu) = 0$;

$$Cov(u_{it}, \boldsymbol{x_{it}}) = Cov(\alpha_i, \boldsymbol{x_{it}}) + Cov(\varepsilon_{it}, \boldsymbol{x_{it}}) = 0$$

Homoscedasticity, that is, constant variance: $(u_{it}^2 | \boldsymbol{x_i}, \alpha_i) = \sigma_u^2$; $E(\alpha_i^2 | \boldsymbol{xi}) = \sigma_\alpha^2$

Normal distribution of the disturbances u_{it}. The error term has constant mean (μ) and variance (σ^2).

A limitation of this model, however, is the possibility of getting negative estimates of the variance for the individual-specific component (Magazzini & Calzolari, 2010). This will be the case, if the assumption of homoscedasticity does not hold. If there is correlation between the factors ($\boldsymbol{x_{it}}$) used in the model and the error term (u_{it}), then the fixed effects models should be used.

CHAPTER 4: RESULTS AND ANALYSIS

4.1. Introduction

This chapter discusses the findings of the study. The data analysis process begins with preliminary tests which include summary statistics, unit root tests and serial correlation tests. This is followed by the Hausman test and the regression.

4.2. Preliminary tests

4.2.1. Descriptive statistics

Table 2: Descriptive statistics

Variable	Mean	Standard deviation	Minimum	Maximum
Happiness	4.0094	0.4792	2.9027	4.9046
LnGDP per capita	6.6218	0.3553	5.8423	7.4445
Life expectancy	62.0463	3.903151	53.6810	68.0280
Education index	0.4627	0.0466	0.3800	0.5520
Unemployment level	3.8925	3.3636	0.6990	9.7900
Credit access	21.4608	11.8403	5.4925	45.2124
Mobile subscriptions	50.4686	23.1755	3.4128	96.3202
Perceptions of corruption	0.6953	0.2843	0.078	0.9300
Social support	0.7573	0.0967	0.4857	0.9088

The lowest happiness score over the years has been 2.9 and the highest 4.9. On average, the reported happiness in the EAC is 4.01. This is lower than the 5.0 half-mark meaning that happiness levels in the EAC are low. Happiness deviates by approximately 0.479.

Income as measured by log of GDP per capita ranges from 5.84 to 7.44, this translates to a range of approximately $340 to $1700 and a mean of 6.62 ($750) with a standard deviation of 36%. The EAC countries therefore range between low-income and lower middle-income countries.

Life expectancy ranges from 54 years to 68 years, such that the shortest period citizens are expected to live is 54 years and a maximum of 68 years, holding all other factors constant. On average, individuals in the EAC have a life expectancy of 62 years with a 4-year deviation.

Education index ranges from 0.38 to 0.552, on a scale of 0 to 1. On average the education index is 0.46 with a deviation of 0.05. This implies low academic achievements in the EAC, particularly in Tanzania which has the lowest index of the four countries.

Unemployment levels range from 0.699% to 9.79%. Policy makers target an unemployment rate of 3 to 5%, therefore, a rate of 9.79% is high and likely to result in unemployment related problems. The mean unemployment level is 3.89% which falls within the target range with a deviation of 3.36%.

Credit access ranges from 5.49% to 45.21% of GDP. Over the years, credit access has greatly improved such that individuals can borrow easily and at agreeable terms. This encourages self-employment as business owners have better access to the necessary funds with a mean of 21.46% and a deviation of 11.84%.

Mobile subscriptions range from 3.4 to 96.32 per 100 people. Over time, more and more people are connected to mobile service providers. This eases communication with friends, families or customers. The mean number of subscribers per 100 people is 50.47 which is approximately a half of the hundred with a deviation of 23.18 subscribers.

Perceptions of corruption range from 0.078 to 0.93, on a scale of 0 to 1. Of the four EAC countries, Kenya recorded the highest corruption levels while Rwanda recorded

the least. The mean corruption level is perceived to be 0.69 implying high corruption levels in the EAC, allowing for a 0.28 deviation. Social support ranges from 0.485 to 0.91, on a scale of 0 to 1. A mean of 0.757 implies high perceived and experienced support from family and friends.

4.2.2. Unit root tests

Im, Pesaran and Shin (IPS) test and Fisher-type test.

Hypothesis;

H_0: $\rho = 0$

H_1: $\rho_i = 0$ where $i = 1, 2, \ldots, N_1$

$\rho_i < 0$ where $i = N_{1+1}, N_{1+2}, \ldots, N$

The null hypothesis states that panels contain unit root while the alternative hypothesis states that some panels are stationary while others are not.

Decision rule;

If the p-value is less than the significance level (0.05), reject the null hypothesis in favour of the alternative implying that the variable is stationary.

Table 3: Unit root test results

Variable	**IPS test (p-value)**	**Fisher type test (p-value)**	**Stationarity**
Happiness	0.0058	0.0000	Stationary
LnGDP per capita	0.0114	0.0000	Stationary
Life expectancy	0.0082	0.0000	Stationary
Education index	0.6760	0.7221 – 0.7540	Non-stationary
Unemployment level	0.5385	0.6918 – 0.8416	Non-stationary
Credit access	0.5826	0.6039 – 0.6572	Non-stationary
Mobile subscriptions	0.1066	0.1031 – 0.1678	Non-stationary
Perceptions of corruption	0.5492	0.0459 – 0.3242	Non-stationary
Social support	0.3991	0.5320 – 0.7277	Non-stationary

The non-stationary variables are differenced to first difference using Fisher type test to make them stationary. This is because, differencing generates missing variables and the IPS test cannot be used for unbalanced panels. These variables are; education index, unemployment, credit access, mobile subscriptions, perceptions of corruption and social support. The results are shown in Table 4 below.

Table 4: First difference unit root test results

Variable	**Fisher type test (p-values)**	**Stationarity**
Education index	0.0000	Stationary
Unemployment level	0.0008 – 0.0080	Stationary
Credit access	0.0000	Stationary
Mobile subscriptions	0.0119 – 0.0297	Stationary
Perceptions of corruption	0.0000	Stationary
Social support	0.0000	Stationary

4.2.3. Serial correlation tests

The serial correlation test was carried out using the Wooldridge test for autocorrelation in panel data.

Hypothesis;

H_0: No first order autocorrelation

H_1: Significant positive autocorrelation

Decision rule;

If the p-value is less than the significance level (0.05), reject the null hypothesis in favour of the alternative meaning that autocorrelation is present.

F(1, 3) = 0.884

Prob > F = 0.4164

Therefore, since the p-value is greater than 0.05, fail to reject the null hypothesis implying that there is no serial correlation.

4.3. Model tests

4.3.1. Test for pool-ability

Hypothesis;

H_0: Pooled OLS model is appropriate

H_1: Pooled OLS model is inappropriate

Decision rule;

If the p-value is less than 0.05 significance level, the null hypothesis is rejected. The Hausman test is then performed to determine which model to use between the Fixed Effects and Random Effects model.

Prob > F = 0.0003

Pooled OLS regression would be a biased estimator.

Table 5: Tests for pool-ability - Cross-section effects

Happiness	**Coefficient**	**P>t**
1	-0.1467	0.2850
2	-0.6804	0.0000
3	-0.6726	0.0000

Cross-sections 1, 2 and 3 are the countries Kenya, Uganda and Tanzania. There are country specific effects for countries 2 and 3 (Uganda and Tanzania), as shown by the 0.0000 p-value in Table 4 above. This means that there are some factors that are specific to these countries hence pooled OLS regression would not capture this heterogeneity and as such would be a biased estimator.

However, there are no time specific effects as shown by the high p-values in Table 6 below. This implies that the dependent variable (happiness) does not change significantly over the years.

Table 6: Tests for pool-ability - Time specific effects

2007	0.3271	0.2250
2008	0.3094	0.2120
2009	0.0564	0.8180
2010	-0.2301	0.3900
2011	0.3271	0.1880
2012	0.0256	0.9170
2013	-0.3176	0.2010
2014	-0.0851	0.7290
2015	-0.0887	0.7180
2016	-0.3072	0.2150
2017	-0.2906	0.2410
2018	-0.0276	0.9100
Constant	4.3984	0.0000

4.3.2. Hausman test

Hypothesis;

H_0: The Random Effects model is appropriate

H_1: The Fixed Effects model is appropriate.

The null hypothesis implies that deviations of coefficients are non-systematic, that is, the errors are random (uncorrelated with the explanatory variables) while the alternative hypothesis implies that deviations of coefficients are systematic (correlated with the explanatory variables).

Decision rule;

If the p-value is less than the significance level (0.05), reject the null hypothesis in favour of the alternative. If the p-value is greater, fail to reject the null hypothesis.

Prob>chi2 = 0.7621

Therefore, fail to reject the null hypothesis implying that the Random Effects model is appropriate.

4.3.3. Random Effects regression

Wald chi2(8) = 30.14

Prob > chi2 = 0.0002

The Random Effects model regression is highly significant as indicated by the 0.0002 p-value.

R-squared:

within = 0.2146

between = 0.7450

overall = 0.4627

Based on the overall R-squared, only 46.27% of the happiness variable has been explained by the explanatory variables. For the between R-squared, there is a 74.5% deviation in the happiness-income relationship between the various countries and a 21.46% deviation within each country.

Sigma_e =0.32985

This implies a 32.985% deviation of the observed values from the true values.

Table 7: Random Effects regression results

Variable	Coefficient	Std. errors	z	P > |z|	Confidence level
LnGDP per capita	1.2643	0.3111	4.06	0.000*	0.6545 – 1.8742
Life expectancy	-0.1204	0.0247	-4.88	0.000*	-0.1687 – 0.0720
Education index	-5.7991	9.2787	-0.62	0.532	-23.9852 – 12.3869
Unemployment	0.1863	0.1684	1.11	0.269	-0.14386 – 0.5164
Credit access	-0.0005	0.0353	-0.01	0.990	-0.0697 – 0.0688
Mobile subscriptions	0.0021	0.0186	0.11	0.911	-0.0343 – 0.0384
Perceptions of corruption	1.7381	1.1109	1.56	0.118	-0.4392 – 3.9154
Social support	1.0364	1.2766	0.81	0.417	-1.4657 – 3.5385
Constant term	3.0883	1.5039	2.05	0.040	0.1405 – 6.0361

*Significant p-values at ***10%, **5% and *1%.*

Income and life expectancy are the only variables that are statistically significant in explaining happiness at the 99% confidence level. The model would therefore appear as follows;

$$Happiness_{i,t} = 3.0883 + 1.2643 \log GDP_{i,t} - 5.7991 education\ index_{i,t} - 0.1204 life\ expectancy_{i,t} + 0.1863 unemployment_{i,t} + 1.7381 corruption_{i,t} + 1.0364 social\ support_{i,t} - 0.0005 credit\ access_{i,t} + 0.0021 mobile\ subscriptions_{i,t} + \varepsilon_{i,t}$$

This means that happiness and income have a positive relationship, such that, a 1% increase in income would increase happiness by 0.0126 points holding all else constant.

Happiness and life expectancy have a negative relationship. A one-year increase in life expectancy, would result in a 0.1204-point decrease in happiness holding all else constant.

The other variables; education index, unemployment, credit access, mobile subscriptions and perceptions of corruption are statistically insignificant in explaining happiness in the EAC at the 95% confidence level. This implies that of importance to the people of the EAC is having a source of livelihood, a strong support system and being of good health.

4.3.4. Heteroscedastic robust Random Effects regression

Running a heteroscedastic robust regression is important in checking whether there might be some pattern in the dependent variable, happiness, which may be present in the residuals. This study will rely on the results from the heteroscedastic robust Random Effects regression.

R-squared:

within = 0.2146

between = 0.7450

overall = 0.4627

Based on the overall R^2, only 46.27% of the relationship between happiness and income has been explained by this study. For the between R-squared, there is a 74.5%

deviation in the happiness-income relationship between the various countries and a 21.46% deviation within each country.

Sigma_e = 0.32984398

This implies a 32.985% deviation of the observed values from the true values.

Table 8: Heteroscedastic robust Random Effects regression results

Variable	**Coefficient**	**Robust Std. errors**	**z**	**P > |z|**	**Confidence level**
LnGDP per capita	1.2643	0.3893	3.25	0.001*	0.5014 – 2.0273
Life expectancy	-0.1204	0.0071	-17.05	0.000*	-0.1342 – -0.1065
Education index	-5.7992	4.4454	-1.30	0.192	-14.5120 – 2.9137
Unemployment	0.1863	0.0978	0.36	0.057***	-0.0054 – 0.3779
Credit access	-0.0005	0.0255	1.90	0.986	-0.0504 – 0.0495
Mobile subscriptions	0.0021	0.0058	-0.02	0.719	-0.0092 – 0.0133
Perceptions of corruption	1.7381	1.5117	1.15	0.250	-1.2249 – 4.7009
Social support	1.0364	0.4504	2.30	0.021**	0.1537 – 1.9191
Constant term	3.088298	2.4274	1.27	0.203	-1.6694 – 7.8460

*Significant p-values at ***10%, **5% and *1%.*

Therefore, the happiness-income relationship model can be specified as;

$$Happiness_{i,t} = 3.0883 + 1.2643 \log GDP_{i,t} - 5.7991 education\ index_{i,t} - 0.1204 life\ expectancy_{i,t} + 0.1863 unemployment_{i,t} + 1.7381 corruption_{i,t} + 1.0364 social\ support_{i,t} - 0.0005 credit\ access_{i,t} + 0.0021 mobile\ subscriptions_{i,t} + \varepsilon_{i,t}$$

At the 99% confidence level, income has a statistically significant positive relationship with happiness while health as captured by life expectancy has an inverse relationship with happiness.

More specifically, a 1% increase in GDP per capita results in a 0.0126-point increase in happiness while a one-year increase in life expectancy would result in a 0.1204-point decrease in happiness, holding all other factors constant.

At the 95% confidence level, social support has a statistically significant positive relationship with happiness. A point increase in social support would result in a 1.036-point increase in happiness, holding all other factors constant.

In addition, at the 90% confidence level, unemployment level has a statistically significant positive relationship with happiness such that a percentage point increase in unemployment results in a 0.1863-point increase in happiness, holding all else constant.

The other variables; education index, mobile subscriptions, credit access and perceptions of corruption are statistically insignificant at the 95% confidence level. This implies that of importance to the people of the EAC is having a source of livelihood, a strong support system and being of good health.

Though statistically insignificant, credit access has a negative relationship with happiness implying that the more the access to credit the less happy an individual is, holding al other factors constant. This can be attributed to the frustrations associated with repaying debt. Education index also has a negative relationship with happiness, holding all else constant. However, past studies have found a positive relationship between academic achievements and happiness (Tabbodi, Rahgozar, & Abadi, 2015). Mobile subscriptions has a positive relationship with happiness. The more one is connected to family and friends the happier they are, holding all else constant. Perceptions of corruption is also positively related, this could mean that though

corruption levels are high, citizens benefit from it either directly or indirectly. Arvin and Lew (2014) found a negative relationship between corruption and happiness especially among developed countries.

CHAPTER 5: CONCLUSION

5.1. Introduction

This chapter discusses the findings, conclusion, recommendations and limitations of the study as well as possible areas of further study.

5.2. Discussion

At the 99% confidence level, income and life expectancy are statistically significant in explaining happiness. Income has a statistically significant positive impact on happiness. A 1% increase in GDP per capita increases happiness by 0.0126 points, holding all else constant. This positive relationship between happiness and income is expected because the more citizens are able to meet their basic needs, the higher the happiness levels. This is consistent with past research. Researchers such as; Kahneman and Deaton (2010), Sengupta, et al. (2012) and Stevenson and Wolfers (2013) find that indeed there is a robust positive relationship between income and happiness.

A year increase in life expectancy, would result in a 0.1204-point decrease in happiness, holding all other factors constant. This relationship should be positive such that an increase in life expectancy results in an increase in happiness (Steptoe, 2018). This is because happiness has been linked to reduced mortality in both diagnosed individuals and the general population. However, this study found a negative relationship. Some possible reasons for this are; the older one gets, the more likely they are to lose functionality causing distress and in turn unhappiness among the elderly. Lifestyle diseases are also more prevalent as one gets older. In addition, between the ages of 53 and 68 years, other factors such as the loss of a loved one especially one's spouse or children are likely to cause profound distress and unhappiness.

At the 95% confidence level, social support is statistically significant. Social support is predicted by perceived and experienced support and family embeddedness. A point increase in social support increases happiness by 1.036 points, holding all other factors constant. Siedlecki, et al. (2014) found that the more one feels appreciated and that they have friends and/or family to turn to in times of need the happier they are.

At the 90% confidence level, unemployment level has a statistically significant positive relationship with happiness. A percentage-point increase in unemployment results in a 0.1863-point increase in happiness, holding all else constant. This is

contrary to what would be expected since unemployment and happiness should have a negative relationship (Clark, Diener, Georgellis, & Lucas, 2002). Such that, when one is unemployed, and they have no alternative sources of income they would not afford their basic needs causing unhappiness. However, this positive relationship could be attributed to poor working conditions. This may include; long working hours, low and/or delayed compensation, few leave or sick days, poor ventilation or cleanliness and/or unfriendly colleagues or employers such that people opt to remain unemployed.

The other variables; education index, mobile subscriptions, credit access and perceptions of corruption are statistically insignificant at the 95% confidence level.

5.3. Conclusion

Happiness levels in the EAC are low, as indicated by the 4.01 average, on a scale of 0 to 1. This motivated this study, to determine the relationship between happiness and income in the EAC.

Overall, this study was highly statistically significant. It was found that income has a statistically significant positive relationship with happiness. Therefore, to increase the happiness of the people of the EAC, policies should centre around creating job opportunities or enabling environments for self-employment so that each individual can meet their basic needs. This is in accordance with the 'Livability theory' which asserts that as long as people are able to meet their needs, their happiness increases, and they are satisfied.

Unemployment also has a statistically significant positive relationship with happiness. This could mean that, for reasons such as poor working conditions, people would rather remain unemployed. Employers should therefore create conducive work environments, for example, through having reasonable working hours with decent compensation.

Similarly, social support has a statistically significant positive relationship with happiness. The more one feels a sense of belonging or appreciated the higher their happiness.

Life expectancy was found to have a statistically significant negative relationship with happiness such that with each additional year, happiness decreases. Nonetheless, the health sector ought to be improved so that the elderly have access to quality healthcare.

This could mean that, the people of the EAC prioritise having a source of income, a strong support system and being of good health as the main contributors of happiness as opposed to the other factors; education, credit access, mobile subscriptions and perceptions of corruption which were found to be statistically insignificant.

This study encourages researchers to look into other determinants of happiness in the EAC as well as possible reasons for the low happiness levels in the EAC.

5.4. Recommendations

Since there is a significant positive relationship between happiness and income, policy makers should focus on how to increase income/compensation for the employed, create job opportunities for the unemployed and/or create enabling environments so individuals can earn a decent living through self-employment. This would be particularly important given the integration of the EAC. Labour mobility, as one of the agenda, would result in higher levels of wellbeing as more and more people are able to meet their basic needs.

Similarly, the health sector should be improved so that individuals can lead healthier lives. This can be achieved through improving medical facilities by equipping them with both the know-how and the tools necessary. Investing in specialised lifestyle disease-related facilities such as Cancer Centres. Promoting awareness regarding lifestyle diseases such as Diabetes and how one can prevent, detect and treat them.

Given the statistically significant positive relationship between social support and happiness, individuals should foster strong relationships with family and friends. In so doing, one would have people to celebrate with in good times and lean on in times of need.

Employers should improve the working conditions of their employees. This can be achieved through encouraging friendly interactions among colleagues, ensuring clean and well-ventilated workspaces and reasonable working hours with decent compensation. This would improve the happiness-unemployment relationship by increasing the happiness of the employed in that not only do they afford their basic needs but also, they enjoy working.

5.5. Limitations of the study

Initially, this study was to cover the EAC, excluding South Sudan due to civil unrest in the country that would bring out heterogeneity. However, during the data collection process, Burundi was also dropped due to data limitations. The happiness index for Burundi was collected for only 5 of the 13 years covered in the study.

5.6. Areas for further study

Happiness has not been thoroughly examined in African countries or regions such as the EAC. Researchers could look into other determinants of happiness as well as region specific factors causing low levels of happiness in the region.

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