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Original Article

The Influences of Education Level and Multiple Incomes on Extension of Life after Retirement among Tanzanians

Michael Laurent Bukwimba^{1*}

¹Institute of Finance Management, Tanzania.

*Author for Correspondence ORCID: <https://orcid.org/0000-0002-7760-2216>; Email: bukwimbamike@gmail.com

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The study examines education level and multiple income of retired people in the United Republic of Tanzania influences retirees to live longer after retirement (longevity). Basing on the results produced by this study, they imply that a number of factors influence the longevity of retirees with varying statistical magnitude and particularly for the period of scrutiny. The findings showed that 87.7% of retirees having secondary school and tertiary education as their highest level of education were paid less than 199,999 TZS per month as compared to 16.7% who received same pension amount attained University education level. Meanwhile, the facts supporting that having multiple sources of income improves the welfare of a human being and hence early death immediately after leaving the job is minimized, there is only 13.51% of those having several sources of income died (figure 4.4) while an average of 87.8% of those with numerous incomes survived within eight years of their retirement period. The results depicts that there is no direct relation between education level and the survival or non-survival of the retirees but the impact of education level towards longevity may be seen through pension amounts and through investments. In other words, the results imply that death or survival of a person do not necessarily depend on education level of that particular person but rather remain to be a contingent.

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INTRODUCTION

The word "longevity"¹ is now and again used as a synonym for "life expectancy" in demography however, the term "longevity" is sometimes meant to refer only to in particular long-lived members of a population, whereas "life expectancy" is at all times defined statistically as the average number of years remaining at a given age² example, a population's life expectancy at birth is the same as the average age at death for all people born in the same year. Longevity is best thought of as a term for broad-spectrum audiences meaning 'typical length of life'. Reflections on longevity have usually gone away from acknowledging the conciseness of human life and have included thinking about methods to extend life³. Longevity has been a subject not only for the scientific society but also for writers of travel, science creative writing, and utopian novels.

This study concentrated mainly on two key factors of longevity to Tanzanian population particularly retirees. It has tried to show how education may influence health of a retirees. It is the expectation of this study that, having higher education level before retirement may be of assistance to an individual to look after his/her health before falling sick. Similarly, when an individual is health can accomplish whatever development plan including post-employment and engaging in various investments.

In connection to that, the study intends to establish a relationship between health and multiple incomes (postretirement income). Having postretirement income takes a retiree into a "Stress Free Mode" in the sense that a person can meet medical expenses for his family and himself. But on the other hand,

postretirement income may decide for the retirees' residential status (Life style). For instance, some of the retirees are being employed by security companies where they earn extra income apart from pension amount. Finally, the study has produced the relationship on how education level and multiple income of a retiree may influence life after retirement of Tanzanians.

Background Statement

An Overview of Aging

The concept of population ageing is becoming a major concern for the policy makers all over the world, for both urbanized and developing countries during the past two decades. But the problems arising out of it will have diverse implications for underdeveloped, developing, and developed countries. Ageing of population is exaggerated due to downward trends in fertility and mortality (India Central Statistics Office, 2011)

Social Security Systems in Tanzania

Social security is a protection measure that provided by the society to its members against economic and social distress which might be caused by stoppages or reduction of income or earnings either due to sickness, maternity, old age, death, and other risks (Maghimbi et al., 2002).

Usually, pension funds have been significant means in the capital markets development in economies – mainly because of the long-term nature of their financial liabilities. Likewise, intensification of pension fund financial assets leads to the development of stock markets and private bond markets for the data as a whole (Meng & Pfau, 2010). While banks and other financial institutions

¹(<https://www.definitions.net/definition/longevity> (as retrieved on 3rd Dec, 2019)

²(<https://www.definitions.net/definition/longevity> (as retrieved on 3rd Dec, 2019)

³(<https://www.definitions.net/definition/longevity> (as retrieved on 3rd Dec, 2019)

have liabilities that normally mature in a few days, at most, pension funds have benefit liabilities that, on average, may not mature for decades. As a result of this financial characteristics, pension funds are an exclusive source of long-term capital for business and other such ventures of private and public character (Meng & Pfau, 2010).

The Public Service Social Security Act, 2018 was signed into law in April, 2018 and afterwards joins all pension funds into two main entities which are the Public Service Social Security Fund (PSSSF) to cover the public sector and the National Social Security Fund (NSSF) to swathe the private sector (URT, 2017). According to this law, PSSSF Act repeals the PSPF, Retirement Benefit Act, the LAPF Pensions Fund Act, the GEPF Retirement Benefit Act and the PPF Pensions Fund Act.

Education as Linked with other Longevity Factors

The United Republic of Tanzania on its report based on Education systems Analysis, 2011, indicates that the administration of the education system is the authorization of the Ministry of Education and Vocational Training (MoEVT). However, excellence of education is an imperative indicator of development. Enhancement of education can propagate growth in quality of life. A better education can amplify the potential of young Tanzanians while removing an obstruction towards achieving advancement and development (Lisa *et al*, 2008).

The human capital gained from acquiring an education can improve both an individual's life as well as the society as a whole. The public benefits from improvements in the quality of education, as can be made known by the democratic political progression. The economic level of any country is an additional factor of increasing human capital through improving the quality of education. Improving the education arrangement will result in increased literacy rates. In general, improved human capital can boost the attractiveness of the country to foreign investment by multi-national corporations. Tanzania has a high rate of primary school attendance in comparison to the rest of Africa (Lisa *et al*, 2008). Education is an integral aspect of

development because well-educated heaps are better capable of making large scale social improvements by means of business or government action (Lisa *et al*, 2008).

It is obvious that, elderly people⁴ with diseases such as diabetes, blood pressure etc. have higher risk to mortality as most of them become more stressful immediately when are assured of total loss or reduction in income. But other health indicators which may trigger or influence mortality in old age are smoking, excessive alcohol consumption, and obesity. Wei *et al*, (1999) observed that compared to normal weight men, obese men have much elevated risk of cardiovascular disease mortality and all-cause mortality.

Similarly, Lantz *et al*. (1998) pointed out that, some health behaviours such as fatness, alcohol misuse; cigarette smoking, and lack of physical exercises as associated with significantly higher risk of death for specific cause of death. They also find out that the distribution of four behavioural risk factors⁵ significantly varies by educational achievement and annual household income. Those with lower level of education and lowest income are likely to turn out to be smokers, overweight, and in the lowest quintile for physical activity. In addition, Lantz *et al*. (1998) concluded that health behaviours and socioeconomic factors are important factors of mortality.

Nevertheless, financial investment in education to workers regardless of their education background is a key to their future wellbeing in retirement life, since it encourages and give confidence to most of people to decide when to start saving, how much to save and how to invest. Survey results by (Brown & McDaid, 2003) suggest that, after completing a financial investment education program, people are likely to re-evaluate their lifetime plans for works, retirement, savings, and consumptions. In this fresh environment where people have greater accountability for determining their own retirement income, the subsequent factors have become critical to people's successful retirement objectives: general financial investment knowledge, an overview understanding of the retirement savings process, an

⁴ 60 years and over in the United Republic of Tanzania is regarded to be older persons

⁵ Cigarette smoking, Alcohol drinking, Sedentary lifestyle, and relative body weight

overview understanding of the retirement final benefits and pensions calculation process, and, acknowledgment of the need for adequate savings.

Study Contribution

The study is crucial because its results append appropriate knowledge to what is known in the field of Actuarial Science and Social protection on whether the prospect life time of the retirees is being unnatural by income from investments and other sources, education level on retirement date and life annuity amounts i.e., periodical amounts.

Moreover, the study through its findings provides useful information and awareness to Social Security Funds in Tanzania, Policy makers through its relevant bodies and a community at large for preparation in terms of investments or ways of having multiple sources of income has to be made before retirement.

A perceptive of mortality in elderly and the factors that influence the future life time of retirees, on hand by this study, is of immense attention to Actuaries in areas such as product design, underwriting, assessment of pension schemes, annuities, and life guarantee, developing mortality-based securities, formulation of social policy and in projecting future trends in mortality and longevity.

LITERATURE REVIEW

Introduction

This section is thus specially designed to present the literature review connected to the area of study. The author divided the literature review in two main streams: firstly, Demographic characteristics, the background of working conditions in Tanzania, social security systems in Tanzania, and secondly, the literature underpinning the subject matter under the scrutiny factors affecting longevity.

Demographic Characteristics

According to National Bureau of Statistics (NBS) (2012) in population and household census, the population of the United Republic of Tanzania

(Mainland) in 2012 was 43.7 million people of whom 51% are women, 44% are men and 4% are children under the age of 5 years (Bukwimba M.L, 2016). According to this study, out of these inhabitants, persons at the age of 60 and over are 2.4 million which accounts for about 5.5 percent.

The current population⁶ of the United Republic of Tanzania is 62,402,055 as of Friday, January 28, 2022, based on Worldometer amplification of the latest United Nations data and the average life expectancy at birth is 56 years of which 53 years for males and 58 years for females (World Bank, 2008).

The Working Conditions in Tanzania

The United Republic of Tanzania was among the poorest countries in the world. But in May 2020, the World Bank branded Tanzania as a lower-middle income country after the country made major economic reforms, including making reliable plans and taking hard decisions intended at improving its economic development (Xinhua, 2020).

Such a situation has amounted to having moderate working conditions as compared to the ILO (2009) minimum working standards. Efforts have been in place, from both the national and international influences, to fine-tune the regulatory framework for working surroundings through a number of reforms such as shaping of the Employment and Labour Relations Act of 2004, The Labour Institutions Act of 2004, and the National Employment Policy of 2008 (ILO, 2009). Alongside these reforms, the Government of Tanzania has been in the implementation of the National Strategy for Growth and Reduction of Poverty 2005 -2010 program as one of the tools to realise the 20-25 Millennium Development Goals (ILO, 2009).

While the labour laws are being in place influencing the minimum standards, the actual working conditions are not often in line with the legal requirements. The essence of labour laws is undermined and employees/workers are subjected to working conditions underneath the specified minimum working conditions by the International Labour organization (ILO, 2009).

⁶<https://www.worldometers.info/world-population/tanzania-population>

The ILO (2009) points out that working condition are said to be key measurement of decent and productive work. Employees/Workers utilize their wages, working hours, security, and capability to contain their personal and family needs regarding the dignity and quality of working life. Thus, aspects of working life are said to be good determinants of productivity, competitiveness, and future life time of workers after they retire.

The quality of working life is important to both human and socio-economic development of a particular community because it evolves from a pre-occupation with some dimensions of paid labour towards embracing a complex set of elements of paid and unpaid work. The notion of quality working life includes the intersection between the labour market and the lives of workers beyond paid work. In this regard, the notion of quality of working life should be given a special consideration as it has both direct and indirect socio-economic development impacts, workers and their families' lives, workers' health during working life and after retirement (Godius & Longinus, 2009).

Forms and Right to Social Security in Tanzania

Most Literature such as (Mchomvu, 2002; Magangila, 1976 and Mlyansi, 1991) on social security summarized the meaning of social security as the safeguard provided by society to its members through public means against socio-economic distress from abridged or loss of income arising from contingencies, of which these contingencies might be temporary or permanent. These studies show that the amount of benefit provided by various formal security schemes in the United Republic of Tanzania is inadequate to prevent poverty and they have failed to provide adequate social protection to members in suffering.

The Right to Social Security

Article 22 of the Universal Declaration of Human Rights (UDHR)⁷ of 10th December 1948 insists that everyone so long as is a member of society has a right to social security. This is to say that any state is obliged to set and maintain some minimum

⁷<http://www.un.org/en/universal-declaration-human-rights/>

standards of material welfare to all its citizens to cover major contingencies of life in spite of their contribution or service.

In Tanzania, the right to social security for all citizens is specified in the Constitution of the United Republic of Tanzania of 1977, as amended in 1994, 1995, and 1998, article 14 of the constitution says that, "Every person has the right to live and to the protection of his life by the society in accordance with the law". Although this right has been stipulated in the Constitution, its coverage is not comprehensive in terms of the population and risks covered. The Social security schemes in Tanzania covers only 6% of the population and about 5% of the active labour force (Bossert, 1987; Tungaraza, 1998; Wangwe & Tibandebage, 1999). The Oxford Policy Management report of 2010 documented that, in many Southern African countries, the coverage of formal schemes is so limited because formal employment is not dominant. This is so in Tanzania because most of if not all, social security schemes focus on employees in formal sectors. Recently, the National Bureau of Statistics based on 2012 Tanzania Population and Household Census reported that the coverage has been extended to 11.3% of the population (NBS, 2012).

Tungaraza and Mapunda (2000) pointed out that although contributors and beneficiaries of different social security schemes in Tanzania have right to take part in various matters regarding social security issues either directly or indirectly (through their congress freely elected by them), none of them participate in Board meeting and do not have a chance to influence the decision-making process. Given this situation, neither the contributors nor their representatives have an idea on the general trend of social security scheme (s), the formula used to determine the benefits, and conditions for payments. This creates an information gap to the community which hinders them from full participation and practicing of their rights.

Mandatory Retirement

The word "Retirement" has been defined in the Oxford Learner's Dictionaries⁸ as cease from office

⁸

www.oxfordlearnersdictionaries.com/us/definition/english/retirement

or gives up the office or profession. Mandatory⁹ retirement is the set age at which persons who hold definite jobs or offices are obligatory by industry custom or by law to retire. The United Nations Common System (UN) (2009) justified mandatory retirement by arguing that, some occupations are either too dangerous such as military personnel or requires high levels of physical and mental skill such as Air traffic controllers, Airline Pilots etc. Thus, there must be limit set age where by an employee whether working in high-risk environment or otherwise has to retire. The World Bank has two compulsory retirement age limits: 65 for those who joined before 1 July 1974 and 62 for those who joined after 1 July 1974.

The Tanzania Progress Report review and Appraisal of the Madrid International Plan of Action on Ageing (MIPAA) (2007) has indicated that in Tanzania and some African countries such as Kenya, Uganda, Algeria etc. the official retirement age is 60 years. The Report went further by asserting that the group of elderly people faces a number of problems after retirement such as lack of savings. Hence the social security schemes should be designed to accommodate them. Moreover, the United Nations Population Division “World population prospects – The 2006 Revision” reports that

Globally, the number of persons aged 60 years or over is expected nearly to triple, increasing from 673 million in 2005 to 2 billion by 2050. Over the same period, the share of older persons living in developing countries is expected to rise from 64 per cent in 2005 to nearly 80 per cent in 2050 (pg. xxii).

This implies that, the Governments in developing countries have to prepare some conducive environments for elderly people in terms of pensions, medical care, healthy settlement, financial management, education etc.; otherwise, the elderly population would be at risk of higher mortality.

Factors Affecting Longevity

According to Bukwimba M.L (2016), most Literature such as Wald and Watt (1997); Musick

(1996); Hummer (1996); Lee (1995); Allison et al (1999); Rogers (1995); Brown and McDaid (2013) consider alcohol taking, education level, gender, obesity, occupation status, race health behaviour, income, marital status, ethnicity, age, and smoking are among the factors that may influence mortality of older people after retirement (Gerontol, 2021). Bender and Jivan (2005) highlight factors that may affect retirees’ living standards and hence affect the future life time by classifying them into four major groups.

Classification One: Demographic characteristics factors such as gender, education, and age. Findings by (Bender & Jivan, 2005) indicated no strong expectation on the effects of these factors on retirement satisfaction.

Classification Two: This classification is concerned with economic measures of wellbeing such as Pension characteristics, income, and wealth. This classification claims that an increase in income and wealth usually is said to be good measure of wellbeing (Bender & Jivan, 2005). In other words, good standard of living is realized and hence higher longevity attained.

Classification Three: Another set of factors considered to impact the wellbeing of retirees was voluntary and non-voluntary retirement. This is when laws of a particular country require a person to retire, due to sickness or may have reached a voluntary retirement age etc.

Classification Four: Health and access to health insurance was the last category considered by (Bender & Jivan, 2005). Health status of a retiree was found to have a greater impact on their wellbeing which is associated with the determination of the future life time (longevity).

In particular regarding these classifications and evidences from the findings as explained above, this study considers some factors such as Income from various sources of investments and Education level attained since it is quite little known in Tanzania perspective, thus the following sections highlight.

⁹ https://en.wikipedia.org/wiki/Mandatory_retirement (as was retrieved on June, 2022)

Income from Investment sources

A number of scholars have observed that employment is a major income generating for employees to sustain their lives for a greater extent. For example, (Kallan, 1997) concluded by pointing out that income and employment status have a significance effect on both all-cause mortality and cause specific mortality for all age–sex groups with exception of elderly females. Income was seen as the major determinant and indicator of a broad range of material factors that not only affect the standard of living but also has a greater impact on psychosocial factors such as a sense of control, security, and status (Judge, 1995). On the other hand, Brown, and McDaid (2013) concluded their work by pointing out that, income is itself a strong factor for inclusion in the new risk-classification paradigm.

In general, most of the Literature such as Knox and Tomlin (1997); Kallan (1997); Rogers et al. (1999); and Pappas et al (1993) identified an inverse relationship between income and mortality in older ages despite the consequences of sex, race, marital status, health, and other demographic characteristics. In addition, (Knox and Tomlin, 1997) found that there was strong evidence to suggest that mortality rates were not equal at different income levels.

The term “Income” which a number of literatures discussed, is too broad in the sense that it includes all source of income generating such as: income from assets, pension amounts (life annuity) and from other investments (Lee, 1995). But with regard to this study, income was portioned into two groups. The first group is asset investments, and postretirement employment as identified by Lee (1995) to be one of the socioeconomic core variables. The second group is Pension amounts only (life annuity as an independent variable to be measured).

Education Level

Education is an essential aspect of development. A well-educated mass is said to be well equipped to

make better decisions for social improvements by means of business or government action (Lisa *et al*, 2008). Education is regarded as a foremost linkage between employment, income, residential status, and access to health facilities. In formal sectors therefore, higher education implies higher income in terms of salary and vice versa, hence mortality in all age groups is minimized (Bukwimba M.L, 2016).

Vaillant and Mukamal (2001) in their study found that high level in education is one of the most important predictors of successful aging. Similarly, (Pappas et al, 1993) found that death rates fell consistently with increasing levels of education. Some scholars have found that there is a close relationship between education, income, and mortality of an individual particularly the elderly people (Lantz et al, 19998). In the same line (Preston and Elo, 1995) established that education is advantageous relative to occupation and income. They state that information on educational attainment is available for people who are not currently in the labour force and its value is less influenced by health problems that develop in adulthood. Likewise (Kallan, 1997) pointed out that the level of education can affect every cause of death.

The Statistical Bulletin of 1975 states that, occupation; education and income are associated with health and longevity. The Bulletin highlights that the interdependence of these factors mean that the effect of one is affected by the presence of others. On the other hand, education has some effects on mortality as it greatly associates with employment, income generation, and access to information, but also it affects mortality by influencing health performance and access to health facilities (Bukwimba M.L, 2016).

Education in Tanzanian Context

The United Republic of Tanzania on its report based on Education systems Analysis, 2011, highlights that the management¹⁰ of the education system is the mandate of the Ministry of Education and

¹⁰ Education Sector Development Plan (2016/17 – 2020/21)
Tanzania Mainland

Vocational Training (MoEVT). However, some responsibilities fall under other ministries such as the Prime Minister's Office for Regional Administration and Local Government (PMO-RALG) and various line ministries for technical education.

Since 2008, the education system is organized into four subsectors, these are:

- Basic Education¹¹: That comprises pre-primary, primary, secondary, teacher training, adult education, and non-formal education (AE/NFE);
- Folk Education:
- Technical and Vocational Education and Training (TVET)¹²: Technical and Vocational Education and Training (TVET) provides alternative education and training opportunities upon completion of primary and secondary education levels, which lead to careers as skilled workers, technicians, and professionals for various sectors of the economy. They focus on imparting the necessary knowledge and skills to youth in order to enable them to contribute to the socioeconomic development of their communities, and ultimately to that of the country
- Higher Education¹³: Higher Education (HE) is part of MoEVT's mandate since 2008. This cycle is organized into two levels; one being university and the other is the non-university. Non-university level institutions include those which offer courses of up to three years leading to a technical bachelor's degree; whereas university level institutions include those which offer courses leading mainly to standard bachelor's degrees and above. Higher education is provided both by government and nongovernmental institutions. The coordination and quality assurance functions remain the responsibility of the Tanzania Commission for Universities (TCU) at the university level and of the NACTE

at the non-university level, both under the supervision of MoEVT

- Quality of education is an important indicator of development. Improvement of education can perpetuate growth in quality of life. A better education can increase the potential of young Tanzanians while removing an impediment towards achieving progress and development (Lisa *et al*, 2008).

The report by (Lisa *et al*, 2008) also indicated that, in 2004, approximately 85% of the population was enrolled in primary school for five years with about 57% continuing through all seven years¹⁴; however, only 6% of students continue their education upon graduating to secondary school.¹⁵ The average rate of graduation from primary school in Sub-Saharan Africa is 61%, and from secondary school is 32%; both statistics imply that Tanzania lags its neighbours. The education rate, however, has improved over the last couple of decades. In 1961 primary school was provided for only 50% of the population and of those students, only 12.5% of which would continue to secondary school.¹⁶

The report on education sector Analysis by de Dakar (2011) concluded that, internal efficiency in Tanzania is generally good compared with other countries in the region, but drops at successive levels. At the primary level, the internal efficiency coefficient was estimated at 88 percent (meaning that 12 percent of resources were wasted on dropout or repetition). Dropout remains the main source of inefficiency; this is particularly true at ordinary secondary level (O-Level) and advanced secondary level (A-Level), which registered lower IECs, of 81 percent and 72 percent respectively. Efforts are necessary, in a context of scarce resources, to reduce secondary level dropout to improve the overall internal efficiency of the system, and reduce related resource wastage. On the other hand, repetition remains low at just 2.4 percent in primary, and below two percent in secondary levels, well below

¹¹ Education Sector Development Plan (2016/17 – 2020/21) Tanzania Mainland

¹² Education Sector Development Plan (2016/17 – 2020/21) Tanzania Mainland

¹³ Education Sector Development Plan (2016/17 – 2020/21) Tanzania Mainland

¹⁴ World Bank Education Profile, statistics from 2005

¹⁵ World Bank Education Profile, statistics from 2000

¹⁶ Hatch, John. Tanzania, a Profile. New York, NY: Praeger Publishers, Inc., 1972.

regional averages, as the result of a positive policy choice (de Dakar, 2011). Given these facts, employees depending on the nature of responsibilities and level of expertise are split into different education levels, some had primary education, secondary education, and professional certificate/diploma. Others had University degree or above.

METHODOLOGY

3.1 Sampling Techniques and Sample size

Ary *et al.* (2010) defines population as a large group to which researcher wishes to generalize; it includes all members of a defined class of people, event, or objects. For this study therefore, the population comprises retirees from four zones of the United Republic of Tanzania such Central Zone, Coast Zone, Southern Highlands Zone, Lake Zone, and Northern Zone. Thus, a sample¹⁷ size of retirees was obtained using the formula¹⁸ at 95% (i.e., 5% level of significance) confidence level and within a margin error (ME) of 0.097. The table below represents the proportional sample size per each region (Study Region).

With regard to scarce means such as time and other key resources, the study embraced itself on examining only two factors namely: Retirement pension and Education level. A systematic sampling technique was employed and hence, primary data were collected focusing on the key factors of longevity as described earlier for 2007 to 2017 retirees. nevertheless, a well-thought-out structured questionnaire was used to collect the required information of the retirees.

3.2 Data Processing and Analysis

Data analysis is the course of analytically working with data by applying statistical and logical techniques to describe, organize, summarize, compare collected data, and divide them into small portions (Leedy & Ormrod, 2005). Survival analysis

was used as the key analysis tool of the study where the output variable was clearly examined. Nevertheless, cross tabulations were also constructed to establish a relationship existing between variables. The analysis concentrated much on the establishment of the following relationships such as: The influence of education on pensions and vice versa, Relationship between health and pensions, how education may influence health of a retiree and vice versa, relationship between education and postretirement income, health of an individual and postretirement income, and how education of a retiree may influence life style; as they were explained in the previous chapter under conceptual frame work section. And hence, in the next Chapter, the study shows how longevity is affected in the presence of all these factors.

To ensure that Survival analysis appropriately explain the gathered information, statistical software (SPSS) was employed to enhance a successful analysis and hence to achieve a meaningful conclusion.

RESULTS AND DISCUSSION OF FINDINGS

Education Level as Linked with Pension Amounts

Education¹⁹ is one of the most vital investments a country can make to her people and its future. At the same time, education is termed to be a key aspect in dropping if not completely eradicating poverty and inequality.

Advanced education level attained by an employee during working life has a superior implication on both terminal settlement and on pension amounts as it influences appointments or promotion to higher positions of which brings in more income (higher salaries and other fringe benefits) much better than the lower positions (Bukwimba M.L., 2016). *Table 1* has useful information in the sense that 87.7% of retirees having secondary school and tertiary education as their highest level of education were

¹⁷

<http://success.qualtrics.com/rs/qualtrics/images/Determining-Sample-Size.pdf>

¹⁸: $n = \frac{Z^2 pq}{E^2}$

¹⁹

<https://www.worldbank.org/en/topic/education/overview#1> (as retrieved on June, 2022)

paid less than 199,999 TZS per month as compared to 16.7% who received same pension amount attained University education level.

Again, on the same scenario, 66.7% of those who attained a university degree as their higher education level during their working life received

400,000 and above TZS, and only 26.2% cumulatively of those attained lower education level than that of a university degree received 400,000TZS and above. This is evidence supporting the fact that, education has a direct impact on retirement pensions.

Table 1: Relationship between Pension and Level of Education.

| Education Level | Retirement Pension (TZS) (%) | | | Total (%) |
|----------------------------|------------------------------|--------------------|------------------|-----------|
| | 199,999 and below | 200,000 to 399,999 | 400,000 and more | |
| Primary School or Similar | 64.7 | 11.8 | 23.5 | 100 |
| Secondary or Higher School | 87.7 | 9.6 | 2.7 | 100 |
| University Degree ** | 16.7 | 16.7 | 66.7 | 100 |

** Indicates that P-value ($p < 0.001$)

The *Table 1* above, shows a strong relationship between education level of retirees and the amounts paid after retirement as pension. For instance, column labelled “199,999 and Below” shows that the number of people decreases as the education level of retirees rises. In other words, most of retirees received this amount due to the fact that their education level was found to be less than a university degree. This is because the p-value

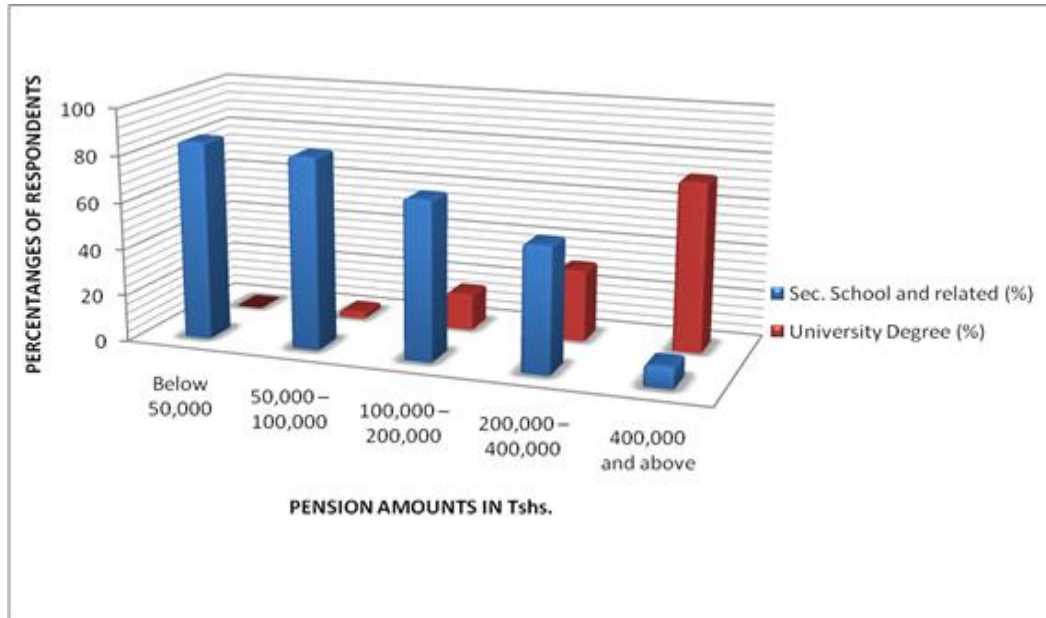
($p < 0.001$) tells us that education in all aspects is a key factor to minimize poverty particularly oldage poverty to be more specific.

Below is a modification of the levels of pension payments and a comparison between two levels of education (secondary school/middle school/Higher school and university degree) against the pension amounts an individual receive.

Table 2: University Degree against Sec. School and Related Education Level in Relation to Pension Amounts

| Pension amounts | Sec. School and related (%) | University Degree (%) |
|-------------------|-----------------------------|-----------------------|
| Below 50,000 | 85.2 | 0 |
| 50,000 – 100,000 | 82.4 | 2.9 |
| 100,000 – 200,000 | 68.4 | 15.8 |
| 200,000 – 400,000 | 53.8 | 30.8 |
| 400,000 and above | 9.1 | 72.9 |

Figure 1: Relationship between Pension and Education Level (Adopted from Bukwimba M.L, 2016)



From the *Figure 1* above clearly indicates that as the education level of employed person advances from secondary and tertiary level to university, brings in some positive financial impact at retirement life. Pension amounts grows considerably from below 50,000TZS to 400,000TZS and above (Bukwimba M.L, 2016).

The Cox Regression Model

The Cox model is referred to as the Cox Proportional Hazard model. It is a statistical technique for exploring the association between the survival of a patient and a number of explanatory variables (Bukwimba M.L, 2016). In this study, it is about exploring the relationship between the survival (Longevity) of the retirees and some descriptive variables (Pension Amounts, Education level attained and Income from Investment).

The Cox PH model is usually written in terms of the hazard model. It is given below as described by Cox (1972).

$$h(t, X) = h_0(t) \exp(\beta_1 X_1 + \dots + \beta_p X_p) \tag{1}$$

It can also be re-written as

$$h(t, X) = h_0(t) \ell^{\sum_{i=1}^p \beta_i X_i} \tag{2}$$

Where $h_0(t)$ is a baseline hazard, β_i is the parameter vector and X_i are explanatory variables?

The Cox Model allowed the author to calculate approximately the hazard of death for a retiree given the variables of interest (see *Table 3*). The hazard function is the probability that a person will experience death within a small period of time, given that an individual has survived to the beginning of the time period (Bukwimba M.L, 2016). Before expressing the behaviour of the retirees given their pension amounts, the *Table 3* presents the logistic Regression results on the status of the retiree (Dead, Alive). The pension amounts per month received by the retirees in the United Republic of Tanzania were broken down into three groups to improve appropriate and clear interpretation (Bukwimba M.L, 2016). The groups are:

1²⁰ (Constant): $\leq 199,999TZS$, 2 (BE):
 $200,000 - 399,999TZS$ and 3 (AB):
 $\geq 400,000TZS$ as indicated in *Table 3*.

Table 3: Logistic Regression Results (Adopted from Bukwimba M.L, 2016)

| Variables | Values | |
|-----------|------------------|--------|
| | Coefficients (B) | Exp(B) |
| Constant | | |
| BE | 2.199** | 9.015 |
| AB | 0.917 | 2.501 |

** Indicate significance

NOTE: Constant represent 199,999 TZS and below, BE: (200,000 – 399,999 TZS) and AB: (400,000 TZS and above)

The coefficients of the regression model from *Table 3* above (i.e., $\beta = 2.199, \beta = 0.917$) respectively are all positive. It implies a higher risk. The third group has lower risk comparative to second and first groups (Bukwimba M.L, 2016). A similar observation on the proportional hazard ratio decreases with an increase in pension amounts. This implies that, the hazard proportional ratio of (200,000 – 399,999TZS) as one of the groups is 9.015 lower than group 1, that is to say, those who earn (199,999TZS and below) with a 95% confidence interval of 1.232 to 65.968. The p-value (p=0.030) suggests a statistical significance at the 5% level and thus, the two groups experience different risks where by the previous is in higher risk compared to the second group (Bukwimba M.L, 2016).

Correspondingly, the proportional hazard allowance of group 3 i.e., $\geq 400,000TZS$ comparative to reference group one is 2.501, this implies that, this cluster experience smaller risk relative to cluster one as a reference cluster. And the p-value (p=0.454) suggests that there is no statistical

significance at 5% level of significance. Hence, the retirees' reference cluster ($\leq 199,999TZS$) and the one which receives higher amounts ($\geq 400,000TZS$) have two different risks of death, such that those earning $\geq 400,000TZS$ per month has relatively lesser risk assuming that pensions is the only source of income. (Bukwimba M.L, 2016).

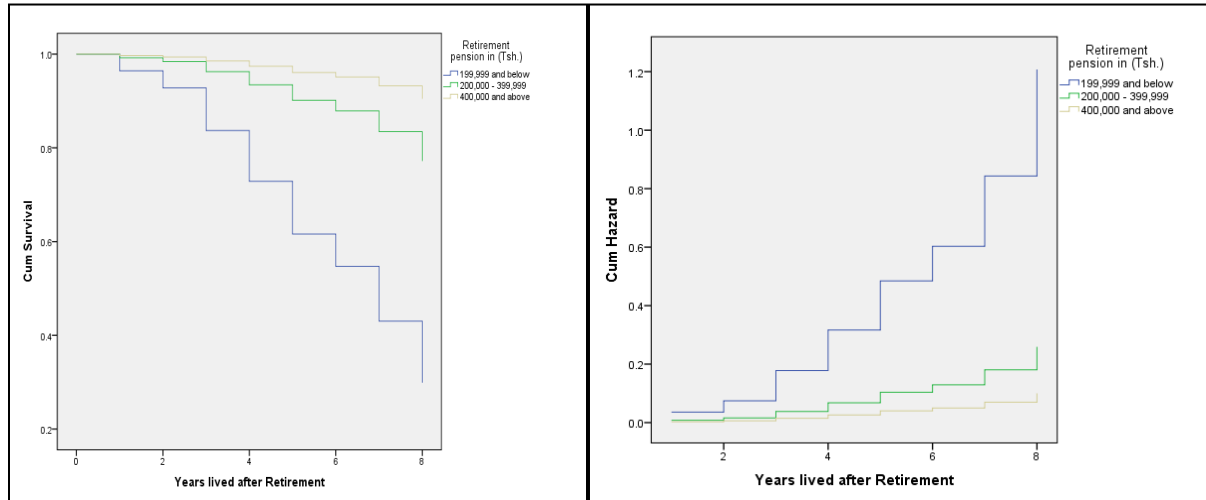
Figure 2 below shows the survival function of three groups of retirees on the basis of their retirement pensions. It indicates that the group earning higher pension amounts of $\geq 400,000TZS$ is in an enhanced arrangement of living longer than the rest of the groups. The group of retirees which seems to have lower survival rate is the one that earns $\leq 199,999TZS$. (Bukwimba M.L, 2016)

The figure below also indicates that this collection of individuals has improved survival rate within the first three years of their retirement, and the survival probability approaches 0.3 as the retiree survives to

²⁰ Adopted from bukwimba M.L, 2016

eight years, but beyond that the possibility of being alive diminishes quickly (Bukwimba M.L, 2016).

Figure 2: Retirees’ Survival Function (Adopted from Bukwimba M.L, 2016)



Thus, these findings conclude that the higher the education level a person attained implies higher terminal income, higher pension amount and hence lower mortality risk and vice versa implies.

Education and the Survival of the Retirees

Table 4: The Effects of Education on the Survival of Retirees

| | | Current status of the retiree | |
|--|---|-------------------------------|--------------|
| | | Died | Alive |
| Education level of the retiree/Deceased | Primary school/similar | 5.4% | 19.2% |
| | Secondary school/middle school/Higher school | 78.4% | 56.4% |
| | University degree | 16.2% | 23.1% |
| | Others | None | 1.3% |
| | Education level lower than University degree | 83.8% | 76.9% |

Table 4 above depicts the number of retirees with different levels of education and survival status: - alive or dead. The Table reveals that a number of retirees who had died during the study period are significantly from the group of those with education level below a university degree. This makes an inference that the level of education may partly be linked with survival rate such that about 83% of all who had died during the period under study belong

to education that is below the university education level category.

More specifically; the Table shows that, for those with secondary education the death rate is higher than compared to those with primary level education but far higher than those with university degree. As such the cumulative percentage of deaths for retirees of secondary and primary levels of education equals 83.8% and accordingly represents

very high mortality rate and hence this implies low survival (Shorter Longevity).

The results depicts that the p-value ($p = 0.103$) which is greater than 5% level of significance and therefore we can infer a no relation between education level and the survival or non-survival of the retirees. In other words, the results imply that death or survival of a person do not necessarily depend on education level of that particular person but rather remain to be a contingent.

Income from other Investment

Investment is an activity that is engaged by people who have savings, in other words, without savings there is no investment though not every saving reflects investment.

Investment²¹ can also be defined as a cognisant act of an individual or any business body that involves

deployment of money in terms of cash in securities or assets issued by any financial Institution aiming at obtaining a return over a particular period of time in future.

For this regard, people engage in different types of investment simply because they need to own multiple sources of income for the betterment of their future wellbeing as Table 5 below. This Table indicates that on an average 87.8% of the retirees have established to be engaging in small scale businesses, medium scale, and even large-scale enterprises according to monthly return a particular business is paying off found to be alive compared to an average percent of 12.2 of the retirees who also engaged themselves various investments (i.e., having at least one source of income) were found died. This generalizes the fact that, multiple sources of income minimize mortality risk.

Table 5: Major Sources of Income, Investment Earnings and Status of Retirees'

| Major Source of Income | | | | |
|-------------------------------|-----------|-----------|-----------|--|
| Status | RP | DP | WI | |
| Died (%) | 54.2* | None | 9.1* | |
| Survived(%) | 45.8* | 100* | 90.9* | |

NOTE: RP – Retirement Pension, DP – Disability Pension, and WI – Working and Investment

| Investment Income per Month (Tsh) | | | | |
|--|----------------------|--------------------------|----------------------------|-------------------|
| Status | Below 100,000 | 100,000 – 300,000 | 300,000 – 1,000,000 | 1,000,000+ |
| Died (%) | 21.4* | 20.7* | 6.7* | None |
| Survived (%) | 78.6* | 79.3* | 93.3* | 100* |

- Indicate existence of relationship between current status of a retiree on one hand and Major sources of income and Investment Income per month on the other hand.

²¹ Kalian-city.blogspot.in/2011/06 as on 03/11/2015

From the group of retirees, it was found that, most of them depend mainly from either pension amounts or from their investment(s) they had engaged during working life/period or just after getting retired from employment. *Table 5* tells us that, having many sources of income reduces the risk of retirement mortality, thus a person lives longer if other factors are not considered. It shows that only 9.1% of the retirees having multiple sources of income had died compared to 54.2% with only one source of income (Retirement pension) who also died during the same period of time. Again, the table shows that 90.9% of those who engaged in postretirement activities and owning some investments found to be alive during 2007-2017.

Looking at these statistics, they do not give us a clear picture on the duration did the retirees started exactly to invest. Neither do they indicate on whether or not the retirees acquired financial education before or after retirement and who offered them such an education. However, the serious concern here is that 54.2% of the retirees who depended on a single source of income had died somewhere between 2007 and 2015; this is quite a short period of time.

Anya and Kevin (2007) have pointed out that financial education is an essential factor for effective retirement savings as it influences most of people to engage in various investments. Accordingly, they insist that employers should provide financial investment-based seminars to

their working place, encourage their employees to search and engage into various investments, provide more information on investment opportunities etc.

The p-value ($p < 0.001$) as indicated on *Table 5* above for the source of income, shows evidence to reject the null hypothesis that multiple sources of income increase the risk of retirement mortality at 5% level of significance. Hence, we conclude that, having multiple sources of income minimizes the mortality risk at old age. That is to say, engaging in various investments/postretirement employment increases the retiree's income which eventually leads to a better standard of living and hence minimizes the risk of retirement mortality. This argument is supported by the findings that an average of 87.8% of the retirees dared to invest in any form/type of investment survived regardless of earnings per month (see *Table 5*). Thus, diversification of fund minimizes financial distress as leads to multiple sources of income of which brings both social-economic and psychological comfortability.

Education as linked to Investment Income

Education level acquired by the retirees during their working life had a greater impact on decision making for their future wellbeing. The information collected from the respondents provides strong evidence for the discussion summarized in *Table 4.6* below.

Table 6: Investment Income in Relation to Education Level

| Investment Income per Month (Tsh) | Education Level (%) | | |
|---|---------------------|----------|------|
| | PS | SS/MS/HS | UD |
| Below 100,000 | 50* | 27.3* | None |
| 100,000 – 300,000 | 50* | 57.6* | 25* |
| 300,000 – 1,000,000 | None | 12.1* | 55* |
| 1,000,000 and above | None | 3* | 20* |
| Total | 100 | 100 | 100 |

NOTE: PS – Primary School, SS/MS/HS – Secondary School/Middle School/High School, UD – University Degree.

- Indicates: Existence of relationship between Education level of a retiree and Investment income in postretirement

Looking at *Table 6*, the findings indicate that 50% of the retirees having only primary or similar level of education participated in different types of investments which paid less than 100,000 Tanzanian shillings, and the other 50% of the group invested into businesses which gave them a monthly return of 100,000 to 300,000 Tanzania shillings per month.

Despite that *Table 6* above indicates that all retirees falling into their respective education groups engaged in one or more income generating activity, the monthly returns justifies that some of them made right decision at right time and had saved more. This is associated with the education level a person attained before getting retired. For example, the *Table 6* shows that most of those having university education were doing better in investment activities, that is, 55% of the them earned (300,000 – 1,000,000) TZS compared to 12.1% of those attained secondary/middle/higher schools and none of primary education level who earned same monthly return.

Similarly, the *Table 6* above shows that 20% of retirees who attained university education level managed to invest into highly paying businesses (i.e., 1,000,000TZS and above) compared to 3% of retirees having secondary/middle/higher schools earned same monthly return.

These results are powered by the p-value ($p < 0.001$) which is less than 5% level of significance. It is statistically significance: and thus, we conclude that there is strong relationship between level of education attained and the investment income, in other words, education level attained before retirement has a greater impact on the future wellbeing of a retiree in terms of influencing final and retirement benefits, postretirement employment/contracts, influencing decision of buying corporate shares and owning houses for rent.

CONCLUSION

The results depicts that there is no direct relationship between education level and the survival or non-survival of the retirees but the impact of education level towards longevity may be seen through pension amounts and through investments. In other words, the results imply that death or survival of a person do not necessarily

depend on education level of that particular person but rather remain to be a contingent.

Meanwhile, the evidence supports that for a retiree to have numerous sources of income apart from solely depending on pension amount, improves the wellbeing of an individual and consequently early death just after retirement is reduced, that is to say, the higher the education level a person attained implies higher terminal income, higher pension amount and hence lower mortality risk and vice versa applies.

REFERENCES

- Adler, N. E., Boyce, T., Chesney, M. A., Cohen, S., Folkman, S., Kahn, R. L., & Syme, S. L. (1994). Socioeconomic status and health: the challenge of the gradient. *American psychologist*, 49(1), 15.
- Ary, D et al.2010. Introduction to Research in Education. Canada: Thompson Wadsworth.
- Olsen, A., & Whitman, K. (2007). Effective retirement savings programs: Design features and financial education. *Soc. Sec. Bull.*, 67, 53.
- Bozio, A., Crawford, R., & Tetlow, G. (2010). *The history of state pensions in the UK: 1948 to 2010*. Institute of Fiscal Studies
- Bossert, W. and Pfingsten, A., 1990. Intermediate inequality: concepts, indices, and welfare implications. *Mathematical Social Sciences*, 19(2), pp.117-134.
- Brian R. and Adrian G. (2010). Mortality by cause of death and by socio-economic and demographic stratification.
- Brown, R. L., & McDaid, J. (2003). Factors affecting retirement mortality. *North American Actuarial Journal*, 7(2), 24-43.
- Bukwimba M.L (2016). The Impact of Pensions on the Mean residual life time of retirees in Tanzania. *International Journal of Advanced and Multidisciplinary Social Science* 2016, 2(1): 1-10

- Central Statistics Office (2011). Situation Analysis of the Elderly in India: Ministry of Statistics and programme Implementation, Government of India.
- Constitution of the United Republic of Tanzania, 1997.
- EMIS/BEST (Education Management Information System / Basic Education Statistics in Tanzania). Various Data. Ministry of Education and Vocational Training.
- ESPR “Education Sector Performance Report 2008/09”
- Godius, K. & Longinus, R. (2009). *Final report on case studies of working conditions survey in Tanzania*. University of Dar es Salaam.
- HelpAge International “The Madrid Plan” <http://www.helpage.org/what-we-do/rights/the-madrid-plan-mipaa/>: Retrieved on 11th October 2014.
- Holzmann, R., & Jørgensen, S. (2001). Social risk management: A new conceptual framework for social protection, and beyond. *International Tax and Public Finance*, 8(4), 529-556.
- Horiuchi, S., & Wilmoth, J. R. (1998). Deceleration in the age pattern of mortality at older ages. *Demography*, 35(4), 391-412
- ILO (2006). Social Protection for all Men and Women: A sourcebook for extending social security coverage in Fiji-options and plan. International Labour Organization.
- ILO (2009). National profile of working conditions in the United Republic of Tanzania. International Labour Organization
- ILO (1984). Introduction to Social Security, Geneva: ILO
- Judge, K. (1995). Income distribution and Life expectancy: A critical appraisal. *British Medical Journal* 311: 1282-1285
- J Gerontol B Psychol Sci Soc Sci. 2021 Mar; 76(3): 583–595.
- Kallan, J. (1997). Effects of socio-demographic Variables on adult mortality in the United States: Comparisons by Sex, Age, and cause of death. *Social Biology*. 44 (1-2): 136-47.
- Katz, S., Ford, A.B., Moskowitz, R.W., Jackson, B.A., & Jaffee, M.W. (1963). Studies of Illness in the Aged: The Index of ADL, a Standardized Measure of Biological and Psychosocial Function. *Journal of the American Medical Association*, 185, 914-919. <http://dx.doi.org/10.1001/jama.1963.03060120024016>
- Bender, K. A., & Jivan, N. A. (2005). *What makes retirees happy?* (Vol. 28). Boston: Center for Retirement Research at Boston College.
- Kothari R.C. (2004). *Research Methodology: Methods and Techniques* (2nd rev. ed.). New Delhi. New Age International.
- Lantz, P. M., House, J. S., Lepkowski, J. M., Williams, D. R., Mero, R. P., & Chen, J. (1998). Socioeconomic factors, health behaviors, and mortality: results from a nationally representative prospective study of US adults. *Journal of the American Medical Association*. 279(21), 1703-1708.
- Leedy, P.D & Ormrod J.E. (2005). *Practical research: Planning and Design*. New Jersey: Pearson Merrill Prentice-Hall.
- Lee, P. R., Moss, N., & Krieger, N. (1995). Measuring social inequalities in health. Report on the Conference of the National Institutes of Health. *Public health reports*, 110(3), 302.
- Legal and Human Right Centre. (2007). Progress through Human Rights. Dar es salaam, Tanzania
- Lisa, B., Nora, D., & Jason, K. (2008). How Tanzania has Progressed: The United Republic of Tanzania development Report.
- de Dakar, P. (2011). Tanzania education sector analysis: beyond primary education, the quest for balanced and efficient policy choices for human development and economic growth.
- Maghimbi S., F.S.K. Tungaraza, and A.S.T. Mchomvu (2002). Social Security Systems

- in Tanzania. *Journal of Social Development in Africa*. **17**: (2).
- Maghimbi S., A.S.T Mchomvu, T.F.K. Ngalula, G.S. Nchahaga, and F.S.K. Tungaraza (1998). Social Policy and Research Practice in Tanzania. *Journal of social Development in Africa*. **13** (2): 45-53.
- Meng, C., and Pfau, W.D. (2010). *The Role of Pension Funds in Capital Market Development*. GRIPS Discussion Paper 10-17, Tokyo-Japan
- Oxford Advanced English Learner's Dictionary (2005.), (17th ed.)
- Oxford Policy management (2010). Evaluation of retirement Systems of countries within the Southern Africa Development Community: Synthesis Document.
- Pappas G., S. Queen, W. Hadden and G. Fisher (1993). The increasing Disparity in Mortality between Socioeconomic Groups in the United States, 1960 and 1986. *New England Journal of Medicine* **329** (2): 103-109.
- Preston Samuel & Irma Elo (1995): Are educational differentials in adults mortality increasing in the United State? *Journal of Aging and Health*: 7:476-496.
- Ridsdale, B., Gallop, A., & Hall, I. (2010, March). Mortality by cause of death and by socio-economic and demographic stratification 2010. In *International Congress of Actuaries 2010*.
- Robert L. Brown and Joanne McDaid (2013). Factors affecting Retirement Mortality. *North American Actuarial Journal*. 7(2): 24-43.
- Rogers R.G., Robert A.H, Charles B.N (1999): Cigarette smoking and mortality. In living and dying in the USA: Behavioral, Health, and Social Differences of Adult Mortality. Academic Press.
- Social Security Regulatory Authority Act. No.8 of 2008 (2008), United Republic of Tanzania.
- Social Security Regulatory Authority "Pension Benefits Harmonization" rule (2014), United Republic of Tanzania.
- The United Republic of Tanzania (2007). Tanzania Progress Report Review and Appraisal of the MIPAA. Addis Ababa, Ethiopia.
- The United Republic of Tanzania (2003). The national Social Security Policy. Ministry of Labour, Youth Development and Sports. Dar es Salaam, Tanzania.
- The United Republic of Tanzania (2008). Economic survey 2007, dar es Salaam Government Printers
- Vailant and Mukama (2001), Successful Aging. Department of Psychiatry, Brigham and Women's Hospital, 75 Francis St., Boston, MA 02115, USA. gvaillant@partners.org
- Yuan, Xingchen, "Survival Model and Estimation for Lung Cancer Patients." (2005). Electronic Theses and Dissertations. Paper 1002. <http://dc.etsu.edu/etd/1002>
- Cox (1972) Regression Analysis and Life Table, Yuan, Xingchen, "Survival Model and Estimation for Lung Cancer Patients." (2005). Electronic Theses and Dissertations. Paper 1002. <http://dc.etsu.edu/etd/1002>