

**RATE OF FINANCIAL RETURNS TO EDUCATION OF PUBLIC PRIMARY  
SCHOOL TEACHERS IN MUMIAS SUB-COUNTY, KENYA**

**BY**

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## DECLARATION

Declaration by candidate

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## **DEDICATION**

To my family: My husband Sam Barasa, our beloved children Cynthia Favor Barasa and Venesa Precious Barasa for their support and patience. May this work be a living proof and inspiration to academicians.

## ABSTRACT

Education is an important determinant of earnings in Kenyan economy. Returns to education for primary teachers have great influence on the stability of the teaching force. Due to this a large number of primary school teachers in Mumias Sub-County are going to school to attain higher qualifications to enhance their earning capacity. However, the level of relationship that exists between earnings and schooling among primary teachers in Kenya remain undetermined. This study therefore, found out the specific professional cost incurred by primary teachers when in training. It also provided the actual relationship between earnings and the level of education for primary school teachers. The purpose of this study was to determine the rate of financial returns to education of primary school teachers in public schools in Mumias Sub-County, Kenya. The study was guided by three objectives: to determine the direct cost incurred by primary teachers in tertiary institutions in Kenya; to establish earnings accruing by age, experience and level of education to primary teachers in public schools in Mumias Sub-County, and lastly establish the relationships between age, experience, level of education, and earnings among primary teachers in public schools in Mumias Sub-County. The study adopted a theoretical framework which is based on the human capital theory which equated human capital to “physical means of production” such as machines and factories; that one can invest in human capital through education and training. The study adopted both descriptive survey and correlation research designs. It cooperated both qualitative and quantitative data. The target population was 1272 TSC primary school teachers. Using stratified sampling, 383 TSC primary schools teachers were sampled from 94 primary schools. Primary data on earnings, age, experience, level of education and cost of tertiary education was obtained through use of a questionnaire. Content validity of the research instrument was determined by experts from the department of Educational Foundations and Management, Maseno University. Test re-test technique was used to establish reliability of the instrument. A pilot study was carried out using 38 TSC primary school teachers in Mumias Sub-County, Kenya, who did not take part in the actual study. A reliability correlation coefficient of 0.82 was obtained which indicated a high degree of internal consistency for the instruments. Data was analyzed using descriptive and inferential statistics. The results of the study showed that the direct cost incurred by primary schools teachers in Mumias sub-county ranged from Ksh2,000 to Ksh181,325. However, primary teachers are obtaining diploma, bachelor degree and masters degree to enhance their earning capacity at various costs. The cost of diploma, bachelor and masters degree were Ksh180,000-329,300, Ksh400,000-645,000 and Ksh800,000-1,000,000 respectively. Earnings accruing by age of P1, diploma, bachelor and masters degree were Ksh16,617-36,153, Ksh29,000-45,692, Ksh41,373-51,407, and Ksh70,000-86,000 respectively. Earnings accruing by experience of P1, diploma, bachelor and masters degree were Ksh17,538-40,400, Ksh29,033-47,071, Ksh34,000-56,214 and Ksh70,000-86,000 respectively. Earnings accruing by level of education of P1, diploma, bachelor and masters degree were Ksh22,596, Ksh39,089, Ksh44,189 and Ksh78,000 respectively. Age, experience and level of education were found to be positively and significantly correlated to earnings. Marginal rates of return for diploma, bachelor and masters were 24.10%, 3.26% and 38.26% respectively. The rate of financial return to education was 21.6%. This study is will add to the body of knowledge regarding financial returns to education in Kenya.

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## **ABBREVIATION**

- ATS - Approved teachers
- DEO - District Education Office
- IQ- Intelligence Quotient
- P1 - Primary Teacher certificate
- TSC - Teachers Service Commission
- TTC - Teacher Training College

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the Problem**

Education investment provides both social and private benefits (returns). Private returns are based on the costs incurred by and benefits received by the individual acquiring the education and they are used to explain the behavior of individuals (schooling decisions) in seeking different levels and types of education (Okafar, 2017). These benefits include both the consumption and investment consequences of education. Social returns are based on the costs incurred by and benefits received by the society as a whole. Social rates are used to formulate educational policies regarding the expansion or contraction of different types of education (Okafar, 2017).

Education provides both direct and indirect benefits for the individual who receives the education and society to which this individual connects (Kifle,2007). There are differences between private costs and social costs, as well as between private and social benefits. This distinction is important because individuals can be expected to base their education decisions on the private costs and benefits, whereas it is in the interest of society as a whole to have educational decisions based on the social costs and benefits (Craig, 2004).

Craig further states that there are benefits (possibly also costs) that are not taken into account by the decision maker .Tertiary education is a key factor in nation's effort to develop highly skilled workforce for competing in the economy (Galabawa, 1991). At national level, investment in education has been emphasized particularly in developing countries where

education is seen as the main instrument used by policy makers to enhance poverty alleviation (Wambugu, 2002).

A synthesis of research clearly demonstrates that there are numerous benefits of higher education (Baum & Payea, 2005). Obtaining a college degree not only enhances earning potential, but also alters one's world view, prompting further growth intellectually, socially, academically, and often spiritually. It is often assumed that more able individuals benefit more from an additional year of education. Also, better-quality education is likely to enhance the productivity of individuals by improving cognitive skills, thereby increasing the rate of returns to education.

The magnitude to which education increases benefits to an individual is referred to as the economic "return" to education (Colclough, Kingdom & Patrinos 2009). Private returns to education are those benefits that accrue to an individual alone from obtaining a particular level of education (Todaro, 1982). The rate of return to schooling is a powerful tool of educational decision making since it calculates how much the return from the investment made.

Woodhall (2004) describes rate of return as a systematic comparison of the magnitude of the costs and benefits in any form of investment. Knowing the rate of return is valuable for several reasons. For an individual, information on private rate of return is helpful in assessing whether it is efficient to opt for extra education. Second, for policy-makers with scarce resources to allocate between competing policies. Third, the process of calculating the rate of return itself can provide important information on the main determinants of return to investment in education (Saharawati, 2008).

Moreover, the rate of return to schooling is an influential instrument. It is used in educational decision making as it determines the magnitude of the return from the investment in education (Shahar, 2008), as well as policy evaluation in education. More often than not, such policies may include expansion or lack of it for certain levels of education.

The Human Capital theory states that a person's education is an investment (which involves the direct spending on education and the indirect costs such as the foregone income) in his/her human capital (analogous to investment by a firm in physical capital), which makes the individual more productive and accrues to both the individual and society, a future stream of benefits like superior productivity, high wages and non-monetary benefits (Mulongo, 2012).

There is positive correlation between higher levels of education and higher earnings for all racial/ethnic groups, both men and women. In addition to higher wages, college graduates are more likely than others to enjoy employer-provided health insurance and pension benefits (Baum & Jennifer, 2007). Economists and educational analysts agree that cause of faster inflation of tuition fees rises is as a result of commercialization of higher education (Ferall, 2011 and Hansmann, 2012). To combat the repercussions of rising tuition, some call for an increase in public funding (Lye, 2011).

In recent years, students have been paying more to attend to college and earning less upon graduation. This trend has led many observers to question whether a college education remains a good investment (Abel & Deitz, 2014). Moreover, many governments of developing countries complain that education is getting too costly, and that they can no longer finance the development or sometimes, even the maintenance of their school systems

(Ronald, 2007). Unit costs of education at all levels, particularly higher education, are much higher in Africa than in other countries in the same range of per capita income (World bank (2000).

Education costs in most systems are characterized by the dominance of personal costs and teacher costs in particular. This can be attributed to the fact that education is a labour-intensive industry relying on a predominantly handicraft technology (Coombs & Hallak, 1972). The academic cost is therefore, defined as the expenditures which are directly related to getting oneself formally educated. The major components of academic cost are the pre-admission cost, fee and funds given to the college/institute, private tuition fee, cost of books, stationary, project/thesis work, study tours and other instrumental costs.

Private cost is the cost borne by the students or their parents/guardians. It includes tuition fees, examination fees, expenditure on books, stationery, board and lodging, transport and other incidental expenses (Singh, 2000). The real cost of education per student appear to have been on the increase in most African countries in the post-independence period because of inflation. The cost of education to an individual student and his family is of three main kinds. First there are direct fee payments for school tuition minus the value of any scholarships.

Second, are any payments for books, uniform, travel, sports, equipments which are necessary to enjoy education fully. Some payments are made directly to the college/institute in terms of fees and funds and other associated charges which include books and stationery, living expenses etc. In this process the cost of acquiring professional education goes up considerably (Ghuman, Singh & Brar, 2009). Third, the cost of an individual student of being

educated, this is the value of alternative opportunities he has had to do without or forego, by being educated.

Educational costs are characterized by the prevalence of higher costs at higher levels. As a general rule, unit costs tend to rise with each successive level of education. Science and technical education, at whatever level, is more costly than general education. At the post-primary levels there are fewer teaching hours but teacher salaries far exceed those of their primary counterparts; lower pupil-teacher ratios; the need for larger libraries and more expensive equipment; costly board and lodging and student grants (Forojalla, 1993). Information on costs is necessary to monitor resource allocation over time, to diagnose the function status of education system, and to evaluate the efficiency in resource utilization (Tsang, 2002). On average, OECD countries spend nearly twice as much per student at the tertiary level as at primary level.

Expenditure per student by educational institutions rises with the level of education in almost all countries (Education at Glance, 2011). This study concurs with the study by Rugar, Ayodo & Agak (2010) on the “rate of financial return to University Schooling among lecturers in public Universities”. They found that the direct private costs of doctoral programmes were higher than direct private costs of master degree. Literature review indicates that the higher the level of education, the higher the cost. However, the above studies never dealt with the specific cost for primary school teachers when in teacher training colleges and universities.

Earnings are the net benefits of a corporation’s operation. Earnings are also the amount on which corporate tax is due. In education, cost- benefit analysis, benefits of education rests on two assumptions. First, that the income of an individual is the best available measure of his

contribution to economy's production of goods and services. Secondly, those income differentials among individuals with different amounts of education are at least partly due to the differences in their educational attainment. According to Horowitz & Schenzler (2012), the benefits of an education program are measured by the wage differentials between program graduates and those with the next lower level of education

Costs of education and earnings are a determining factor in making decisions about investment choices in education. In the process of acquiring education, an individual incurs costs and reaps benefits at a future date (Shahar, 2008). Cost-benefit analysis focuses on the economic benefits of education. Thus an examination of the various levels of education is carried out to find out how much each level costs and benefits accruing from it.

Individual earnings may be influenced by non-school and school factors. Non-school factors include socio-economic background, ability and trade unions. Theoretically if everyone, rich or poor, faces the same cost and reaps the same benefit from additional schooling, educational attainment should not differ by family background. However, in real world, years of schooling completed, and educational achievement more generally, vary widely by family background (Elena & Barrow, 2006).

Family background includes the size and spacing of children, education of parents, the occupation and income of parents. Rothstein and Rouse (2007) found that there is a positive correlation between family income and schooling. It is widely accepted that family income affects education by influencing the amount of education individuals obtain. Moreover, family income is strongly correlated with family resources that foster cognitive and non-cognitive traits during child's formative years and her ability to learn (Taber, 2004). Green

(2003) found a significant and positive relationship between the individual's family background and earnings in case of Pakistan.

However, Heckman (2002) show that conditioning on family background characteristics and measures of ability, the relation between family income and educational attainment weakens significantly. Blondal, Field and Girouard (2002) found that students in higher education still tend to come from a relatively favored background. Schultz (2004) argues that if private returns to schooling increase with higher education, then poorer families who educate their children up to only primary education will face lower returns while richer families who educate children up to higher education will reap higher returns.

Nonetheless, Albert (2000) emphasizes that family features are important factors in the student's demand for higher education. The mother's educational status is more important than the father's. However, the educational status of the father is more effective in the employment. According to Kuzgan (2006), the socio-economic condition of an individual determines his/her level of education and eventually the profession chosen by the individual.

Early factors in a child's life such as health and feeding habits of the mother during the pregnancy, the child's own health, the family's income and living conditions, can determine the performance of the child in the school and later in life. Malnutrition can affect a child's ability to read, write, perform arithmetic operations, think clearly and objectively. This may hinder him/her from performing well and ends up in a low-paying job. Solon (2004) recognizes that higher income parents have greater wherewithal to invest in their children's education, health and so forth.

Age is a crucial element that enables the individual to deduce his lifetime earnings from a cross-section of observations of earnings of educated people. All age-earning profiles increase with age up to a maximum point irrespective of the years of schooling or level of education. Mohammad (2011) studied microeconomic analysis of private returns to education and determinants of earnings. He found that age and experience positively and significantly contributed to earnings. However, Henderson, Polachek & Wang (2011) found that young workers have higher returns than older workers.

Ashraf (2011) found that age and experience were positively and significantly correlated to earnings. Cook (2004) concluded his study that the average experience was significantly associated with growth in productivity. Tyler, Murnane & Willet (2000) present evidence for the US suggestions that cognitive skill at the age of leaving compulsory education is positively and significantly correlated with earnings. Workers with higher levels of education and more work experience tend to have higher wages. For some years the most common explanation for these correlations has been that time spent in school or the job increases wages by directly increasing workers productivity.

School factors include academic achievement and quality of schooling. These factors may influence a person's earnings. A low-school quality may leave a student unprepared to master the skills of the next grade level. This may force parents to take their children to quality schools. Students are forced to raise their school graduation grades for entrance to the university (Mueller & Rockerbie, 2004). Harmon & Walker (2002) found in England and Wales that there is no significant link between earnings and various measures of school resources such as pupil-teacher ratios, actual class sizes, teacher salaries or spending on textbooks.

Whereas, Dearden, Ferri & Meghir (2002) found that in Britain pupil-teacher ratio are not significantly related to adult men's wages. They also found that for British women, pupil-teacher ratios are significantly negatively related to women's earnings at age 33, but only for women of lower academic ability. A person's ability includes his intelligence quotient (IQ). It is upon his intelligence that one develops his ability that is an ingredient of the determinants of earnings. However, the degree at which age, experience and level of education influence earnings to primary public school teachers in Kenya has not been established. Therefore, this study found out the degree at which each of the variables above influence earnings.

Studies indicate that primary level yields highest social returns compared to secondary and university levels (Psacharopoulos & Patrinos, 2002, Republic of Kenya, 2003b). These studies concurred with earlier ones (Thias & Carnoy, 1972; Psacharopoulos, 1973) which revealed that private rate of returns to university education were highest. A study by Price Waterhouse Coopers (2005) showed that the first university degree in the United Kingdom yields higher returns than lower qualification. Godius & Franscis (2007) carried out a study in Tanzania and found out that the private rate of return to one year of vocational education ranged between 1.4 and 2.8 percent.

According to Rugar *et al.* (2010) investing in University Schooling is highly profitable and level of schooling determines lifetime earnings. This study concurs with the study by Kifle (2007) who estimated private rate of return to education in Eritrea. He concluded that private rate of return to investment in education was high. He also found that the higher the level of education, the higher the rate of return was. Moreover, increase in one year of work experience had positive impact on earnings. The rate of returns to education varies from

individual to individual due to differences in age, ability, quality and quantity of education, and socio economic status (Gale, 2008).

However, Rugar *et al.* looked at rate of financial returns to university lecturers, Psacharopolous, Kifle and other researchers studied general areas. These areas did not look at the actual relationship between earnings on level of education, age and experience for teachers as it was done in this study. The demand for education is high in the institutions of higher learning. The population increases year in year out (Oyaro, 2013).

According to Njoroge (2016), the number of graduate teachers in primary schools has grown three-fold over the last four years as more tutors upgraded their academic qualifications. Data shows that there were 21,218 graduate teachers in 2015 compared to 6,262 in 2011. He further found that the number of primary teachers holding a diploma nearly tripled to 39,143 during the period. This is because returns to education at all levels appear to vary significantly. In particular, returns to primary school teachers appear to be slightly different.

It has been observed that 38.9% of primary school teachers in Mumias Sub-County have gone for higher education. This has made the District Education Officer of Mumias Sub-County to demand for two timetables from primary school teachers going for teaching practice in secondary schools, that is, one for his/her primary station and another for teaching practice (Mumias Sub-County Education, 2014). This is contrary to primary school teachers doing teaching practice from neighbouring Sub-Counties because they are only stationed in their teaching practice centres.

Table 1.1 shows that out 985 primary school teachers in Butere Sub-County, 254 (25.8%) had enrolled for higher education. 265 (27.3%) out of 970 of teachers in Navakholo Sub-County had enrolled for higher education. 183 (29.5%) out of 619, 232 (29.1%) out of 797 and 495 (38.9%) out of 1272 primary school teachers in Kakamega Central, Matungu and Mumias Sub-Counties respectively had enrolled for higher education.

**Table 1.1 Number of Teachers in Mumias Sub-County and Neighboring Sub-counties**

| <b>Sub-County</b> | <b>Total number of TSC teachers</b> | <b>Number of teachers enrolled for higher education</b> | <b>Percentage</b> |
|-------------------|-------------------------------------|---|-------------------|
| Butere            | 985                                 | 254   | 25.8              |
| Navakholo         | 970                                 | 265   | 27.3              |
| Kakamega East     | 619                                 | 183   | 29.5              |
| Matungu           | 797                                 | 232   | 29.1              |
| Mumias            | 1272                                | 495   | 38.9              |

**Ministry of Education statistics Section; 2014**

Apparently, Mumias Sub-County is one of the Sub-counties in Kakamega county with very high number of primary school teachers as noted by the DEO's office Mumias Sub-County. Consequently, it has a high population of teachers who are undertaking higher levels of education. Thus it is against this background that the study sought to establish the rate of financial return to education of public primary school teachers in Mumias Sub-County.

### **1.2 Statement of the Problem.**

Private cost refers to the part of expenditure/investments incurred by parents or students or both. Research showed that the higher the educational level, the higher the cost. Knowing the cost of education incurred during the study period is crucial as this involves how much

money an individual is willing to spend. This decision of opting for extra education is then made by a rationale and well-informed individuals by weighing the costs incurred during study period and the benefits gained in future. The theory of human capital assumes a continuous increase in wages with employment experience at different levels of schooling. Several studies have established that earnings rise as the educational attainment improves, however it is not clear whether this is the case with teachers in primary schools in Mumias sub-county who have opted to further their education beyond their initial professional certification.

Research shows that age, experience and level of education were positively and significantly correlated with earnings. Studies by most researchers show that private returns to education increase with increase in the level of education. Available statistics indicate that 38.9% of primary school teachers in Mumias sub-county are pursuing higher levels of education beyond their initial professional certification, but it is not clear whether this endeavor improves the rate of return to their investment. Hence this study seeks to quantify the rate of return to their investment in further education.

### **1.3 Purpose of the Study**

The purpose of this study was to find out the rate of financial returns to education of primary school teachers in public schools in Mumias Sub-County.

### **1.4 Objectives of the Study**

The study was guided by the following objectives:

1. To determine the direct private cost incurred by primary teachers in tertiary institutions in Kenya.

2. To establish earnings accruing by age, level of education and experience to primary teachers in public schools in Mumias Sub-County
3. To establish the relationships between age, experience, level of education, and earnings among primary teachers in public schools in Mumias Sub-County.

### **1.5 Research questions**

The research objectives were answered using the research questions below:

1. What are the direct private costs incurred by primary teachers in tertiary institutions?
2. What are the earnings accruing by age, level of education and experience and experience to primary teachers in public schools in Mumias Sub-county?
3. What are the relationships between age, experience, level of education, and earnings among primary teachers in public schools in Mumias Sub-county?

### **1.6 Significance of the Study**

This study has provided a statistical quantification of the rate of financial returns to education of public primary school teachers in Mumias Sub-County as well as contributed to literature and hopefully, to scholarly debate on this topic. It is also hoped that stakeholders involved in remuneration of teachers in Kenya will benefit from the findings of this study.

### **1.7 Delimitation of the Study**

The study has the following delimitation:

The study was delimited to primary school teachers in public schools in Mumias Sub-County for the period of time which the data was collected. This is because each private school has its own payment rates.

### **1.8 Scope and limitations of the Study**

The study was confined to finding the empirical evidence of rate of financial return to education of public primary school teachers in Mumias Sub-county. The dependent variable considered was earning (which was used to calculate rate of return to education), while the independent variables were level of education, age and teaching experience. Age and teaching experience are embedded in calculation of earnings. However, trade unions, ability, socio-economic factors and school quality are important control variables which have a bearing on teachers' earnings.

The limitations of the study were:

1. This study only sampled public primary school teachers in Mumias Sub-County, the findings may not be representative of private primary school teachers and teachers from other counties. This is because private schools have their different mode of payments while some schools are in hardship areas hence the returns may be slightly different.
2. It is difficult for people to give their actual age, therefore, in this study the researcher dealt with age in classes of five. For purposes of analysis, mid-point of age was used to represent the age of that person.

### **1.9 Assumptions of the Study**

The study was carried out on the basis of the following assumptions:

1. The monthly salary of a teacher is the best available measure of the financial return to him/her.
2. Income differentials among teachers with different amounts of education are at least partly due to differences in their educational attainment.
3. The participants would co-operate with the researcher and respond to the questionnaire.

## **1.10 Theoretical Framework**

Return is a profit on an investment. It comprises of any change in value, and interest or dividends or other cash flow which the investor receives from the investment. Benefits of education are equated to earnings and therefore earnings are assumed to be the benefits of education. The human capital theory proposed by Becker (1962), postulates that most investments in human capital both raise observed earnings at older ages, because returns are added to earnings then, and lower them at young ages, because costs are deducted from earnings then. It is concerned with the role of learning in determining the return to schooling.

Human capital is a stock of knowledge, skills and abilities embedded in an individual which results from natural endowment and subsequent investment in education, training and experience. It declares that time spent in school or on the job increases wages by directly increasing the workers' productivity. Mincer (1974) went further than Becker and brought about a model for estimating rates of return to investment in human capital.

The theory of investment in human capital employs three main methods of estimating rates of return to investment in human capital; Mincers'(1974) econometrical earnings function, ratio discounted net benefits to discounted total costs , and the internal rate of return associated with investment in education that is calculated in almost the same way as the profitability of a financial asset.(Thias and Carnoy, 1972). According to this theory, the rate of return on a project is a summary statistic which describes the relationship between costs and benefits associated with the project.

The benefit – cost ratio is a tool for analyzing returns to education that gives a numerical figure. The larger the benefit-cost ratio, the more desirable is the project. Benefit-cost ratio should always be more than one for anyone to invest in the alternative. If benefit-cost ratio is

less than one, the costs are more than the benefits, which implies that it is not wise to invest in the alternatives. The internal rate of return is the rate of interest that equates the discounted present value of expected benefits to the present value of cost.

Econometrical earnings function also known as semi-log earnings function, as developed by Jacob Mincer (1974) has the advantage of accommodating other factors other than schooling that may influence earnings among primary teachers. According to Heckman (2006), the Mincerian earning function is specified as: Where  $\ln Y$  represents the natural log of income (Y)  $S$  represents the number of years of schooling  $Exp$  represents the number of years of work experience  $Exp^2$  represents the square of number of years of work experience. This method has an advantage of including other personal factors other than schooling which in turn can influence earnings among primary school teachers.

Variables that were used in the calculation included; age, (represented by experience squared), experience and years of schooling. Since 1960s, the Mincer model remains the most estimated in earnings determination in different time periods and countries as it uses a formal model of investment in human capital as basis (Lemieux, 2006). The Mincer's earnings function is a single-equation model that explains wage income as a function of schooling and experience, named after Jacob Mincer. The equation has been examined in many datasets and it is one of the mostly used models in empirical economics (Lemieux, 2006).

The logarithm of earnings is modeled as the sum of years of education and a quadratic function of 'years of potential experience'. It is given by:

$\ln W = f(S, X)$ ,

In equation form, the earnings function becomes:

$\ln W = \ln W_0 + bS + c_1X + c_2X^2$ , where,

W-Earnings,

$W_0$ -earnings of someone with no education and no experience,

S-Years of Schooling,

X-Years of potential labour market experience

The coefficients  $b$ ,  $c_1$  and  $c_2$  can be interpreted as the returns to schooling and experience respectively. According to Mincer, the coefficient to schooling describes the percentage change in wages associated to additional schooling, interpreted as private rate of return to schooling.

The major yardsticks used to measure earnings are education and age profiles. Education and age profiles show that as the age increases, earnings also increase due to experience and promotion. The average earnings increase with age indicates that work experience increases worker's productivity as experience is a proxy for informal on-the-job training. Workers with higher levels of education and more work experience in Kenya tend to have higher wages. However, trade unions, ability, socio-economic factors and school quality are important control variables which have a bearing on teachers' earnings.

## 1.11 Definition of Key Operational Terms

**Ability -** skill/competence/talent.

**Earnings-** are fixed regular monthly payments made by the employer to an employee.

**Financial return to education** – is monetary profit accruing from investment in education

**Level of education-** refers to educational qualifications

**Primary school teachers -** these are teachers employed by Teachers Service Commission.

**Professional cost-** refers to fees charged by tertiary institutions specially to train in specific fields such as teachers.

**Rate of Return** – is a measure of profit as a percentage of investment

**Return to education -** is the reward of investing in education. This reward can be in the form of earnings and other social returns like honour, status, accommodating attitude etc.

**School quality-** measured by the level of resources available in the school, district, or state where the student grew up, such as expenditures per student or the pupil-teacher ratio.

**Teaching Experience** – is the number of years that a teacher has worked with TSC basing on current level of education

**Trade Union-** is an organization that protects workers against exploitation by powerful employers as monopolies that inflate their members' wages and as institutions that help modern industry run smoothly.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents a review of literature related to the study of rate of financial returns to education of primary school teachers in public schools in Mumias Sub-County. It includes literature in broad areas namely: direct private cost of education, earnings accruing by age, experience and level of education, and lastly, the relationship between age, experience, level of education, and earnings.

#### **2.2 Direct Private Cost of Education**

Direct private cost refers to part of the expenditure/ investments which are incurred by parents or students or both (Kumar, 2004). Private cost may be classified into two categories; that is, academic cost and maintenance cost. Academic cost refers to expenses on the items such as fees and funds paid to the institution. The major components of academic cost are the pre-admission cost, fee and funds given to the college/institute, private tuition, fee, cost of books, stationery, project/thesis work, study tours and other instrumental costs.

Maintenance cost includes expenses incurred on clothing, transport, boarding and lodging and other sundry expenses (Kumar, 2004). Private cost is borne by the students or his/her parents/guardians. It includes tuition fees, examination fees, expenditure on books, stationery, board and lodging, transport and other incidental expenses (Singh, 2000). Some payments are made directly to the college/institute in terms of fees and funds, and other associated charges which include books and stationery, living expenses etc. In the process, the cost of acquiring professional education goes up considerably (Ghuman, Singh & Brar, 2009).

Economists and educational analysts agree that cause of faster inflation of tuition fees rises is as a result of commercialization of higher education (Ferall, 2011 & Hansmann, 2012). According to OECD (2008), private resources had been mobilized through the commercialization of research and other private uses of institutional facilities and staff. It further reports that there has been an overall trend of shifting the cost burden to students and away from public subsidies through greater contributions by students and their families.

However, Lye (2011), reports that to combat the repercussions of rising tuition, some call for an increase in public funding. In recent years, students have been paying more to attend to college and earning less upon graduation. This trend has led many observers to question whether a college education remains a good investment (Abel & Deitz, 2014). Trembly, *et al.* (2012) observed that the rising costs of education is a direct consequence of the expansion higher education systems and wider participation, which have increased the financial burden of higher education as most countries have tried to expand their systems while limiting the adverse impact on unit costs and expenditure to maintain quality.

According to OECD (2012), at the aggregate level, for the 25 OECD with trend data, the cost of higher education had risen from 1.3 percent to 1.5 percent of GDP between 1995 and 2009. Moreover, unit costs also increased since 2000 by 9 percent on average across the OECD. Since 1995, more than half of the twenty five countries with available information had undertaken system reforms of tuition fees and financial support for students, and most had introduced or increased students' contribution of the cost of their higher education, (Education at Glance, 2011). As a result, among OECD countries with trend data, the public share of higher education expenditure has decreased from 78 percent in 1995 to 73 percent in

2009. Eggins & West (2010) suggest that recent trends in the financing of higher education are likely to exacerbate in the years to come.

Sianesi (2003) carried out a study on returns to education in Britain. She concluded that individual cost estimates take no account of the actual amount of time spent to achieve the different qualifications. She argued that comparisons should however more appropriately be performed on an annualized basis, that is, in terms of returns per year rather than on overall returns. She further concluded that individual costs to obtaining a qualification should also include the psychic costs of studying and the effort needed to achieve the qualification; these might also considerably differ between qualifications and thus contribute to explain differential returns.

Moreover, many governments of developing countries complain that education is getting too costly, and that they can no longer finance the development or sometimes, even the maintenance of their school systems (Ronald, 2007). Unit costs of education at all levels, particularly higher education, are much higher in Africa than in other countries in the same range of per capita income (World Bank, 2000). Nonetheless, parents are expected to bear the tuition of their children. Attending college has transformed from an intellectual pursuit to a financially burdensome venture (Ferall, 2011).

Cost of providing higher education is difficult to determine because of the joint production of both teaching and research in universities (Daly, Lewis & Corliss, 2015). Completing a qualification provides an individual with the option of continuing in further study. There is also considerable risk associated with commencing a university degree (Daly, *et al.* 2015). Costs are incurred at the beginning of the degree and nearly 30 percent of students do not complete their degrees (Daly, *et al.* 2015). In another study, Chalam (1986) analyzed the

private cost of higher education by socio-economic background of students. He found that private cost of education across all the degree colleges was found to be two to three times more than that of institutional cost. He also found that private costs of education to students increased progressively with the increase in the parental income. Less privileged parents certainly have fewer financial resources than more privileged ones. Some families clearly have more resources to donate to their children.

Nonetheless, Shan (1987) estimated the private cost of college education. The study found that the private cost was substantially high, and tuition fee formed only a very small portion of the total private cost. However, Schultz (2003) states that higher education in Africa could be more efficient and more equitably distributed if children of well-educated parents paid the public costs of their schooling, and these tuition revenues facilitated the expansion of higher education and financed fellowships for children of the poor and less educated parents. When the purpose of cost-benefit analysis is to determine the profitability of private investments in education, then the relative costs are those borne by the individual and family (Woodhall, 2004).

Cinn (1999) concluded that the highest proportion of private cost of higher education was on fees charged by colleges, books and stationery etc. The study revealed that the private cost increases at each level of higher education. This study concurs with the study by Rugar, Ayodo & Agak (2010) on the “rate of financial return to university schooling among lecturers in public universities”. They found that the average direct private costs of doctoral programmes were higher than the average direct private costs of masters’ degree across all disciplines.

They further found that the direct private cost of science-based doctoral degree programmes were higher than direct private cost of arts-based doctoral degrees at both Maseno and Egerton universities. The authors found that the average direct costs of doctoral degrees were Ksh. 843,000 and Ksh.953,500 for arts-based and science-based respectively. Literature review indicates that the higher the level of education, the higher the cost. However, the above studies looked at general areas, they never dealt with the specific cost incurred by primary teachers when in training. Moreover, apart from the study by Rugar et al. (2010), there are no recent studies in Kenya on the cost of tertiary education.

### **2.3 Earnings accruing by Age, Level of Education and Experience**

Harmon & Walker (2002) found in England and Wales that there is no significant link between earnings and various measures of school resources such as pupil-teacher ratios, actual class sizes, teacher salaries or spending on textbooks. Whereas, Dearden, Ferri & Meghir (2002) found that in Britain pupil-teacher are not significantly related to adult men's wages. They also found that for British women, pupil-teacher ratios are significantly negatively related to women's earnings at age 33, but only for women of lower academic ability.

Some routes through the education system yield a higher return for a particular qualification. O-levels, for example, receive their highest return when they are followed by vocational qualifications and lose some of their value when individuals obtain further academic qualifications, such as A-levels and a degree (Dearden, McIntosh, Myck & Vignoles, 2002). According to Heckman, Gensowski & Savelyer (2011), IQ increases earnings directly as well as indirectly through schooling choices.

Sianesi (2003) carried out a study on returns to education in Britain. The main aim of the study was to offer a non-technical and relatively brief summary of an extensive centre of economics of education research programme, which focused on the impact of educational qualifications on individual wages and how these labour market returns have changed over time. She concluded that education seems to be a profitable investment for individuals, although large variation was found in the observed wage returns by type of qualification. In particular, academic qualifications still seem to be attracting more substantial rewards on the labour market.

Personality affects educational choices, and thus through returns to these education achievements, personality also indirectly influence earnings. According to Psacharopoulos & Patrinos (2004) in their study on “Human capital and rate of return” found that education quality as measured by cognitive skills, has a strong impact on an individual earnings, in particular, more years of schooling are associated with higher individual earnings, and education quality has a strong and robust influence on economic growth with truly causal relationships.

Trade unions are organizations that aim at improving the welfare of its members by negotiating higher earnings for its members, better conditions of service and increasing job tenure (Kulundu, Bigsten & Mwabu, 2005). They also found that there is a significantly positive effect of union membership on wages and earnings. Podgursky (2003) argued that teachers unions effectively increased fringe benefits, measured by the pension contributions, for their members in Chicago public schools.

Card (2001) found that increased unionism substantially reduced the wage inequality for both male and female workers within the public sector. Union bargaining results in wages above

the market rate and in a wage distribution that is more compressed than the distribution in non-union sector (Blanchflower & Bryson, 2003). Unionized workplaces tend to be better paying than non-union work places for reasons that are not directly attributable to union membership (Blanchflower & Bryson, 2004b).

Green (2003) found a significant and positive relationship between the individual's family background and earnings in case of Pakistan. Rothstein & Rouse (2007) found that there is a positive correlation between family income and schooling. Higher-income parents have greater wherewithal to invest in their children's education, health and so forth. It is widely accepted that the family affects education by influencing the amount of education individuals obtain. Moreover, family income is strongly correlated with family resources that foster cognitive and non-cognitive traits during child's formative years and her ability to learn (Taber, 2004). However, Heckman (2002) show that conditioning on family background characteristics and measures of ability, the relation between family income and educational attainment weakens significantly.

Blondal, Field & Girouard (2002) found that students in higher education still tend to come from a relatively favored background. Schultz (2004) argues that if private returns to schooling increase with higher education, then poorer families who educate their children up to only primary education will face lower returns while richer families who educate children up to higher education will reap higher returns. Wage returns on education are higher in developing countries compared to developed countries. In most cases, developing countries exhibit high returns to primary education while returns on tertiary education are higher in developed countries (Schultz, 2004).

Wambugu (2003) using data on Kenyan manufacturing firm employees, found that controlling for parental education in earnings function reduces the level of returns to workers education only by a small percentage. He found that family background such as parent's education and income has a positive impact on wages and that returns to education decline when family background variables are included in the earnings regressions.

Patrinos et al. (2004) further concluded that globally, the average return to schooling is about 10 percent but there are considerable differences between developed and developing countries with the latter showing 11 percent compared to about 7.5 percent for OECD countries. The authors further found that in Ghana, Cote d' Ivoire, Kenya, South Africa, Nigeria, and Burkina Faso indicated that wage gain associated with each year of higher education are between 10 and 15 percent.

Nonetheless, Albert (2000) emphasizes that family features are important factors in the student's demand for higher education. The mother's educational status is more important than the father's. The educational status of the father is more effective in the employment. According to Kuzgan (2006), the socio-economic condition of an individual determines his/her level of education and eventually the profession chosen by the individual. Moreover, Taber (2001) show that the return to education is greater for more able individuals. Kijima (2006) found increasing returns at the higher education levels after 1991 in India. Shah (2007) and Javed *et al.* (2010) tried to find out the impact of higher education and experience on earnings of women teaching at public sector educational institutions and showed that higher education plays a positive role in enhancing the earnings of women teaching at public sector educational institutions in Islamabad. According to Tansel and Bircan (2010) in Turkey, the returns on education increase over different levels of education so that highest returns are achieved at the university level. This study concurs with a study by Fasih (2008) who found that higher wage returns to education are apparent only at the highest level of

education and hence the big payoff in wage employment in Ghana is tertiary education. According to Mwabu and Schultz (2000), the returns to earnings function shifts upward such that for a given level of education, a worker earns more.

Psacharopoulos and Patrinos (2004) stated that returns to education are higher in private sector employment than in public sector employment, this is the reason why many graduates opt for employment in the private sector. Age is a crucial element that enables an individual to deduce his lifetime earnings from a cross-section of observations of earnings of educated people. All age-earning profiles increase with age up to a maximum point irrespective of the years of schooling or level of education. According to the Office for National Statistics (2015), age is a key factor affecting earnings, as this tends to be a proxy for experience and the build-up of skills over time. Hourly pay of all employees regardless of sector rose sharply between ages of 17 and 42 years old, as job-related skills and experience is rewarded.

Henderson, Polachek and Wang (2011) found that young workers have higher returns than older workers. However, Glover and Short (2016) found that elderly earnings shares rose due to increased labor attachment. Andres (2003) shows that workers educated in private schools have higher returns and the quality of schooling significantly affects returns.

According to Bowler and Gintis the best argue that schooling has effect on productivity because they socialize people, making them acquire traits required by employers such as docility. However, the mathematical economist, Arrow (1973) argued that education does not have any relationship with individual's productivity. What makes somebody productive includes other traits such as intelligence quotient (IQ). IQ is the genetic component not affected by schooling and attitudes. Education only identifies people's IQ by awarding certificates. The age-earning profiles show that highly educated people earn more at every

age than those with less education. Card (2001) argued that ability biases to the estimates of the return to education are not large.

Ashraf (2011) estimated returns for different levels of education. He used data from Pakistan Integrated Household Survey, 2001-2002. He found that age was positively and significantly correlated to earnings. According to Blau and Kahn 2008, beginning with the work of Becker (1962) and Mincer (1962), economists have recognized the importance of work experience in analyzing the returns to post- school investments in human capital. Often, the longer you do the job, the more productive you become. As a result, experienced workers usually earn more than beginners (Torpey, 2015).

Psacharopoulos and Ying (2006) estimated both social and private rates of returns to different dimensions (that is, sector of employment, gender and level of education) to assess earning differentials according to level of education, after the introduction of the cost of education in Latin America. The study also included the nature of the secondary school curriculum and over time using the data for 18 countries. It was found that the payment connected with education had decreased in the 1980s. As a result, primary level of education showed the most return rates. However, the above study did not take into consideration the education of primary school teachers in Kenya. The present study looked at the rate of financial returns to education of primary school teachers in Kenya, but does not consider gender as a variable since earnings of teachers are independent of gender.

Connolly & Gottschalk (2003) found that returns to tenure increase with education, but that returns to experience decrease with educational attainment in US. Moreover, Nasir and Nazli (2000) studied the effect of level of education on earnings and found that high level of education was associated with higher earnings in Pakistan. Higher levels of education lead to higher earnings as the employment experience lengthens (Kirbly & Riley, 2004).

A study in north Carolina USA by Clotfelter, Ladd & Vigdor (2007) found that although teaching experience is important, its benefits become evident after just few years of teaching and seem to peak at four or five years. According to Godius and Teal (2007) , in a study to determine the returns to vocational training and academic education in Tanzania using earning functions, found out that high 51 levels of academic education have higher returns than either vocational or lower levels of academic. According to Kamenyi, Manda and Mwabu (2002), households evaluate educational decisions in terms of future income benefits. If these benefits turn out to be too low then demand for that level of education is lowered. Conversely, if these rates of return are very high, it could be evidence that 53 individuals cannot obtain the optimal amount of education.

Education is a key determinant of earnings and therefore, an important exit route from poverty (Republic of Kenya, 2003). However, as would be observed in any society of the world, poverty and income inequality remain among Kenyans in spite of the heavy investments in education (Republic of Kenya, 2007). Moraa (2009) carried out a study on the private returns to education in Kenya. He found out that nationally, university level of education has the highest private returns to schooling and primary level has the lowest.

He further found out that it is really rewarding for anyone to progress to higher levels of education as it yields higher returns compared to those who complete their studies at lower levels of education. However, the degree at which age, experience and level of education influence earnings to primary public school teachers in Kenya has not been established, therefore, this study found out the degree at which each of the variables above influence earnings.

## **2.4 Relationships between Age, Experience, Level of education, and Earnings**

Earnings are the net benefits of a corporation's operation. Earnings are also the amount on which corporate tax is due. In education, cost-benefit analysis, benefits of education rests on two assumptions. First, that the income of an individual is the best available measure of his contribution to economy's production of goods and services. Secondly, those income differentials among individuals with different amounts of education are at least partly due to the differences in their educational attainment.

The private rate of returns to education is the increase in earnings from an additional year of education for an individual who makes the investment decision on education, while social rate of return to education measures the increase in national income resulting from the same year of education (Borjas, 2004). It is often the social rate of return to education that provides a basis for government programs, such as scholarships and education loans that are aimed at increasing the levels of education of individuals.

Studies in several show a positive relationship between education and earnings. Education enables people to fully enjoy life, appreciate literature and culture, counseling services, spread of new techniques in agriculture practices and be more informed and socially be involved in some of the non-pecuniary benefits of education (Nwadiani, 2010). He further states that, the monetary benefits results from the improvement in productivity by an educated person over time through an increase in earnings. This is done by comparing the earnings of the different groups with varied levels of schooling but of similar age group.

Mohammad (2011) studied microeconomic analysis of private returns to education and determinants of earnings. He found that age and experience positively and significantly

contributed to earnings. However, Luong and Herbert (2009) found that age is not significantly related to hourly earnings but work experience was important in explaining variations. Cook (2004) concluded his study that the average experience was significantly associated with growth in productivity.

Tyler, Murnane and Willet (2000) present evidence for the US suggestions that cognitive skill at age of leaving compulsory education is positively and significantly correlated with earnings. Workers with higher levels of education and more work experience tend to have higher wages. For some years the most common explanation for these correlations has been that time spent in school or the job increases wages by directly increasing workers productivity.

Sorting models, while allowing for learning, focus on the ways in which schooling serves as either a signal or filter for productivity differences that firms cannot reward directly. According to Chenevert (2004), experience is positively correlated with earnings. Dustmann and Meghir (2003) found positive returns to experience and firm tenure for skilled workers. They further found that returns to experience for skilled workers can be substantial. In the first two years, following formal training, wages grow at seven percent and then at six percent a year. The returns decline thereafter, but even in the longer run experience leads to a wage growth of 1.2% a year. Benefits that accrue to a fresh school leaver will be less than that of a postgraduate degree holder (Olakulehin & Panda, 2012).

Harmon, Walker & Nielsen (2001) evaluate the relationship between education and wages across the EU using a common methodology. Their estimates of wage effects of schooling are substantial, so that each additional year of education is associated with more than an 8% increase in wages on average. The impact is significantly higher than average in the United

Kingdom and Ireland (between 10 and 14%). In contrast, it is lower in Sweden, Denmark and Norway (between 4 and 6%).

Numerous studies suggest that the rate of returns to education in the United States was around nine percent in the 1990s (Borjas, 2004). The rate of returns to education varies from individual to individual due to differences in age, ability, quality and quantity of education, and socio economic status (Gale, 2008). For example, it is often assumed that more able individuals benefit more from an additional year of education. Also, better-quality education is likely to enhance the productivity of individuals by improving cognitive skills, thereby increasing the rate of returns to education.

De la Fuente (2003) found estimates of the private return to education across fourteen EU countries between 8 and 10% for most countries. Returns are larger in Ireland, Germany and Austria (above 10%) and in Portugal and the United Kingdom (between 10 and 12%). The returns are smallest in Sweden (about 6%). Sanroman (2006) estimated the economic returns to schooling in Uruguay and concluded that education was a very profitable investment. Amin (2005) estimated private returns to education on three educational levels namely; primary, tertiary and higher level of education and found positive association between different levels of education and return.

Faridi, Hussain & Bashir (2010) investigated the effect of different level of education on student's earnings. Applying OLS method on data collected from ground inspection about different levels of education of students, they concluded that years of completed education and experience are positively related to income of students. Comi & Brunello (2000) explored the relationship between education and the effects of education on growth of earnings. They collected the cohort data from eleven European countries and found differences in growth of earnings at different levels of education. In Europe Psacharopoulos

(2007) asserts that persons with tertiary education earn nearly twice as much as those with lower secondary education. Blom & Verner (2001) found that between 1982 and 1998 in Brazil, returns to tertiary education increased sharply, while returns to primary and lower secondary education dropped.

In general, the return to an extra year of education increases with the level of education (Kingdon, Patrinos, Sakellariou & Soderborn, 2008). Fiszbein et al. (2007) show that in Argentina over the period 1992 to 2002, returns to primary education decreased, returns to secondary remained stable and returns to higher education increased substantially, with university education exhibiting the highest returns among all levels by 2002. Tiffany and Kominski (2011) concluded that achievement of higher levels of education is a well established path to better jobs and earnings.

Siphambe (2000), while analyzing the returns to education in Botswana found that returns rises by level of education. This study concurs with the study by Kifle (2007) who estimated private rate of return to education in Eritrea using sample data was drawn from employees working in public sector and private sector of the economy. The main result obtained with the help of extended Mincerian earnings function indicated the financially rewarding effect of education. He concluded that private rate of return to investment in education was high. He also found that the higher the level of education, the higher the rate of return was.

Okuwa (2004) carried out a study on the private returns to higher education in Nigeria. The study endeavored to determine the relationship between years of schooling and earnings (rate of return) in Nigeria. The study stated that education is an essential determinant of earnings in the market economies. The higher an individual's expected starting wage and the steeper the

rise in earning capacity over time. Moreover, increase in one year of work experience had positive impact on earnings.

Baum & Payea (2004) outlined many benefits generated from higher education. They described differences in educational attainment among various groups within American society. They noted that despite the twin problem of rising college prices and budget constraints at all levels of government; there was increased participation in higher education. The study concluded that there was a correlation between higher levels of education and higher earnings for all racial and ethnic groups, even men and women alike.

The study further concluded that the benefits of completing a bachelor's degree or higher produces greater benefits than high school or college education in America. Asadullah (2005) found that an additional year of schooling increase the earnings by seven percent. This study concurs with a study by Antonio, while studying the private and social return to schooling in Italy. He found that the individual return to schooling compares favorably to the financial assets. He also found out that the private returns are higher in higher levels of schooling, and lower in lower levels of schooling. Oreopoulos (2007) found that in addition to increasing lifetime wealth by approximately 15 percent, an additional year of schooling reduces the likelihood of being poor health and being unemployed. Adebayo (2002) researched on private wage returns to schooling in Nigeria found that wage rates increase with education level and age. Nonetheless, Tan (2005) show that returns to education rise with educational attainment.

According to Sackey (2008) on private returns to education in Ghana found that private returns to schooling at higher levels of education have increased for both female and male workers. He used data from 1992 and 1999 Ghana living standards surveys. For female workers, the return to an additional year of secondary schooling increased from 7.3% in 1992 to 12.3% in 1999. In case of tertiary education, the change was from 11.4% in 1992 to 18.4%

in 1999. For male workers the return to an additional year of secondary education decreased from about 7% to 6% while the return to tertiary education increased from about 13% to 19%.

Boothby & Rowe (2002) analyzed the Rate of return to education in Canada through derived individual rates of return by comparing the simulated lifetime earnings streams of pairs of individuals using Life Paths model focusing on both the level of education and on the field of study. Mohammad (2011) studied microeconomic analysis of private returns to education and determinants of earnings. He found that education positively and significantly contributed to earnings. Furthermore, Montenegro (2013) found that returns are higher/lower in the higher/lower schooling levels respectively.

A report by the Centre for the Study of Higher Education Management (2007) analyses evidence on returns to tertiary education and confirms that private returns to higher education in developed countries are positive. Botchorishvili (2007) estimated the marginal private returns to education in Georgia for the period 1997 to 2006 and also the evolution of these returns overtime. Using the Georgian household survey and applying the Mincerian approach, the study found out that the returns to an additional year of schooling in 2006 was 6.2 percent for both men and women. In addition, the study found out that the marginal private returns to higher education were higher compared to other levels of education which stood at 6.6 percent for men and 7 percent for women.

Tsakloglou & Cholezas (2000) analyzed the private returns to education in Greece using the Mincer approach and three household survey (1974, 1988 and 1994). They found that the returns to education increases as the level of education rises. With different sensitivity tests and by replacing potential experience with age as the explanatory variable, the estimated

returns declined by two percent for both sexes. Foltz & Gajigo (2012) found that the rate of return to education increases with an additional year of schooling.

Rita (2002) studied the evolution of private rates of return to education in Finland using the simple Mincer earnings equation framework and cross-sections of the Finnish labour force survey. The study also attempted to examine the sensitivity of educational returns to the specified earnings equation and adopted estimation technique. The results indicated that the average return to an additional year of schooling has remained roughly unchanged among male workers over the twelve year period investigated. Nonetheless, Colclough, Kingdom & Patrinos (2009) found that while education has many important non-market benefits, it is also valued for its role in helping to become more productive, have higher earnings and avoid poverty. For individuals, education attainment is a key determinant of earnings and has a significant effect on labour market outcomes. Moreover, the returns to the individual have increased strongly in the past few decades in many countries, contributing to wider income inequalities between people with different education attainment (De la Fuente, 2003).

Godius & Franscis (2007) carried out a study in Tanzania and found out that the private rate of return to one year of vocational education ranged between 1.4 and 2.8 percent.

According to Moraa (2009), nationally university level of education has the highest private returns to schooling (40%) and primary level the lowest at 11%. Moreover, Shimada et al.(2016) carried out a study on an update of the returns to education in Kenya using the 2005-2006 Kenya Integrated Household Budget Survey, and found out that returns to additional year of schooling are 14.9% for males and 13.5% for females with a continuous education variable, but the returns to females are consistently higher than males when returns are estimated by level of education.

Warugongo (2009) examined private returns to education in Kenya. The purpose of the study was to determine the relationship between years of schooling and earnings (rate of return) in Kenya using the KIBHS data. He found that the private rate of returns is low for graduates of primary education. It is higher for secondary education graduates and highest for university graduates. It also came clear that mean earnings increased with higher years of labour market experience.

Manda *et al.* (2004) examined human capital externalities and private returns to education in Kenya, found that private returns to education generally increase with the level of education. At the national level, the rate of return to primary education was 7.7 percent, 23.4 percent for secondary education and 25.1 percent for university education. They further found that returns to education in the urban areas are higher than returns to education in the rural areas. Thus, it is more beneficial for those with formal education to work in the urban areas than in rural areas.

Shimada *et al.* (2016) further showed that returns to education increases for higher levels of education, that is, the classical pattern of diminishing return to schooling does not hold true for both males and females. However, the present study did not factor in gender since the earnings of teachers in Kenya do not vary with gender. Kimenyi *et al.* (2006) examined human capital externalities and private returns to education in Kenya using 1994 data sets from a national welfare monitoring survey. They found a positive relationship between the level of education and the associated returns. According to Rugar *et al.* (2010), investing in University Schooling is highly profitable and level of schooling determines lifetime earnings. However, Rugar *et al.* (2010) looked at financial returns to university lecturers, Psacharopolous (2004), Kifle (2007), Da la Fuente (2003), Siphambe (2000), Okuwa (2004), Baum & Payea (2004), Asadullah (2005), Oreopoulos (2007), Adebayo (2002), Tan (2005),

Sackey (2008), Mohammad (2011), Nasir (2000) among others studied general areas. These studies did not look at the actual relationship between age, experience, level of education, and earnings for teachers as it was done in this study. This study focused on specific industry, that is, primary school teachers.

Moreover, most studies used secondary data to investigate returns accruing to workers. For example, Asadullah (2006) used data from recent nationwide household survey, Blundell *et al.* (2000) used British birth cohort panel data. Kirbly & Riley (2004) used United Kingdom labour force survey, Okuwa (2004) used data from Labour market survey by National Manpower Board in collaboration with the national population commission. Moraa (2009) used data from Kenya integrated household budget survey 2005/2006 conducted by the Kenya National Bureau of Statistic under the Ministry of Planning and National Development. However, this study used primary data collected from public primary school teachers in Mumias Sub-County.

## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.1. Introduction

This chapter highlights the research design adopted by the study, area of study, study population, sample and sampling techniques, data collection instruments, data collection procedure, method of data analysis and ethical considerations.

#### 3.2. Research Design

Research design refers to the way the study is planned and conducted, the procedures and techniques employed to answer the research problem or question (Kombo, 2002). This study employed both descriptive survey and correlational research designs. Kombo & Tromp (2006) argue that through descriptive design, measurement of multiple characteristics of a large population could be done within a short period. It can be used when collecting about people's attitudes, opinions, habits or any of the variety of education or social issues (Kombo, 2002). This method is appropriate as it involves gathering information from large population in their natural settings. It made it possible to establish the age, experience and level of education among primary teachers in public schools.

Correlation design seeks to establish the type of relationship existing between two or more variables. This design is also suitable for this study because it permits one to analyze several variables either singly or collectively and to show their interrelationships (Michael, 2010). It aided the researcher to determine whether or not there is any relationship between age, experience, level of education, and earnings among primary school teachers in public schools. This is because the investigation indicated the direction and magnitude between variables.

### **3.3. Area of Study**

This study was carried out in Mumias Sub-County. The Sub-County borders Butere Sub-County on the south, Nabakholo Sub-County on the North, Kakamega East on the east and Matungu Sub-County on the west as shown in appendix 111. It has a total of 94 public primary schools with a population of 1272 TSC teachers (DEO's Office, Mumias Sub-County, 2015). The major cash crop in the area is sugarcane which is milled at the nearby Mumias Sugar Company. Most of the inhabitants of the project area have turned their farms into small plantations of sugarcane with the average size of plot holdings of four acres in an effort to earn cash from the company.

### **3.4. Study population**

Mumias Sub-County has a total of 94 public primary schools. The study population consisted of 1272 TSC primary school teachers in Mumias Sub-County. Out of the 1272 teachers, 824 had P1 certificate qualifications, 246 had diploma qualifications, 200 had bachelor degree qualifications and 2 had masters' degree qualifications. (DEO's Office, Mumias Sub-County, 2015).

### **3.5 Sample and Sampling techniques**

Stratified sampling was used in determining the sample size in the study because it gives equal opportunity to all subjects in the target population to be selected for the study. Stratified sampling is a process in which the units in the sample are proportional to their presence in the population (Koul, 1992). It was appropriate for this study because the study population consisted of three sub-groups which were homogeneous/ contained members that shared common characteristics, which needed to be represented in the sample. Stratified sampling was used to select 30% (Fraenkel & Wallen, 2009) of TSC primary teachers. This gave a total of 383 TSC primary school teachers. The sample size for each strata was calculated using the stratified sample formula by Mark (2010) shown below;

Sample size of the strata=  $\frac{\text{Size of entire sample} \times \text{Layer Size}}{\text{Population size}}$

Population size

**Table 3.1: Stratification of Public Primary Teachers in Mumias Sub-County**

| Educational Qualification | Number of people in strata | Number of people in sample          |
|---------------------------|----------------------------|-------------------------------------|
| P1 Certificate            | 824                        | $\frac{383 \times 824}{1272} = 247$ |
| Diploma Certificate       | 246                        | $\frac{383 \times 246}{1272} = 74$  |
| Bachelor Degree           | 200                        | $\frac{383 \times 200}{1272} = 60$  |
| Master's Degree           | 2                          | 2                                   |

### 3.6. Research Instruments

Questionnaire for primary school teachers in Mumias sub-county was used for data collection. According to Orodho (2008) a questionnaire has the ability to collect a large amount of information in relatively short period of time. Questionnaires items are standardized and anonymity is maintained. The questionnaire was used to elicit demographic information about age, teaching experience, level of education, length of stay in tertiary institution and current job group of the respondents. It also solicited data on cost of tertiary education, how teachers financed education in tertiary institutions, challenges encountered in terms of raising tertiary fees and earnings. The questionnaire comprised of similar questions irrespective of the level of education attained.

### **3.7 Validity and Reliability of Research Instruments**

#### **3.7.1 Validity**

Validity is the most critical criterion and indicates the degree to which an instrument measures what is supposed to measure (Kombo, 2002). Content validity of the research instruments was determined by the supervisors and other experts from the Department of Educational Foundations and Management, Maseno University. They matched each item with the research questions in order to determine whether or not the instrument actually measured what it was supposed to measure. They made amendments and modifications which were used to produce the final copy of the questionnaire.

#### **3.7.2 Reliability**

Kombo (2002) defines the reliability of an instrument as the measure of the degree to which a research instrument yields consistent results or data after repeated trials. In conducting reliability for the questionnaire, the test re-test reliability was used. According to Mugenda & Mugenda (2003), test– retest reliability procedure helps to ascertain that the instruments of collecting data are free from pitfalls and mistakes that would have surfaced in the main data collection process if the pre-testing of the instruments had not been done.

According to Orodho (2009) at least 10% of selected sample size is sufficient for pilot study. Therefore, questionnaire was administered to 38 TSC primary school teachers in Mumias Sub-County. This number was not part of the sample size. After a period of three weeks, the questionnaire was re-administered to the same respondents.

Data collected on the two sets was collated and analyzed using the Pearson's Moment Correlation technique, with the following formula:

$$r = \frac{\sum xy - \frac{(\sum x)(\sum y)}{N}}{\sqrt{\left[\left(\sum x^2 - \frac{(\sum x)^2}{N}\right)\right]\left[\left(\sum y^2 - \frac{(\sum y)^2}{N}\right)\right]}}$$

Where:

X= the scores obtained during the first pilot

Y= the scores obtained during the second pilot

r= Pearson r

$\sum x$  = the sum of scores in the first pilot

$\sum y$  = the sum of scores in the second pilot

$\sum xy$  = the sum of the products of scores in the first and second pilot

$\sum x^2$  = the sum of the squared scores in the first pilot

$\sum y^2$  = the sum of squared scores in the second pilot

N= the number of paired x and y pilot cases

The instrument generated a Pearson's Product Moment Correlation Co-efficient of 0.82, therefore, the instrument was considered reliable. Orodho (2008) asserts that Pearson's Product Moment Correlation Co-efficient of 0.8 is considered high enough to judge the instrument as reliable for the study.

### **3.8. Data Collection Procedures**

There are three logistical phases for data collection (Orodho, 2008). Phase one involved pre-field logistics phase where completeness, identification and clear instructions were verified. This included getting a recommendation letter from the School of Graduate Studies (SGS) which enabled the Maseno University researcher to seek a permit from Maseno University Ethics Review Committee. This was the official permit to be able to visit TSC teachers in Mumias Sub-County.

Phase two was the field-work logistics stage. It involved actual visits, the first visit was meant for familiarization and introduction. During the second visit, the researcher distributed 383 questionnaire to be filled by teachers. The researcher also explained to the respondents the aim of the research, the importance of giving true and accurate responses and assured them of the confidentiality of the information given. Phase three was the post-field logistics phase. The duly filled questionnaires were picked and the information collected through the questionnaire was used in data analysis.

### **3.9. Method of data analysis**

Data obtained from the questionnaire was classified according to the level of education, that is, masters' degree, bachelors' degree, diploma in education, P1, S1 certificate. These levels were then measured in complete years as follows; a master's degree is equivalent to 20 years, a bachelor degree is equivalent to 18 years, diploma in education is equivalent to 17 years and P1 and S1 certificate are equivalent to 14 years.

This study adopted both qualitative and quantitative techniques. Qualitative data was analyzed by quick impressionist summary. This was done by summarizing key findings by noting down the frequent responses of the participants. For quantitative data; percentages,

frequencies, line graphs, descriptive statistics, correlations and multiple and stepwise linear regression were used to summarize the data. Percentages, frequencies, descriptive statistics were used to establish the distribution of schooling, age, experience and earnings among primary school teachers, in public schools in Kenya.

Correlation was used to ascertain association between schooling, age, experience, level of education and earnings. Inferential statistics such as stepwise linear regression was used to determine levels of relationships among level of education, age, experience and earnings.

### **3.10 Ethical Considerations**

Efforts were made to seek permission from all relevant authorities before questioning occurred. The researcher sought ethical clearance from Maseno university ethics review committee. The researcher met respondents in their schools. Participants were informed of the purpose of the study and explanation given in detail on the importance of the study. Respondents were made aware that participation is voluntary. To protect the identity of respondents, questionnaires did not require them to fill in their names and names of the schools they teach.

Raw data collected from the field was kept under lockable drawers where only the researcher will access. Processed data will be stored in various storage masses and email of the researcher to safety in case of viruses. The researcher set up secret password for storage masses and email. The information will be disseminated to the participants, stakeholder and communities through the Teachers Service Commission Sub-County director and head teachers to ensure feedback of the findings reach the study participants. The benefits of the study will be communicated and recommendations implemented to benefit the participants and other members of the sub-County.

## CHAPTER FOUR

### RESULTS, INTERPRETATION AND DISCUSSION

#### 4.1 Introduction

This chapter deals with results and discussion of findings. The findings are presented focusing on the research objectives below:

- I. To determine the direct cost incurred by primary teachers in tertiary institutions.
- II. To establish earnings accruing by age, level of education and teaching experience to primary teachers in public schools in Mumias Sub-County.
- III. To establish the relationship between age, experience, level of education, and earnings among primary teachers in public schools in Mumias Sub-County.

The response rate of questionnaire was 100%.

#### 4.2 Demographic data

Demographic data is divided into six sections namely; age, level of education, year of admission, current job group, challenges encountered in terms of raising tertiary fees and number of teachers who had done teacher proficiency courses.

##### 4.2.1 Age

Table 4.1 on page 48 shows the distribution of age among primary school teachers. From the table, out of 247 P1 certificate holders those aged 20-24 years were 12 (4.9%). Those aged 25-29 years were 17 (6.9%), 30-34 years were 50 (20.2%), 35-39 years were 93 (37.7%), 40-44 years were 25 (10.1%), 45-49 years were 18 (7.3%), 50-54 years were 12 (4.9%) and those 55-59 years were 20 (8.1%). This means that majority primary school teachers in Mumias Sub-County, Kenya with P1 certificate represent a young, energetic and trained working population as revealed by their age where 172 (69.7%), are between 20 to 39 years.

**Table 4.1: Distribution of Age among Primary School Teachers**

| Age          | P1         |              | Diploma   |              | Bachelor  |              | Masters  |              | Total      |              |
|--------------|------------|--------------|-----------|--------------|-----------|--------------|----------|--------------|------------|--------------|
|              | F          | %            | F         | %            | F         | %            | F        | %            | F          | %            |
| 20-24        | 12         | 4.9          | -         | -            | -         | -            | -        | -            | 12         | 3.1          |
| 25-29        | 17         | 6.9          | 1         | 1.4          | -         | -            | -        | -            | 18         | 4.7          |
| 30-34        | 50         | 20.2         | 12        | 16.2         | 30        | 50.0         | -        | -            | 92         | 24.0         |
| 35-39        | 93         | 37.7         | 20        | 27.0         | 5         | 8.3          | -        | -            | 118        | 30.8         |
| 40-44        | 25         | 10.1         | 24        | 32.4         | 18        | 30.0         | -        | -            | 67         | 17.5         |
| 45-49        | 18         | 7.3          | 9         | 12.2         | 7         | 11.7         | 1        | 50.0         | 35         | 9.1          |
| 50-54        | 12         | 4.9          | 6         | 8.1          | -         | -            | 1        | 50.0         | 19         | 5.0          |
| 55-59        | 20         | 8.1          | 2         | 2.7          | -         | -            | -        | -            | 22         | 5.7          |
| <b>Total</b> | <b>247</b> | <b>100.0</b> | <b>74</b> | <b>100.0</b> | <b>60</b> | <b>100.0</b> | <b>2</b> | <b>100.0</b> | <b>383</b> | <b>100.0</b> |

It also shows that out of 74 diploma certificate holders those aged 25-29 years was 1 (1.4%). Those aged 30-34 years were 12 (16.2%), 35-39 years were 20 (27.0%), 40-44 years were 24 (32.4%), 45-49 years were 9 (12.2%), 50-54 years were 6 (8.1%), and those with 55-59 years were 2 (2.7%). This shows that majority of primary school teachers with diploma qualification in Mumias Sub-County are aged between 30 and 44.

Out of 60 degree holders those aged 30-34 years were 30 (50%). Those aged 35-39 years were 5 (8.3%), 40-44 years were 18 (30.0%), and those with 45-49 years were 7 (11.7%). This implies that young teachers in Mumias Sub-County had Bachelor degree qualification, that is, young teachers were more motivated to do a bachelor's degree. Only two teachers had master's degree in education. One was aged 45-49 years and the other was aged 50-54 years, each representing 50% of primary school with master's degree in education. This shows that teachers with Masters degree qualification represented an old working population.

Table 4.1 reveals that out of 383 primary school teachers; 12 primary school teachers were aged 20-24 years (3.1%). Those aged 25-29 years were 18 (4.7%), 30-34 years were 92 (24.0%), 35-39 were 118 (30.8%), 40-44 years were 67 (17.5%), 45-49 years were 35 (9.1%), 50-54 years were 19 (5.0%), and those with 55-59 years were 22 (5.7%). Therefore, the study findings reveals that majority of primary school teachers in Mumias Sub-County are within the ages 20 to 39 (62.7%) representing a young working population while the old, who were minority are within the ages 51 to 60 years were 41(10.7%). Information on age was important because age is a key factor affecting earnings, as it tends to be a proxy for experience and build-up of skills over time.

#### **4.2.2 Level of Education**

The researcher also wanted to establish the level of education of the respondents. From table 4.1 on page 48, out of 383 respondents those who had acquired P1 certificate in education were 247 (64.5%). Those who had acquired diploma certificate in education were 74 (19.3%), bachelor degree in education were 60 (15.7%), and those who had acquired masters degree in education were 2 (0.5%). This clearly show that majority of the teachers (64.5%) had P1 certificate level of education, while 35.5% had advanced their level of education. These results are in agreement with the findings of KNEC ( 2010) which established that the majority of teachers (63.7%) in Kenya possess the P1 teaching certificate. This information was important in determining its influence on earnings.

#### **4.2.3 Current Job Group**

Table 4.2 shows that out of 247 P1 respondents 199 were in job group G (80.6%). 9 (3.6%) were in job group H, 13(5.3%) were in job group J, 12 (4.9%) were in job group K, 10(4.0%) were in job group L, 3(1.2%) were in job group M, and 1(0.4%) was in job group N. It also

indicates that out of 74 diploma respondents 14(18.9%) were in job group J, 20(45.9%) were in job group K, 40(54.1%) were in job group L.

**Table 4.2: Distribution of Job Group among Primary School Teachers**

| Job Group | P1  |       | Diploma |       | Bachelor |       | Masters |      | Total |       |
|-----------|-----|-------|---------|-------|----------|-------|---------|------|-------|-------|
|           | F   | %     | F       | %     | F        | %     | F       | %    | F     | %     |
| G         | 199 | 80.6  | -       | -     | -        | -     | -       | -    | 199   | 51.9  |
| H         | 9   | 3.6   | -       | -     | -        | -     | -       | -    | 9     | 2.3   |
| J         | 13  | 5.3   | 14      | 18.9  | -        | -     | -       | -    | 27    | 7.0   |
| K         | 12  | 4.9   | 20      | 27.0  | 13       | 21.7  | -       | -    | 45    | 11.7  |
| L         | 10  | 4.0   | 40      | 54.1  | 34       | 56.7  | -       | -    | 84    | 21.9  |
| M         | 3   | 1.2   | -       | -     | 11       | 18.3  | -       | -    | 14    | 3.7   |
| N         | 1   | 0.4   | -       | -     | 2        | 3.3   | 1       | 50.0 | 4     | 1.0   |
| P         | -   | -     | -       | -     | -        | -     | 1       | 50.0 | 1     | 0.3   |
| Total     | 247 | 100.0 | 74      | 100.0 | 60       | 100.0 | 2       | -    | 383   | 99.8* |

Out of 60 bachelor degree respondents; 13 (21.7%) were in job group K, 34 (56.7%) were in job group L, 11 (18.3%) were in job group M, and 2 (3.3%) were in job group N. It also shows that out of 2 master respondents, one was in job group N and the other was in job group P.

This indicates primary school teachers can rise to any given job group irrespective of the education level after successfully completing teacher proficiency course for P1 certificate holders, diploma certificate, bachelor degree or masters degree in education. It also shows

that majority of public primary schools with diploma and bachelor degree qualifications were in job group L.

#### **4.2.4 Year of Admission to Tertiary Institution.**

Table 4.3 shows the level of education against year of admission in tertiary institutions for teachers in Mumias Sub-County. Years of admission for teachers who had acquired P1 Certificate, diploma certificate in education, bachelor degree in education and masters' degree in education ranged from 1977 to 2011, 2001 to 2012, 2000 to 2010 and 2001 to 2005 respectively.

**Table 4.3: Level of Education of Primary School Teachers against Year of Admission.**

| <b>Level of education</b> | <b>N</b> | <b>Year of Admission</b> |
|---------------------------|----------|--------------------------|
| P1 certificate            | 247      | 1977-2011                |
| Diploma                   | 74       | 2001-2012                |
| Bachelor                  | 60       | 2000-2010                |
| Masters                   | 2        | 2001-2005                |

Information on the year of admission was necessary in this study since it enabled the researcher to explain the differences in the minimum and maximum cost of education. This is because the difference in the year of admission for teachers who pursued P1 certificate in education was too wide (34 years).

#### **4.2.5 Challenges encountered in terms of raising tertiary fees**

Out of 383 primary school teachers, 62(16.2 percent) had no problem in terms of raising tertiary education fees. However, 83.8 percent (321 teachers out of 383) of the teachers were not able to make payments in time due to the following challenges:

Delay/lack of promotion by the teachers service commission after doing teacher proficiency courses, diploma and bachelor degree courses made it difficult to enroll for higher education because of lack of enough money to pay for it. They also encountered delayed payment by Mumias Sugar Company which led to delay in fee payment as some teachers depended on sugarcane farming. They depended on parents who were peasant farmers which made it difficult to raise fees from farm produce. Low price on the sale of domestic animals yet they intended to get school fees from them.

Teachers had difficulties in raising money through Harambee, let down by well wishers and fear of people to assist. They had high number of dependants from one source of income, fees kept on increasing during the study period. They faced Poverty/ low income, this led to lack of shopping, pocket money and transport to and back to tertiary institutions. Teachers complained of poor remuneration in teaching profession.

Teachers who had acquired P1 certificate encountered discrimination due to polygamy/extended family made the parents unable to raise full fees on time which led to acquiring a P1 level of education only. Some teachers had other responsibilities which overburdened fee payment since some enrolled to TTCs when they had already settled in marriage/ others enrolled when they a bit old. They reported that low pay rate from TSC on P1 scale resulted in a lot of problems in balancing home economics and college fee. One teacher complained of being sent regularly from Meru to Western due to fee balances which proved to be expensive.

#### 4.2.6 Teacher Proficiency Course

Table 4.4 shows the number of teachers who had/had not done teacher proficiency courses among P1 certificate holders. None of teachers aged from 20-34 had done teacher proficiency course. 3 (3.2%) out of 93 teachers aged 35-39 years had done teacher proficiency course. 5 (20.0%) out of 25 teachers aged 40-44 years had done teacher proficiency course. 7 (38.9%) out of 18 teachers aged 45-49 had done teacher proficiency course.

**Table 4.4: Age of Teachers against Number of Teachers who had/had not done Teacher Proficiency Courses cross tabulation**

| Age          | Teacher proficiency course |           | Total      |
|--------------|----------------------------|-----------|------------|
|              | NO                         | YES       |            |
| 20-24        | 12                         | 0         | 12         |
| 25-29        | 17                         | 0         | 17         |
| 30-34        | 50                         | 0         | 50         |
| 35-39        | 90                         | 3         | 93         |
| 40-44        | 20                         | 5         | 25         |
| 45-49        | 11                         | 7         | 18         |
| 50-54        | 1                          | 11        | 12         |
| 55-59        | 2                          | 18        | 20         |
| <b>Total</b> | <b>203</b>                 | <b>44</b> | <b>247</b> |

11 (91.7%) out of 12 teachers aged 50-54 years had done teacher proficiency course, and finally, 18 (90.0%) out of 20 teachers aged 55-59 years had done teacher proficiency course. This means that young teachers had not enrolled for proficiency course because they lacked enough teaching experience to enroll for them. As age increases, the number of teachers who had done teacher proficiency courses also increase.

### 4.3 Direct Private Cost incurred by Primary Teachers in Tertiary Institutions.

The respondents were requested to indicate how much money they spent in pursuit of the current level of education they had acquired.

**Table 4.5: Cost of Education incurred by P1 Teachers in Teacher Training College in the Year 1977-2011**

| <b>Vote heads</b> | <b>Minimum</b> | <b>Maximum</b> | <b>Mean</b> | <b>Std. Deviation</b> |
|-------------------|----------------|----------------|-------------|-----------------------|
| Tuition           | 500            | 75,000         | 30,692.39   | 19,618.221            |
| Stationary        | 100            | 20,000         | 4,790.61    | 3,332.609             |
| Clothing          | 150            | 13,000         | 5,222.96    | 3,145.468             |
| Transport         | 50             | 16,000         | 5,183.04    | 3,539.486             |
| Boarding          | 500            | 60,000         | 18,558.91   | 12,989.850            |
| Caution money     | 100            | 1,000          | 901.62      | 784.088               |
| Personal effects  | 100            | 20,000         | 7,379.53    | 5,117.993             |
| Activity          | 100            | 9,000          | 1,808.62    | 1,268.106             |
| Projects          | 50             | 10,700         | 3,421.05    | 2,147.811             |

The responses from teachers were categorized as the cost of obtaining a P1 certificate, a diploma certificate, a bachelor's degree and master's degree as shown in table 4.5, 4.6, 4.7 and 4.8 respectively. This data on total direct private costs was given out by the respondents through a use of a questionnaire. This included the cost of stationary, tuition, clothing, transport, boarding, caution money, personal effects, activity and projects.

**Table 4.6: Cost of Education incurred by Teachers pursuing Diploma Certificate in Education in the Year 2001-2012**

| <b>Vote heads</b> | Minimum | Maximum | Mean       | Std. Deviation |
|-------------------|---------|---------|------------|----------------|
| Tuition           | 120,000 | 266500  | 159,397.30 | 30,647.394     |
| Stationary        | 4,000   | 15000   | 7,537.84   | 2,211.533      |
| Clothing          | 1,200   | 18,000  | 9,302.70   | 4,337.033      |
| Transport         | 2,000   | 19,000  | 9,121.62   | 3,476.704      |
| Boarding          | 4,000   | 54,000  | 20,265.52  | 15,302.947     |
| Caution money     | 500     | 2,500   | 1,479.73   | 478.577        |
| Personal effects  | 4,000   | 20,000  | 10,625.68  | 4,274.745      |
| Activity          | 1,500   | 6,000   | 2,498.65   | 819.370        |
| Projects          | 2,500   | 10,000  | 7,082.43   | 2,103.706      |

Tables 4.5, 4.6 and 4.7 show that the greatest expenditure in cost of education was tuition followed by boarding, while caution money was the least expenditure for teachers who had pursued P1 Certificate, diploma in education and bachelor degree in education. Tuition had a mean of Ksh 30,692.39, Ksh 159,379.30 and Ksh. 405,375.83 for P1 Certificate, diploma certificate in education and bachelor degree in education respectively. Boarding was second with a mean of Ksh. 18,558.91, Ksh. 20,265.52 and Ksh.15, 302.947 for P1 certificate, diploma certificate in education and bachelor degree in education respectively. Caution money had a mean of Ksh.901.62, Ksh.1,479.73 and Ksh.2,483.33 for P1 certificate, diploma in education and bachelor's degree in education respectively. Tuition fee accounts for the greatest expenditure in the cost of education because it is the key area in terms of teaching and learning. Boarding fee is also high because it takes into account the high level of care and supervision, accommodation and food.

**Table 4.7: Cost of Education incurred by Teachers pursuing Degree in Education in the Year 2000-2010**

| <b>Vote heads</b> | Minimum | Maximum | Mean       | Std. Deviation |
|-------------------|---------|---------|------------|----------------|
| Tuition           | 317,000 | 518,000 | 405,375.83 | 37,257.402     |
| Stationary        | 2,123   | 10,000  | 5,983.33   | 1,980.769      |
| Clothing          | 2000    | 50,000  | 8,756.67   | 7,496.516      |
| Transport         | 1,870   | 30,000  | 12,250.00  | 4,716.991      |
| Boarding          | 7,000   | 52,000  | 36,583.33  | 10,879.201     |
| Caution money     | 1,000   | 3,000   | 2,483.33   | 528.563        |
| Personal effects  | 9,000   | 50,000  | 21,216.67  | 7,377.455      |
| Activity          | 4,000   | 6,000   | 4,873.33   | 953.116        |
| Projects          | 4,000   | 10,500  | 5,683.33   | 1,434.935      |

Table 4.8 shows the amount of money that was spent on each vote head by teachers in pursuit for master's degree in education.

According to Table 4.8, teachers pursuing master's degree in education spend more money on projects with a mean of Ksh. 375,000.00. This was followed by boarding with a mean of Ksh. 210,500.00. Tuition was in the third position with a mean of Ksh. 164,500.00. The least expenditure was on caution money with a mean of Ksh. 3,500. Tuition is the third expenditure for students who pursued masters because course work for masters is expected to take only one year. More money is spent on projects since it involves proposal writing, data collection, data analysis, regular visits to supervisors for consultation, printing and typing of proposals and projects/thesis.

**Table 4.8: Cost of Education incurred by Teachers pursuing Master’s Degree in Education in the Year 2001-2005**

| <b>Vote heads</b> | <b>Minimum</b> | <b>Maximum</b> | <b>Mean</b> | <b>Std. Deviation</b> |
|-------------------|----------------|----------------|-------------|-----------------------|
| Tuition           | 139,000        | 190,000        | 164,500.00  | 36,062.446            |
| Stationary        | 25,000         | 36,000         | 30,500.00   | 7,778.175             |
| Clothing          | 20,000         | 25,000         | 22,500.00   | 3,535.534             |
| Transport         | 45,000         | 72,000         | 58,500.00   | 19,091.883            |
| Boarding          | 181,000        | 240,000        | 210,500.00  | 41,719.300            |
| Caution money     | 2,000          | 5,000          | 3,500.00    | 2,121.320             |
| Activity          | 0              | 0              | .00         | .000                  |
| Projects          | 350,000        | 400,000        | 375,000.00  | 35,355.339            |

Table 4.9 on page 58 shows the total direct cost incurred by primary school teachers in tertiary institutions. The minimum cost for obtaining a P1 certificate was Ksh. 2,000. This is because some teachers took education in 1970s when the cost of education was still low. Therefore, the cost of obtaining a P1 certificate ranged from Ksh. 2,000 to Ksh. 181,325. The cost of obtaining a diploma certificate ranged from Ksh.180,000 to Ksh. 329,300, while that of bachelors ranged from Ksh.400,000 to Ksh.645,000. Lastly, master’s degree cost ranged from Ksh.800,000 to Ksh.1,000,000. These results show that master’s degree cost had the highest mean of Ksh.900,000 followed by bachelors with a mean of Ksh.498,455.83, then diploma certificate with a mean of Ksh.226,783.11, and P1 certificate had the lowest mean of Ksh.80,096.78.

**Table 4.9: Direct Private Cost incurred by Primary School Teachers**

| <b>Level of education</b> | <b>N</b> | <b>Minimum</b> | <b>Maximum</b> | <b>Mean</b> | <b>Std. Deviation</b> |
|---------------------------|----------|----------------|----------------|-------------|-----------------------|
| P1 certificate            | 247      | 2,000          | 181,325        | 80,096.78   | 44,502.871            |
| Diploma certificate       | 74       | 180,000        | 329,300        | 226,783.11  | 33,937.996            |
| Bachelor's degree         | 60       | 400,000        | 645,000        | 498,455.83  | 48,732.453            |
| Master's degree           | 2        | 800,000        | 1,000,000      | 900,000     | 141,421.356           |

Results from Table 4.9, show that obtaining masters degree is more expensive than bachelor's degree, a bachelor's degree is more expensive than a diploma certificate, and a diploma certificate is more expensive than a P1 certificate. The low direct cost of obtaining a P1 certificate makes it more attractive unlike masters' degree. This finding is supported with those of Cinn (1999) who found out that the private cost of education increases at each level of higher education. Rugar et al. (2010) also found out that direct private costs of doctoral programmes were higher than direct private costs of masters' degree.

However, this study gives us the specific costs incurred by primary school teachers in tertiary institutions. Table 4.9 further indicates that the higher the level of education, the lower the number of people attaining that particular level. According to World Bank (2000), the government subsidised the cost of higher education. However, this is not the case with primary school teachers pursuing bachelor degree and masters' degree because they are self-sponsored programmes.

#### 4.4 Earnings accruing by Age, Level of Education and Experience

##### 4.4.1 Earnings accruing by Age for Primary School Teachers

Table 4.10 shows mean earnings accruing by age for P1 certificate, diploma, bachelor and masters holders. It shows that at every age, the highly educated teachers earn more than teachers with lower level of education.

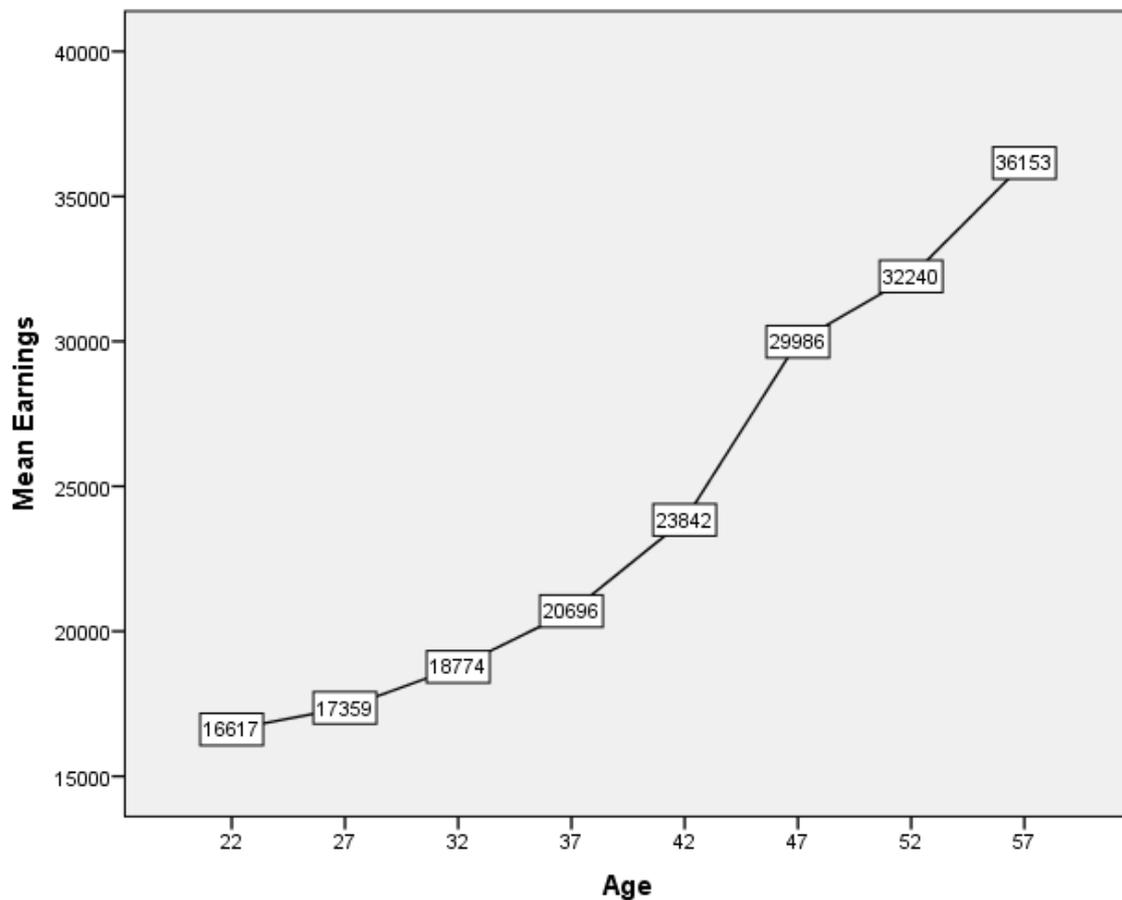
**Table 4.10: Mean Earnings across Age for Primary School Teachers**

| Age          | P1               |            | Diploma          |           | Bachelor         |           | Masters          |          |
|--------------|------------------|------------|------------------|-----------|------------------|-----------|------------------|----------|
|              | Mean             | F          | Mean             | F         | Mean             | F         | Mean             | F        |
|              | Earnings         |            | Earnings         |           | Earnings         |           | Earnings         |          |
| 20-24        | 16,616.67        | 12         | -                | -         | -                | -         | -                | -        |
| 25-29        | 17,359.24        | 17         | 29,000.00        | 1         | -                | -         | -                | -        |
| 30-34        | 18,773.82        | 50         | 32,450.00        | 12        | 41,373.33        | 30        | -                | -        |
| 35-39        | 20,695.73        | 93         | 38,595.00        | 20        | 44,260.00        | 5         | -                | -        |
| 40-44        | 23,841.82        | 25         | 40,295.83        | 24        | 46,056.11        | 18        | -                | -        |
| 45-49        | 29,985.78        | 18         | 40,783.33        | 9         | 51,407.14        | 7         | 86,000.00        | 1        |
| 50-54        | 32240.00         | 12         | 45,691.67        | 6         | -                | -         | 70,000.00        | 1        |
| 55-59        | 36152.50         | 20         | 44,025.00        | 2         | -                | -         | -                | -        |
| <b>Mean</b>  |                  |            |                  |           |                  |           |                  |          |
| <b>Total</b> | <b>22,686.02</b> | <b>247</b> | <b>39,009.12</b> | <b>74</b> | <b>44,189.33</b> | <b>60</b> | <b>78,000.00</b> | <b>2</b> |

The findings according to this objective were further discussed in regard to the level of education.

#### 4.4.1.1 Earnings accruing by age for teachers who had P1 Certificate qualifications

Figure 4.1 shows mean earnings accruing by age for teachers who had acquired P1 Certificate. It reveals that teachers aged 20-24 years had mean earnings of Ksh16,617. Those aged 25-29 years had mean earnings of Ksh17,359. Teachers who were aged 30-34 had mean earnings of Ksh18,774. Those aged 35-39 years had mean earnings of Ksh20,696. Teachers who were aged 40-44 years had mean earnings of Ksh23,842. Those aged 45-49 years had mean earnings of Ksh29,986. Those aged 50-54 years had mean earnings of Ksh32,240. Those aged 55-59 years had mean earnings of Ksh36,153.



**Figure 4.1: Mean Earnings across Age for Primary School Teachers who had acquired P1 Certificate**

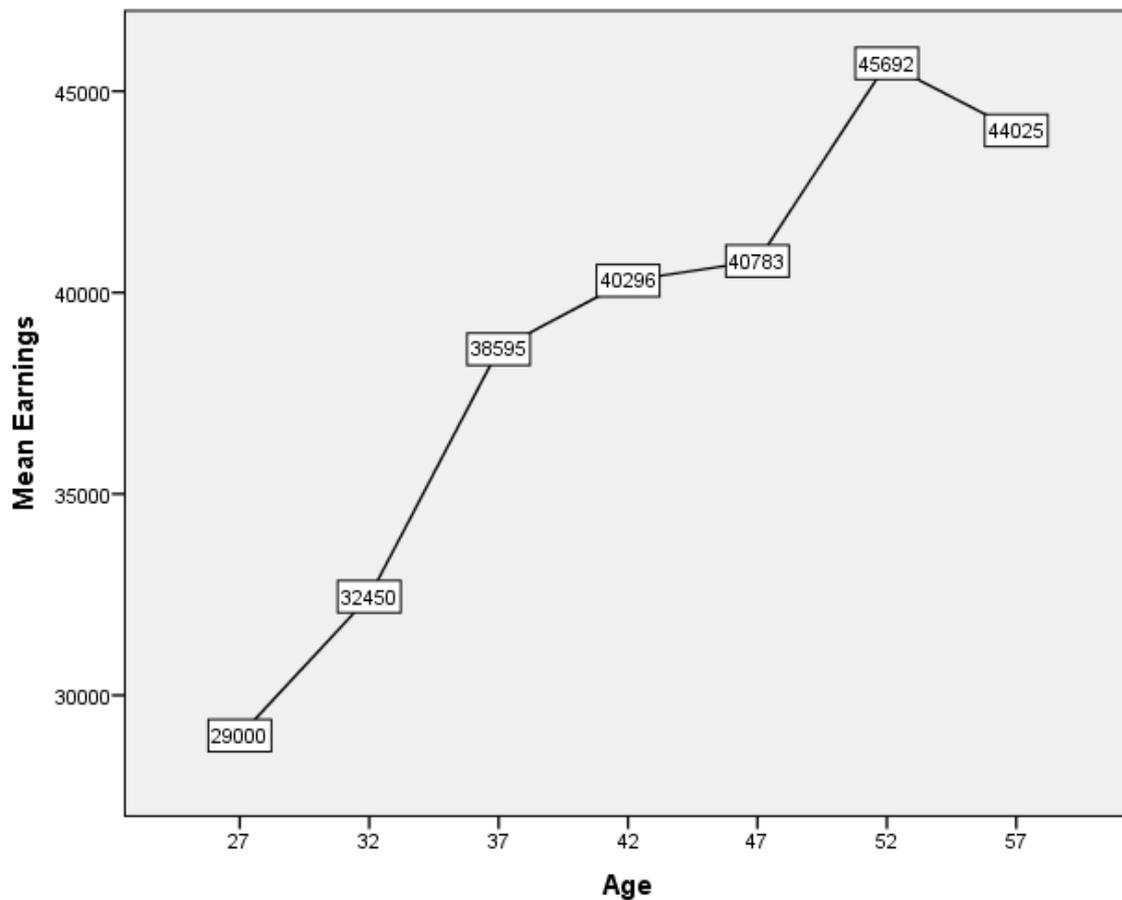
Those aged 50-54 years had mean earnings of Ksh32,240, and those aged 55-59 years had mean earnings of Ksh36,153. This means that the higher the age, the higher the earnings devoid to promotion to head teacher, deputy head teacher, senior teacher or head of department among teachers with P1 certificate qualifications. This finding is similar to Adebayo (2002) and Rugar et al. (2010), who found that earnings rose with age. However, it is contrary Henderson et al. (2011) who found that young workers have higher returns than older workers. This study found that earnings among primary school teachers rise as age increases, and tends to peak at age 45-49 and showed a steady increase in earnings with increase in age.

#### **4.4.1.2 Earnings accruing by Age for Teachers who had Diploma Certificate**

##### **Qualifications**

Figure 4.2 on page 62 shows that mean earnings accruing by age of teachers who had diploma qualifications. Teachers aged 25-29 years had mean earnings of Ksh29,000. Those aged 30-34 years had mean earnings of Ksh32,450. Teachers who were aged 35-39 had mean earnings of Ksh38,595. Those aged 40-44 years had mean earnings of Ksh40,296. Those aged 45-49 years had mean earnings of Ksh40,783. Those aged 50-54 years had mean earnings of Ksh45,692, and those aged 55-59 years had mean earnings of Ksh44,025.

According to Figure 4.2, as age increases, earnings also increase for teachers up to age 50-54 and then drop at age 55-59 for teachers who had diploma qualifications. The drop for the oldest teachers is because only two teachers out of 74 were aged 55-59 and had less teaching experience as compared to those aged 50-54 as shown in Table 4.11 on page 63. Therefore, we can reasonably conclude that the teachers' earnings do increase with age.



**Figure 4.2: Mean Earnings across Age for Primary School Teachers who had acquired Diploma Certificate**

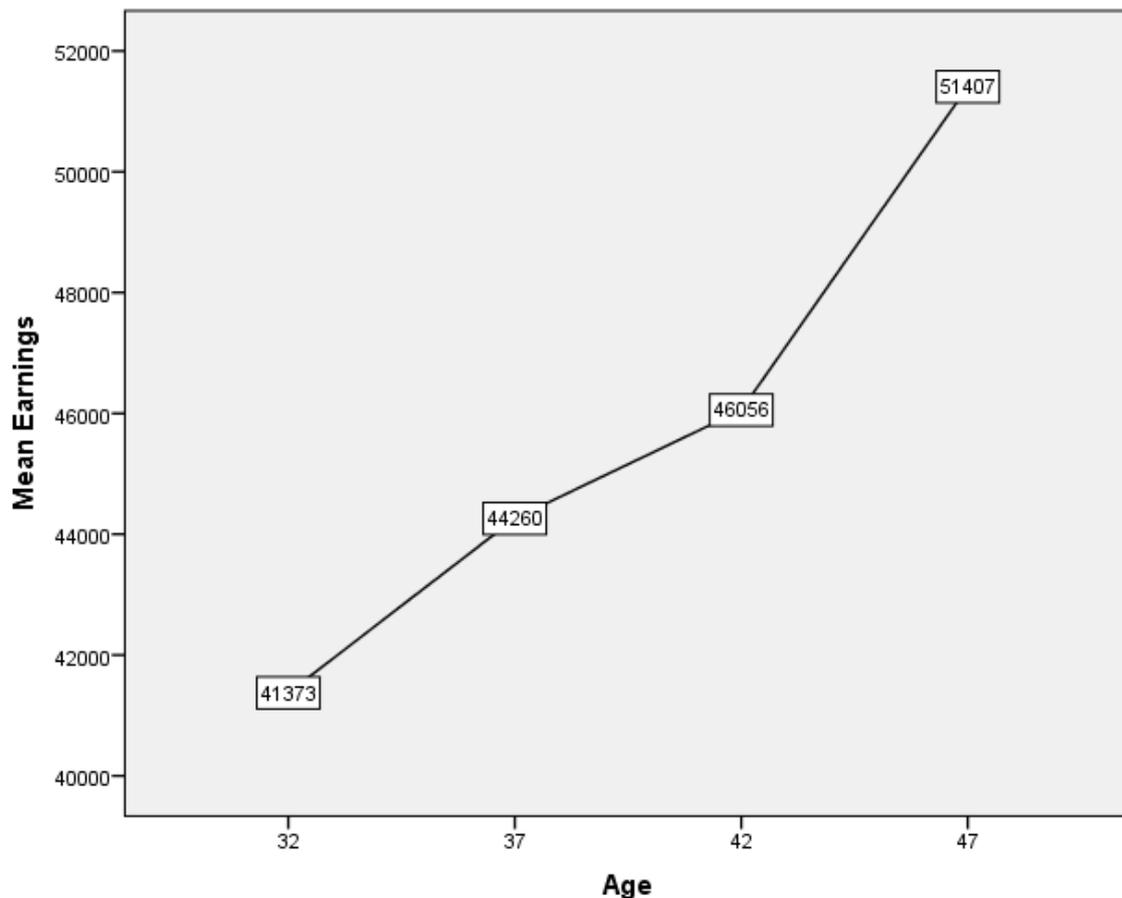
This finding is similar to Adebayo (2002) and Rugar et al.(2010), who found that earnings rose with age. However, it is contrary Henderson et al. (2011) who found that young workers have higher returns than older workers. This study found that earnings among primary school teachers rise as age increases, and tends to peak at age 35-39 and 50-54. Moreover, this study has provided the variation earnings with age of primary school teachers in Mumias Sub-County.

**Table 4.11: Age against Teaching Experience for Primary School Teachers with Diploma Certificate**

| <b>Age</b>   | <b>Mean Experience</b> | <b>Teaching N</b> | <b>Std. Deviation</b> |
|--------------|------------------------|-------------------|-----------------------|
| 27           | 1.00                   | 1                 | .                     |
| 32           | 3.17                   | 12                | 1.267                 |
| 37           | 5.90                   | 20                | 1.889                 |
| 42           | 7.33                   | 24                | 3.784                 |
| 47           | 7.22                   | 9                 | 2.949                 |
| 52           | 10.17                  | 6                 | 1.602                 |
| 57           | 9.00                   | 2                 | 1.414                 |
| <b>Total</b> | <b>6.45</b>            | <b>74</b>         | <b>3.278</b>          |

#### **4.4.1.3 Earnings accruing by Age for Teachers who had Bachelor Degree Qualifications**

Figure 4.3 on page 64, shows that mean earnings accruing by age of teachers who had bachelor degree qualifications. Teachers aged 30-34 years had mean earnings of Ksh 41,373. Teachers who were aged 35-39 had mean earnings of Ksh 44,260. Those aged 40-44 years had mean earnings of Ksh 46,056, and those aged 45-49 years had mean earnings of Ksh 51,407. This means that as age increases, earnings also increase. The graph is steeper between age 40-44 and 45-49 devoid to promotions to headship or head of department the teachers receive. Age of the individual reflects the maturity and accumulation of general life experiences that might tend to make one more valuable as a teacher (Mohammed, 2011).



**Figure 4.3: Mean Earnings across Age for Primary School Teachers who had acquired Bachelor Degree**

#### **4.4.1.4 Earnings accruing by Age for Primary Teachers who had Masters Degree Qualifications**

From table 4.10 out of two masters' degree holders; one was aged 45-49 years and had mean earnings of Ksh 86,000. The other respondent was aged 50-54 years and had mean earning of Ksh 70,000. This is because the teacher aged 45-49 had 15 years of teaching experience after attaining masters degree while the one aged 50-54 had teaching experience of 9 years . This finding is in agreement with the finding by Ashraf (2011) and Adebayo (2002) who found that earnings increase with increase in age. However, this study goes further to give the variations of earnings with specific ages. This study has provided the variation earnings with

age of primary school teachers in Mumias Sub-County with P1, diploma, bachelor degree and masters degree qualifications.

#### 4.4.2 Earnings accruing by Level of Education for Primary School Teachers

For purposes of analysis, levels of education were then measured in complete years of schooling as follows; a master's degree was equivalent to 20 years of schooling, a bachelor degree equivalent to 18 years of schooling, diploma in education was equivalent to 17 years and P1 and S1 certificate are equivalent to 14 years.

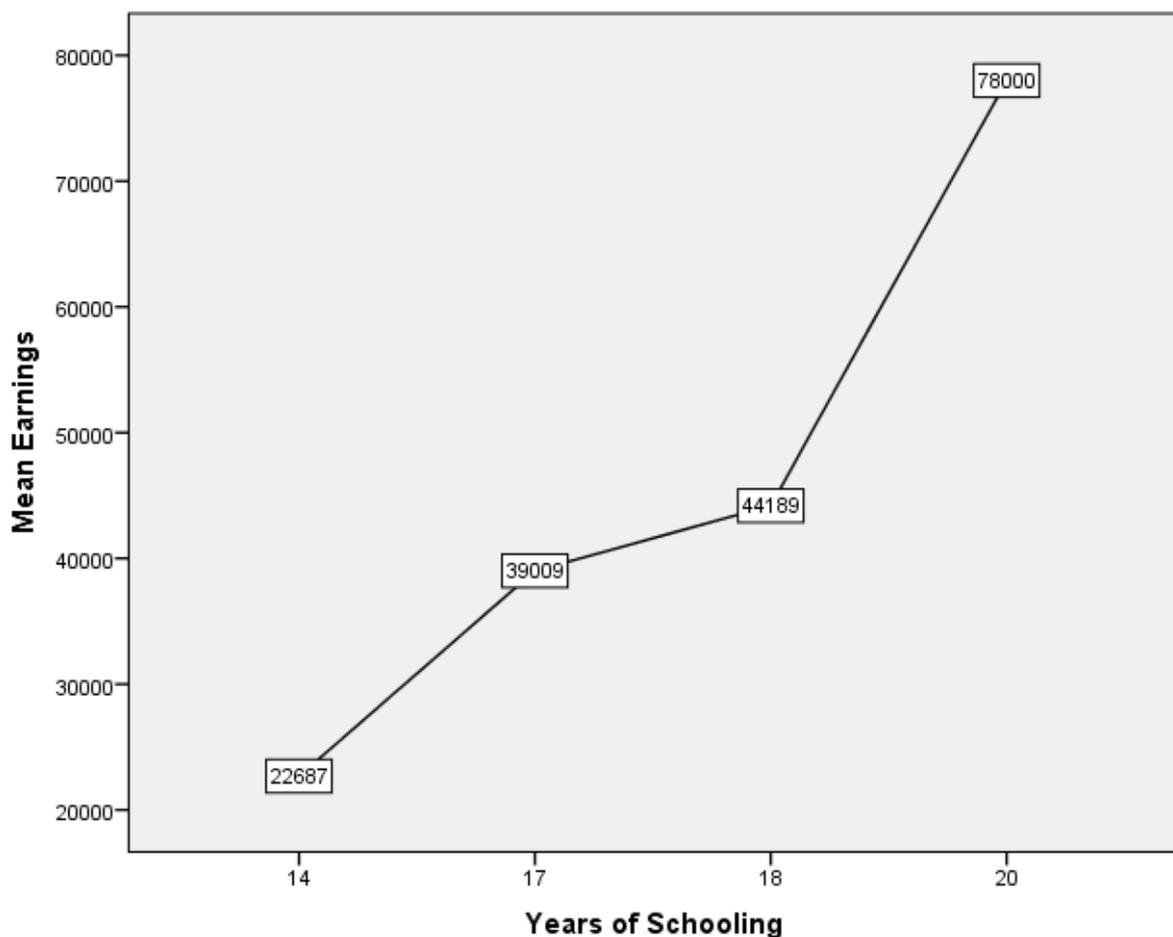


Figure 4.4: Mean Earnings across Years of Schooling for Primary School Teachers

From figure 4.4, teachers who had acquired P1 certificate in education had total mean earnings of Ksh 22,686. Those who had acquired diploma certificate in education had total mean earnings of Kshs 39,009.

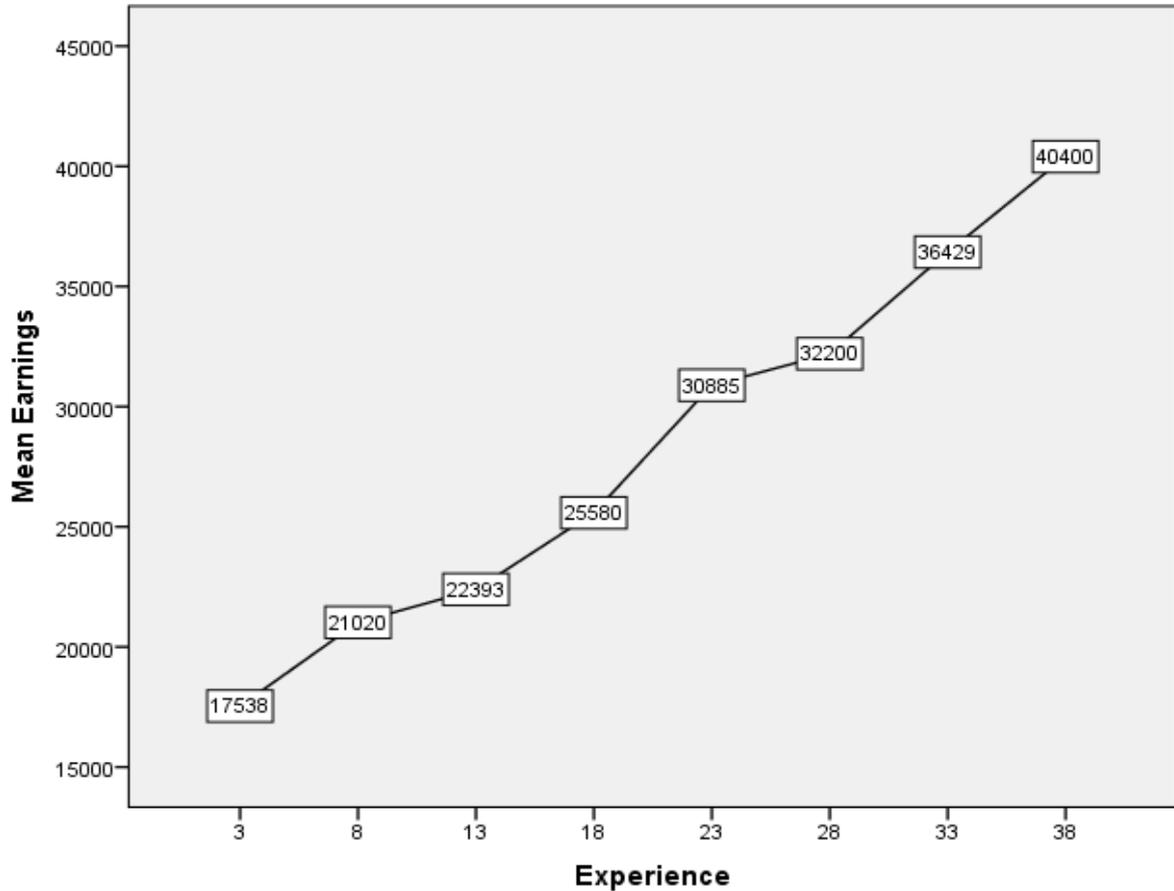
Teachers with bachelor degree in education had total mean earnings of Kshs. 44,189, and teachers who had acquired masters' degree in education had total mean earnings of Kshs 78,000. This shows that as level of education increases, earnings also increase. This is because high-skilled people are assumed to be more productive, can perform a wide range of tasks and they can easily be trained new skills (Mohammed, 2011). This study concurs with the study done by Siphambe (2000), Tan (2005), Adebayo (2002) Nasir and Nazli (2000), and de la Fuente (2003) who found out that high level of education led to higher earnings. However, the above studies did not give the actual earnings for different levels of education, which this study has given. Traditionally, primary school teachers had P1 certificates. But the expansion of universities outside major centres and the need for higher earnings have led to many teachers enrolling to universities to earn degrees.

#### **4.4.3 Earnings accruing by Experience for Primary School Teachers**

##### **4.4.3.1 Earnings accruing by Experience for Primary School Teachers who had acquired P1 Certificate.**

The teaching experience of primary school teachers with P1 Certificate ranged from 1-38 years in Mumias Sub-County. Therefore, in this sub-section the researcher dealt with teaching experience in classes of 5, that is, 1-5, 6-10, 11-15, 16-20, 21-25, 26-30, 31-35 and 36-40. For purpose of analysis, the mid-point of teaching experience was used. Teachers with teaching experience of 1-5 had mean earnings of Ksh17,538. Those with teaching experience of 6-10 had mean earnings Ksh21,020, 11-15 had mean earnings of Ksh22,393, 16-20 had mean earnings of Ksh 25,580, 21-25 had mean earnings Ksh30,885, 26-30 had mean earnings

of Ksh32,200, 31-35 had mean earnings of Ksh36,429 and 36-40 had mean earnings of Ksh. 40,400.



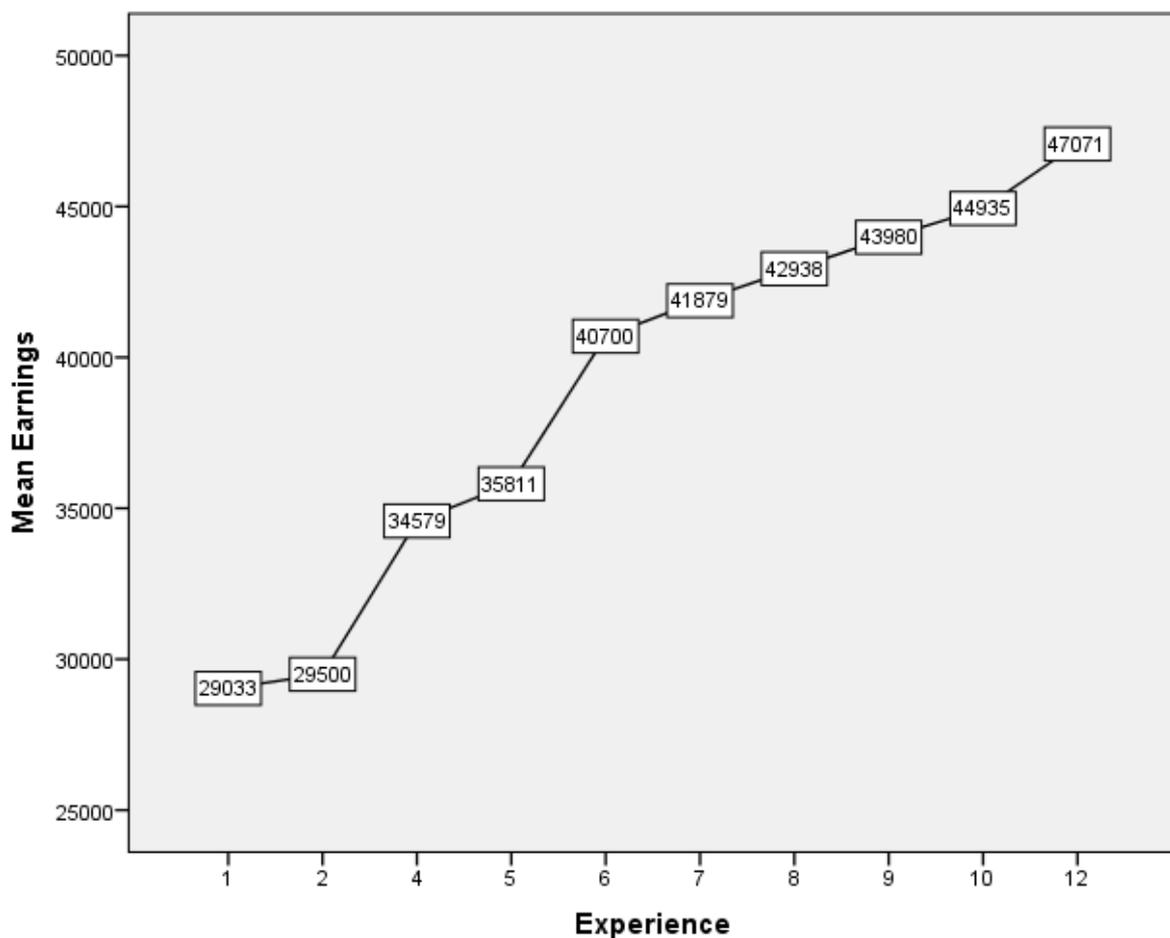
**Figure 4.5: Mean Earnings across Teaching Experience for Primary School Teachers who had acquired P1 Certificate**

This shows that as teaching experience increase earnings also increase among teachers with P1 certificate qualifications. This finding is in agreement with Torpey (2015) who found that the longer you do a job, the more productive you become. Experienced workers usually earn higher than beginners. According to the Teachers Service Commission Code of Regulation (2015), part V1, section 74, sub-section 2a, the commission shall in considering the promotion of a teacher under common cadre establishment take into account the period of

time served by the teacher in a given grade. Therefore, annual increments in the form of salary that are automatically given to a teacher, teacher promotions and review of salaries by the commission explain the increase in earnings as teaching experience also increase.

#### 4.4.3.2 Earnings accruing by Teaching Experience for Primary School Teachers who had acquired Diploma Certificate Qualifications

Figure 4.6 shows that mean earnings accruing by teaching experience of teachers who had diploma certificate qualifications.



**Figure 4.6: Mean Earnings across Teaching Experience for Primary School Teachers who had acquired Diploma Certificate**

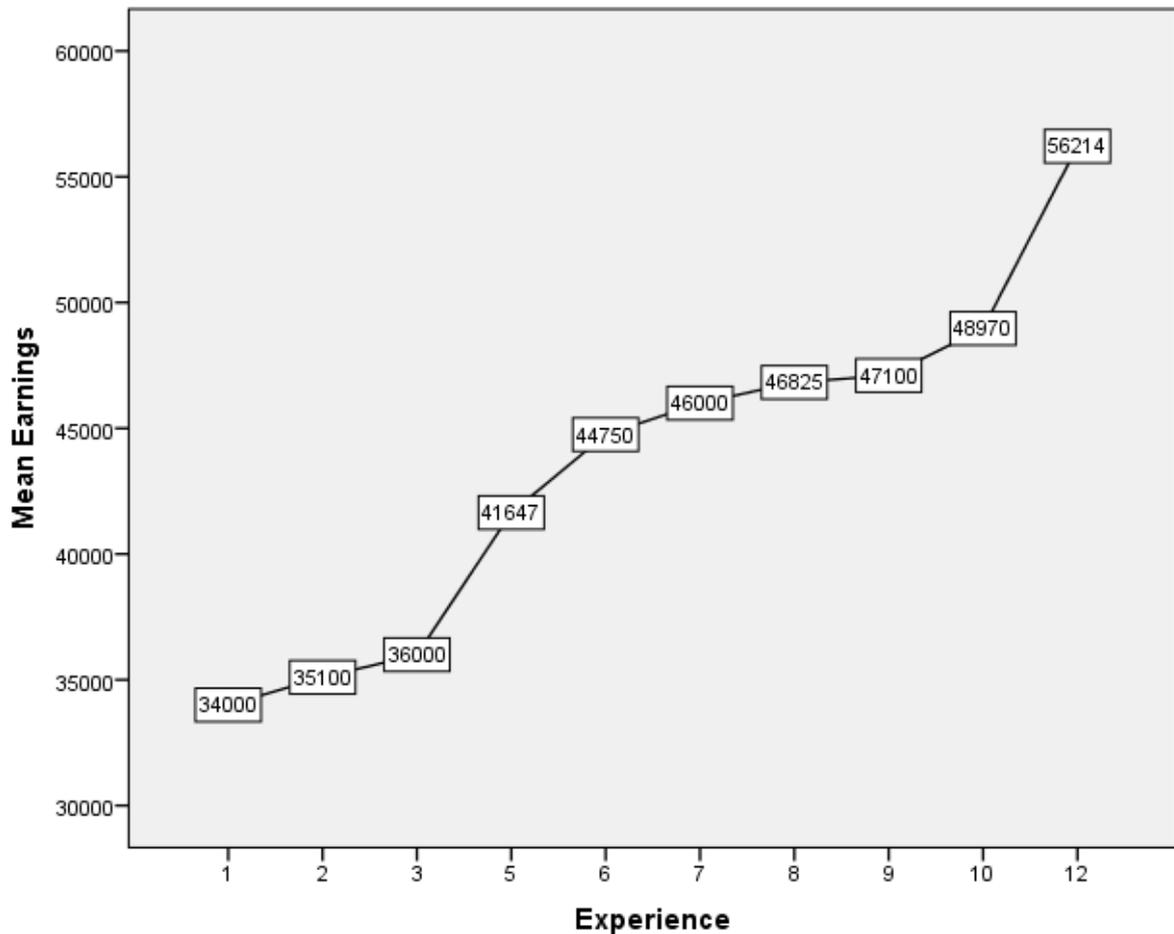
Teachers with one year teaching experience had mean earning of Ksh29,033. Those with 2, 4, 5, 6, 7, 8, 9, 10, and 12 years of teaching experience had mean earnings of Ksh29,500,

Ksh34,579, Ksh35,811, Ksh40,700, Ksh41,878, Ksh42,938, Ksh43,980, Ksh44,935, and Ksh47,071 respectively.

This shows that as teaching experience increase, earnings also increase. More experienced teachers earned more than less experienced teachers. This is due yearly increments, review of salaries and promotions to next job groups a teacher receives. This finding concurs with the finding by Naderi and Mace (2003), Kirbly & Riley (2004) and Clotfelter et al. (2007) who found that employment experience is important as its benefits become evident as employment experience lengthens. However, these studies did not give variations of earnings for various employment experiences

#### **4.4.3.3 Earnings accruing by Teaching Experience for Primary School Teachers who had acquired Bachelor Degree**

Figure 4.7 on page 70 shows that mean earnings accruing by teaching experience of teachers who had bachelor degree qualifications. The teaching experience ranged from 1 to 12, and mean earnings ranged from Ksh34000 to Ksh56,214 respectively. Teachers with teaching experience of 1, 2, 3, 5, 6, 7, 8, 9, 10 and 12 years had mean earnings of Ksh34000, Ksh35100, Ksh36000, Ksh41647, Ksh44750, Ksh46000, Ksh46825, Ksh47100, Ksh48970 and Ksh56214 respectively. This shows that as teaching experience increases mean earnings also increase among teachers with bachelor degree qualifications. More experienced teachers earned more than less experienced teachers. This is due yearly increments and promotions to next job groups a teacher receives.



**Figure 4.7: Mean Earnings across Teaching Experience for Primary School Teachers who had acquired Bachelor Degree in Education.**

#### **4.4.3.4 Earnings accruing by Teaching Experience for Primary School Teachers who had acquired Masters Degree**

The teacher with 15 years of teaching experience earned Ksh86,000 while the one with only 9 years of teaching experience earned Ksh70,000.

These findings are similar to the findings done by Kirbly and Riley (2004) who found out that higher level of education led to higher earnings as the employment experience lengthens. However, they did not look at effect of teaching experience for particular levels of education

on earnings as it has been done in this study. They also did not provide information on the variation of earnings with the working experience, which this study provided.

#### **4.5 Relationships between Age, Experience, Level of Education, and Earnings**

##### **4.5.1 Correlations among Age, Experience, Level of Education, and Earnings**

Table 4.12 on page 72 displays the correlations between independent variables and dependent variable. For purposes of analysis, level of education, that is, masters degree, bachelors degree, diploma and P1 certificate will be measured in complete years equivalent to 20, 18, 17 and 14 years respectively.

It shows that the Pearson's correlation,  $r$ , between experience and earnings is 0.231. This indicates a positive correlation between earnings and experience. The coefficient of determination is 0.053 which is equivalent to 5.3%. This means that 5.3% of variance in earnings of teachers is predictable from teaching experience. The level of significance in a 2-tailed was 0.000 showing that there is a statistically significant correlation between earnings and experience.

Age and earnings are significantly and positively correlated with age with a Pearson's correlation,  $r$ , of 0.453 and the level of significance in a 2-tailed was 0.000. This gives a coefficient of determination of 0.205 which is equivalent to 20.5%. This implies that 20.5% of the variance in earnings of teachers is predictable from age. The Pearson's correlation,  $r$ , between level of education and earnings is 0.807. This means that there is a strong positive relationship between earnings and level of education. The coefficient of determination ( $r^2$ ) is 0.651 which is equivalent to 65.1%.

**Table 4.12: Correlations between each independent variable and dependent variable**

|                          |                     | Age    | Level<br>of Education | Experience | Earnings |
|--------------------------|---------------------|--------|-----------------------|------------|----------|
| Age                      | Pearson Correlation | 1      | .036                  | .771**     | .453**   |
|                          | Sig. (2-tailed)     |        | .479                  | .000       | .000     |
|                          | N                   | 383    | 383                   | 383        | 383      |
| Level<br>of<br>Education | Pearson Correlation | .036   | 1                     | -.246**    | .807**   |
|                          | Sig. (2-tailed)     | .479   |                       | .000       | .000     |
|                          | N                   | 383    | 383                   | 383        | 383      |
| Experience               | Pearson Correlation | .771** | -.246**               | 1          | .231**   |
|                          | Sig. (2-tailed)     | .000   | .000                  |            | .000     |
|                          | N                   | 383    | 383                   | 383        | 383      |
| Earnings                 | Pearson Correlation | .453** | .807**                | .231**     | 1        |
|                          | Sig. (2-tailed)     | .000   | .000                  | .000       |          |
|                          | N                   | 383    | 383                   | 383        | 383      |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

This means that 65.1% of the variance in earnings is predictable from level of education. The sig. (2-tailed) is 0.000 indicating that there is a statistically significant correlation between earnings and years of schooling.

This finding agrees with Ashraf (2011), Mohammed (2011) and Cook (2004) who established that experience and age are positively and significantly correlated to earnings. Amin (2005), Faridi *et al.* (2010) and Kimenyi *et al.* (2006) established a positive association between different levels of education and returns. This study finding also shows that there is positive relationship between earnings and levels of education. This also agrees with the human capital theory which says that earnings increase with additional schooling. However, the studies only gave the strength and direction of the relationships, but did not give the extent to which changes in the dependent variable can be explained by the change/ the percentage of variation in the independent variables. This study has found out that if experience, age and level of education increase by one year earnings increase by 5.3%, 20.5% and 65.1% respectively.

It also reveals that the independent variables, that is, age and teaching experience are related. Experience is significantly and positively correlated with age with a Pearson's correlation,  $r$  of 0.771 and the level of significance in a 2-tailed was 0.000. This gives a coefficient of determination of 0.594 which is equivalent to 59.4%. This implies that 59.4% of teaching experience is predictable from age. Therefore, increase in age increases, teaching experience which also increase the earnings.

Results in Table 4.13 show results of stepwise regression procedure. The  $R$  value of 0.807 represents the correlation coefficient between schooling and earnings. This indicates a good

level of prediction. The R square with years of schooling alone is 0.650 which implies that years of schooling explain 65.0% of the variability of the dependent variable, earnings. A combination of years of schooling and experience R square of 0.847 which explained 84.7% in earnings among teachers.

**Table 4.13: Multiple Linear Regression Model Summary**

| Model | R                 | R Square | Adjusted Square | R Std. Error of the Estimate |
|-------|-------------------|----------|-----------------|------------------------------|
| 1     | .807 <sup>a</sup> | .651     | .650            | 6961.777                     |
| 2     | .921 <sup>b</sup> | .847     | .847            | 4607.677                     |
| 3     | .927 <sup>c</sup> | .860     | .859            | 4415.995                     |

a. Predictors: (Constant), Years of Schooling

b. Predictors: (Constant), Years of Schooling, Experience

c. Predictors: (Constant), Years of Schooling, Experience, Age

Combination of years of schooling, experience and age gave R square of 0.859 which explained 85.9% in earnings among teachers. This left a residual of 14.1 percent of variation unexplained. This model was therefore adequate.

## 4.5.2 Private Return to Education

### 4.5.2.1 Marginal Rate of Return to Schooling.

Marginal rate of return accruing to schooling was calculated using the information shown in the tables 4.14 and 4.15 on page 75. Table 4.14 shows the years of schooling and earnings for primary school teachers in Mumias sub-County. The table shows that teachers with P1 certificate, diploma certificate, bachelor degree and master degree had mean earnings of Ksh.

22,596.02, Ksh. 39,089.08, Ksh. 44,189.33 and Ksh. 78,000.00 respectively. This indicates that as level of education increases, earnings also increase.

**Table 4.14: Descriptive Statistics showing Mean Earnings**

| <b>Level of Education</b> | <b>N</b> | <b>Mean earnings</b> | <b>Std. Deviation</b> |
|---------------------------|----------|----------------------|-----------------------|
| P1 Certificate            | 247      | 22,686.02            | 6,851.581             |
| Diploma                   | 74       | 39,089.12            | 5,972.284             |
| Bachelor                  | 60       | 44,189.33            | 6,878.431             |
| Masters                   | 2        | 78000.00             | 11,313.708            |

Table 4.15 shows the marginal returns to schooling for primary teachers.

**Table 4.15: Marginal Rates of Returns to Level of Education**

| <b>Level of education</b> | <b>Mean earnings</b> | <b>Mean Earning differentials</b> | <b>Percentage differentials</b> | <b>Rate of return</b> |
|---------------------------|----------------------|-----------------------------------|---------------------------------|-----------------------|
| P1 Certificate            | 22,686.02            |                                   |                                 |                       |
| Diploma                   | 39,089.12            | 16,403.1                          | 72.30                           | 24.10%                |
| Bachelor                  | 44,189.33            | 5100.21                           | 13.05                           | 3.26%                 |
| Masters                   | 78000.00             | 33810.67                          | 76.51                           | 38.26%                |

Table 4.15 shows the marginal rate of return to extra year(s) of schooling which was calculated using the Mincerian model (Mincer, 1974). Initially the mean earnings for each level of education were calculated using descriptive statistics shown in Table 4.14. From the mean earnings, earning differentials were computed which were converted to percentage

differentials. Finally, the rates of return for diploma, bachelors and masters were calculated using P1 certificate as the base level of education.

The results in Table 4.15 show that respondents who had acquired diploma certificate accumulated Ksh.16, 403.1 more than respondents who had P1 Certificate. Respondents who had bachelor degree in education accumulated Ksh.5100.21 more than respondents who had diploma certificate in education. Finally, respondents who had masters degree in education accumulated Ksh.33,810.67 more than respondents who had bachelor degree in education.

Marginal rate of returns were computed by dividing the percentage differentials by the duration spent for each respective level of education. The rate of return for those with had masters degree in education was 38.26%. That of those with bachelor degree in education was 3.26%. Finally, the rate of return for those with diploma certificate in education was 24.10%. This shows that masters paid faster followed by diploma and lastly bachelors. This could be due the reason that masters degree took only two years, diploma certificate in education took three years and bachelor degree took four years.

This finding is in agreement with Rugar et al. (2010) who found that masters degree paid faster than doctoral degree. However, this study used P1 certificate as base level of education, and computed marginal rates of return for diploma, bachelor and masters degree certificate. Whereas, Rugar et al. (2010) used bachelor degree level of education as base level of education, and computed marginal rates of return for masters degree and doctoral degree certificates as 30.81% and 15.95% respectively.

#### 4.5.2.2 Rate of Return to Education.

Rate of return to education was calculated using Mincer's 1974 econometrical earnings function model. Table 4.16 shows the coefficients for level of education, experience and experience squared.

| Model                | Unstandardized |            | Standardized | T      | Sig. |
|----------------------|----------------|------------|--------------|--------|------|
|                      | Coefficients   |            | Coefficients |        |      |
|                      | B              | Std. Error | Beta         |        |      |
| (Constant)           | 6.605          | .069       |              | 95.942 | .000 |
| 1 Level of Education | .216           | .004       | .925         | 50.533 | .000 |
| Experience           | .038           | .003       | .787         | 14.056 | .000 |
| Exp <sup>2</sup>     | .000           | .000       | -.262        | -4.676 | .000 |

Multiple regression analysis was conducted to examine the relationship between dependent and independent variables. Based table 4.18, the equation for regression is;

In  $W = 6.605 + 0.216(\text{Level of Educ}) + 0.038(\text{Experience}) + 0.000(\text{experience}^2)$ . According to the regression equation established, taking all factors into account (Level of Education, Teaching Experience and Experience squared) constant at zero, natural logarithm of earnings will be 6.605.

According to Mincer (1974), the estimated rate of return to education is obtained as the coefficient to education variable in the regression equation that controls for work experience and other individual characteristics. Hence, from the equation, the private rate of return to education is 0.216, which represents 21.6%. At 5% level of significance and 95% level of confidence, level of education, teaching experience and experience squared showed a 0.000 level of significance.

This value differs from the value obtained by Chirwa & Zgovu (2001), Rugar et al. (2010) and Government of Kenya (2003). This is because the levels of schooling differ. Chirwa & Zgovu (2001) conducted a rate of return study in education on rural labour markets in Malawi. The study used Mincerian earnings function and survey data from regular salaried and casual employment. Results showed that the average rate of return on education was 6 percent. Rugar *et al.* (2010) found that the rate of return to university schooling among lecturers in two public Universities in Kenya was 50.4%, while the Government of Kenya found out that the private rate of return to university schooling was 53% (Republic of Kenya,2003).

Chirwa & Zgovu (2001) dealt with regular salaried and causal employment, Rugar et al. (2010) dealt with university lecturers, government of Kenya dealt with university schooling in general. However, this study dealt with primary school teachers with P1 training, Diploma in education training, bachelor degree in education and masters' degree in education. Returns to education generally vary with kind and or level of education.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMENDATIONS

#### 5.1 Introduction.

This chapter presents the summary of the findings, conclusion, and recommendation of the study. The purpose of the study was to find out the rate of financial returns to primary school teachers in public schools in Mumias Sub-County.

#### 5.2 Summary of the findings of the study

##### 5.2.1 Direct Private Costs incurred by Primary Teachers in Tertiary Institutions

The study sought to determine the direct private cost incurred by primary teachers in tertiary institutions. The study found out that the greatest expenditure in cost of education was tuition and boarding for teachers pursuing a P1 certificate (with a mean of KSh 30,692.39 and 18,558.91 respectively), diploma (with a mean of Ksh.159,397.30 and 20,265.52 respectively) and bachelor degree in education (with a mean of ksh. 405,375.83 and 36,583.33 respectively). On the other hand projects took the greatest share for teachers pursuing masters' degree (with a mean of Ksh. 375,000.00). Caution money was the least expenditure among the four levels of education.

It was also observed that the overall cost of obtaining a masters' degree was the most expensive, and obtaining a P1 certificate was the least expensive. It was found that the cost of attaining a P1 certificate ranged from ksh.2,000 to Ksh. 181,325, diploma certificate ranged from Ksh 180,000 to Ksh 329,300, a bachelor's degree ranged from ksh.400,000 to Ksh 645,000, and a masters' degree ranged from Ksh 800,000 to Ksh 1,000,000.

## **5.2.2 Earnings accruing by Age, Experience and Level of Education to Primary Teachers in Public Schools in Mumias Sub-County**

The study further sought to establish earnings accruing by age experience and level of education to primary teachers in public schools in Mumias Sub-County. Analysis done arrived at the following conclusions.

- i. Results showed that teachers who had acquired P1 certificate were aged from 20 to 59 years with mean earnings ranging from Ksh16,617 to Ksh36,153 respectively. Those who had acquired diploma certificate were aged from 25 to 59 years with mean earnings ranging from Ksh29,000 to Ksh45,692, bachelor degree holders were aged 30 to 49 years with mean earnings ranging from Ksh41,373 to Ksh51,407, and masters degree holders were aged 45-49 and 50-54 with mean earnings ranging from Ksh70,000 to Ksh86,000. It was found that earnings increase with increase in age.
- ii. It was found that mean earnings accruing to teachers with P1 certificate level of education was Ksh22,596. Mean earnings for diploma certificate holders was Ksh39,089, bachelor degree holders had mean earnings of Ksh44,189, and for masters degree was Ksh78,000. This showed that as level of education increases, earnings also increase.
- iii. Teaching experience for teachers with P1 qualifications ranged from 1 to 38 years. Their mean earnings ranged from Ksh17,538 to Ksh40,400 respectively. Teachers with diploma qualifications had teaching ranging from 1 to 12 years and mean earnings ranged from Ksh29,033 to Ksh47,071 respectively. Teaching experience for bachelor holders was 1 to 12 with mean earnings of Ksh34,00 to Ksh56,214, and for masters was 9 and 15 years with mean earnings of Ksh70,000 and Ksh86,000. The results further showed that as teaching experience, age and level of education increases, earnings also increase.

### **5.2.3 Relationships between Age, Experience, Level of Education, and Earnings among Primary Teachers in Public Schools in Mumias Sub-County.**

Lastly, the study sought to establish the relationship between age, experience, level of education, and earnings among primary teachers in public schools in Mumias Sub-County.

Analysis done arrived at the following conclusions.

- i. Results showed a positive correlation between earnings and experience with a Pearson's correlation,  $r$  of 0.231. The coefficient of determination was 0.053 which is equivalent to 5.3 %. This means that 5.3% of variance in earnings of teachers is predictable from teaching experience. The level of significance in a 2-tailed was 0.000 showing that there was a statistically significant correlation between earnings and experience.
- ii. Earnings were significantly and positively correlated with age with a Pearson's correlation,  $r$  of 0.453 and the level of significance in a 2-tailed of 0.000. This gave a coefficient of determination of 0.205 which is equivalent to 20.5%. This implies that 20.5% of the variance in earnings of teachers is predictable from age.
- iii. Results of correlations showed that there was a strong positive relationship between earnings and level of education of 0.807. The coefficient of determination ( $r^2$ ) was 0.651 which is equivalent to 65.1%. This means that 65.1% of the variance in earnings is predictable from level of education. The level of significance in a 2-tailed was 0.000 indicating that there was a statistically significant correlation between earnings and years of schooling.
- iv. Marginal rate of return to teachers with diploma certificate, bachelor degree and masters were 24.10%, 3.26% and 38.26% respectively. This showed that masters paid faster followed by diploma and bachelor degree came last.

- v. Stepwise regression procedure gave the R value of 0.807 which represented the correlation coefficient between level of education and earnings. This indicated a good level of prediction. The R square with level of education alone in Table 4.18 was 0.650 which implied that years of schooling explain 65.0% of the variability of the dependent variable, earnings. A combination of level of education and experience R square of 0.847 which explained 84.7% in earnings among teachers.

Combination of level of education, experience and age gave R square of 0.859 which explained 85.9% in earnings among teachers. Therefore, the rate of return to an additional level of education is 21.6%, implying that a primary school teacher will raise his or her earnings by 21.6 percent by obtaining a higher level of education.

### **5.3 CONCLUSIONS**

From the summary of the findings of the study on the rate of financial returns to primary school teachers in Mumias Sub-County, Kenya, the following conclusions were drawn.

#### **5.3.1 Direct Private Cost of Education**

The first objective was to determine the direct private cost incurred by primary teachers in tertiary institutions. The study concludes that masters' degree was the most expensive and P1 certificate was the least expensive. It was found that P1 certificate ranged from Ksh. 2000 to Ksh. 181,325, diploma certificate ranged from Ksh.180,000 to Ksh.329,300. A bachelor's degree ranged from Ksh.400,000 to Ksh. 645,000, and a masters' degree ranged from Ksh.800,000 to 1,000,000.

### **5.3.2 Earnings accruing by Age, Experience and Level of Education**

The second objective of this study was to establish earnings accruing by experience and age to primary teachers in public schools in Mumias Sub-county. This study concludes earnings accruing by age for teachers with P1 certificate, diploma certificate, bachelor degree and masters degree were Ksh16,617 to Ksh36,153, Ksh29,000 to Ksh45,692, Ksh41,373 to Ksh 51,407, and Ksh70,000 to Ksh86,000 respectively. Earnings accruing by teaching experience for teachers with P1 certificate, diploma certificate, bachelor degree and masters degree were Ksh17,538 to Ksh40,400, Ksh29,033 to Ksh47,071, Ksh34,000 to Ksh56,214, and Ksh70,000 and ksh86,000 respectively.

Earnings accruing by level of education for teachers with P1 certificate, diploma certificate, bachelor degree and masters degree were Ksh22,596, Ksh39,089, ksh44,189 and ksh78,000 respectively. It also concludes that earnings increase with increase in age, experience and level of education.

### **5.3.3 Relationships between Age, experience, Level of Education, and Earnings**

The last objective was to establish the relationship between the age, experience, level of education, and earnings among primary teachers in public schools in Mumias Sub-County.

This study concludes that there is a positive correlation between experience and earnings of 0.231. This means that if experience is known then 5.3 percent of earnings can be predicted. Age is also positively correlated to earnings with r value of 0.453. Therefore, if age is known 20.2 percent of earnings can be predicted. There was a strong positive correlation of 0.807 between earnings and level of education. Therefore, level of education influence 65.1 percent of earnings. This implies that a primary school teacher will raise his or her earnings by 65.1 percent by obtaining a higher level of education.

The study further concludes that masters' degree paid faster (with a rate of return of 38.26%) followed by diploma (with a rate of return of 24.33%) and lastly bachelors degree (with a rate of return of 3.26%). The rate of return to education of public primary school teachers was found to be 21.6%.

#### **5.4 RECOMMENDATIONS**

The following recommendations were made from this study:

- i. The government should subsidize the cost of obtaining masters degree/ set aside public funds for research and training in universities to make it attractive to many teachers.
- ii. Universities should continue with school-based bachelor degree and postgraduate programmes to train more primary school teachers in higher levels of education.
- iii. It is more profitable to invest in higher levels of education, therefore, teachers should invest in higher education at early ages to enable them get maximum benefits from their investments in education.

#### **5.5 RECOMMENDATIONS FOR FURTHER RESEARCH**

1. An independent study should be carried out to examine private non-financial and social returns to education of public primary school teachers.
2. Further research is required in other counties to on the financial rates of return to education of public primary schools.

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## APPENDICES

### APPENDIX 1: QUESTIONNAIRE FOR PRIMARY SCHOOL TEACHERS.

I am a master's student of Maseno University conducting a research on "analyzing the rate of financial returns to primary teachers in public institutions in Mumias Sub-County". Truth and accuracy in responses are very important. Information given will be treated with confidentiality and will be used for research purposes only.

Please tick ( ) or fill the information appropriately.

1. Gender:

2. Age:

20-24 ( )

25-29 ( )

30-34 ( )

35-39 ( )

40-44 ( )

45-49 ( )

50-54 ( )

55-60 ( )

3. Tertiary education.

a) Master's degree in education ( )

b) Bachelors degree in education ( )

c) Diploma in education ( )

d) P1 certificate in education ( )

e) S1 certificate in education ( )

4. Year of admission in tertiary institution: .....

5. Length of study in Tertiary institution ..... years

6. How long have you been teaching? .....

7. Current job group .....

8. How did you finance your education in TTC/University?

a) Full scholarship ( )

b) Partial scholarship ( )

c) Self-sponsored (including HELB loan) ( )

d) Harambees ( )

e) Bursary ( )

9. If you got assistance in (10) above, how much did you obtain?.....

10. What challenges did you face in terms of raising tertiary fees?

.....  
.....  
.....

11. How much did you spend on the following in the tertiary institution:

a) Tuition? .....

b) Stationary? .....

c) Clothing/uniform? .....

d) Transport? .....

e) Boarding? .....

f) Caution money? .....

g) Personal effects? .....

h) Activity? .....

i) Projects? .....

j) Other (specify) .....

12a).Did you do a teacher proficiency course?

Yes ( )

No ( )

b) What benefits do a teacher get after completing teacher proficiency course?

.....  
.....  
.....

13. At what age did you enter formal employment? .....

14. a)What was your starting gross salary per month? Ksh .....

b) What is your current net salary per month after taxation? Ksh .....

**THANK**

**YOU.**

**APPENDIX II: DOCUMENT ANALYSIS (SALARY SCALE)**

| <b>Job Group</b> | <b>Basic Salary</b>    | <b>Commuter Allowance</b> | <b>House Allowance</b> | <b>Medical Allowance</b> |
|------------------|------------------------|---------------------------|------------------------|--------------------------|
| <b>F</b>         | <b>14520 – 16080</b>   | <b>802</b>                | <b>2,300</b>           | <b>767</b>               |
| <b>G</b>         | <b>16692 – 21304</b>   | <b>1,001</b>              | <b>3,000</b>           | <b>954</b>               |
| <b>H</b>         | <b>19323 – 24662</b>   | <b>1,181</b>              | <b>3,000</b>           | <b>1,157</b>             |
| <b>J</b>         | <b>24662 – 29918</b>   | <b>1,642</b>              | <b>3,500</b>           | <b>1,632</b>             |
| <b>K</b>         | <b>31020 – 41590</b>   | <b>1,909</b>              | <b>6,000</b>           | <b>1,897</b>             |
| <b>L</b>         | <b>35910 – 45880</b>   | <b>2,258</b>              | <b>12,000</b>          | <b>2,246</b>             |
| <b>M</b>         | <b>41590 – 55840</b>   | <b>2,688</b>              | <b>12,000</b>          | <b>2,680</b>             |
| <b>N</b>         | <b>48190 – 65290</b>   | <b>3,042</b>              | <b>13,000</b>          | <b>3,044</b>             |
| <b>P</b>         | <b>77527 – 103894</b>  | <b>3,450</b>              | <b>15,000</b>          | <b>3,453</b>             |
| <b>Q</b>         | <b>89748 – 120270</b>  | <b>3,910</b>              | <b>15,000</b>          | <b>3,914</b>             |
| <b>R</b>         | <b>109089 - 144928</b> | <b>4,410</b>              | <b>15,000</b>          | <b>4,412</b>             |

## APPENDIX III: MASENO UNIVERSITY ETHICS REVIEW COMMITTEE PERMIT



### MASENO UNIVERSITY ETHICS REVIEW COMMITTEE

Tel: +254 057 351 622 Ext: 3050  
Fax: +254 057 351 221

Private Bag – 40105, Maseno, Kenya  
Email: muerc-secretariate@maseno.ac.ke

**FROM:** Secretary - MUERC

**DATE:** 11<sup>th</sup> September, 2017

**TO:** Valentine Nafula Chenane  
PG/MED/0029/2013  
Department of Educational Foundations and Management  
School of Education, Maseno University  
P. O. Box, Private Bag, Maseno, Kenya

**REF:** MSU/DRPI/MUERC/00398/17

**RE: Rate of Financial Returns to Education for Primary School Teachers in Mumias Sub-County, Kenya. Proposal Reference Number: MSU/DRPI/MUERC/ 00398/17**

This is to inform you that the Maseno University Ethics Review Committee (MUERC) determined that the ethics issues raised at the initial review were adequately addressed in the revised proposal. Consequently, the study is granted approval for implementation effective this 11<sup>th</sup> day of September, 2017 for a period of one (1) year.

Please note that authorization to conduct this study will automatically expire on 10<sup>th</sup> September, 2018. If you plan to continue with the study beyond this date, please submit an application for continuation approval to the MUERC Secretariat by 15<sup>th</sup> August, 2018.

Approval for continuation of the study will be subject to successful submission of an annual progress report that is to reach the MUERC Secretariat by 15<sup>th</sup> August, 2018.

Please note that any unanticipated problems resulting from the conduct of this study must be reported to MUERC. You are required to submit any proposed changes to this study to the MUERC for review and approval prior to initiation. Please advise MUERC when the study is completed or discontinued.

Thank you.

Dr. Bonuke Anyona,  
Secretary,  
Maseno University Ethics Review Committee.



Cc: Chairman,  
Maseno University Ethics Review Committee.

MASENO UNIVERSITY IS ISO 9001:2008 CERTIFIED



APPENDIX IV: MAP FOR MUMIAS SUB-COUNTY

