Contextual Influences in Female and Male Schooling:

The Case of Igembe and Imenti North Districts

By

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DECLARATION

This thesis is my original work carried out during my PhD scholarship at the Institute for Development Studies, College of Humanities and Social Sciences, University of Nairobi and has not been presented in any other university or learning institution.

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This doctoral thesis has been submitted for examination with our approval as the appointed University Supervisors.

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DEDICATION

To my loving wife Beth Nkirote and my adorable son Mike Munene Koome

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ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
CBS	Central Bureau of Statistics
CDF	Community Development Fund
EFA	Education for All; also Exploratory Factor Analysis in statistics
ERS	Economic Recovery Strategy
FGDs	Focus group discussions
FPE	Free primary education
FSE	Free secondary education
GDP	Gross Domestic Product
HIV	Human Immune Virus
HPI	Human Poverty Index

KANU	Kenya African National Union
KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of Secondary Education
KDHS	Kenya Demographic and Health Survey
KIHBS	Kenya Integrated Household Budget Survey
KIPPRA	Kenya Institute for Public Policy Research and Analysis
KMO	Kaiser-Meyer-Olkin (Measure of Sampling Adequacy)
KNBS	Kenya National Bureau of Statistics (formerly CBS)
MoE	Ministry of Education
MSA	Measure of Sampling Adequacy
NCPD	National Council for Population and Development
NGOs	Non-governmental organisations
OR	Odds ratios

PCA	Principal Components Analysis
PCR	Pupil completion rate
SPSS	Statistical Package for Social Sciences
STIs	Sexually transmitted illnesses
TFR	Total fertility rate
TIVET	Technical, Industrial, Vocational and Entrepreneurship Training
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
WHO	World Health Organisation

ABSTRACT

Contextual Influences in Female and Male Schooling: The Case of Igembe and Imenti North Districts

By Peter Koome

The goal of the study was to understand the role of household and community factors in male and female educational attainment in two rural districts in Kenya. The study focused on four educational transitions namely: non-entry into formal education; dropout prior to completion of primary school among children who ever attended school; exit after completion of primary school; and high school dropout.

Data was collected from a probability sample of 1200 young people aged 15-24 distributed equally across the two study sites, that is, Igembe North and Buuri districts. Logistic regression was the main analytic method used because all the dependent variables were dichotomous. Although the bulk of the study was based on quantitative data, some qualitative data was collected from key informants who were education officers as well as people who had exited from the formal education system at each of the exit points under study.

Household's economic ability as measured by wealth index (computed from household ownership of durable goods and assets using principal components analysis) emerged as the most powerful explanatory factor in all the educational transitions. At the community level, district of residence is the strongest predictor of dropping out of school before completion of the primary level of education. However, the variable is not a powerful predictor of exiting after completing the primary level. Female respondents have 43 percent lower odds for dropping out of school during primary school years relative to male respondents but they have higher odds for dropping out of school after completion of the primary level. However, there is no statistically significant relationship between gender and high school dropout.

Household economic status is the most powerful explanatory factor in educational attainment but non-income factors too are important predictors of school dropout. The study further concludes that the context in which schooling occurs (as measured by district of residence) and gender of the learner are important explanatory factors in educational attainment.

The study recommends contextualization of interventions meant to increase pupil retention and completion at different levels. This should be coupled with strict enforcement of education for all principles which necessarily involves elimination of unofficial fees and harmonisation of official fees. Equally important is the need for targeting of the poorest households for

extra support beyond the generalised free education programme through local support mechanisms such as the Constituency Development Fund.

Targeting of interventions should also take a gender dimension to the extent that male and female children have different odds for exiting from the education system at different stages. The boy child is more affected at earlier stages in life while the girl child is affected more adversely at later stages. As noted earlier, these patterns may not hold in every context in the Kenyan society, which vindicates the need for targeting of interventions based on empirical data from the local communities rather than on data aggregated at national or regional level. The study recommends interventions that broadly seek to ensure that all children not only enrol in school but also successfully join and complete high school. Such an endeavour should address all exit points in general but pay special attention to early exit points because children who get out of school at such stages can as well be considered to be "gone for good". Their chances for poverty reversal are negligible.

Although this thesis is based on a sample of 1200 respondents, which was sufficient for advanced statistical analysis, multivariate analysis of correlates of non-entry into primary school and high school dropout could not be carried out because very few respondents dropped out of school at the two stages. This is a positive finding because it means that an overwhelming majority of children in the two districts get enrolled in formal education system and that those who manage to get to high school rarely dropout. However, the handful who are not enrolled at all into the formal education system as well as the few who drop out at high school constitute an important and unique group whose problems should not be ignored. More qualitative research to shed light on their circumstances is recommended.

DEFINITION OF KEY TERMS

Community factors: These are factors within the wider community that are conceived to influence schooling.

Contextual influences: This is a broad concept that comprises factors that define the social, economic, cultural and psychological environment or context in which schooling occurs. The concept is central in this study because it helps in isolating the many forces that shape schooling outcomes in any given community.

Deprivation: In this study, "deprivation" is defined in broad terms to include not only income poverty but also many other factors that may adversely affect schooling such as domestic violence and poor supervision by parents. Thus deprivation has income- and non-income-related dimensions (see definition of household income and non-income factors). In this regard, deprivation is synonymous with poverty so long as it is borne in mind that poverty in this context has two components as described above.

Educational attainment: In this study, educational attainment is defined as successful completion of some well-defined levels of schooling, which are also called "transitions" (see definition of educational transitions).

Educational transitions: The term is used interchangeably with "exit points" and it denotes those specific points in the educational system where a child

can leave the formal education system. In this study the transitions of interest are: enrolment (or non-enrolment) into the formal education system; exiting the formal education system before getting the primary school certificate; non-enrolment into secondary school after successful completion of primary school; and failure to complete secondary school after enrolling irrespective of the duration. The term is also used to denote successful negotiation of the implied milestones.

Household income factors: The term refers to factors that are linked directly to income. Since it was not possible to get income data, the study used a composite index constructed from ownership of durable goods (car, television, radio, mobile phone) and means productive assets (land, cattle). In a sense, therefore, these factors can be considered as constituting the "physical wealth" of the household

Household non-income factors: These are factors that are non-income related but have serious implications for educational attainment of children such as parental education and other characteristics, quality of supervision, amount of household chores given to the children, and the child's connectedness to the family among others. These factors can be considered as constituting the "psychic wealth" of the household.

High school and secondary school: The two terms are used interchangeably in this study, and they denote the second level in Kenya's formal education system, that is, the level between primary and university levels.

Household: Consist of people who may or may not be blood relations but have same housekeeping arrangements such as "eating from the same pot" in the Africa context.

School dropout: This term is used to mean exiting the education system before completion of a given level (or non-entry into formal education system). For example, children who complete the primary level of education but do not proceed to secondary school are considered "school dropouts" at analysis of non-entry into secondary school. There are, therefore, four groups of school dropout in this study: those who did not join the formal education system; those who joined but exited prior to completion of primary school; those who completed primary school but did not transition to secondary school; and those who dropped out of school before competition secondary school.

Schooling: The concept denotes school attendance at any given level hence it captures the quantitative aspect of education as opposed to quality of education. At individual level, schooling, therefore, is captured by the level of education completed in the formal education system rather than the student's score in any applicable examinations.

CHAPTER 1: INTRODUCTION

1.1 Overview of the chapter

This chapter is divided into five broad sections. The first section introduces the topic and presents the overriding postulate of the study: that educational attainment among male and female children can be predicted by community and household factors, and that an insightful approach to understanding the relative importance of these factors is to analyse their explanatory power from the time the child joins formal education system to completion of high school. The second section presents a detailed review of Kenya's social, political, demographic, and economic aspects and their role in shaping educational outcomes in order to situate the study within the prevailing circumstances at the macro-level. The third section states the problem of the study while the fourth and fifth sections present the objectives and the rationale of the study respectively.

1.2 Background

There is wide acknowledgment in the literature that education is one of the most important instruments for individual advancement as reflected by incomes levels, health, and participation in social, cultural, and political process in the community as well as societal transformation that results from increased productivity, efficiency and innovation (Manda, 2002; Cutler & Lleras-Muney, 2006;. Alwy & Schech 2004; Amin & Awung, 2005). These broad views form the backbone of human capital theory. The theory views

education as an important factor in production because of its role in development of human resources necessary for economic and social transformation (Olaniyan & Okemakinde, 2008). Indeed, human capital investment has been shown through empirical analysis to contribute to national economic output by increasing the productive capacity of workers as well as through its positive externalities (Oketch et al. 2008; Manda et al. 2002; Olaniyan & Okemakinde, 2008). According to Oketch et al. (2008), equitable access to education of good quality has several benefits such as lowering poverty and inequality, accelerating economic growth, and improving health of infants and children. An analysis of determinants of poverty in Kenya by Geda et al. (2001) concluded that attainment of high school and university education is the most important factor associated with not being in poverty, and that female education has a large impact on poverty reduction. Another study by Manda et al. (2002) found that education is positively correlated with earnings and has other benefits to the individual and the community. These views are consistent with Amartya Sen's argument that education is a fundamental freedom that builds other human capabilities (Sen, 1999).

Educational attainment is explicable in terms of individual, household, community, and state-level factors. Good performance in school, for instance, is a powerful motivator in educational pursuit while ability and willingness of the household to invest in education ensures realisation of academic

aspirations of its members. Similarly, a country's policies on education directly affect schooling because of their effect on accessibility, affordability, and quality of education.

Although formal education in Kenya dates back to colonial times, the sector experienced rapid expansion after the country gained independence from Britain in 1963. This expansion was informed by the philosophy spelt out in the Sessional Paper No. 10 of 1965 on African Socialism and Its Application to Planning, which conceived education as a tool to fight ignorance, disease, and poverty – the key barriers to national development (Orodho, 2003).

Kenya has made commendable progress in school enrolment but the rate of attrition is considered high (MOE, 2010). Introduction of free primary education in 2003 led to increase in gross enrolment rate of over 100 percent in 2004 but completion rate stood at 56 percent. It is also instructive that gross enrolment rate at secondary level stood at 22.2 percent in 2004 (CBS, 2005). Moreover, the huge regional variations in educational attainment in Kenya have been linked to differentials in economic ability of the different regions. A study by Orodho (2003) found that gross enrolment rate at pre-primary, primary and secondary levels is higher in economically high and medium potential provinces of Central, Western and Nyanza, and lower in low potential provinces such as Rift Valley and North Eastern.

According to the Kenya Integrated Household Budget Survey (KIHBS) of 2007 (KNBS 2007), 6.2 percent of school age children (6-17 years) have never attended school and more than one third of children of the same age group in North Eastern province have never attended school. About 13 percent of the children said the main reason for their school non-attendance was that their parents or guardians thought they were too young to attend school despite having reached the recommended age of six years. Another 19.8 percent cited lack of money despite the institution of free primary education. The survey also found high percentage of pupils reporting that they were not attending school due to family illness in Suba, Migori, and Turkana districts (53.2, 23.0, and 21.0 percent respectively). In addition, arid districts of Wajir, Kajiado, Samburu, Turkana, and Moyale had a huge number of children attributing their school non-attendance to the fact that they were working for pay or working in the home. The net attendance ratios for both primary and secondary levels are higher for economically well off districts and lowest in arid and semi-arid lands.

Table 1.1 presents the level of school attendance among children aged 6 to 17 years. The percent of children who have never attended school is slightly higher in rural areas compared with urban areas (6.7% and 3.5% respectively) but differences across regions is even more spectacular: the proportion of such children is only 1 percent in Central province compared with slightly over 40 percent in North Eastern province. Central province is a

high potential agricultural region while North Eastern province is entirely an arid area.

Table 1.1 Percentage distribution of children aged 6-17 years by school attendance and region

Region	Ever attended	Never attended	Total count
Kenya	93.4	6.2	11,215,740
Rural	93.0	6.7	9,458,698
Urban	95.6	3.5	1,757,042
Nairobi	97.8	1.6	578,798
Central	98.9	0.9	1,291,503
Coast	90.7	9.0	1,040,095
Eastern	96.0	3.8	1,899,072
North Eastern	56.3	42.4	435,916
Nyanza	97.4	2.2	1,643,579
Rift Valley	90.9	8.3	2,824,458
Western	96.3	3.3	1,502,319

Source: Kenya Integrated Household Budget Survey 2007 (KNBS 2007)

While the bulk of the studies in this area have focused primarily on one exit point or other individually, for example, dropout at primary level, dropout at high school (see, for example, Vos et al. 2004; Sawamura & Sifuna, 2008; Okumu et al. 2008; Ohba, 2009; Oyugi, 2010), the current study focused on all critical exit points from commencement of formal education to completion of high school namely: (1) entry into formal education system (or lack of it); (2) school dropout prior to completing primary school; (3) exit after completion of primary school; and (4) school dropout before completion of secondary school. This approach has the advantage of enabling an analysis of the relative importance of each factor or set of factors in explaining the

likelihood of experiencing each of the transitions, which is essential in scheduling of interventions for poverty reduction and reversal.

Implied in the foregoing discussion is that research on educational attainment in Kenya has not comprehensively and coherently explained why some children stay in school while others drop out principally because it focuses on specific stages rather than the whole continuum from entry into the formal education system to completion of secondary school. Clearly, this piece-meal analysis of schooling cannot tell the whole story cogently and coherently to the extent that it does not assess the various factors associated with exiting from the formal education system at different exit points from early childhood to young adulthood.

Using primary data collected from young people aged 15-24 in two rural districts of Meru ethnic group, that is Imenti North (now Buuri) and Igembe (now Igembe North) districts[1], (called sub-Counties since the promulgation of the new constitution in 2010) the study sought to demonstrate that the likelihood of exiting from the educational system among boys and girls can be predicted by household and community levels factors that are linked to the level of deprivation. In this context, deprivation is defined in broad terms to

[1] Igembe and Imenti North districts had not been subdivided at the time when the topic for this thesis was approved by the University. At the time of data collection, subdivision had taken place hence the birth of Igembe North and Buuri districts (among others) respectively. Thus, this study is based on the new districts rather than the larger original districts hence the new names are used throughout this thesis.

include not only "lowness" of income but also social and cultural barriers to leading meaningful lives. To achieve this goal, the study focused specifically on four education transitions listed above (Sen, 1999).

1.3 The context of the study

This subsection situates the study in the prevailing circumstances at the macro level, which is based on the premise that macro-level factors have direct and indirect effects on educational attainment to the extent that they define the context in which education takes place. Indeed, a cursory look at educational attainment in the country shows marked differentials with respect to geography, economic status, ethnicity, and type of place or residence (rural-urban divide). Variations in educational attainment across these categories are the subject of this review.

1.3.1 Kenya's administrative and geographic zones

Kenya borders Uganda, Tanzania, Somalia, Ethiopia and Sudan. It has a total of 582,646 square kilometres with a land area of 581,313 square kilometres. Only 20 percent of the country's land is arable (KNBS & ICF Macro, 2010).

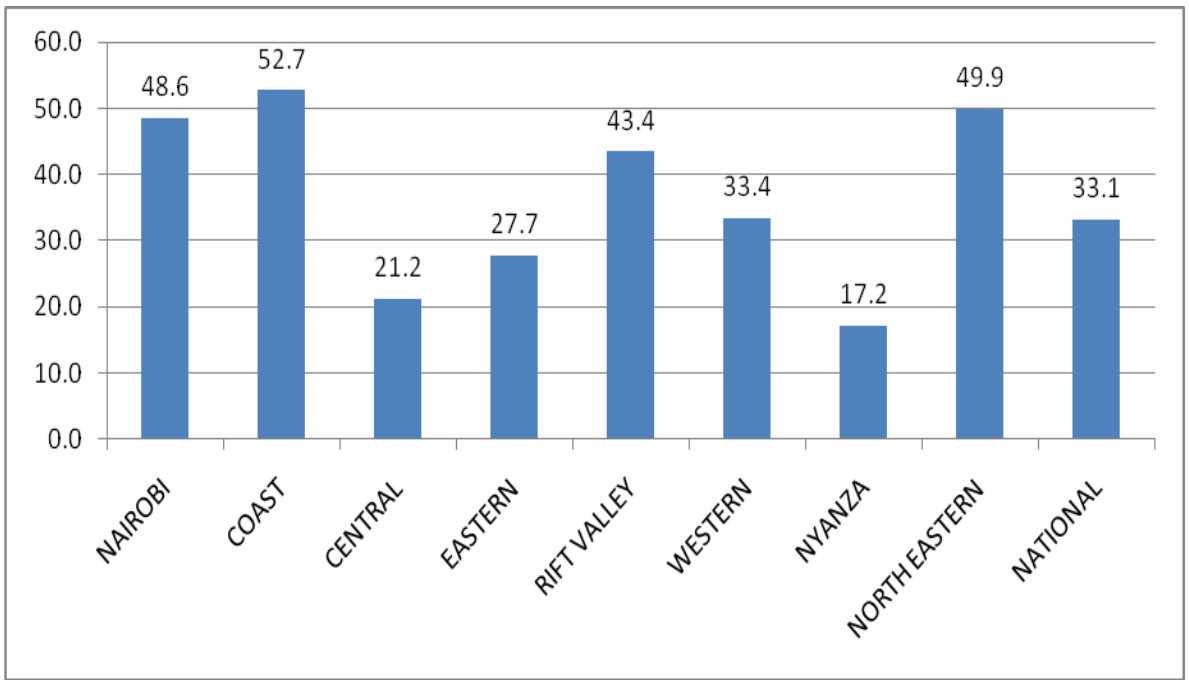
Until the promulgation of a new constitution on 27th of August 2010, the country was divided into eight administrative units known as provinces. These were: Nairobi; Central; Coast; Eastern; North Eastern; Nyanza; Rift Valley; and Western provinces. Each province was headed by a Provincial

Commissioner, who together with other government officials within the provincial administration infrastructure, articulated government policies across all administrative levels in the county. The new legal dispensation brought about by the new constitution created 47 counties and effectively dismantled the provincial administration infrastructure and ushered in a devolved system of government headed by a county governor. (See the list of the 47 counties in Annex 2.)

The 2009 Population and Housing Census (KNBS, 2010a) distinguishes numerous ethnic groups, the major ones being Kikuyu, Luhya, Kalenjin, Luo, Kamba, Kisii, Mijikenda, Somali, and Meru. The main religions are Christianity and Islam, while Kiswahili and English are the official languages.

Practically all education indicators vary substantially across the different geographic zones. Generally, they are most favourable in high agriculture potential zones and worst in arid and semi arid areas. Although national data are usually not presented according to geographic areas but rather according to provinces as shown in Figure 1.1, it is still possible to glean some differences that approximate respective geographic regions. Non-entry into secondary in 2009 (based on children who sat KCPE in 2008) is highest in the arid and semi-arid Coast and North Eastern regions (52.7% and 49.9% dropout rate respectively) and lowest in Nyanza and Central provinces, which are generally have high agricultural potential regions.

Figure 1.1 Percent of pupils who sat KCPE in 2008 and did not enroll in secondary school in 2009 according to province



Similarly, North Eastern Province, which falls entirely in an arid zone, had a primary net enrolment rate of 33.1 percent and 20.8 percent for boys and girls respectively compared with 99.1 and 98.9 for boys and girls respectively in Western province. North Eastern province also has the highest pupil-teacher ratio at 63.1, which is markedly higher than the national average of 42.9 pupils per teacher at primary school level (MoE, 2010).

1.3.2 Political landscape

Kenya gained independence from Britain on 12th December 1963 and became a republic a year later with Mr Jomo Kenyatta as president. Upon his death in 1978, he was succeeded by Mr Daniel Moi who ruled the country until 2002

when Mr Mwai Kibaki became president. In 2013, Mr Uhuru Kenyatta, the son of Kenya's first president, became Kenya's fourth president.

The country has enjoyed relative stability since independence and has a rich history of political transformations (sometimes for better, sometimes for worse). In 1982, the parliament amended the constitution to make the country a one-party state but internal and external pressure culminated in the reversal of the situation in December 1991, when Kenya once again legally became a multiparty state. The ruling party, Kenya African National Union, however, managed to retain power until 2002 when the opposition political parties coalesced into a movement – the National Rainbow Coalition – and defeated Moi's preferred presidential candidate. It is worth emphasizing that the two most radical events in the recent past that have changed the political landscape of Kenya are the post election violence of early 2008, which was a consequence of disputes arising from the 2007 presidential elections, and the promulgation of a new constitution in August 2010.

Changes in political leadership have had a substantial impact on development of education in the country. Such changes are most prominent in education financing and structure and have had profound impact in access, availability, affordability and quality of educational services in the country.

For instance, some scholars have noted that available evidence seems to suggest that 8-4-4, the current system of education in Kenya was introduced in partial response to the Mackay Commission and also as a political goal by the government with a hidden agenda of settling some political scores (Ojiambo, 2009). The same can also be said of the reintroduction of free primary education in 2003 and institution of free secondary education in 2008 to the extent that the two programmes were merely campaign promises by the political parties that eventually got political power in the respective elections. At the time of writing this thesis, the country was again planning to give all standard one pupils laptops. The laptop project was not a product of any systematic analysis of the benefits of introducing computer-assisted learning approaches into primary schools; rather it was merely a promise made by the Jubilee Coalition in during the campaigns for 2013 elections.

1.3.3 Kenya's economy

Kenya's economy, which is predominantly agricultural, has experienced periods of economic boom as well as downturns. In the first decade after independence, the economy grew at an average of 7 percent per annum, which has been attributed to growth in various sectors and increased agricultural production (Ministry of Planning and National Development, 2005). Since the 1980s, however, the economy has performed below its potential, with low economic and employment growth and a decline in productivity and per capita income. The number of people openly unemployed

in 2005 stood at over 2 million, which represents14.6 per cent of the labour force, with the youth accounting for 45 percent of the total (Ministry of Planning and National Development, 2005). In addition, the number of the working poor is considered huge by policy makers and it comprises primarily of subsistence farmers, female-headed households and slum dwellers (Ministry of Planning and National Development, 2005).

The decline in economic performance reached its peak in 2000 when GDP growth rate reached 0.2 percent (KNBS & ICF Macro, 2010). The annual rate of growth of the economy improved from 2.6 percent in 2004 to 3.4 percent in 2005 and 5.5 percent in 2007 but declined again rather sharply to 1.7 percent in 2008 due to various internal and external factors including post-election violence, drought, high food and fuel prices, and the global financial crisis (KNBS & ICF Macro, 2010). According to the Kenya Economic Survey (KNBS, 2013), Kenya's economy grew at 4.6 percent in 2013.

Changes in economic performance have many implications for the education sector at the macro and the household levels. In the recent past, however, the government has consistently allocated slightly more than one-quarter of its total annual budget to education except in 2006/2007 financial year where allocation to education was 23.55 percent of the national budget. Table 1.2 shows government expenditure on education since 2005.

Table 1.2 Education expenditure

Category	2003/04	2004/05	2005/06 *	2006/07	2007/08	2008/2009*
MOE Recurrent (KES)	68,215.50	77,219.00	84,420.50	93,114.44	95,818.12	106,062.3
MOE Development (KES)	4,076.50	2,863.80	6,293.66	7,735.62	8,868.27	10,068.6
Total MOE Recurrent & Development (KES)	72,292.00	80,082.80	90,714.16	100,850.06	104,686.39	116,130.9
Gross Domestic Product (KES)	1,136,288.00	1,282,505.00	1,415,156.00	1,561,527.25	1,814,243.00	2,099,798.00
Total MOE as % of GDP	6.36%	6.24%	6.55%	6.35%	6.5%	5.5%
Total MOE as % of GOK total expenditure	27.43%	26.78%	25.75%	23.55%	27.16%	15.02%
MOE recurrent as % of Total MOE Expenditure	94.36%	96.42%	93.04%	93.91%	93.08%	91.33%
MOE development as % of Total MOE expenditure	5.64%	3.58%	6.96%	6.09%	6.92%	8.67%

Source: Ministry of Education (MoE). 2010. Educational Statistical Booklet 2003-2009, Government Printers: Nairobi, Kenya

* MoE expenditure does not represent the total GOK expenditure in education (total education expenditure will require to add Ministry of Higher Education and Ministry of Youth Affairs expenditure)

Despite the huge allocation, it is worth noting that 93.1 percent of the Ministry's budget goes to recurrent expenditure, which leaves only 6.9 percent for development (MoE, 2010). The government has instituted free primary and secondary education but economic situation of the household affects access because "free education" is not really free. Poor households are still faced with the challenge of accessing education because of the many hidden costs such as building fees, holiday tuition charges, and lunch fees (Ohba 2009).

1.3.4 Demographic changes

Kenya has also witnessed a number of notable demographic changes since independence. First, its population has grown from 10.9 million in 1969 to 38.6 in 2009 (KNBS 2010). The country's intercensal population growth rate for the period 1999-2009 is estimated at 2.8 percent per annum, which is marginally lower than that of the preceding decade, which was 2.9 (Table 1.3).

The total fertility rate (TRF) went down from 8.1 births per woman in the late 1970s to 4.6 in 2009 while mortality rate has declined steadily over time as reflected by reduction in crude death rate from 17.0 in 1969 to 11.7 in 1999. High fertility in the context of reducing mortality translates into a youthful population structure with inbuilt momentum to propel population growth for many years to come.

Table 1.3 Selected demographic indicators for Kenya, 1969-2009

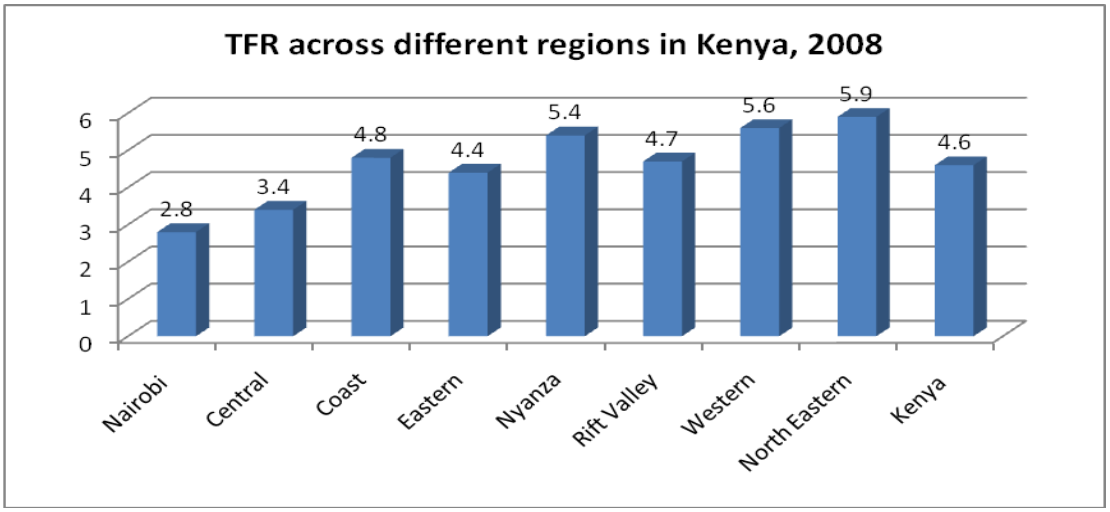
Indicator	1969	1979	1989	1999	2009
Population (millions)	10.9	16.2	23.2	28.7	39.4[a]
Density (pop./km2)	19.0	27.0	37.0	49.0	67.7[a]
Percent urban	9.9	15.1	18.1	19.4	21.0[a]
Crude birth rate	50.0	54.0	48.0	41.3	34.8[b]
Crude death rate	17.0	14.0	11.0	11.7	u
Intercensal growth rate	3.3	3.8	3.4	2.9	2.8[a]
Total fertility rate	7.6	7.8	6.7	5.0	4.6[b]
Life expectancy at birth	50	54	60	56.6	58.9[a]

a Revised projection figures
b KDHS results
u = unknown
Source: CBS, 1970; CBS, 1981; CBS, 1994; CBS, 2002a (Cited in KNBS & ICF Macro 2010)

Although Kenya's TFR has been declining since the late seventies, it is evident that some regions and ethnic communities exhibit markedly high fertility rates relative to the rest of the country as shown in Figure 1.2 (KNBS & ICF Macro, 2010). While Nairobi province had a TFR of 2.8 and Central province 3.4 in 2008, Western and North Eastern provinces had a TFR of 5.6 and 5.9 respectively.

According to resource dilution theory, a large family in resource-constrained settings translates into lower investment per child and concomitantly lower access to quality education (see, for example, Jæger, 2009). Implied here is that high fertility in such settings directly contributes to intergenerational transmission of poverty because low investment in education denies children the requisite facilities to escape the poverty trap.

Figure 1.2 Regional TFR differentials



According to the 2009 census (KNBS 2009 v1B), children aged less than 20 years account for 53.7 percent of the total population. This scenario has two critical implications for education. First, it means that the country is currently faced with a huge population in need of educational services, which is constrained by the implied huge dependency burden. Second, it means that the country will have to contend with this challenge for a long time as these children progress through their reproductive career even if TFR declines to replacement level.

1.4 Problem Statement

Private returns to education in Africa are considerable hence families are motivated to invest in human capital (Wainaina, 2006; World Bank 2000). Although such returns vary with context, the evidence strongly suggests that generally education does improve one's economic status and attenuate the magnitude of inequalities along social-economic status and gender (Hannum & Buchmann, 2005). Thus, the amount of schooling a person acquires affects his or her occupational placement and the risk of poverty as well as her general well-being and that of her children (Hofferth et al., 2001). Additionally, the increase in women's earning power in economic activities outside the family influences many development outcomes including gender equity and equality, child health; it also influences reproductive behaviour and educational attainment of the children (Cleland & Jejeebhoy 1996; Orodho, 2003; Omwanda, 1996).

While the importance of female education is widely acknowledged in demographic literature, there is no agreement on the key determinants of women's schooling. As Fuller and Liang (1999:180) point out, national and international agencies are putting in place programmes for the expansion of female school enrolment but there is "very little empirical evidence on the factors that explain why some daughters stay in school while others exit". It is also evident that male education has not received much attention by demographers despite its close interaction with female education to shape

population and development outcomes. This study focuses on educational attainment of both male and female children.

Educationists too have largely focused on specific stages in isolation rather than all critical exit points. In addition, analyses have tended to focus on a limited set of factors (see, for example Okumu et al., 2008; Ohba, 2009; Oyugi, 2010; Gatumu, 2012; Limukii & Mualuko 2012), and the context within which schooling occurs is largely left out in such analyses. All these gaps undermine efforts aimed at timetabling and targeting interventions meant to retain children in the education system.

The overriding goal of this study was to -isolate factors that explain why some children drop out of school at different exit points. Guided by the bargaining model of household behavior (Mattila-Wiro, 1999) and theories of community effect on individual decision-making (Galster, 2010), the study sought to understand the nature of the relationship between household and community factors on the one hand and educational attainment of male and female children on the other. Four education transitions were studied: entry (or lack of entry) into the formal education system; school dropout before completion of the primary level; terminal exit after completion of primary school; and high school dropout.

The process of identifying explanatory factors for each of these transitions was guided by Amartya Sen's (1999) propositions on human development and

poverty. His view of development as the extent of freedom to pursue various lifestyles and poverty as denial of capability to lead the kind of life one has reason to value enables the analyst to broaden the range of forces that promote or otherwise constrain various human endeavours. Explanatory factors in the analysis of educational attainment can be grouped into household economic ability as reflected by ownership of durable household goods (a stable measure of income levels) and non-income-related factors such as parental supervision, household structure, and the balance between engaging in household chores relative to engaging on school work. The context in which schooling occurs needs special focus because it not only affects availability, access and quality aspects of education but also shapes people's views on efficacy of education as a tool for personal development. Thus, it is hypothesised that poverty (reflected by both income- and non-income-related factors as well as constraints within the wider community) can effectively predict the likelihood of exiting from the educational system among male and female children.

1.5 Objectives

1.5.1 General Objective

The goal of the study was to understand the role of household and community factors in male and female educational attainment in two rural districts in Kenya.

1.5.2 Specific Objectives

1. To establish the nature of association between household economic factors and educational attainment;

2. To analyse the nature of the association between household non-income factors and educational attainment;

3. To assess the role of community-level factors in explaining educational attainment;

4. To investigate gender differences in educational attainment.

1.6 Research questions

1. How are household economic factors associated with educational attainment?

2. What is the nature of the association between non-income factors and educational attainment?

3. What role do community-level factors play in explaining educational attainment?

4. Does educational attainment differ by gender of the child?

1.7 Justification of the Study

It has been pointed out that Africa's future economic growth will depend less on its natural resources and more on its human capacities and its ability to

accelerate a demographic transition (World Bank, 2000). This position is informed by human capital theory, which can be summarised by Psacharopoulos and Woodhall's (1997:102) assertion that "Human resources constitute the ultimate basis of wealth of nations. Capital and natural resources are passive factors of production, human beings are the active agencies who accumulate capital, exploit natural resources, build social, economic and political organization, and carry forward national development". According to the 2009 Kenya Population and Housing Census (KNBS, 2010b), 23 percent of children eligible to be in primary school (that is, children aged 6-13) and 76 percent of those eligible to be in secondary school (that is, 14-17 year-olds) were not attending school at the time of the census.

Taking a capability perspective, the study broadens the analytic sphere by isolating factors associated with lack of entry into formal education, dropout prior to completion of primary level of education, terminal exit before entry into high school, and high school dropout. This approach is useful in informing the process of timetabling interventions within the life course to the extent that it answers the questions, "What are the most critical forces that undermine attainment of each specific level of education?"

In this study, institution of free primary and secondary education, school feeding programmes, provisions of sex and family life education as well as reproductive health services, and the return to school policy for pupils who get pregnant – among others – are viewed as "interventions" aimed at

retaining pupils in the education system. There is a growing body of research that shows that having a "good start" in early in life is correlated with lifetime success (Yaqub, 2002; Oberg, 2003; Grantham-McGregor, 2007) and that the chances of rising economic status and escaping poverty diminish with time (Hertzman, 2002). This evidence shows that educational attainment is influenced by many variables hence, in the interest of parsimony, the study placed special emphasis on reducing those factors into "components", which brings about valuable insights into the phenomenon under investigation. To the extent that the study isolates forces that support or otherwise constrain transition through the education system, the findings are also useful to policymakers who must make decisions on allocation of scarce public resources for poverty avoidance and poverty reversal.

1.8 Summary of Chapter 1

This chapter introduced and discussed the topic of the study within the macro situation prevailing in the country. It was argued that educational attainment varies with geographic location and economic situation obtaining in the country and by extension the household. The education sector has been profoundly influenced by state-level policies and programmes, the most critical in the recent past being institution of free primary and secondary education. The overriding argument was that despite the recent introduction of free primary and secondary education, not all children who ought to be in school are in school hence the need to explore factors that lead to school

dropout at different points in the child's educational career. Such an approach, it was argued, would enable contextualisation and timetabling of interventions aimed at increasing educational attainment and ultimately mitigating poverty. In the next chapter, relevant theoretical and empirical literature is reviewed with a view to elucidating on the factors that hinder or otherwise promote educational attainment of both male and female children.

1.9 Outline of the thesis

This thesis is divided into six chapters. Chapter 1 introduces the study and situates it within the prevailing economic, social, geographic, and political situation in Kenya. It also defines the problem and presents the objectives and the rationale for the study. Chapter 2 is a review of the literature and ends with a discussion of the conceptual framework of the study. Chapter 3 presents the methods of data collection, transformations and analysis while Chapter 4 presents the findings of the study. This chapter is structured according to "educational transitions" or conversely, "exit points" rather than according to the objectives of the study because of the need to follow the transitions progressively. A critical interpretation of the findings is covered in Chapter 5 which is structured according to the objectives of the study so as to highlight the relative importance of each set of factors in explaining why some children exit the formal education system while others proceed. The last chapter summarises the study and gives recommendations for policy and future research. .

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature on development, schooling, child and adolescent development, and the place of the household and the community in male and female educational attainment over time. Household- and community-level factors associated with the four education transitions of interest in this study are also discussed. The review focuses on both theoretical and empirical perspectives that build on the overriding argument of the study – that educational attainment of male and female children is a function of contextual factors rooted in the community and mediated by the household, and that each stage in the educational career is affected by a unique set of factors that can be explained by the level of deprivation. Central to this review is that poverty includes both low incomes and other forms of "unfreedoms" (Sen 1999) for which no monetary value can be attached.

2.2 Theoretical perspectives in education, development, and gender

2.2.1 Benefits of formal education: The Human Capital Theory

Scientific inquiry on the benefits of education is anchored on the Human Capital Theory. The theory posits that formal education is directly linked to productivity and efficiency hence "an educated population is a productive population" Olaniyan & Okemakinde, 2008: 158). Human capital theory views education as a productive investment because it increases efficiency

and productivity of workers by creating knowledge and skills necessary to function in the economy. Indeed, human capital theorists consider this productive investment as important as (or even more important than) physical capital. Babalola (2003) argues that investment in human capital is based on three perspectives. The first is that the new generation must be given the appropriate portions of the knowledge already accumulated by preceding generations while the second holds that the new generation needs to be acquainted with an understanding of how existing knowledge should be used to develop new products and production technologies and methods. The third perspective is that that people should be encouraged to develop new ideas, products, and processes through innovative methods.

The hypothesized positive relationship between investing in human capital and societal transformation, specifically rapid economic growth, is responsible for the huge investment in education in both developed and developing nations. Education has private returns by way of increased wages and general advancement of the individual as well as public returns that accrue from increased productivity, efficiency, and innovation. Economists generally accept the view that human capital rather than any other capital is the key determinant of the pace of a country's economic growth. This view is aptly summary by Psacharopoulos and Woodhall (1997: 102) in their argument that:

> Human resources constitute the ultimate basis of wealth of nations. Capital and natural resources are passive factors of production, human beings are the active agencies who accumulate capital, exploit natural resources, build social, economic and political organization, and carry forward national development.

Empirical evidence shows that an increase in the quality of education is associated with numerous benefits including increased productivity, reduced poverty and inequality of income, and improved health and economic growth (Manda et al., 2002; Olaniyan & Okemakinde, 2008). Education is closely associated with demographic changes such as decrease in child mortality, increase in contraceptive use, and lowering of fertility levels – indicators which translate into better health for individuals and communities (Filmer & Pritchett 2001; Ohba, 2008). It is also worth noting that the close correlation between education and occupational outcomes implies that education may reduce inequalities along socio-economic, gender and ethnic lines, and generally mitigate relative deprivation (Hannum & Buchmann, 2005).

The perceived benefits of education to the individual and the society are responsible for the massive expansion of the education sector in many developing economies. In Kenya, for instance, the education sector has usually taken up the biggest proportion of the country's total budget since independence. However, the debate on individual and societal returns to education is far from over. The main question posed by Manda et al. (2002) is whether the education system yields returns to the individual and the society to justify the investment in it. The evidence shows that there is a positive

correlation between education and an individual's earning and that the more educated people exhibit higher productivity compared with their less educated counterparts (Olaniyan & Okemakinde, 2008). It is worth emphasising that research has revealed that education's rate of return to individuals is greater than returns to the society (Oketch, 2008).

2.2.2 The concept of development

This subsection seeks to situate the concerns of this study within the broader conceptualisation of development that takes a human capability perspective as articulated by Amartya Sen. The approach builds on the emerging body of knowledge that seeks to redefine the concept of development with a view to including parameters that explain "development" from a human development perspective rather than from a purely economic view. It essentially redefines the concept of poverty, a key construct in this study, by allowing for inclusion of other indicators of poverty besides lowness of income.

In his treatise on "alternatives on development", Paul Streeten (1981) notes that the traditional approach to development has been challenged by existence of "growth without development", hence:

> A more appropriate definition of "development" would begin by identifying basic needs. In many developing countries the objective of development would be defined as raising the level of living of the masses of the people. This implies meeting such needs as continuous employment or secure livelihoods, more and better schooling for the children, better medical services, pure water at hand, cheap transport and, of course (but by no means only) a somewhat higher income.

Thus, Amartya Sen's capability approach and its application by United Nations Development Programme in its articulation of the concept of "human development" may be considered an outcome of the search for an appropriate definition of development. While traditional approaches to development typically equated development with economic growth as measured by Gross Domestic Product (GDP), the UNDP has since the 1990s sought to demonstrate that economic growth does not automatically bring about human development as measured by indicators such as longevity, literacy, and standards of living, and to propose an alternative approach that puts all the people at the centre of development (UNDP, 2002). Unlike traditional approaches, human development approach views people as active participants in a process that is meant to transform their lives. Development in this context, therefore, is "a process of change that enables people to take charge of their destinies to realise their full potential. It needs building up in the people the confidence, skills, assets, and the freedom necessary to achieve this" (UNDP, 2002: 2). Human development approach, however, has been criticised for not capturing all forms of social and cultural inequalities and other inequalities, and for its failure to expose intra-country disparities in human development indicators (UNDP, 2002).

On the other hand, poverty can be viewed as an antithesis of development. In its most general sense, poverty is the lack of basic necessities such as food shelter, healthcare, and safety (Bradshaw, 2006). According to the UNDP

(2002: 18), "Poverty means the denial of opportunities and choices most basic to human development". The UNDP has formulated the concept of "human poverty", which is an overarching definition that captures social, economic, and other forms of deprivation, and recognises the role of gender and other forms of inequalities in perpetuating poverty. Human Poverty Index (HPI) is a measure of deprivation based on literacy, longevity, and living standards.

Inadequacies in personal development have direct implications on income poverty as well as poverty of capabilities – and both forms of deprivation are readily transmissible from one generation to the next. Moore (2005: 5) argues that:

> The causes of chronic poverty are complex and usually involve sets of overlaying factors… Most chronic poverty is a result of multiple interacting factors operating at levels from the intra-household to the global. Some of these factors are maintainers of chronic poverty: they operate so as to keep poor people poor. Others are drivers of chronic poverty: they push vulnerable non-poor and transitory poor people into poverty out of which they cannot find a way out.

Implied here is that poverty can be prevented or avoided. It can also be reversed during the life course but the ease of reversal diminishes over time and plateaus off eventually (Yaqub, 2002). The view that "Disaster is not something for which the poorest have to wait; it is a frequent occurrence" continues to gain prominence as more and more people especially in the developing world fall into the trap of poverty despite global economic growth

(Dasgupta, 2000: 643). Education is theorised to have a critical role to play in mitigating poverty, and this proposition is central to this study.

Amartya Sen has been very instrumental in changing our view of development. His capability approach, though not a precise theory or mathematical algorithm creates room for inclusion of indicators of wellbeing that go beyond utility or income as is the case in traditional economics. The approach advocates a focus on people's capabilities when making evaluations of development such as poverty analysis, social justice issues and development ethics among others.

These postulates are central in this study for two reasons. First, they expand our analytic sphere and offer a novel framework for understanding barriers to educational attainment. They also act as a practical guide for isolating empirical indicators of such barriers.

2.2.3 Gender perspectives in household decision-making

Sociological perspectives on sex and gender and concomitant gender role differentiation and its impact in all spheres of life are used in this study to understand the place of gender in educational attainment. Sex is a physiological attribute that distinguishes males from females and is defined in terms of differences in anatomy, reproductive system, and hormones among many other attributes. On the other hand, gender is socially

constructed hence it is defined in terms of roles that are culturally, socially and physiologically given to males and females (Andersen, 2008).

There are four theoretical perspectives that organise sociological explanations for gender roles namely functionalism, conflict theory, social interaction, and feminist perspective. Functionalism focuses on the role of gender in the realisation of social order. According to this perspective, gender roles in prehistoric societies were assigned based on the exigencies of day to day survival, hence males would be engaged in outdoor roles – of hunting and gathering – while females would be engaged in the home because of childbearing and nursing of children. Although functionalist argue that this principle applies also to modern societies, the theory has been criticised for being conservative and advancing male dominance (Andersen, 2010; Gupta, 2008).

Conflict theory, which is rooted in Marxism, focuses on power imbalances associated with gender. The theory posits "that social structure is based on the dominance of some groups over others and that groups in society share common interests, whether its members are aware of it or not. Conflict is not simply based on class struggle and the tensions between owner and worker or employer and employee; it occurs on a much wider level and among almost all other groups. These include parents and children, husbands and wives, young and the old, sick and healthy…" (Andersen, 2010: 8). Applied in the family set up, the theory holds the view that the economic strength a women possess

including her ability to work outside the home translates into more power within the home which can lead to more egalitarian households. The theory has been criticised for overemphasising economic inequality and allusion to inevitability of conflict among family members while the evidence also shows that households decision making are also egalitarian rather than always dictatorial (Lincoln, 2008).

The third perspective, symbolic interaction, aims at explaining gender and socially constructed concept. Thus "People interact according to how they perceive a situation, how they understand the social encounter, and the meanings they bring to it. Another important step in the interaction process involves how they think other people who are part of the interaction also understand the encounter. Each person's definition of the situation influences others' definitions" (Andersen, 2010:9). The main weakness of this perspective is its failure to account for macro-level focuses that influence behaviour such as cultural norms (Tichenor, 2005).

The feminist perspective core focus is women empowerment and has been very instrumental in organising theory and research on social interactions at both micro and macro level. The main argument of feminism is that when the oppressed amass resources, they can challenge oppressive social systems. From a family perspective, the traditional patriarchal family is viewed as an avenue for the oppression of women because the patriarchal family, though

an important pillar in social stability hinders realisation of egalitarianism that is desired by both men and women (Gupta, 2008; Anderson, 2010).

2.3 Child development from infancy to young adulthood: implications for educational attainment

This subsection focuses on two concomitant transitions from childhood to young adulthood namely biological growth and development on the one hand and educational attainment on the other. From a capability approach, it is hypothesised that the two transitions can be undermined by economic and non-economic deprivation within the household and the wider community.

2.3.1 Childhood experiences and educational attainment

Childhood defines the trajectory of individual development both physiologically and psychologically and by extension all other spheres of life including cognitive development and educational attainment. Writing from a capability perspective, Yaqub (2002) argues that the negative effects of childhood poverty can be resisted or reversed both during childhood and in adulthood hence an understanding of "timetabling" of interventions is critical. Childhood poverty, however, is considered more debilitating because it is harder to reverse to the extent that chances of poverty reversal diminish with time. The importance of childhood is aptly captured by Luthar (2006: 780) thus:

> During the childhood years, early relationships with primary caregivers affect several emerging psychological attributes and influence the negotiation of major developmental tasks; resolution of

> these tasks, in turn, affects the likelihood of success at future tasks. Accordingly, serious disruptions in the early relationships with caregivers – in the form of physical, sexual, or emotional abuse – strongly impair the chances of resilient adaptation later in life. Whereas some maltreated children will obviously do better in life than others, the likelihood of sustained competence, without corrective, ameliorative relationship experiences, remains compromised at best. On the positive side, strong relationships with those in one's proximal circle serve vital protective processes, for children as well as for adults.

Yaqub (2002: 429) argues that "Growing up *is* human development" (emphasis in original) hence an important question that arises is, How do children "grow up"? There are four broad theoretical perspectives that generally inform analysis of early childhood namely: behaviourism and social learning theory; cognitive-developmental theory; socio-cultural theory; and ecological systems theory (Grisham-Brown, 2009).

Skinner posits that children's behaviour can be influenced through a system of reinforcement and punishment. A further refinement of the theory is offered by Albert Bandura who included the view that imitation or observational learning enhances the chances that children will learn new behaviors (Daniels and Shumow 2003; McLeod 2011). Another perspective, the cognitive-developmental theory, first proposed Jean Piaget asserts that children pass through four distinct stages of development, including the sensor-motor stage (birth to two years), preoperational stage (two to seven years), concrete operational stage (seven to eleven years), and formal operational stage (eleven and beyond) (Daniels and Shumow 2003: 497).

These arguments highlight the importance of viewing early childhood as a critical stage in a person's educational career as it lays the foundation for development later in life. Thus, investing in early childhood education and development should necessarily be given as much emphasis as primary, secondary and post-secondary education to the extent that an individual's performance in the later stages is affected by the quality of educational experience earlier in life.

2.3.2 Adolescence and its implications on educational attainment

Adolescence has been viewed as a critical developmental milestone as it constitutes the transition from childhood to adulthood both physiological and socially. It is at this state that reliance on parents and the immediate family environment for support and knowledge is downplayed while peers and other forces outside the family unit become important reference points (Moore and Rosenthal 1993). Thus, as the individual progresses along the educational path, he or she is also undergoing a profound physiological transition that affects all decision-making processes in a powerful way. How the individual navigates this transition given the prevailing social, cultural, and economic forces has serious implications for his or her future development with respect to schooling and economic placement. One of the key changes on the individual at this stage is the emergence of the sexual self in that sexuality takes the centre stage and influences practically all other behaviours (Moore & Rosenthal, 1993).

Many theories have been proposed to explain adolescent behaviour. Sigmund Freud, a psychosexual theorist, viewed adolescence as a stage characterised by a reawakening of sexual energies of earlier stages (the oral, anal, and phallic stages). Hormonal changes lead to emergence of irrational behaviours and the adolescent must learn the social skills necessary to initiate peer relationships essential for developing a fully functioning adult sexuality (Moore & Rosenthal, 1993). Ann Freud argued that the course of maturation influences all behaviours. To her, adolescence cannot be emotionally painless (Moore & Rosenthal 1993).

Other theorists have taken into account the influence of social cultural environment in shaping adolescent sexuality. Learner and Spanier's (1980) sexual socialisation theory postulates that sexual roles are developed through the socialisation process which encourages and rewards some behaviours while discouraging and punishing others. Sex role development entails learning how to be psychologically masculine or feminine. Sexual behaviour has also been regarded as one of the key ways through which adolescents begin to emotionally leave the family and move towards independence. Successful steps to this end heighten feelings of self-esteem and confidence.

The biosocial model by (Moore and Rosenthal 1993) blends biological and psychological influences in explaining sexual behaviour. The strength of his postulates lies in the recognition of social processes, which encourage or discourage sexual involvement, modify the form in which sexual behaviour is

expressed, and define appropriate sexual partner. Physical changes signal sexual maturity and attractiveness, which may expose the individual to more social pressure to act in sexual ways as he or she may be rewarded through praise and popularity. On the other hand, parents may be wary of sexual maturation especially if it comes early.

Social cognitive (learning) theory lays emphasis on inter-individual differences and intra-individual continuities. Individual attributes affect the process of acquiring behaviour as they modify a person's susceptibility to social influence that is exerted through reinforcement or modelling procedures (**B**andura, 1992). People acquire new behaviour through observation of others, that is, modelling. The social environment provides role models, including parents, peers and the mass media models.

According to social cognitive theory, human functioning can be explained in terms of "triadic reciprocal causation" in which behaviour, environmental influences and personal determinants in the form of cognitive, affective and biological factors all operate as interactive determinants of each other (Bandura, 1992: 94). Thus:

> [People] adopt certain standards of behaviour for themselves and regulate their behaviour anticipatorily through self-evaluative consequences. Social norms convey standards of conduct. Adoption of personal standards creates a self-regulatory system that operates partly through internalised self-sanctions. People behave in ways that give them self-satisfaction and they refrain from behaving in ways that violate their standards because it will bring self-censor. Anticipatory self-sanctions thus keep conduct in line with internal standards.

In situation where the society is undergoing rapid socio-economic transformation as is the case in Africa, there is a juxtaposition of traditional and modern values which creates in the adolescents – who themselves are in a transitory stage – conflicts in definition of their rights and responsibilities and confusion about their sex roles and gender expectations (Caldwell et al., 1998; Gage 1998). For instance in communities where marriage and childbearing are considered "greatest achievements for the woman", adolescent girls are faced with a real challenge in deciding whether to pursue education or to get married and start a family (Luke, 2003; Lloyd, 2006).

2.4 Determinants of educational attainment

This section discusses the various factors that were hypothesised to affect educational attainment of male and female children. The first set of factors comprises macro-level forces that define the context in which schooling occurs while the second is household factors, which are conceptually defined to include not only income-related variables such as economic status but also other variables for which no monetary value can be attached such as parental supervision and the balance between engaging in household chores and schoolwork. The third set of factors relates to individual attributes and the key variable of interest is gender of the child. These factors correspond to the objectives and the hypotheses of the study.

2.4.1 Contextual factors and educational attainment

Conceptualising the role of community-level factors in shaping behaviour is guided by the need to understand how the various social institutions, economic forces, and culture-based evaluations of normative behaviour interact with each other to influence the household or the individual's decision to exit from the formal education. Implied here is that analysis of individual decisions and views regarding optimal education, while acknowledging the role of personal attributes such as motivation and cognitive ability, should necessarily be situated within the specific context or environment in which the individual player operates (O'Higgins et al., 2008; Snedker et al., 2009; Bobonis & Finan, 2009).

Generally, the community shapes adolescents' behaviour principally by presenting them with "structures of opportunities" including education, health and sport facilities (Kaufman et al., 2004: 263). The evidence shows that the higher the level of poverty the lower the level of people's wellbeing in different spheres of life such as health and income (Bobonis & Finan 2009).

Communities with high levels of capability deprivation have little motivation to pursue education because of the paucity of returns to educational investment in such communities. This is because people in these contexts do not acquire sufficient levels of schooling to experience significant returns. Thus, the local culture of such communities may explicitly or implicitly

approve of or even promote alternative behaviours including early marriage and childbearing (Mensch et al., 2001; Lloyd, 2006; Biddlecom, 2008).

It is also worth emphasising that the school may not always present equal opportunities for girls and boys. For instance, a study in Kenya revealed that girls were sexually harassed by boys in school in addition to recording fewer teacher-pupil interactions in the classroom relative to boys (Mensch & Lloyd, 1998). The latter may be due to teachers' attitudes towards teaching boys and girls. Indeed, one study in three districts in Kenya found that an average of 22 percent of primary school teachers preferred teaching boys while only 5 percent preferred teaching girls (Mensch and Lloyd 1998). The importance of attitudes of significant others is confirmed by another Kenyan study which found teachers' and parents' attitudes towards cognitive abilities of boys and girls to be correlated with academic performance (Lloyd & Mensch, 1998).

Another school-level variable that has been given special attention in the literature is gender composition of the school. The key question here is whether gender composition of the school has any effects on school performance. Studies have generally shown that at secondary school level, children in single sex schools perform consistently better than children in mixed school and are less likely to drop out of school even after controlling for confounding factors, and the differences are often evident for both males and females (Woodward, 2009; Ajaja, 2012). This is especially true in Kenyan

secondary schools where good performing schools are single-sex schools (Glennerster et al., 2011).

Similarly, state policies can be sources of capability deprivation to the extent that such policies affect access, affordability, and quality of learning (Glennerster et al., 2011; Ohba, 2009). As discussed earlier, the introduction of free primary education and free secondary education led to marked increases in enrolment rates across the whole country although there is evidence that the quality of learning declined as a result. Implementation of these policies has also been hampered by embezzlement of funds by state officials (see, for instance, reports presented in the Daily Nation newspaper of 15th June 2011), insufficient facilities such as books and classrooms, and lack teachers.

2.4.2 Household level factors

According to Mattila-Wiro (1999: 6), "The household fosters economic and social relationships between its members (intrahousehold relations) but also between households (interhousehold relations), and maintains a mutual relationship with the economy and the society of its immediate location". These postulates form the foundation of the bargaining model of the household. Thus, poor parent-child relations, lack of effective supervision, and unsupportive home environment are associated with negative outcomes including poor academic performance and school dropout (Kirby et al. 2001).

Educational attainment has also been linked to economic ability of the household and parental education (Ohba, 2009; Glennerster et al., 2011).

This review borrows heavily from Fuller and Liang's (1999) attempt to explain which girls stay in school in the South African context using the family-economy model. The model posits that the household's decisions on children's education are influenced by three institutional-level forces namely: immediate labour demands and income opportunities; national policies on education, and the extent of to which parents adhere to cultural dictates in their environment (Fuller & Liang 1999:185).

From a capability perspective, each of the three processes that influence household decision-making can be sources of capability deprivation among young people and consequently affect their schooling. For instance, immediate labour demands can lead to withdrawal of children of either gender from the school depending on available income generating opportunities and household's economic constraints. This partly explains why more boys than girls are enrolled in school in some communities and vice versa in others (Moyi 2011).

Finally, parents' cultural commitments and social practices (tolerance to female genital cutting and early marriage, unequal number of household chores for male and female children, low investment in girl-child education) have negative implications on female schooling (Fuller & Liang, 1999; Moyi

2011; Lloyd, 2006). An application of this model in Botswana, for instance, found that girls are likely to stay in school longer if the number of chores assigned to them was closer to the number assigned to boys (Fuller and Liang 1999).

These studies do not condemn all forms of household chores a child may engage in but rather seek to highlight the problems that may arise when a child's participation in time-consuming activities in the household is disruptive. This is because "At one end of the continuum, the work is beneficial, promoting or enhancing a child's physical, mental, spiritual, moral or social development without interfering with schooling, recreation, and rest. At the other end, it is palpably destructive or exploitative" (UNICEF, 1997: 24). This study is concerned with the latter.

In summary, household level factors can be put into two broad categories: income factors and non-income factors. The former are all those indicators that can be linked directly to household incomes such as ownership of durable goods, household consumption patterns, and wealth. In standard economics, absence or low values of these parameters is referred to as poverty. There is, however, another dimension of interest in this study namely non-income or "psychic wealth", which broadens our analytic space by allowing for inclusion of other factors besides income and wealth in the analysis of determinants of educational attainment or, conversely, dropping out of school. Some of the more critical non-income factors are: parental education; parental

supervision; household chores; parental conflict; and household size. These variables have received appreciable attention in previous research (Moyi, 2011; Lloyd 2006; Mensch et al., 2001; Kirby, 2001).

2.4.3 Individual level factors: a gendered dimension to educational attainment

Individual agency plays an important role in educational attainment but it is largely mediated by household factors such as economic ability and parental characteristics as well as community and state level factors including availability of learning institutions, quality of learning, school levies, and educational policies among others. Implied here is that role of the individual in educational attainment, though prominent at the micro-level, cannot explain the observed differences in schooling across different populations. The study takes the view that that all communities are equally endowed genetically hence the observed variations in educational attainment can only be explained by "nurture" rather than "nature", where nurture is defined in broad terms to include not only socialisation by immediate social networks such as the family and peer groups but also the influence of community resources and state policies on education.

It is important to highlight that nurture in many context takes a gender dimension because of gender role differentiation and expectations in any cultural context. Like in any other sphere of life, gender is an important explanatory factors in educational attainment and

2.4.3 Kenya's education: an empirical review

The current system of education in Kenya is "8-4-4". Primary education takes eight years and successful completion means sitting the Kenya Certificate of Primary Education (KCPE) examination offered by the Kenya National Examinations Council. Secondary education takes four years at the end of which students sit the Kenya Certificate of Secondary Examination (KCSE) offered by the same council. Although university education generally take four years to complete (the last 4 in 8-4-4), some courses such as medicine and pharmacy take a little longer.

Kenya has put great emphasis on education since independence. The special focus on education is informed by the fact that human capital development spurs growth by increasing the productivity of the labour force while reducing inequalities and poverty (Oketch et al., 2008). At independence, most of the expansion was at primary and secondary levels, but more emphasis has been placed on higher education since 1980s (Manda et al., 2002).

Kenya's great concern with education is reflected by the numerous policy papers on education since independence. The Ominde Commission, which was the first commission on education after independence, sought to transform the colonial-era education system with a view to making it more responsive to the needs of independent Kenya particularly promotion of

national unity and development of human capital (Ngigi & Macharia 2007). Further, the commission recommended "that educational facilities be located in underprivileged regions, and the religious convictions of all people be safeguarded and respected" (Alwy & Schench, 2004: 5).

The current policy document, "A Policy Framework for Education: Aligning Education and Training to the Constitution of Kenya (2010) and Kenya Vision 2030 and Beyond" (MoE, 2013: 18), robustly articulated in the philosophy of education in Kenya is thus:

> Education in Kenya shall focus on the development of individual potential in a holistic and integrated manner, whilst producing individuals who are intellectually, emotionally and physically balanced. The provision of a holistic, quality education and training that promotes the cognitive, psychomotor and affective domains of learners will be a priority. As such it will instil values such as patriotism, equality, honesty, humility, mutual respect, and high moral standards.

It is also worth noting that the government's policy initiatives in the in the recent past have focused on provision of free primary and secondary education. Free primary education (FPE) programme was introduced in 2003 and free secondary education (FSE) programme in 2008. Data from the Ministry of Education shows that since introduction of free primary education in 2003, there has been marked increase in enrolment rates in the country in general and in poorer districts in particular since the programme has reduced the impact of education financing as a barrier to access (MoE,

2010). It has also had a positive impact on the rate of completion of primary school as shown in Table 2.1. Specifically, pupil completion rate (PCR) increased from 65 percent in 2002, the year preceding introduction of FPE, to 70 percent in 2003 and then shot up to 78 percent in 2004. It stood at 83 percent in 2009.

Table 2.1 Primary schools pupil completion Rate (PCR), 1998-2009

Year	Number of KCPE Candidates			13 year old population cohort			Pupil Completion Rate(PCR)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1998	231,084	215,455	446,539	395,821	388,502	784,323	58.4	55.5	56.9
1999	235,147	219,397	454,544	396,613	389,279	785,892	59.3	56.4	57.8
2000	248,420	232,691	481,111	408,096	401,004	809,100	60.9	58.0	59.5
2001	264,744	249,606	514,350	419,912	413,081	832,993	63.0	60.4	61.7
2002	278,641	261,428	540,069	420,839	413,993	834,832	66.2	63.1	64.7
2003	303,907	284,054	587,961	421,768	414,907	836,675	72.1	68.5	70.3
2004	342,979	314,768	657,747	422,699	415,823	838,522	81.1	75.7	78.4
2005	352,826	318,724	671,550	428,110	437,635	865,745	82.4	72.8	77.6
2006	352,782	313,669	666,451	429,180	438,730	867,909	82.2	71.5	76.8
2007	372,265	332,653	704,918	430,467	440,046	870,513	86.5	75.6	81.0
2008	367,125	328,652	695,777	431,418	441,017	872,435	85.1	74.5	79.8
2009	381,600	345,454	727,054	432,370	441,991	874,361	88.3	78.2	83.2

Source: Ministry of Education (MoE). 2010. Educational Statistical Booklet 2003-2009, Government Printers: Nairobi, Kenya

Generally, introduction of FSE has increased access to secondary level of education as reflected by transition from primary to secondary school. Table 2.2 shows that the primary to secondary transition rate has been increasing in the last decade – from less than 50 percent in the period ending just after introduction of FPE to 56 percent in 2005. Since 2005, the increase has been steady and in 2010 stood at 67 percent.

Table 2.2 Primary to secondary transition

Year In Std 8	Year In Form 1	% Transiting to Form 1		
		Boys	Girls	Total
1997	1998	45.6	44.3	45.0
1998	1999	47.6	44.5	46.1
1999	2000	43.8	42.6	43.3
2000	2001	47.6	45.4	46.5
2001	2002	44.4	42.7	43.6
2002	2003	43.6	49.8	46.4
2003	2004	43.6	41.7	42.7
2004	2005	57.2	54.7	56.0
2005	2006	55.5	54.3	57.3
2006	2007	59.5	59.6	59.6
2007	2008	61.1	58.5	59.9
2008	2009	61.3	67.3	64.1
2009	2010*	64.1	69.9	66.9

Source: Ministry of Education (MoE). 2010. Educational Statistical Booklet 2003-2009, Government Printers: Nairobi, Kenya

According to the Ministry of Education (MOE, 2010), enrolment has not kept pace with teacher recruitment and this has led to huge pupil-teacher ratio with a possible effect on the quality of education.

*Table 2.3 Number of Educational Institutions, 2005 - 2009**

Category	2005	2006	2007	2008	2009*
Schools					
Pre-Primary					
Public	22,479	22,796	23,100	23,783	23,823
Private	9,564	10,325	14,163	14,171	14,424
Total	34,043	36,121	37,263	37,954	38,247
Primary					
Public	17,807	17,946	18,063	18,130	18,543
Private	7,546	7,983	8,041	8,076	8,124
Total	25,353	25,929	26,104	26,206	26,667
Secondary:					
Public	3,621	3,646	4,245	4,454	5,019
Private	1,773	2,013	2,240	2,112	1,952
Total	5,394	5,659	6,485	6,566	6,971
Teacher Training Colleges:					
Pre primary	6	8	10	10	11
Public	22	22	21	21	20
Private	8	8	12	13	51
Total	30	30	33	34	71
Primary					
Public	22	22	21	21	20
Private	8	8	12	75	85
Total	30	30	33	96	105
Secondary+	3	3	3	2	3
TIVET Institutions					
Youth Polytechnics	543	563	574	654	754
Institutes of Technology	22	22	22	23	24
Technical Training Institutes	23	23	23	24	22
National Polytechnics	3	3	3	3	5
Polytechnic University Colleges	-	-	-	-	2
Total	591	611	622	704	807
Universities					
Public	7	7	7	7	8
Private	17	17	21	21	32
Total	24	24	28	28	40
TOTAL	65,438	68,377	70,538	71,556	72,840

* Provisional

\+ Includes Kenya Technical Training College

Source : Ministry of Education (MoE). 2010. Educational Statistical Booklet 2003-2009, Government Printers: Nairobi, Kenya

Further, the rate of expansion of secondary school and universities has not kept pace with that of the primary level, which partly explains the huge level of

wastage after completion of primary level of education. Table 2.3 shows the number of educational institutions for different level Kenya. A review of the free secondary education in Kenya found that:

> … public secondary schools continued to levy fees for lunch, school buildings and boarding equipment. Parents are also expected to provide school uniforms, sports uniforms, books, stationary etc. Consequently, the study found that the costs for sending a child to the first year of day secondary school are about eight times the monthly income for employed parents, 12 to 17 times for self-employed parents and 19 to 20 times for peasant parents engaged in casual work in the study. In the case of boarding schools, the costs for sending a child to the first year of boarding secondary school are 15 times the monthly income for employed parents, 23 to 33 times for self-employed parents and 38 to 40 times for peasant parents engaged in casual work. Thus, the study found that poor households continued to face a significant challenge in meeting the costs of 'free secondary education'.
>
> (Ohba 2009: 30)

In summary, the policy of free primary and secondary education is useful in increasing access to education but it needs critical reassessment in order to realize its intended goals. First, the government seems to lack the capacity (or political will, or both) to effectively track free education funds to ensure efficiency and accountability by taking timely remedial action in case of misuse. Indeed, misappropriation of free education funds has been a constant challenge at the Ministry of Education since the inception of free primary education programme. Second, critical as they maybe, financial constraints are not the only significant barriers to access to education. Quality of education, distance to school and communities' and households' views about the importance of

education in the face of competing alternatives such as selling unskilled labour and even early marriage need special focus.

2.5 Isolating determinants of progression from pre-primary stage to completion of secondary school: An empirical review

The following sections explore some of the most critical forces determining entry into formal educational system and progression – or lack of it – through primary and secondary levels. Specifically, there are four transitions of interest in this study: (1) entry into formal educational system; (2) dropout before completion of primary school; (3) terminal exit before joining secondary school; and (4) school dropout before completion of secondary education. It is hypothesised that the likelihood of experiencing each of these transitions can be predicted by the magnitude of capability and income deprivations within the household and the immediate environment where the transitions occur. Further, it is hypothesised that each of the transitions is affected by a different set of variables although there are many variables that are consistently important across all the transitions. The overriding proposition is that type and intensity of deprivation in a defined context can reliably predict the likelihood of experiencing each of the transitions.

2.5.1 Entry into formal education system

Population scientists keen on explaining female (and to a smaller extent male) educational attainment have focused mainly on initiation of sexual activity and reproduction among adolescents as explanatory variables, and merely allude to

the fact that childhood experiences may explain some of the observed adolescents' behaviours. For instance, in their analyses of associations between premarital sex and leaving school in Burkina Faso, Ghana, Malawi, and Uganda, Biddlecom et al. (2008) isolated three negative childhood experiences namely orphanhood, food shortages and alcohol abuse in the family before age ten and before age 19 as predictors of school dropout before completion of secondary school. While this effort opens a new area of focus in explaining educational attainment over time, there is a dearth of coherent frameworks that isolate those who enrol in school from those who do not.

It has been argued that early childhood experiences affect both physiological and psychological wellbeing later in life and define lifetime socioeconomic potential hence the contention that children who have a "good start" in life have greater chances in the life course (Hertzman, 2002; Yaqub, 2002). Further, Sen (1999) argues that "… capabilities that adults enjoy are deeply conditional on their experiences as children". This assertion is supported by empirical evidence from medical research that shows that "Children's development is affected by psychosocial and biological factors and by genetic inheritance. Poverty and its attendant problems are major risk factors. The first few years of life are particularly important because vital development occurs in all domains" (Grantham-McGregor, 2007: 60). Thus, intervening at this stage is intuitively appealing in securing the future of the individual through what has been described as "poverty avoidance" (Yaqub, 2002).

This transition has received the least scholarly attention in demographic circles yet the proportion of eligible children not attending school is significant, at least based on the current situation in Kenya. According to the 2009 Kenya Population and Housing Census (KNBS, 2010b) 58 percent of children aged 3-5 years are out of the formal education system while 23 percent and 76 percent of children eligible to be in primary school and secondary school respectively (that is, 6-13 years and 14-17 years respectively) were not attending school.

Focusing specifically on 6-17 year olds who have never attended school in Kenya, the main reasons cited by the respondents in the Kenya Integrated Household Budget Survey of 2005/06 (KNBS, 2007) are parents' refusal to allow the child to attend school, need to work or help at home, and lack of money for school (29%, 22% and 20% respectively). This scenario exists despite the introduction of free primary education in 2003, which implies that there are many other causes of school non-attendance beyond formal or official school fees: unofficial charges; household labour demands; logistical problems such as distance to school; and school quality among others may play a significant role.

It is postulated that the severest forms of deprivation, which have income and non-income dimensions, are responsible for failure to enrol in the formal education system, and facilitate transmission of poverty from one generation to the other given that "Poverty is not transferred from one generation to the next as a 'package', but as a complex of positive and negative factors that affect a child's chances of experiencing poverty" (Moore, 2005:12).

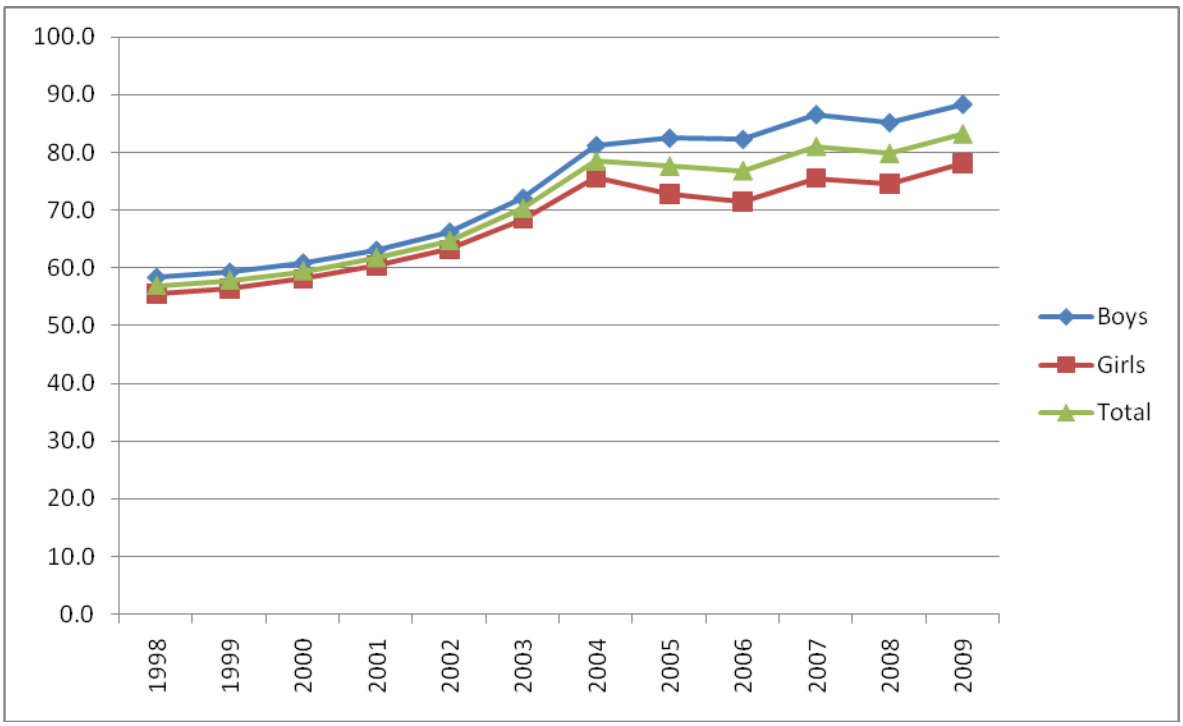
2.5.2 Dropout before completion of primary school

Grantham-McGregor et al. (2007: 66) argue that "Disadvantaged children in developing countries who do not reach their developmental potential are less likely to be productive adults. Two pathways reduce their productivity: fewer years of schooling, and less learning per year in school… Studies from 51 countries show that, on average, each year of schooling increases wages by 9·7%". Generally, primary school education commences in the fifth or sixth year of life and ends in early teens. In Kenya specifically, it begins around age 6 and ends around age 14. As discussed earlier, the rate of attrition during primary school is high and may be attributed to income and non-income constraints within the household as well as factors in the wider community including the school itself.

An evaluation of the free primary education programmes in different countries in Eastern Africa shows that a significant proportion of eligible children are not in school. To begin with, children from poor households may drop out of school due to lack of money to cater for school-related expenses even in the context of free primary education. Indeed, lack of money is cited by overwhelming majority of Kenyan children aged 6-17 years who ever attended but are not currently in school (46%) as the main reason why they dropped out of school (KNBS, 2007). Lowness of incomes is linked to non-income deprivations (Sen, 1999) and may be responsible for other reasons cited for dropping out of school such as parents' refusal to let the child continue with education, child's own lack or interest, and need for the child to help at home among others (KNBS, 2007).

In contexts of scarce resources and strong traditional beliefs and customs, it is not uncommon for female children to be withdrawn from school so as to maximise investment in the education of their male siblings (Unterhalter et al., 2010). Deprivations within the household and the community have been found to be closely associated with school dropout.

Figure 2.1 Primary School Pupil Completion Rate (PCR), 1998-2009



Source: Ministry of Education (MoE). 2010. Educational Statistical Booklet 2003-2009, Government Printers: Nairobi, Kenya

A study in Uganda, for instance, found that the likelihood of dropping out of primary school increases with the distance a pupil moves to school among rural communities while high academic educational attainment of parents has a significant retention effect (Okumu et al., 2008). Figure 2.1 shows that in the

recent past, particularly since 2004, there has been an increase in the primary school completion rate in Kenya. The rate stood at over 80 percent in 2009.

2.5.3 School dropout after completion of primary school

While the high rate of attrition through primary school years is a source of concern, the transition to secondary school is the first stage of "mass exit" from the formal education system in Kenya despite the institution of free secondary education. Transition from primary level to secondary level was steady (at less than 60%) prior to introduction free secondary education in 2008, after which it shot up to 66.7 percent. (Oyugi, 2010).

The same deprivations responsible non-enrolment in primary school and dropout during primary school years – coupled with new ones that are unique to adolescence – are responsible for lack of entry into secondary school after successful completion of primary school. Manda et al. (2002:3) note that:

> … households evaluate schooling decisions in terms of future income benefits. If these benefits turn out to be too low, then policies advocating the use of educational services as part of the plan for poverty alleviation may be ill conceived. Alternatively, if these rates of return are very high, it could be evidence that individuals are not able to obtain the optimal amount of education.

Another dimension that has not been given particular attention in educational research is the fact this period coincides albeit loosely with onset of puberty (Biddlecom et al., 2008). This presents a different framework from which the individual and the household can make decisions pertaining to further

investment in education in the face of other – and in some cases more appealing – possibilities for children of either gender. According to Manda et al (2002:3):

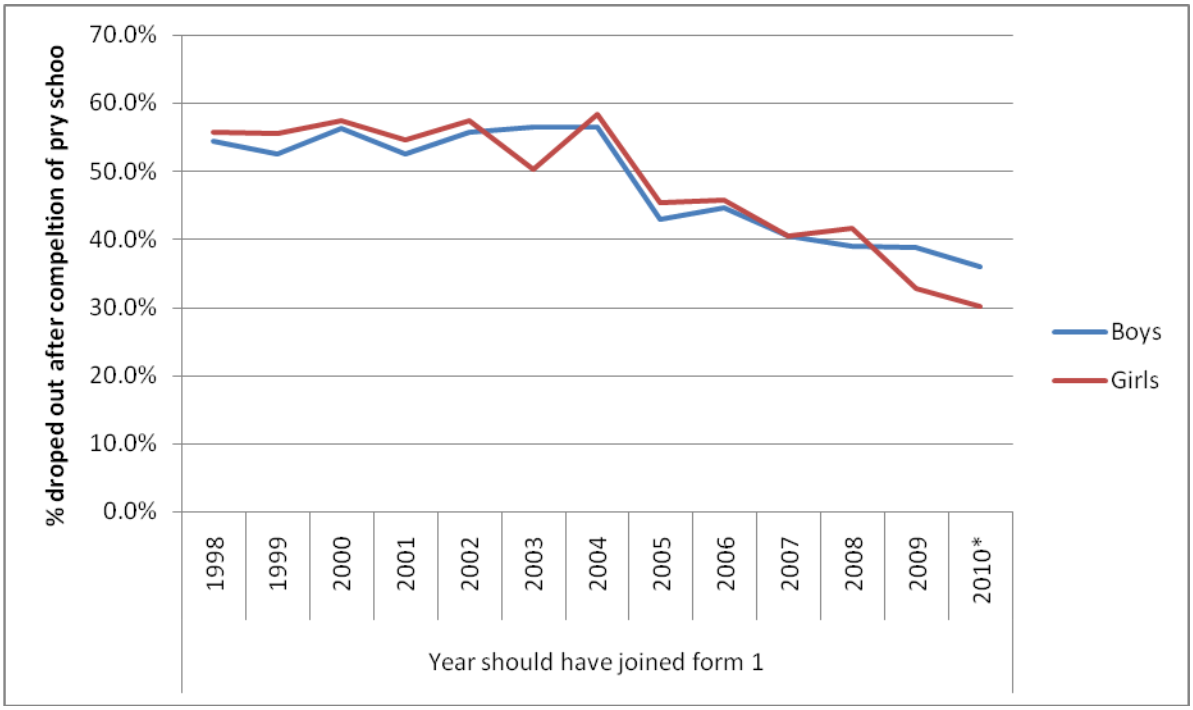
> Declining returns may influence private choices on education as evidenced by high dropout rates and low enrolments. Or it could be that government policies themselves are responsible for the decline in enrolment. For example, it is often stated that the policy of cost sharing in the educational system has had a negative impact on enrolment.

Kenya has experienced marked reduction in the rate of dropout after completion of primary school (that is, terminal exit after KCPE) in the recent past and the decline has been slightly higher among girls compared to boys. These differences are shown in Figure 2.2.

While enrolment rates have so far increased considerably due to introduction of free secondary education in 2008, the mismatch between primary and secondary schools is a major contributory factor in transitioning from primary level to secondary level. For instance, in 2008 there were 26,104 primary schools compared to 6,485 secondary schools (Oyugi, 2010), which implies that a large number of pupils cannot join secondary school. It should be emphasised here that although the government "declares" the proportion of primary school pupils who will transition to secondary school based on "merit", definition of merit is arbitrary and does not in way mean that those how are not selected to join form 1 do not need secondary education or lack the cognitive ability to acquire the skills and knowledge offered at that level. For instance, roughly 17 percent of

pupils who sat KCPE in 2014 did not join secondary school. Truth can be found in the mismatch between primary and secondary school spaces.

Figure 2.2 Non-entry into secondary school



Source: Ministry of Education (MoE). 2010. Educational Statistical Booklet 2003-2009, Government Printers: Nairobi, Kenya.

2.5.4 Dropout before completion of secondary school

The secondary level of education is considered essential in acquisition of skills that can lead to meaningful participation in the knowledge economy because "… primary education alone is not sufficient to provide the quality skilled human resource necessary for … sustainable development" (Kibaki, 2008). Affordability has been considered the biggest hurdle in accessing secondary education in Kenya as aptly put by the President of Kenya, Mr Mwai Kibaki, during the launch of the Free Secondary Education programme:

> …. children from poor families who fail to join secondary schools because of lack of school fees often revert back to illiteracy, thus reversing 8 years of investment in their primary education. It is for these reasons that my Government undertook to implement the Free Secondary Education Programme beginning this year.
>
> (Kibaki 2008 Speech at launch of Free Secondary Education; paragraph 3)

According to the Kenya Demographic and Health Survey of 2008 (KNBS & ICF Macro, 2010), attainment of secondary education for both men and women increases consistently as household wealth increases as measured by wealth index. For instance, while only 3 percent of females and 9 percent of males from the poorest households reported having completed secondary level of education, the percentage shoots up to 48 percent for females and 55 percent for males in the wealthiest households.

The literature, however suggests, that there are many other explanations for high school dropout that have their roots in the family including poor parent-child relations, lack of connectedness to the family, poor supervision, and lack of support by parents (Kirby, 2001). To the extent that secondary school coincides with early adolescence, sexual and reproductive behaviours of young people become important explanatory variables for exiting from the formal education system. Adolescence is associated with irrational risk taking tendencies, peer pressure and desire to experiment with various behaviours which leads to initiation of sexual activity which in turn may lead to early parenthood (Mensch et al., 2001; Lloyd & Mensch, 1999). Early reproduction leads to school dropout

because parenting is time-intensive and the young parent may not adequately balance schooling and his or her new roles as a parent (Lloyd, 2006).

This perspective, however, needs to be tempered with a few caveats. First, there is no evidence that young male parents suffer any educational disadvantage as a result of entering fatherhood early. Second, even young mothers may be able to resume school after pregnancy since close relatives including grandparents, parents and even cousins can take care of the child. Third, government policy to allow school girls to resume school after childbirth ideally reopens the school gates for young mothers to complete their education after the hiatus occasioned by pregnancy and child birth (Lloyd, 2006).

2.6 Conceptual Framework

This study sought to understand factors associated with educational attainment of both male and female children in low economic settings. The evidence suggests that investment in education has positive correlation with economic growth and development. However, access to formal education is not a uniform phenomenon but varies with context hence the need to find out why some children remain in school while others exit. The study focuses on four educational transitions namely: entry into formal education, exit prior to completion of primary school, terminal exit at the end of primary education level, and drop out before completion of high school.

The study is anchored on Human Capital Theory, which views formal education as a central factor in individual and national development. The theory is premised on the view that peoples' learning capacities are comparable to other natural resources involved in the production process hence when the resource is effectively exploited, the results are profitable both for the individual and for society as a whole. Thus, education is a capital good (Olaniyan & Okemakinde, 2008). Education creates productive citizens (higher incomes, better health, more physical and social security) and improves the general wellbeing of the society owing to its many externalities (Manda et al. 2002; Olaniyan & Okemakinde, 2008).

Development of human capital is a critical function of the household. In this study, the household is defined as a group of people with common housekeeping arrangements but with different goals and aspirations on the one hand and a shared common concern for the wellbeing of each other on the other (Mattila-Wiro, 1999). With respect to human capital development, "The household fosters economic and social relationships between its members (intrahousehold relations) but also between households (interhousehold relations), and maintains a mutual relationship with the economy and the society of its immediate location." (Mattila-Wiro, 1999: 6). The study is guided by the Bargaining Model of household behaviour, which recognizes the individual player's preferences and mutual cooperation of the members for personal and collective wellbeing (Mattila-Wiro, 1999). These propositions are critical in the

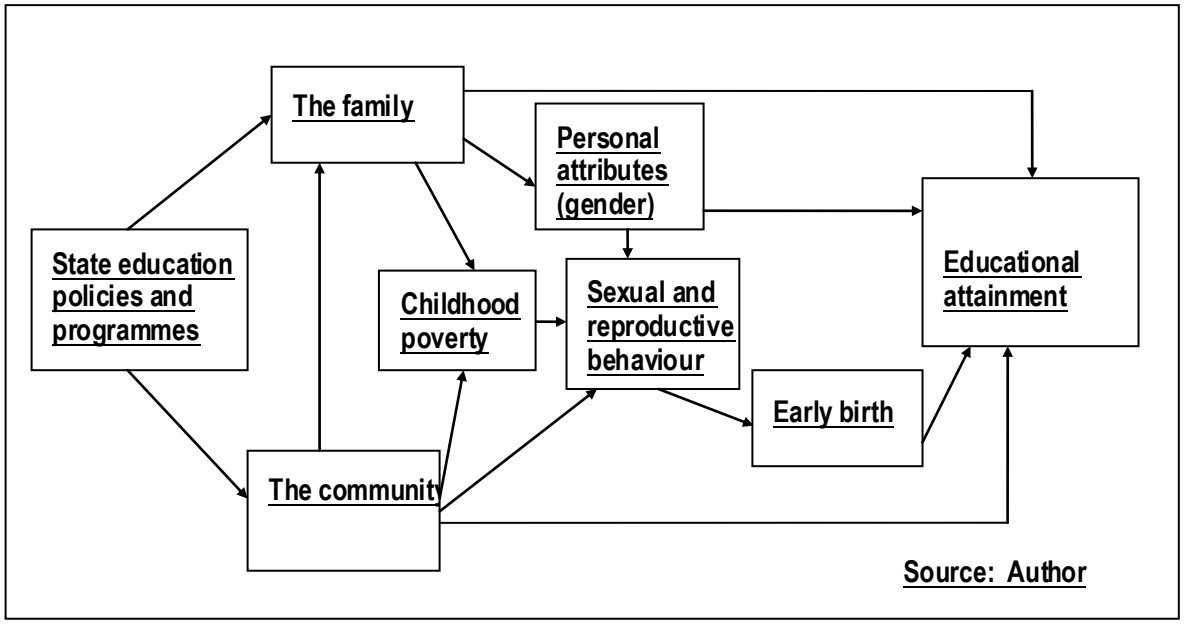
assessment of the household decision making process with respect to withdrawing children from school.

Another set of factors that influence the schooling can be grouped together under the term "individual attributes", the main ones being gender of the child, intellectual capability, and personal aspirations among others. For instance, children who are academically endowed are likely to have positive attitudes towards education and to perceive education as beneficial which leads to greater connectedness to the school hence greater probably of grade completion. Similarly, gender of the child is a powerful explanatory factor in educational attainment because of cultural and social expectations of children of children either gender as well as gendered allocation of time for schoolwork and household chores. For instance, female children may be given disproportionately more household chores relative to male children, or they may be withdrawn from school altogether as a strategy by the household to maximise schooling for their male siblings.

At the macro-level, the study postulates that the level of poverty or deprivation in the local community is a predictor of educational outcomes to the extent that it shapes opportunities for enrolment, retention, and completion. The linkages between household and community factors are informed by the family economy model which argues that household decision-making process involves evaluation of efficacy of formal education based on material provided by the immediate community.

It is evident that the study involved a critical analysis of many concepts and concomitantly many relationships hence the need for overt articulation of "an organising principle". In this regard, Amartya Sen's (1999) propositions on development and poverty were used to inform the process of identifying and organising the various factors that influence household choices and ultimately shape participation in the formal education system among children. (These relationships are summarised in Figure 2.3).

Figure 2.3: A conceptual framework for the analysis of educational attainment in low economic settings



Of interest here is his definition of poverty as "capability deprivation" (or denial of opportunities and means to attain some well-defined value goals in life) rather than merely low incomes – an approach that expands the analytic sphere considerable (and insightfully) by allowing inclusion of poverty indicators that are well beyond the realm of income. It is hypothesised that a scale of

"capability deprivation" can effectively predict the likelihood of, and the reason for, exiting from the formal education system among male and female school children in different contexts.

This framework views the state as the ultimate factor in determining educational outcomes of its citizens because of the fundamental role it plays in articulating the national education policy which in turn influences accessibility and affordability of education. The two principle pathways through which this influence is channelled are the family (or the household) and the community.

The household's decision-making process involves evaluation of the implications of state policies on education to the extent that such policies define the amount of resources the household requires to finance education. The community also influences this process by defining the perceived returns to education to the individual and the family. The family's economic ability in turn determines educational attainment of its members even in the context of free primary and secondary education because of the many legal and illegal expenses that are borne by the household. Income poverty can also lead to withdrawal of children from school to participate in the labour market to supplement family income.

Beyond the influence of incomes, the home environment (defined by a child's connectedness to the family, adequacy of supervision, household chores assigned to make and female children – which may be influenced by parental education and family structure among others) influence the quality of the child's

participation in the education system and ultimately grade retention and completion. Childhood poverty, for instance, has been associated with poor participation in education and can encourage early marriage and parenthood, which are usually incompatible with schooling. These factors can work through sexual and reproductive behaviour (specifically the timing of first birth) which can lead to school dropout during adolescence.

The community affects schooling by defining how easily educational facilities can be accessed. Schools are a community resource, and the amount of this resource – rather than cognitive endowment – determines the proportion that of children who transition from one level to another.

CHAPTER 3: METHODOLOGY

3.1 Overview of the Chapter

This chapter discusses the study design and presents discussion of the sources and types of data, sampling, operational definition of variables and analytic methods. The study used both quantitative and qualitative approaches. The former was based on a random sample of children aged 15-24 years who were considered *de jure* members of the household at the time of the survey while the latter was based on a purposive sample of respondents of the same age bracket who had experienced a negative outcome at any of the four transitions. Principal components analysis was used to develop a wealth index as well as to reduce the dimensions of factors that collectively define the home environment. The main analytic methods for quantitative data were cross-tabulations with Chi-square test and logistic regression analysis because the dependent variables (educational transitions) were dichotomous. On the other hand, qualitative data was analysed manually, which involved organising the responses around the various themes of interest to shed more light on the facts assembled by quantitative analysis.

3.2 Study Design

The study used a cross-sectional survey design. Data pertaining to the status of the individual, the household and the community was collected with reference

to two specific points in time, that is, early childhood and the present[2]. Reconstruction of the early childhood state was necessitated by the need to understand the link between deprivation during childhood and educational attainment as measured by attainment of different educational milestones.

A structured questionnaire was used and respondents, who were aged 15-24, were randomly selected from the two study sites (Buuri and Igembe North districts[3]). This data was then complemented by qualitative discussions with selected children and young adults who had experienced any of the outcomes of interest as well as experts in the area of education. Specific aspects of the study design are discussed in the rest of this chapter.

3.3 Data needs and the place of triangulation

The study was anchored on Human Capital Theory as well as theories of human development, family decision-making, and child and adolescent development. Application of different perspectives, as will be discussed in this section, is an aspect of triangulation. The importance of triangulation in social research is widely acknowledged. The most typical application is utilisation of both qualitative and quantitative sources of data. Social scholars generally identify four types of triangulation (Bryman, 2011; Neuman, 2006 Ghrayeb et. Al., 2011): data triangulation; investigator/observer triangulation; theoretical

[2] The instrument made explicit reference to the time when children generally start formal education.

[3] See footnote 1for more details on the change of names of the districts

triangulation; and methodological triangulation. Data triangulation refers to use of multiple measures of the same phenomenon while observer or investigator triangulation involves collection and interpretation of data by more than one observer so as to get a deeper understanding of the phenomenon of under investigation. Theoretical triangulation, refers to use of multiple theoretical perspectives in interpreting data while methodological triangulation entail use of more than one methodological approach in gathering data (Bryman, 2011; Downward & Mearman, 2007; Neuman, 2006).

In this study, data triangulation was used extensively to increase reliability of the measures such as wealth status and household environment. Investigator triangulation was not used but theoretical triangulation came in handy in the formulation of the study questions given that the study has its theoretical foundations in education, economics, sociology and demography. Methodological triangulation was also extensively utilised in the study whereby quantitative and qualitative data were used to complement each other and increase the reliability of the findings. This approach is supported by the observation that although quantitative analysis has been a major strength of demographic research, it has also contributed to its theoretical weaknesses by limiting demographic imagination. This is because not all variables of demographers' interest can be operationalised and eventually quantified (Obermeyer, 1997).

3.4 The Study Site

The study was based on primary data collected from two rural districts of Buuri and Igembe North districts in Eastern province of Kenya. The districts that existed at the time of approval of the topic for this thesis were Imenti North and Igembe districts (created in 1992 through subdivision of the larger Meru district). However, at the time of data collection, the two had been subdivided again into Buuri and Imenti North districts and Igembe South and Igembe North districts respectively. The two districts are inhabited by Meru people who speak Kiigembe and Kiimenti dialects hence they are quite similar with respect to culture.

The Meru tribe is a Bantu ethnic group residing on the north-eastern slopes of Mount Kenya and is divided into nine sub-tribes, namely: Tigania, Igembe, Imenti, Igoji, Mwimbi, Muthambi, Chuka and Tharaka. Although Chuka and Tharaka have different mythology about their origin, the dialects spoken across the eight sub-tribes are mutually intelligible. The two study sites also have close similarities in a number of development indicators, at least gauging from the former districts they belonged to before the recent divisions mentioned above. For instance, among all rural districts in Kenya in 2007, Imenti North was second least poor and Igembe third least poor with respect to food poverty while the proportion of children aged 6-17 years who have never attended school stood at 9 percent in Imenti North and 7 percent in Igembe (KNBS, 2007).

However, there are a number of differences between the two districts that make analysis of contextual forces shaping educational attainment among men and women tenable and appealing. According to the Kenya Integrated Household Budget Survey of 2007 (KNBS, 2007), Igembe has the least proportion of children aged 6-17 years reporting that they dropped out of school due to the inability of their families to meet school-related costs in the whole country (10% compared with 31% in Imenti North and 45% nationally).

Introduction of free primary education in Kenya is premised on the fact that financial costs of education are the main (if not the only) barrier to educational pursuits but that view is challenged by the fact that the two districts are very similar with respect to their economic base. The survey cited above offers some "suggestive" statistics. Children from Igembe district are more likely than those from Imenti North to report that parents' resistance or conflict between the school and their beliefs was the main contributor to their exiting from school. On the other hand, the complexity in analysing underlying factors in exiting from school is underscored by the fact that proportionately more children from Imenti North reported truncating their educational careers because they were "not interested" (KNBS, 2007).

3.5 Study population

The target respondents were young people aged 15-24, who were usual members of the household. In this study, usual members included domestic workers and

any other people in the household who were not blood relations of the household head so long as they were considered "usual members of the household" but excluded visitors and blood relations who were not considered usual household members. Household data was collected from the head of the household or, in his/her absence, from any responsible adult in the household. However, efforts were made to ensure that the heads of household actually answered the questions for the sake of accuracy.

3.6 Sampling techniques

The study used probability sampling and the specific sampling techniques used were informed by approaches that are applicable in large-scale household surveys such as Demographic and Health Surveys. According to the United Nations (2005: 37),

> …. good sample design for a household survey must combine, harmonically, numerous elements in order to produce the desired outcome. The sample must be selected in *stages* to pinpoint the locations where interviews are to take place and to choose the households efficiently. The design must be *stratified* in such a way that the sample actually selected is spread over geographic sub-areas and population sub-groups properly. The sample plan must make use of *clusters* of households in order to keep costs to a manageable level. At the same time it must avoid being overly *clustered* because of the latter's damaging effects on reliability. The *size* of the sample must take account of competing needs so that costs and precision are optimally balanced. The sample size must also address the urgent needs of users who desire data for sub-populations or sub-areas – *domains*. The sample design must seek maximum accuracy in two important ways. First, the *sample frame* that is used (or constructed) must be as complete, correct and current as possible. Second, sample selection techniques that minimize unintentional bias sometimes caused by the implementers should be used (emphasis in original).

For large household surveys (national or regional), the number of households does not affect the sample size. Sample size is rather affected by the domains of the study (that is, the number of geographical units for which separate estimates are to be provided, in our case district of residence), the level of the key indicator or indicators of interest, and the proportion of the population "affected" (or population for which the rate of the key indicator is based). Sample size is further affected by clustering effects at the enumeration areas, sampled households, variability of the clusters, and method of sampling within the cluster. Thus, computation of sample size requires factoring in clustering, which is the design effect – an expression of "how much larger the sampling variance (square of the standard error) for the stratified, cluster sample is compared to a simple random sample of the same size" (UN, 2005: 41).

According to the United Nations (2005), the sample size is calculated in terms of the number of households that must be selected given that the survey is a large household survey. Sample size calculation is given by the following formula:

$n_h = (z^2) (r) (1-r) (f) (k) / (p) (ň) (e^2)$

Where:

n_h is the number of households to be selected;

z is the statistic defining level of confidence (usually 1.96, that is 95 percent level of confidence)

r is an estimate of a key indicator to be measured

f is the sample design effect (*deff)*

k is a multiplier to account for the rate of non-response;

p is the proportion of the total population accounted for by the target population and upon which the parameter, *r*, is based

ň is the average household size (number of persons per household);

e is the margin of error allowed

Unless more accurate estimates for the above parameters exist (except for *z* which is merely the level of confidence), the UN recommends the following values:

z is the statistic defining level of confidence and usually 1.96, that is, 95 percent level of confidence

f (or the design effect) is set at 2.0

k (the multiplier for non-response) is set at 10 percent

n is set at 6.0 persons per household; and

e is 10 percent of *r* hence *e* = 10r

Substituting these recommended values gives

$n = (3.84)\ (1\text{-}r)\ (1.2)\ (1.1)/\ (r)\ (p)\ (6)\ (.01)$

The formula further reduces to

$$n = \frac{(84.5)(1-r)}{(r)(p)}$$

In this study, the two domains were Igembe North and Buuri districts hence the sample size was computed for each of them separately. It should be noted that at the time of the study, the relevant population and education figures for the two districts were not available because the districts were new having been hived off from the larger districts of Imenti North and Igembe districts. Given this scenario, the survey used national estimates.

Table 3.1 Parameters used in the computation of sample size

Parameter	Value
Total Population of Kenya in 2009	38,610,097
Population aged 15-24	7,944,646
Proportion represented by the study population	= 7,944,646/38,610,097 = 0.21
Sample size per domain	601
Total sample size	= 601*2 = 1202 (rounded off to 1200)

The key indicator used in the formula was dropout our prior to enrolling in secondary school which was 40.1 percent in 2008 (MOE, 2010). This transition was chosen because it has the highest rate of wastage in the whole of the formal education system in Kenya. The proportion of the total population represented

by 15-24 year olds was estimated at 0.21 (based on the 2009 census). These details are presented in the Table 3.1.

Using a multistage sampling approach, four locations were randomly sampled from each district followed by a random selection of ten clusters or enumeration points per location. The "cluster" was defined as a collection of households that was considered a village by the residents and recognized as such by local administration, and administered by a village head. Given the researcher's and research assistants' knowledge of the two study sites, it was not necessary to procure maps of the sampled clusters. Finally, 15 households were sampled randomly from each cluster and one eligible household member was randomly selected from every selected household. The sample was distributed as shown in Table 3.2. The list of locations and clusters is presented in Annex 3.

Table 3.2: Sample distribution

District	Locations	Clusters	Households per cluster	Total respondents
Buuri	4	10	15	600
Igembe North	4	10	15	600
Total	8	20	30	1200

3.7 Study instruments and piloting

The study focused on four educational transitions: entry into the formal education system; school dropout at primary school level; terminal exit after

completion of primary school; and school dropout at secondary school level. For this reason, the questionnaire was structured to not only capture the current situation (for example, age of the respondent) but also to reconstruct the household and community situation at the time children usually enrol in primary school. This approach was dictated by the need to address the inability of the study design to collect longitudinal data.

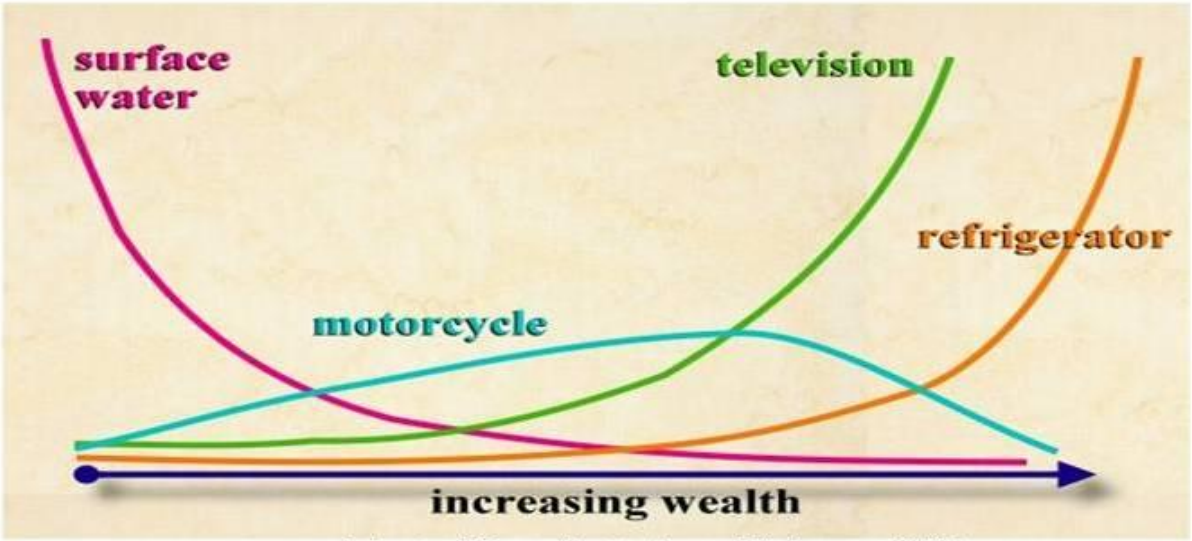
Prior to commencement of fieldwork, the study instrument was pretested and revised to check if the questions really captured what they were meant to measure as well as to isolate questions that needed further exploration using qualitative methods. Below is a summary of the main issues that arose from the pre-test and how they were addressed in fieldwork. The final questionnaire that was used to collect the data for this study is presented in Annex 1 of this thesis.

i. Background factors (sub-tribe, religion, district and location): These variables were easy to document and the instrument captured them satisfactorily.

ii. Family background factors: "parental commitment to cultural requirements" as presented in the operational framework was not exhaustively measured partly due to the multidimensional nature of the two constructs. Special emphasis was placed on capturing more information about it in the key informant interviews in the actual fieldwork. Ownership of a motor bike was also dropped from the current situation data because it did not seem to measure

household socio-economic status. Figure 3.1, adopted from Rutstein and Johnson (2004), tries to visualize the relationships discussed above. Evidently, at some point in a community's development trajectory, owning a motorbike ceases to be positively associated with economic status.

Figure 3.1: Durable goods and economic status



Adopted from Rutstein and Johnson 2004

Another major change to the questionnaire was deletion of questions pertaining to characteristics of guardians (their educational levels, occupation, etc) because having no parent is "the main" form of disadvantage according to theoretical postulates on orphanhood. In other words, deprivations among the guardians merely exacerbate the extent of disadvantage experienced by the child rather than introduce a different form of deprivation.

iii. Community factors: It was realised that cultural factors that affect school needed to be explored more qualitatively because it was not possible to quantity

and operationalise all the plausible causative factors. For instance, it was not possible to quantitatively explore people's views concerning acceptability of adolescent childbearing and its effects on educational attainment over time.

iii. Educational attainment (dependent variable captured by four transitions): The four transitions did not present any challenges in terms of understanding of the questions by the respondents.

The main data collection approach for the qualitative component of the study was key informant interviews among respondents who did not attend school or dropped out at different stages. Two education officials in the study sites also participated in the study as key informants.

Two different discussion guides were used: one for children who had experienced a negative outcome with respect to the transitions under investigation, and the other for the local education officials. The common themes of focus for all the tools were: general views about education in the community; circumstances that led to the transition/lack of the respective transition; self-assessment of the extent of deprivation occasioned by failure to enrol in school or exiting at respective points in time; and future life prospects given the current scenario. Data were collected by the researcher with the assistance of a note taker who recorded the discussions in as much detail as possible. The respondents were drawn from the two study sites.

3.8 Quantitative data collection

Familiarisation with the study site is an indispensable step in population based studies. The researcher made two reconnaissance visits to each of the sampled locations for the purpose of planning data collection logistics. The first visit was meant to make initial contact with key players on the study site namely village elders, location chiefs, and education officials as well as to get a general understanding of logistics of executing fieldwork. The second visit aimed at locating the boundaries of the sampled clusters and identification of key features to guide in data collection.

Working in groups of twos, research assistants identified a landmark within the village (for example, a school, church, shop), walked in the opposite direction and selected the first household for interview after which they picked every third household. Research assistants alternately conducted 3 or 4 interviews in one village after turning so that each village contributed a total 15 successful interviews.

In the event of a refusal or failure to find an eligible respondent, the household was replaced with the next household and the sampling interval would be resumed after a successful interview. Moreover, any selected respondent who could not be reached after the second call-back was replaced with the third household from the last household where a successful interview had taken place.

An eligible respondent was any person aged between 15 and 24 years who was considered a "usual" member of the household. The research assistant listed down all eligible respondents, selected one randomly using the KISH grid and circled the selected respondent in the list of household members to enable the supervisor confirm the accuracy of the information collected through back checking.

The questionnaire was interviewer-administered and informed consent was sought of all respondents prior to commencement of interview. The parent or guardian gave the consent on behalf of respondents aged less than 18 years while the rest gave their own consent. Training of research assistants and supervisors involved a detailed review of study instruments, interviewer skills, and pretesting of the study tools. For each of the two study sites, data collection was carried out by ten research assistants and one supervisor. Pretesting, review and administration of the questionnaire were executed in the months spanning April to September 2011. Data was entered by experienced data entry clerks using SPSS Version 15 while data cleaning and analysis was wholly carried out by the researcher.

3.9 Qualitative Data Collection

The main data collection approach for the qualitative component of the study was key informant interviews among respondents who did not attend school or

dropped out at different stages. Two education officials in the study sites also participated in the study as key informants.

Two different discussion guides were used: one for children who had experienced a negative outcome with respect to the transitions under investigation, and the other for the local education officials. The common themes of focus for all the tools were: general views about education in the community; circumstances that led to the transition/lack of the respective transition; self-assessment of the extent of deprivation occasioned by failure to enrol in school or exiting at respective points in time; and future life prospects given the current scenario. Data was collected by the researcher with the assistance of a note taker who recorded the discussions in as much detail as possible. The respondents were drawn from the two study sites. The final versions of the discussion guides are presented in Annex 1 of this thesis.

3.10 Operational definition of variables

3.10.1 The dependent variable

The four transitions of interest in this study were: entry/lack of entry into formal education system; school dropout prior to completion of primary level of education; terminal exit before entry into secondary school; and school dropout before completion of secondary school level. Thus, in the analysis of factors associated with the first transition (or conversely its absence), respondents who had never attended school were compared with those who had ever enrolled in school irrespective of the level completed while analyses of other transitions

compared those who dropped out of school at respective stages with those who did not. Thus, the dependent variable – education attainment, or conversely, school dropout – was measured at four different points in time.

3.10.2 Independent variables

It was argued in the preceding sections that poverty shapes educational outcomes among women both directly as well as through its influence on the timing of first birth and that the effects of early fatherhood on male schooling are hardly analysed in population and development research. Borrowing from Amartya Sen's (1999) conceptualisation of poverty as capability deprivation, this study took a broad view of poverty that included not only lowness of incomes but also other important constraints to leading healthy and productive lives. Thus, poverty was conceived as comprising two components: an income or "wealth" component that was made up of indicators to which a monetary value could be attached; and a non-income component made up of indicators with not direct monetary value but which have intrinsic ability to enhance people's ability to live the kind of lives they have reason to value, in this case, to attain the various educational milestones under investigation. The guiding question was how existing household and community opportunities promote schooling and mitigate alternative behaviours such as entering the unskilled labour market or starting a family.

Household income-related factors

The evidence generally supports the view that socioeconomic features of communities and households are closely associated with educational attainment (Krishnan, 2010; O'Higgins et al., 2008). A study in Uganda found that the proportion of economically active household members was negatively associated with school dropout net of all confounding factors such as distance to school and education level of the head of the household (Okumu et al., 2008). A persuasive case for the influence of household economic status in access to secondary education among Kenyan children is offered by Ohba (2009: 24) in his argument that school-related fees are practically beyond the reach of many households.

While previous studies give important insights into the link between economic status of the household and educational attainment, the current study used household assets rather than direct measures of household economic welfare such as proportion of economically active members of the household or parental income or consumption patterns. Economic status is a multidimensional concept that cannot be adequately measured by just one or two manifest variable such as ownership of a car or a radio or farm land or income or consumption patterns. Indeed, there is extensive literature on the problem of ranking households on the economic status continuum, and the biggest hurdle especially in developing country context is lack of reliable income or consumption data (Filmer & Pritchett, 2001; Rutstein & Johnson, 2004; Kolenikov & Angeles, 2004). As Filmer and Pritchett (2001) argue in their authoritative paper, "Estimating

Wealth Effects without Expenditure Data – or Tears: An Application to Educational Enrollments in States of India", income and consumption data in such contexts is either unavailable or prone to errors owing to fluctuations hence it cannot reliably rank households according to economic status. An asset index, therefore, is a better proxy for economic status because it reflects the status of the household in the long-run.

Household non-income factors

This study was based on the thesis that any factor that works against enhancement of people's lives can be viewed as a source of capability deprivation. Such a factor is a form of "unfreedom" (Sen, 1999) that needs to be remedied for the full realisation of human development. Analysis of "freedoms" was based on factors identified from the literature that were considered to play an important role in enhancing people's lives as reflected by their contribution to educational attainment.

Literature on parent-child relations and its place in shaping young people's behaviour demonstrates that connectedness to the family, close parental supervision, parental involvement in the child's life, and child's perception of level of support by the family influence all spheres of the child's life including sexual behaviour and schooling (Kirby, 2001; O'Higgins et al., 2008). Parental education appears to have a strong influence on this equation: for instance, more educated parents may have the resources and the motivation to invest

more in the education of their children, which in turn may increase the child's connectedness to the family, and elicit positive behavioural outcomes. Such parents may also be apprehensive if the balance between schoolwork and household chores is skewed against schoolwork. In all likelihood, they are unlikely to remove their children from school and place them in the labour market to supplement family income. Besides these overt behaviours, educated parents may tacitly influence their children's behaviour through role modelling (Moyi 2011; O'Higgins et al, 2008; UNICEF, 1997).

Another household-related construct that has been found to have serious implications for schooling and educational attainment is the amount of time used by the child at home doing household duties relative to that used on school work. Although, participation of children in productive activities within the household is a natural and essential part of child growth and development, child labour can be detrimental to a child's education (Moyi, 2011).

From the foregoing argument, the household may be considered as the sum total of child-parent relations, parent's knowledge, attitudes and abilities in different spheres (cultural, technical), and the child's perception of reality as defined by the family and mediated by the wider social system including the peer network, the school, and the community. It is therefore plausible to view the family-level factors used in this study as correlated measures of the same construct – the home environment. For this reason, the study used principal components analysis to reduce the number of manifest variables that

collectively represent this construct. The following manifest variables were isolated and factor analysed: child's involvement in five household chores (fetching water; fetching firewood; cooking/washing; grazing livestock; and working for pay); parental conflict; frequency at which the parents checked the child's schoolwork; alcohol use among parents; and if the child lived with biological parents or not. However, father's and mother's education were excluded from factor analysis of indicators of home environment so they could be included independently in regression models and consequently enable comparison of the findings of the study (that is, the association between parental education and schooling) with similar previous studies. Unlike wealth index, the factor scores for each of the components extracted were not combined into a composite index but were instead used singly in subsequent regression models.

Community factors

Community-level forces were captured by a number of indicators the chief one being district of residence. This is a good indicator of underlying conditions that influence behaviour and explain the differences between the two districts with respect to educational attainment. Implied here is that each of the two districts can be considered a distinct community chiefly because district boundaries are usually not random but rather follow such characteristics as common traditions and language (or dialects of a mutually intelligible language). In other words,

the district can be considered an all-encompassing proxy for the many unobservable variables that give a community its distinct identify.

Although the two districts that were studied share a common language, they also exhibit huge cultural differences that build the case for viewing them as two distinct communities. For instance, Igembe North has more resilient traditions as reflected by higher prevalence of female genital cutting relative to Buuri (Evelia et al., 2008[4]; KNBS, 2008[5]).

Besides the district, other variables of interest at the community level were type of the school and distance to the school the child attended most of the time during his or her primary school years. The literature suggests that private schools perform better than public schools (Glennerster et al., 2011; Ohba, 2009) while distance to school is generally inversely correlated with child's performance although some studies have documented a lack of a strong relationship (Okumu et al., 2008).

Individual factors

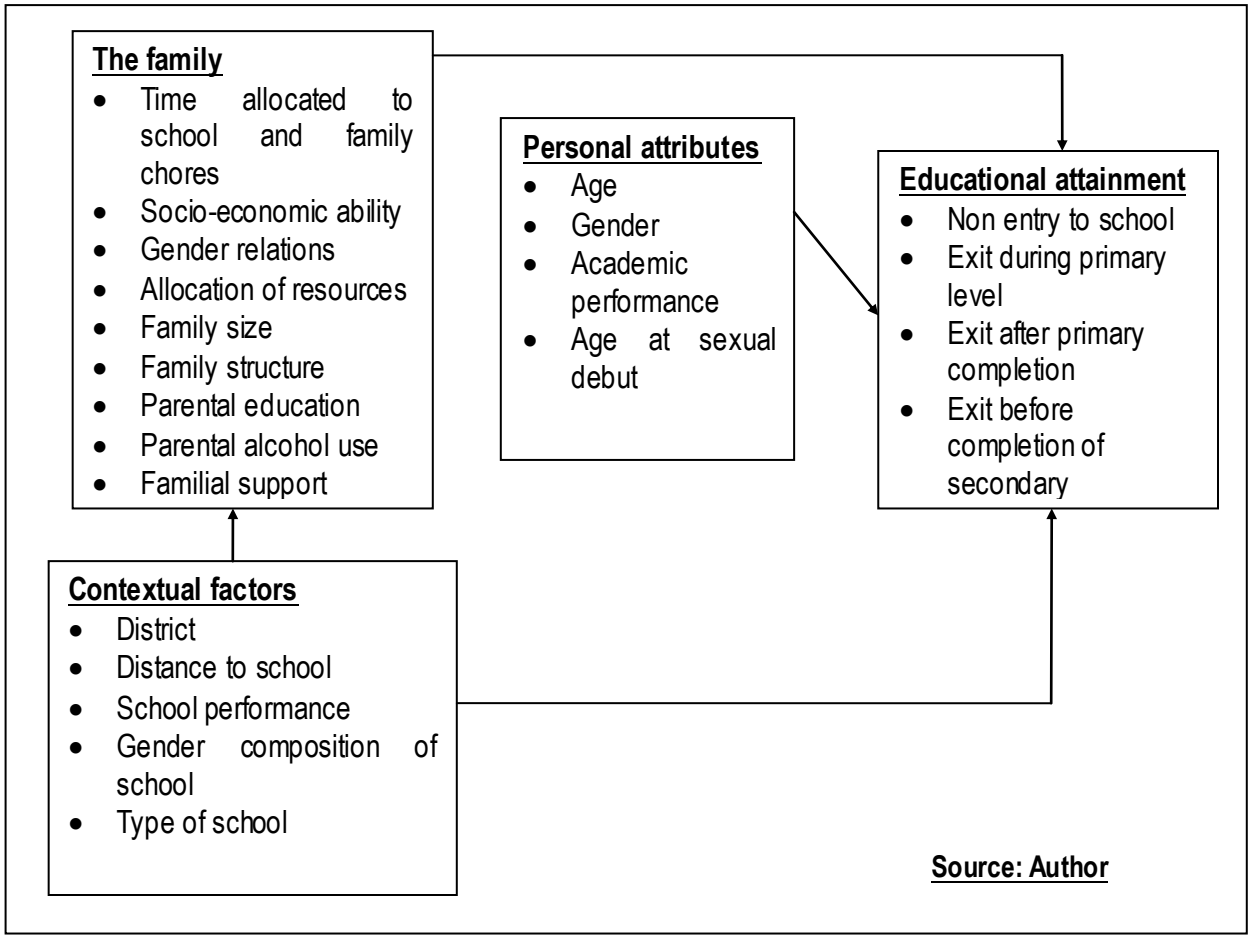
There are marked gender differences in educational attainment and many studies have shown that the poor performance of females can be attributed to deprivations suffered at all the stages such as being given more household

[4] http://pdf.usaid.gov/pdf_docs/PNADN573.pdf

[5] http://www.knbs.or.ke/surveys/MICS/Eastern/Meru%20Central%20Report.pdf

chores relative to male children and even being withdrawn from school so as to work and support the education of their male siblings (Lloyd, 2006; Mensch et al., 2001; UNICEF, 1997; . Thus, the main individual attribute that was analysed in this study was gender of the child. The study also included a few other individual attributes namely age at sexual debut and age of the respondent. Figure 3.2 is a graphic presentation of the relationship between the different variables discussed above.

Figure 3.2: Operational framework for the analysis of factors associated with educational male and female educational attainment



3.11 Study Hypotheses

The following were the study hypotheses.

1. There is significant association between household economic factors and educational attainment among male and female children;
2. There is a significant association between non-income factors and educational attainment among male and female children;
3. Educational attainment varies with community factors;
4. Educational attainment varies by gender.

3.12 Unit of Analysis

The unit of analysis was the individual since the dependent variable (school dropout at different stages) related to the individual.

3.13 Analytic Methods

3.13.1 Frequency distribution of the survey respondents by different characteristics

The first step in data analysis involved carrying out frequency distributions and cross-tabulations to understand how the sample was distributed across the selected predictors of educational attainment. Inclusion of Chi-square test further helped to assess existence of association between the independent and dependent variables.

3.13.2 Application of principal component analysis in construction of the wealth index and in data reduction for household no-income variables

There are is a sound theoretical case for combining, for example, all household durable goods into a composite measure of "wealth". First, these variables measure the same latent factor – wealth – hence they are correlated, and have a direct as well as an indirect effect on the outcome of interest (Filmer & Pritchett, 2001), in this case educational attainment. Owning a car, for instance, may serve as a proxy for wealth but it may also have a direct effect on educational attainment if it also offers a means of transport to school for the children hence eliminating the stress involved in walking to school. Second, reducing the dimensions of the original variables by creating a composite index that uses all the variables that measure the same construct creates parsimony and makes it possible to understand what the different sets of variables that load on each component stand for – which ultimately contributes to theory development (Krishnan, 2008). Such an index may also be more reliable than any individual measures of the current status of the household to the extent that they are not prone to problems of fluctuations (Krishnan, 2010; Rutstein and Johnson, 2004; Kolenikov & Angeles, 2004; Filmer & Pritchett, 2001). Put in another way, Principal Components Analysis has four goals namely: to extract the most important information from the data; to reduce the number of predictors keeping only the important information; to simplify the description of the data set; and to analyze the structure of the observations and the variables (Abdi & Williams, 2010).

In one of the earliest and most influential papers on construction of a socio-economic index that used principal components analysis, Filmer and Pritchett (2001) used Demographic and Health data on household assets (clock, bicycle, radio, television, sewing machine, motorcycle, refrigerator, car), type of access to drinking water, types of toilet, and housing conditions including the main material used in construction of the main dwelling unit. Since the 1990s the Filmer and Pritchett approach has received widespread acceptance in social and economic research because of its stability; indeed, it is currently the standard procedure in international circles as reflected by its application in studies and analysis by the Work Bank, the United Nations, and Measure Evaluation among others (Kolenikov & Angeles, 2004; Krishnan, 2008; Rutstein & Johnson 2004; Rutstein 2008).

There are, however, a few dissenting views the chief one emanating from Kolenikov and Angeles (2004). Their argument is that PCA is strictly meant for interval (metric) data hence it cannot be applied in the analysis of categorical (ordinal or nominal) data. This criticism notwithstanding, use of dummy variables for nominal variables and even use of ordinal variables as if they are continuous variables in PCA are acceptable since the differences in the results are insignificant in index construction. Abeyasekera (not dated: p11) notes that "The technique is strictly applicable to a set of measurements which are either quantitative or have an ordinal scale. However, being largely a descriptive

technique, the inclusion of binary variables and/or a small number of nominal categorical variables is unlikely to be of practical consequence".

This study used principal components analysis to construct a wealth index using six manifest variables namely household ownership of a car, a television, a radio, and mobile phone as well as acres of farming land and heads of cattle the household owns. As will be discussed in more detail in the next section, the same analytic technique was used to reduce the many household non-income variables into three components that were used in subsequent analysis in place of the original variables.

Wealth index construction

As noted above, construction of the wealth index involved use of principal components analysis, which is a multivariate technique for transforming a set of related variables into a set of unrelated variables (the principal components). The technique was first introduced in the early 20th Century (Kolenikov & Angeles 2004; Krishnan, 2008).

Only a few components account for much of the variance in the original variables, and the components provide a clear summary of the data because each component can be given "a name" (reification). They also simplify subsequent analysis by reducing the number of explanatory variables. Although factor analysis (more specifically exploratory factor analysis [EFA]) and principal components analysis follow virtually similar computational steps,

the two are conceptually different in that EFA is appropriate for detecting the structure of data while PCA is appropriate for data reduction, that is, for summarising a set of manifest variables into principal factors or components (Kolenikov & Angeles, 2004; Landau & Everitt, 2004; Rutstein & Johnson, 2004).

In other words, the technique transforms a large number of related (correlated) variables into a smaller and parsimonious set of orthogonal (unrelated) factors. These unrelated factors, or the principal components as they are popularly called, are linear weighted combinations of the initial variables used in the data set. The technique orders the components so that the first is a linear index of all the variables that accounts for the largest amount of variation in all the variables, while the second, which is orthogonal to the first, accounts for the maximum variation that is not accounted for in the first index. Each subsequent component accounts for the maximum variation that is not accounted for by the preceding components until all the variance in the original variables is accounted for. A formal definition of principal components analysis is presented below.

Given a set of N variables a^*_{1j} to a^*_{Nj} representing ownership of N by each household j, PCA starts by specifying each variable normalised by its mean and standard deviation thus:

$a_{1j} = (a^*_{1j} - a^*_1)/(s^*_1)$, where a*1 is the mean of a^*_{1j} across households and s^*_1 is its standard deviation. As a linear combination of a set of unobserved components for each household, the selected variables are expressed thus:

$$a_{1j} = v_{11} X A_{1j} + v_{12} X A_{2j} + \ldots v_{1N} X A_{Nj} \ldots$$

$$\ldots \qquad j=1,\ldots j$$

$$a_{Nj} = v_{N1} X A_{1j} + v_{N2} X A_{2j} + \ldots + v_{NN} X A_{nj},$$

where the *A*s are the components and the *v*s are the coefficients on each component for each variable (and do not vary across households). Because only the left-hand side of each line is observed, the solution to the problem is indeterminate (Filmer & Pritchett 2001).

Principal components analysis solves this problem by finding the linear combination of variables with the maximum variance (which is the first component - A_{1j}), and then finding a second linear combination of variables uncorrelated to the first, with the maximum remaining variance. The process is repeated until all the variance has been accounted for. (For detailed computational procedures, see Filmer & Pritchett, 2001).

Two components were extracted and a wealth index was constructed by multiplying the percentage of variance explained by the eigenvalue of each component with the regression factor scores for corresponding component and summing the two. In other words, the index was basically the summation of

factor scores weighted by the percentage of variance explained by each factor. The index had three categories namely "poor", "middle", and "rich". Actual computations are presented in the next subsections.

The logic and procedures used in the construction of wealth index were extended in extracting components for multivariate regression analysis of household non-income factors. Statistical modelling was guided by one of the key arguments presented in the literature review: that educational attainment is a function of household economic and non-economic factors, all of which can be considered as measures of deprivation. While principal components (or factors) of economic ability were combined into an index, non-income principal components were not combined but were instead saved as regression factor scores because the components reflected the different dimensions of deprivation more clearly than a composite index would possibly do. Indeed, the basic goal of applying principal components analysis to non-income variables was to understand how the variables load on each of the components and (possibly) see what each component stood for and ultimately "name" the component. However, care was taken in reification because:

> It must be emphasised that no mathematical method is, or could be, designed to give physically meaningful results. If a mathematical expression of this sort has an obvious physical meaning, it must be attributed to a lucky chance, or to the fact that the data have a strongly marked structure that shows up in analysis. Even in the latter case, quite small sampling fluctuations can upset the interpretation, for example, the first two principal components may appear in reverse order, or may become confused altogether.
>
> (Landau and Everitt 2004: p294)

Variables that did not have high loadings on any one of the components (or generally did not factor well into any component) were removed from PCA but were included singly in the regression models. Detailed computations procedures and outputs are presented in the last section of this chapter.

3.13.3 Multivariate regression analysis

The dependent variables of the study were dichotomous (entry/non-entry into formal educational system; dropout/continuation at primary level; terminal exit at completion of primary education/progression to secondary school; and dropping out of school prior to completion of secondary education/completion of secondary education) hence logistic regression analysis was the main analytic procedure. Odds ratios generated by logistic regression permit direct observation of the ` importance of each independent variable in predicting the likelihood of experiencing the event of interest compared with the reference category. Besides, logistic regression has the advantage of allowing for inclusion of statistical controls (Landau and Everitt 2004).

The general logistic regression equation is of the form:

$$y = \frac{e^{(Bo+BiXi)}}{1+e^{(Bo+BiXi)}}$$

Where y is the likelihood of experiencing the event, Bs are regression coefficients, and Xs are the set of predictors. The model has an underlying linear model function hence to make the distribution linear, a logit transformation is carried out thus:

$$g(x)\ \ln(y/1-y) = Bo + BiXi.$$

A negative value of ßi means the independent variable reduces the likelihood of making the observation and vice versa. Odd ratio, the probability of having the observation to not having it, is then computed by exponentiating the ßi. In this model there is an underlying null hypothesis that all ßs equal zero hence a rejection of this null hypothesis implies that at least one ß does not equal zero.

3.14 Sample distribution and data manipulations

In this section, the distribution of independent and dependent variables is presented and discussed. For the substantive analysis, however, continuous variables were recoded so as to transform them into categorical variables and consequently make them amenable to statistical analysis. Similarly some categorical variables were transformed further to take care of categories with too few cases or to drop cases depending on the exigencies of the analytic procedure to be applied.

3.14.1 Sample distribution according to household economic status or "physical wealth" and construction of the wealth index

The study used household ownership of durable goods and assets rather than income or expenditure data to rank respondents according to economic status. This is because unlike income which is subject to huge fluctuation especially among informal sector workers and subsistent farmers, ownership of durable goods and household assets exhibits more stability over time and has been shown to be a reliable measure of household economic status (Filmer & Pritchett, 2001; Rutstein & Johnson, 2004). In this study, household ownership of a car, a television, a radio, and a mobile phone, as well as amount of land and heads of cattle owned were used in the construction of the wealth index. Table 3.3 is a percent distribution of respondents according to the ownership of household durable goods and average number of acres of land and heads of cattle.

Table 3.3 Distribution of respondents by household assets

		Percent	Number
Owned car	Yes	7.3	87
	No	92.8	1113
Owned mobile phone	Yes	36.7	440
	No	63.3	760
Owned radio	Yes	87.7	1052
	No	12.3	148
Owned television	Yes	35.9	431
	No	64.1	769

The other two variables used in the construction of wealth index were acres of land and heads of cattle owned by the household. On average households owned 2.87 and 2.94 acres of land and heads of cattle respectively.

Principal components analysis requires that the data is metric (or dichotomous but dummy coded), the ratio of cases to variables is 5:1, and the total number of cases is greater than 50. To ensure that the data met the first condition, all dichotomous variables were dummy-coded so that each variable had two dummy variables (for example, ownership of a car as dummy variable 1 and non-ownership of a car as dummy variable 2). The other two conditions were also met because the number of cases was 1200 which is well beyond the threshold of five cases to one variable.

Further, the correlation matrix for the variables must contain two or more correlations of 0.30 or greater, have overall sampling adequacy of 0.50 and a statistically significant Bartlett's test of sphericity (Tabachnick & Fidell 2007). Sampling adequacy indicates the proportion of variance in the variables which might be caused by underlying factors. The maximum value of Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is 1. A value of 0.9 is considered "marvellous", 0.80, "meritorious", 0.70, "middling, 0.60, "mediocre", 0.50, "miserable" (Antony and Rao 2007). A KMO value of less than 0.50 means that the data is not ideal for factor analysis. Bartlett's test of sphericity indicates whether the correlation matrix is an identity matrix, and shows the extent to which the variables are unrelated. Very small p-values indicate significant

relationships between variables and huge values (greater than 0.10) indicate that the data are not suitable for factor analysis (Landau & Everitt, 2004; Krishnan, 2010).

Table 3.4 is a correlation matrix of the variables used in the construction of the wealth index. These results show that each of the variables has a correlation of 0.3 with at least one other variable.

Table 3.4: PCA output showing correlations between household economic variables

Household assets	Owns car	Owns TV	Owns radio	Owns mobile phone	Land in acres	Heads of cattle
Owns car	1.000					
Owns TV	0.306	1.000				
Owns radio	0.105	0.276	1.000			
Owns mobile phone	0.354	0.443	0.280	1.000		
Land in acres	0.404	0.222	0.057	0.193	1.000	
Heads of cattle	0.124	0.076	0.043	0.037	0.465	1.000

Further, the sample had a KMO Measure of Sampling Adequacy of 0.65 and a statistically significant Bartlett's test of sphericity as shown in Table 3.5 ($p<0.001$, approximate Chi-square of 1127.836, degrees of freedom 15). Overall, the data met all the conditions for factor analysis using principal components analysis. Since the variables had different measurements (hence are standardised in the analysis), computations used the correlation matrix rather than the covariance matrix.

Table 3.5: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.65
Bartlett's Test of Sphericity	Approx. Chi-Square	1127.84
	Degrees of freedom	15
	Significance (p value)	0

Unrotated factor loadings are usually hard to interpret hence the need to apply one factor rotation procedure or other. Thus, the goal of rotation is to make interpretation easier and more straightforward by maximizing factor loadings for each variable on utmost one factor, and to have all factor loadings large and positive or near zero, with few intermediate values (Everitt & Dunn 2001). In SPSS, rotation procedures that produce orthogonal (unrelated) factors are varimax, quartimax, and equamax, while those that lead to an oblique (correlated) solution are direct oblimin and promax (Landau & Everitt 2004). In this study, varimax rotation was because the factors were considered unrelated.

There are different ways of determining the number of factors to extract, the most commonly used procedure being the Kaiser criterion, which is also called the eigenvalue rule. The rule specifies that only those components with an eigenvalue of 1.0 or more are retained for further analysis. The eigenvalues can also be graphically plotted based on Catell's (1966) Scree test. In this study, components with an eigenvalue of 1 or more were extracted and saved as regression factor scores for the construction of the wealth index. Components and their respective eigenvalues were also plotted in a Scree plot so as to visualize the data as shown in Figure 3.3.

Figure 3.3: Scree plot showing eigenvalues for each of the component in wealth index construction

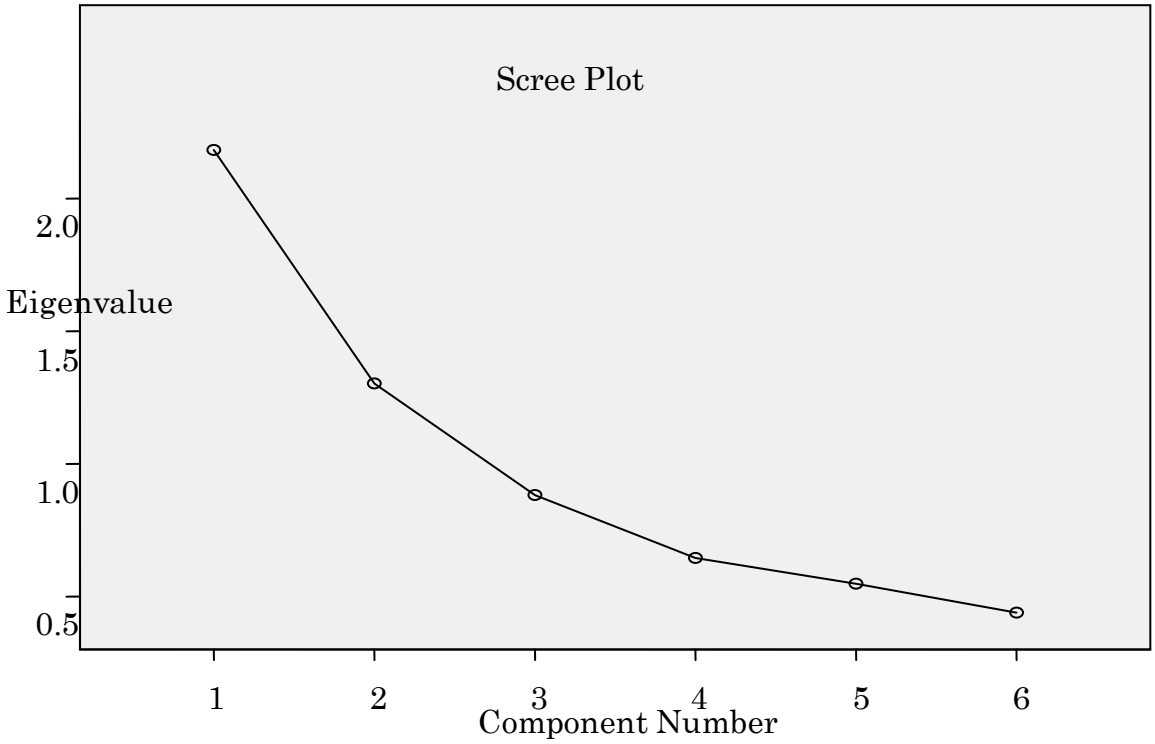


Table 3.6 is a detailed presentation of components, factor loadings, and variances explained by each of the six components. Based on the eigenvalue rule, two components were extracted which together accounted for 58 percent of total variance. Table 3.7 shows how the variables load on each component. Car, television, radio and mobile phone have high positive loadings on the first component and account for 31 percent of the total variance after orthogonal rotation of the correlation matrix. On the other hand, amount of land and heads of cattle owned by the household have high positive loadings on the second component and account for 27 percent of the total variance.

Table 3.6: Eigenvalues and extraction sums of squared loadings with corresponding percentages of variance accounted for from PCA with varimax rotation

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.2	36.4	36.4	2.2	36.4	36.4	1.9	30.9	30.9
2	1.3	21.7	58.1	1.3	21.7	58.1	1.6	27.2	58.1
3	0.9	14.7	72.8						
4	0.6	10.8	83.5						
5	0.5	9.1	92.7						
6	0.4	7.3	100.0						

Evidently, the first component captures "luxury" goods while the second appears to capture productive resources. However, car ownership has a complex structure because it has factor loadings of 0.501 and 0.473 on components 1 and 2 respectively. Although some statisticians advocate for removal of a variable that has high loadings on more than one component (Krishnan 2008), such a move was deemed unnecessary because the ultimate goal of the analysis was to combine the components into one index rather than to "name" and use each of the components individually.

Table 3.7: Rotated components matrix

Variables	Component 1	Component 2
Owns car	0.501	0.473
Owns TV	0.751	0.146
Owns radio	0.618	-0.098
Owns mobile phone	0.785	0.101
Land in acres	0.170	0.850
Heads of cattle	-0.104	0.803

3.14.2 Computing the Socioeconomic Index

Factor scores coefficients for each component were estimated using regression method (which is available in SPSS) for each case, and factor scores were saved in the data file. The factor scores are standardised, that is, they have a mean of zero and a standard deviation of 1. The first factor (or component) accounted for 30.9 percent of the variance while the second accounted for 27.2 percent hence their individual contribution in the measurement of household wealth is unequal. For this reason, the percent of variance explained by each of the components was used as weights in the computation of the wealth index thus:

*Wealth Index = (30.9*regression factor score 1) + (27.2*regression factor score 2)*

This approach has been used in previous research and has been found to be reliable in computation of wealth index (Filmer and Pritchett 2001; Krishnan 2008). Of interest in the study was construction of an index to rank respondents according to economic status. Thus, the study divided the Wealth Index computed by use of the formula presented above into three equal percentile where the first one third of the distribution was named "poorest", the second "middle", and the third "richest". This index of household physical wealth was used in place of the original manifest variables in the analysis of the association between economic status and educational attainment.

3.14.3 Validity of the wealth index

Validity is defined as the extent to which the instrument measures what it is meant to measure. Researchers generally identify four main types of validity:

content validity; face validity; criterion validity; and construct validity. Content validity refers to the degree to which the instrument adequately assesses or measures all the domains of a construct while face validity, which is considered a subcomponent of content validity, is established when a person reviewing the instrument concludes that it measures the characteristic or trait of interest. Criterion validity refers to the extent to which a measure is empirically associated with relevant criterion variables, which may either be assessed at the same time (concurrent validity), in the future (predictive validity), or in the past (postdictive validity). Finally, construct validity is the degree to which an instrument measures the trait or theoretical construct that it is intended to measure, and is seen by many researchers as an overarching term that encompasses all forms of validity (Neuman, 2006; Westen & Rosenthal 2003). According to Westen and Rosenthal (2003: 608), "Researchers generally establish the construct validity of a measure by correlating it with a number of other measures and arguing from the pattern of correlations that the measure is associated with these variables in theoretically predictable ways".

Based on the reasoning presented above, we would expect a positive association between the wealth index and the variables that were used in its construction. Thus, construct validity was assessed by cross-tabulating the wealth index against its constituent, that is, household assets. Of interest here was to assess the extent to which the index is internally coherent. Table 3.8 shows the distribution of assets across the three categories of wealth.

Table 3.8: Ownership of durable goods and the wealth index

		Poorest	Middle	Richest
		Percent	Percent	Percent
Car	Yes	0.0	0.0	22.0
	No	100.0	100.0	78.0
Mobile phone	Yes	4.9	32.7	78.0
	No	95.1	67.3	22.0
Radio	Yes	66.8	96.5	99.7
	No	33.2	3.5	0.3
Television	Yes	0.0	20.5	88.1
	No	100.0	79.5	11.9

The robustness of the index is confirmed by these results in that poorer households have markedly smaller proportions reporting ownership of any of the four goods analysed compared to the richest households. For instance, none of the poorest households had a car or a television but among the richest households, as many as 22 percent and 88 percent had a car and a television respectively. Differences across categories for each of the assets are statistically significant at 99 percent level.

3.14.4 Sample distribution according to household non-income variables and extraction of "home environment" factors (principal components)

The study used the following variables to assess the home environment at the time the child joined (or was supposed to join) primary school: father's level of education; mother's level of education; total number of household members; parental conflicts; frequency with which the parents checked the child's schoolwork; alcohol use among parents; if the child lived with biological parents

or not; and child's involvement in five household chores (fetching water; fetching firewood; cooking/washing; grazing livestock; and working for pay). Parental education was removed from PCA so it could be included independently in the regression models and consequently enable comparison of the findings of the study (that is, the association between parental education and schooling) with similar previous studies.

Table 3.9 is a percent distribution of respondents by various household and parental characteristics. Most of the parents of the children in the sample had primary level of education, accounting for over 50 percent. Household size ranged from 1 person to 12 people with a mean size of 5.16 and 5.98 in Buuri and Igembe North respectively.

With respect to the household structure, analyses showed that about 62 percent of the sample lived with both biological parents while 15 percent live with their biological mothers only. Another 10 percent lived with a spouse and about 4 percent lived with their grandparents. Overall, 78 percent of the households were headed by male parents, 15 percent by female parents and 8 percent by other people. Table 3.10 is a frequency distribution of respondents who have ever attended school according to the frequency with which they engaged in different household chores. Apart from working for pay, at least 10 percent of children engaged in household chores namely fetching firewood and water, cooking, and working in the farm.

Table 3.9: Sample distribution according to parental characteristics and parenting behaviours (N=1182)*

Characteristic	Categories	Percent	Number
Highest level of education of father	No education	7.3	80
	Primary	53.4	588
	Secondary	20.4	225
	Diploma	5.1	56
	University	2.9	32
	No father/no response	11.0	121
Highest level of education of mother	No education	13.8	163
	Primary	55.4	654
	Secondary	18.0	213
	Diploma	5.2	61
	University	2.5	30
	No mother/no response	5.1	60
Responsible people who the respondent lives with	Both biological parents	62.0	744
	Biological mother only	15.1	181
	Biological mother and step father	0.5	6
	Biological father only	2.3	27
	Biological father and step mother	2.6	31
	Grandparent(s)	3.9	47
	Other relative	2.8	34
	Guardian	0.1	1
	Others	0.9	11
	Spouse	9.8	118
Household size	Four or fewer people	25.4	300
	5 or more people	74.6	880
Parental conflict	Yes, fought	22.2	266
	No, did not fight	39.2	470
	Not applicable/no response	38.7	464
Frequency mother used to check homework	Often	20.5	241
	Sometimes	51.8	608
	Rarely/never	25.3	297
	No mother/no response	2.4	28
Frequency father used to check homework	Often	23.8	270
	Sometimes	37.0	420
	Rarely/never	31.1	353
	No father/no response	8.2	93

*Those who have never attended school are excluded from the analysis because they will not be subjected to analysis pertaining to educational attainment

The first step in manipulating the variables to make them amenable to factor analysis was creation of dummy variables for all categorical variables in line with Filmer and Pritchett's (2001) approach. For easy interpretation of the findings, that is, to ensure that the components extracted have one direction, only the dummy variables that captured the concept of "deprivation" were included in the model.

Table 3.10: Sample distribution according to frequency of undertaking different household chores during primary school years (N=1182)*

Activity	Frequency	Percent**	Number
Fetching firewood	Often	27.5	323
	Sometimes	48.6	572
	Rarely/never	23.9	281
Fetching water	Often	32.5	382
	Sometimes	41.0	482
	Rarely/never	26.5	311
Cooking and washing	Often	31.6	371
	Sometimes	39.2	460
	Rarely/never	29.2	342
Grazing livestock	Often	13.0	153
	Sometimes	22.4	263
	Rarely/never	64.5	757
Working for pay (e.g. in other people's farms)	Often	6.8	80
	Sometimes	13.2	155
	Rarely/never	79.9	935

*Total is 1182 because it excludes 18 respondents who have never attended school.

** The percentages are based on valid cases only, which in some instances may not add up to 1182 because of missing data/non-responses, which were dropped

As a preliminary step in the extraction of the components, all the twelve variables above were included in PCA. However, although the model had a KMO measure of sampling adequacy of 0.706 and a statistically significant Bartlett's test of sphericity ($p<0.001$), the variable "number of household members" and "who the respondent lived with" were found to have particularly low loadings on the three components (less than 0.30), and overall, the extracted components accounted for only 45 percent of the variance in the original variables – which is below the threshold of 50 percent. Since removing either of the two variables did not solve the problem, both variables were removed altogether hence all subsequent computations were based on the remaining ten variables (see Table 3.12 for a list of the retained variables).

The models had a KMO measure of sampling adequacy of 0.706, which is "middling" hence acceptable, and a statistically significant Bartlett's Test of Sphericity ($p<0.001$; approximate Chi-square of 1377.385; and 45 degrees of freedom). This information is presented in Table 3.11.

Table 3.11 KMO MSA and Bartlett's test of sphericity.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.706
Bartlett's Test of Sphericity	Approximate Chi-Square	1377.383
	Degree of freedom	45
	Significance	0.000

Table 3.13 presents eigenvalues and extraction sums of squared loadings with corresponding percentages of variance accounted for with varimax rotation. Table 3.14 shows how the different variables load on the three extracted components. The first component has high positive loadings for household chores that relate to 'in-house" chores and accounts for 21 percent of the total variance. This component was named "in-house chores" because they denote chores that involve spending most of the time within the household. The argument here is that fetching water and firewood are activities that are "home-centred" since firewood and water are utilised within the homestead. In other words, "fetching" is not the consideration; the focus is "utilisation". Component 2 can be called "unsatisfactory home environment" because it has high positive loadings for variables that capture poor family relations, while the last component is named "out-door chores" because of its high positive loadings on chores that relate to spending time outside of the home.

Table 3.12 PCA output showing correlations between the variables

	Fetched firewood often	Fetched water often	Cooked /washed often	Grazed livestock often	Worked for pay often	Parents fought	Father used alcohol	Mother used alcohol	Father rarely checked schoolwork	Mother rarely checked schoolwork
Fetched firewood often	1.00									
Fetched water often	0.57	1.00								
Cooked and washed often	0.45	0.47	1.00							
Grazed livestock often	0.17	0.28	0.16	1.00						
Worked for pay often	0.11	0.13	0.09	0.30	1.00					
Parents fought	0.04	0.08	0.07	0.00	0.07	1.00				
Father used alcohol	0.05	0.17	0.13	0.04	0.03	0.33	1.00			
Mother used alcohol	0.09	0.13	0.08	-0.06	-0.05	0.18	0.30	1.00		
Father rarely checked schoolwork	0.05	0.19	0.10	0.00	0.03	0.22	0.32	0.17	1.00	
Mother rarely checked schoolwork	0.21	0.21	0.11	0.09	0.15	0.12	0.17	0.12	0.30	1.00

Table 3.13 Eigenvalues and extraction sums of squared loadings with corresponding percentages of variance accounted for from PCA with varimax rotation

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.495	24.9	24.9	2.5	24.9	24.9	2.1	20.5	20.5
2	1.596	16.0	40.9	1.6	16.0	40.9	1.9	18.6	39.1
3	1.184	11.8	52.8	1.2	11.8	52.8	1.4	13.7	52.8
4	0.916	9.2	61.9						
5	0.839	8.4	70.3						
6	0.752	7.5	77.8						
7	0.658	6.6	84.4						
8	0.620	6.2	90.6						
9	0.546	5.5	96.1						
10	0.393	3.9	100.0						

Table 3.14: Rotated components

	Component 1	Component 2	Component 3
Fetched firewood often	0.828	0.015	0.075
Fetched water often	0.808	0.168	0.160
Cooked and washed often	0.762	0.071	0.023
Grazed livestock often	0.236	-0.038	0.715
Worked for pay often	0.006	0.093	0.807
Parents fought	-0.045	0.656	0.038
Father used to take alcohol	0.050	0.714	0.012
Mother used to take alcohol	0.176	0.470	-0.316
Father rarely checked schoolwork	0.070	0.672	0.009
Mother rarely checked schoolwork	0.195	0.447	0.270

3.14.5 Sample distribution according to community-level factors

As shown in Table 3.15, the research design ensured that the sample was distributed equally between the two study sites. The two districts have very low levels of urbanization and the proportion living in an urban area is only 4 percent compared with 96 percent living in rural areas. This distribution is expected because the two districts were created just before the survey and none of them had any major trading and/or administrative centre within its boundaries. For this reason, type of place of residence was not included in the analysis of educational attainment. These variables were not factor analysed simply because they are already few.

Table 3.15 Distribution of all respondents according to community level factors (N=1200)

	Characteristic	Percent	Number*
District	Buuri	50.0	600
	Igembe North	50.0	600
Type of primary school attended	Public	90.4	1068
	Private	9.6	114
Distance to the school attended	Within 2 km	67.9	803
	Beyond 2 km	32.1	379

Note: *For type of school and distance to school, number excludes those who have never attended school

As expected, an overwhelming majority of the respondents attended public primary schools, and most of them (68%) attended schools that were within

two kilometres of their homes[6]. In subsequent analysis, the three variables were included as individually.

3.14.6 Sample distribution according to personal attributes

There is no plausible reason to believe that there exist any differences in the two study sites or between male and female respondents with respect to genetics (and by extension intelligence as reflected by educational attainment) hence any observed differences are a function of nurture – the sum total of the individual's interactions with his or her environment – rather than nature. For instance, girls may perform worse than boys in school simply because they engage in more time-consuming household chores after school (Moyi, 2011; UNICEF, 1997), lack hygienic facilities hence stay away from school duration menstruation, and may have to contend with a "teacher culture" that considers girls to be less endowed than boys especially in mathematics and sciences, a self-fulfilling prophesy that undermines the quality of interaction between the teacher and the pupil and leads to poor educational outcomes for girls (Lloyd, 2006; Mensch et al., 2001). The other personal attributes were age of the respondent, age at sexual debut, grade repetition and usual position in class.

[6] To cater for the fact that some children had moved from school to school, the question explicitly asked about the school the child attended most of the time during his or her primary school years.

The sample was fairly evenly distributed across the different ages with a mean of 19.95 years. The variables was recoded into three categories namely 15-17 to stand for early adolescence, 18-19 to stand for late adolescence, and 20 or older to stand for young adulthood, accounting for 34 percent, 24 percent and 42 percent respectively as shown on Table 3.16.

Table 3.16: Distribution of respondents by personal attributes (N=1200)

Characteristic	Categories	Percent	Number
Gender of respondent	Male	45.5	546
	Female	54.5	654
Age	15-17	34.1	409
	18-19	24.4	293
	20-24	41.5	498
Age at first sex	Had sex by age 14	25.5	306
	Had sex after 14 or not had sex yet	74.5	894
Grade repetition	Repeated at least once	60.2	703*
	Never repeated	39.8	465
Usual position in class	Top	41.4	487*
	Middle	53.4	628
	Lowest	5.1	60

*Excludes 18 respondents who have never attended school

Males were slightly fewer than females in the sample (accounting for 46 percent and 54 percent respectively), which may be due to higher mobility among males in search of work outside the household. Slightly more than one quarter of the respondents had had sex by age 14. It was not possible to compute any measures of central tendency - mean, median, and mode - for the whole sample because not all the respondents had yet had their sexual debut.

Grade repetition is a common phenomenon with 60 percent of the respondents who had ever been to school reporting that they had repeated a grade at least once at the primary school level. Finally, most of the respondents reported that they usually fell somewhere in the middle of the class with respect to academic performance during their primary school years. Finally, no data reduction was carried due to the fact that personal attributes were captured by only a small set of variables.

CHAPTER 4: FACTORS ASSOCIATED WITH TERMINAL EXIT FROM THE FORMAL EDUCATION SYSTEM AT DIFFERENT STAGES

4.1 Introduction

This chapter is presents the findings of the study and is divided into four broad sections. The first section focus on the first educational transition of interest in this study, which was entry into formal education system (or lack of it), that is, enrolment into standard 1, while the second was dropping out of school before completion of the primary level of education. The third section presents findings on correlates of exiting from the formal education system after completion of the primary level of education while the last section focuses on dropping out of school before completion of the secondary level of education.

4.2 Non-enrolment into formal education system

All respondents who participated in the quantitative component of the study were asked if they had ever attended school, and analyses demonstrate that non-entry into formal education is a problem that is restricted to a minority of children in the study sites. Only 18 respondents (or 1.5% of 1200) said they had never attended school, a rate that is comparable to the national average which is 1.6 for children aged 15-19 and 3.2 among young adults aged 20-24 (KNBS & ICF Macro, 2010).

This finding may be partly attributed to the free primary education programme in that the sampled respondents commenced school at the introduction of the free primary education programme in 2003. As shown in Table 4.1, primary school gross enrolment rate increased from 91 percent in 2002 to 108 percent in 2003, the year free primary education was instituted. Evidently, the free primary education has had a great impact increasing access to primary education and would be expected to radically reduce the percentage of people with no formal education in the future.

Table 4.1 Primary school gross enrolment rate in Kenya, 1999-2090

Year	Boys	Girls	Total
1999	92.7	89.7	91.2
2000	111.3	88.0	99.6
2001	90.8	88.1	89.4
2002	92.9	89.6	91.2
2003	111.1	104.5	107.8
2004	112.0	103.9	108.0
2005	111.2	104.0	107.6
2006	106.4	101.1	103.8
2007	111.8	106.0	108.9
2008	112.2	107.3	109.8
2009	112.8	107.2	110.0

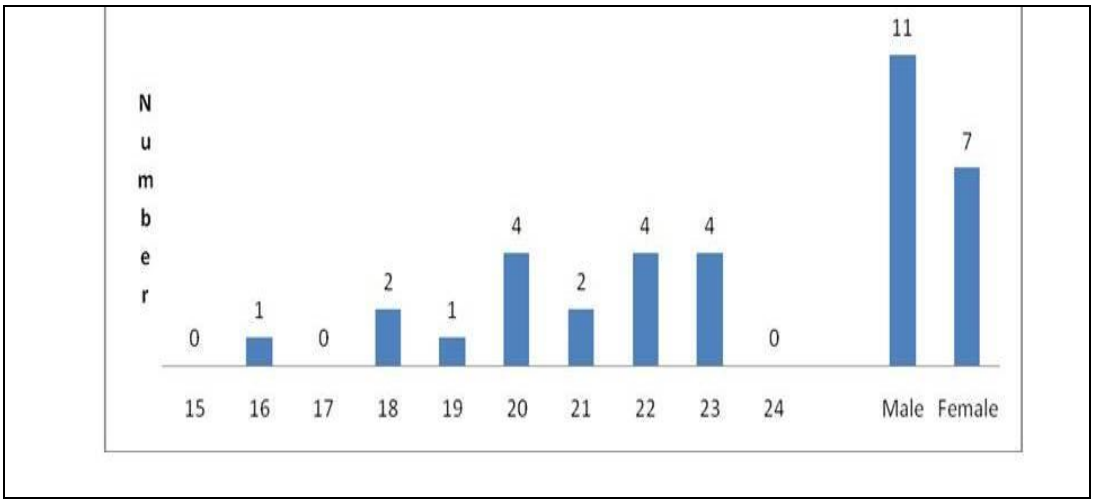
Source: Ministry of Education (MoE). 2010. Educational Statistical Booklet 2003-2009, Government Printers: Nairobi, Kenya

4.3 Factors associated with non-entry into formal education

Given the paucity in the number of respondents with no formal education, it was not possible to carry out any advanced statistical analysis of factors

associated non-enrolment into formal education. Analyses demonstrate that younger respondents were less likely to report having had no formal education compared with their older counterparts, a finding that may be explained by introduction of free primary education in 2003, that is, about nine years before the time of the survey. There were also more males than females in this group as shown in Figure 4.1.

Figure 4.1: Distribution of respondents who have never attended school by age and gender



The study used qualitative data to assess the question above because quantitative data were not sufficient for advanced statistical analysis. Interviews were conducted among two respondents aged 14-24 who had never attended school as well as the District Education officer for Igembe North as key informants. Discussions focused on three broad factors that are hypothesised to affect educational attainment namely household income and non-income factors, community forces, and individual attributes.

According to the Education Officer interviewed, it is not likely that non-entry into formal education is a function of lowness of incomes in Igembe North. He argued:

> Although there are indeed very poor households here, this is perhaps the richest region in Kenya in terms of incomes. Even among the poorest of the families, it is not logical to argue that they do not have enough money to buy school uniforms and pens and such materials so as to enrol a child in standard 1 – even without free primary education. Their incomes are large enough. Surely you can work in a person's farm and afford these costs. The biggest challenge is not failing to join primary school altogether but rather dropping out too early. Those who have never attended school even for a day are a tiny minority.

These views are collaborated by empirical data from all rural districts in Kenya in 2007, which ranked Imenti North was second least poor and Igembe third least poor with respect to food poverty (KNBS, 2007b). An interview with a girl aged thirteen years who had never been to school further support the assertion that non-entry into primary school has more to do with unfavourable household situation than lowness of incomes. The pathways can also be intricate. In the case of this respondent, her mother was not married and so, this being a patriarchal society, her father and paternal grandmother (grandfather was deceased) took her from her mother when she was a toddler. But neither her father nor her grandmother ever considered taking her to school. She could barely scribble her own name but to her, that was a great achievement since she had learnt it from her friends who were lucky to attend school.

Education, health, care and love, and generally good parenting practices are some of the critical needs of a child at this stage (Sen 1999). For these needs to be met, the family should necessarily possess the requisite capacity to provide for the child materially and emotionally and enable the child access shared community resources such as schools, centres of religious instruction, and healthcare among others. At the family level, income levels and economic ability in general play a critical in the household's decision to send the child to school (Ohba, 2009). These factors, however, are medicated by parents' views towards the importance of formal education and by immediate labour demands in the households (O'Higgins et al., 2008).

The guiding premise is that at this stage in life the decision to enter the formal education system is solely a parental decision rather than a joint decision by the parents and the child. Institutional factors also play a role in entry into formal education system to the extent that they shape the nature of costs that households have to incur to secure education for their children (Ohba, 2008).

The wider community is largely responsible for the challenge of non-enrolment into formal education to the extent that it places low premium on education because of existence of other routes to earning a livelihood the principal one being involvement in the *miraa* economy. *Miraa* production and trade is highly appealing in the community because of the assurance of good financial returns hence it is the strongest factor in pulling children out of

primary school. With respect to non-entry into formal education, *miraa* economy is to blame for creating an environment that views school non-attendance as acceptable. In the words of the key respondent quoted above:

> I think in our district, children are very bright. But they have no role models to motivate them. Nobody cares whether you go to school or not. Parents are very reluctant and very busy doing funny things that will never help them. Drinking of *chang'aa* (a potent locally brewed spirit) and chewing of *miraa* is their hobby especially men. Prostitution is the order of the day to the girls. Nobody seems to assist the other and this has brought so many problems in our area.
> (Girl aged 13 years in Mutuati market, Igembe North District)

Sometimes the reasons for non-enrolment into formal education are not clear to the respondent but they can be traced to the *miraa* economy and a society that is indifferent to formal education. One male teenager (aged 18 years) simply said he did not know why his parents did not enrol him into primary school. He just found himself not attending school but did not care to seek answers. "I did not ask why because I was busy picking *miraa* with my cousins who had enrolled and dropped out – I think before they were in standard three".

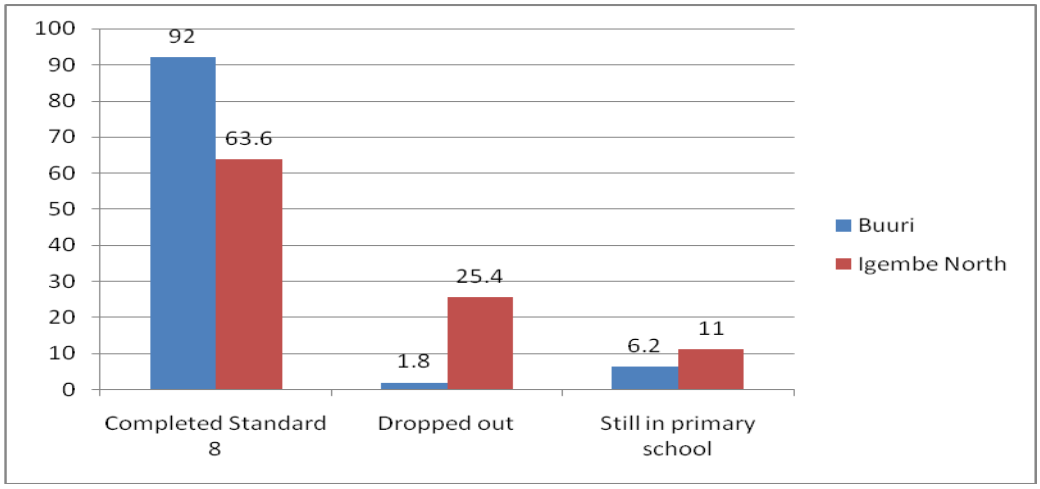
The link between parental characteristics and children's educational attainment was also evident from these qualitative discussions. According to these children, their parents had no education and could barely read or write, and were also involved in the *miraa* economy since they themselves were children.

4.4 School dropout before completion of primary education

The overriding concern of this section was to understand factors associated with dropping out of school before completion of the primary level of education. The 101 respondents who were still attending primary level of education at the time of the study and the eighteen who had never attended school were excluded from the analysis hence the findings presented in this section are based on 1081 cases.

As will be discussed in detail in the next sections, district of residence, which is the main community-level factor in this study, is indeed an important explanatory factor in dropping out of school at the primary level (Figure 4.2). Primary school completion by exact age 15 stood and 92 percent in Buuri district and 64 percent in Igembe North district. Igembe North also had disproportionately higher percentage of primary school dropouts compared with Buuri (25.4% and 1.8% respectively), a pattern that is replicated with respect to being still in primary school after the age of 15 years (11% in Igembe North and 6.2% in Buuri respectively). A Pearson's Chi-square test of the association between district of residence and completion of primary school showed that this link is statistically significant at 99 percent confidence level. Evidently, there is late enrolment and/or higher grade repetition in Igembe North district compared with Buuri district.

Figure 4.2 Distribution of respondents who have ever attended by completion of primary school in the two study sites (N=1081)



Source: Author's computations from the data

Preliminary analysis involved cross-tabulation of the predictor variables against dropping out of school before completion of the primary level, with Chi-square test being applied to establish existence of an association between the two. The same predictors used in the cross tabulation (or factor scores for principal components extracted from respective predictors) were then fitted into a logistic regression model to assess their independent effect in explaining school dropout during primary school years all other factors equal. Finally, the findings were complemented with qualitative data collected from key informants.

4.4.1 Characteristics of children who dropped out of school at primary level: household economic and non-economic factors

The goal of this section is to understand the unique traits of children who dropped out of school before completion of the primary school. It should be noted that analyses do not factor in the many possible interactions between the explanatory variables (statistical controls were introduced in multivariate analyses whose results are presented in the next section) hence these findings can be considered preliminary while the subsequent ones are substantive findings. Main discussions and conclusions are based on the latter.

Table 4.2 is a percent distribution of respondents who have attended school but dropped out before completion of the primary level of education across household income and non-income characteristics. As expected, the percentage of respondents who dropped out during primary school years decreases as household economic status increases. While close to one-third of children from the poorest households reported dropping out of school before completion of primary level of education, the proportion drops to slightly over 10 percent among those in the middle of the wealth index, and drops further to 6 percent among the richest households. This finding is consistent with the view that free primary education is not absolutely free. In many contexts, it is hampered by the many levies charged by schools such as building fund, activity fees and holiday tuitions.

Table 4.2 Percent distribution of respondent who dropped out of school before completion of primary school, according to household, community and individual characteristics (N=1081)

		Percent dropped out	Number	Pearson's Chi-square*
Wealth Index	Poorest	28.9	100	*
	Middle	10.6	38	
	Richest	5.6	21	
Father's education	No education	28.4	48	*
	Primary	14.1	59	
	Secondary +	5.4	16	
	No parent	21.7	23	
Mother's education	No education	30.2	79	*
	Primary	7.1	35	
	Secondary +	8.9	23	
	No parent	18.2	10	
Parents fought	Yes	23.4	71	*
	No	8.7	52	
	Not applicable	18.7	26	
Household size/no. of people	Four or fewer	10.4	44	
	5 or more	17.6	112	
Father drank alcohol	Yes	22.8	54	*
	No	10.1	63	
Mother drank alcohol	Yes	36.8	25	*
	No	12.5	110	
Frequency mother checked schoolwork	Often	12.9	23	*
	Sometimes	10.3	62	
	Rarely/never	23.8	64	
	No mother	25.0	7	
Frequency father checked schoolwork	Often	6.0	15	*
	Sometimes	10.0	38	
	Rarely/never	24.4	79	
	No father	22.2	20	
Total		14.7	159	

* Means significant at $p<0.05$

Preliminary analysis also confirmed the hypothesised link between parental characteristics such as education, domestic violence, alcohol use by parents and amount of time spent on household chores on the one hand and exit from formal education before completion of the primary level of education on the other. The percentage of school dropout at the primary level decreases consistently as parents' level of education increases and increases as household size increases (the latter, however, is not statistically significant at $p<0.05$). In addition, children whose parents fought, took alcohol, and rarely checked the child's schoolwork have higher likelihood for dropping out at primary level compared with their counterparts whose parents did not fight, did not consume alcohol, and checked their children's schoolwork often.

Another important set of household non-economic factors analysed was household chores. There are two main pathways through which the balance between schoolwork and household chores affects educational attainment. Firstly, household chores take time that would have been used to meet learning needs of children which leads to poor academic performance and consequently exiting from the formal education system. The second pathway involves dropping out of school because of existence of opportunities for gainful employment (income-centred chores) for children and youth with limited or no technical skills such as working for pay in other people's farms. According to family economy theory (Fuller and Liang 1999), children and

youth may take up employment before completion of primary education in situations where unskilled labour is in demand. The following household chores were analyzed: grazing; fetching firewood; fetching water; working in the farm; carrying out household chores such as cooking and washing; and working for pay (e.g. in other people's farms).

Table 4.3: Association between engaging in household chores and school dropout before completion of primary school level (N=1081)

		Percent	Number	Pearson's Chi-square
Fetching firewood	Often	25.0	66	*
	Sometimes	14.0	73	
	Rarely/never	6.2	18	
Fetching water	Often	22.6	78	*
	Sometimes	14.1	62	
	Rarely/never	5.9	17	
Working in the farm	Often	22.1	34	*
	Sometimes	16.5	91	
	Rarely/never	8.7	32	
Cooking and washing	Often	18.8	64	*
	Sometimes	13.8	57	
	Rarely/never	11.3	36	
Grazing livestock	Often	24.0	36	*
	Sometimes	16.3	40	
	Rarely/never	11.8	80	
Working for pay e.g. other people's farms	Often	26.9	21	*
	Sometimes	32.4	48	
	Rarely/never	10.4	88	
Total		14.7	159	

* Significant at $p<0.05$

Table 4.3 is a percent distribution of respondents who dropped out of school during the primary level by frequency of involvement in different household chores. Overall, being involved in any household chores "often" is associated with higher percentage of school dropout compared with engaging in such activities "sometimes" or "rarely/never", and the differences are statistically significant at 95 percent confidence level.

For example, the dropout rate for children who said that they fetched firewood "often" is 25 percent while that of children who "rarely or never" fetched firewood is 6 percent. It is evident from these analysis that generally the lower the frequency of engaging in household chores the lower the likelihood of dropping out of school at the primary level. A more detailed discussion of the role of household "psychic wealth" in explaining attainment of primary education is presented in section 4.3 where statistical controls are included in the analysis to take into effect the many interactions that exist between the explanatory variables.

4.4.2 Community factors and school dropout before completion of primary school

Community-level factors define the context of schooling and independently influence quality, access and availability of education. Preliminary test of association between the district of residence on the one hand and terminal exit before completion of primary level of education on the other found that Igembe North had disproportionately higher rate of school dropout at the

primary level compared with Buuri district (28% and 2% respectively). The findings presented in Table 4.4 also suggest that children from private primary schools as well as those attending a school that is not more than two kilometres away from home had lower likelihood of exiting from the formal education system before completion of primary school.

Table 4.4: Percent distribution of respondents who dropped out at primary level according to community-level factors (N=1081)

Characteristic	Categories	Percent dropped out at primary level	Count	Pearson chi-square test of significance *p<0.5
District	Buuri	2.0	11	*
	Igembe North	28.6	148	
Type of school	Public	15.8	153	*
	Private	2.8	3	
Distance to school	2 km or shorter	13.0	110	*
	More than 2 Km	20.8	49	
Total		14.7	159	

4.4.3 Individual characteristics

In this study, the main individual attribute of interest was gender of the respondent. Others were age of the respondent, gender, and age at sexual debut. Cross-tabulations of individual characteristics and school dropout before completion of the primary level of education found that dropping out increased consistently with increase in age of the child – from 7 percent among those aged 15-17 to 13 percent among the older adolescents and

peaked at 21 percent among those aged 20-24 (Table 4.5). It is also evident that those who delayed sexual debut till they were past age 14 (or had not had sex at the time of the survey) had lower proportions reporting dropping out of school during primary school years compared with those who had sex earlier (12% and 22% respectively). A detailed discussion of possible linkages between individual attributes and schooling is presented in the next section.

Table 4.5 Percent distribution of respondents who dropped out at during the primary level according to different individual characteristics

Characteristic	Categories	Percent	Number	Pearson chi-square test of significance *p<0.5
Age of respondent	15-17	7.1	22	*
	18-19	12.5	36	
	20-24	20.9	101	
Gender of respondent	Male	15.6	78	NS
	Female	14.0	81	
Age at first sex	Had sex by age 14	22.2	61	*
	Had sex after 14 or never had sex	12.2	98	
Total		14.7	159	

4.4.4 Multivariate analysis of factors associated with primary school dropout

The analyses findings discussed in the preceding section were meant to show simple associations between independent variables and primary school dropout without controlling for interaction between explanatory variables. For instance, parental education may be correlated with economic status of

the household, level of involvement of the parent in the child's education, frequency with which the child engages in household chores among others hence the independent effect of each of these variables cannot be estimated without recourse to multivariate analysis. In order to show the direction and strength of association between independent variables and school dropout, a logistic regression model was estimated using "enter" method so as to retain all the predictors. As noted earlier, principal components analysis was used to create a wealth index as well as to reduce the number of variables that captured household non-incomes aspects, and factor scores for respective components saved and used in place of original variables for the sake of parsimony. Parental education variables, however, were included as individual variables so as to enable comparison of the results with previous studies.

The first objective of this study was to establish the strength and direction of association between household economic status as captured by the wealth index on the one hand and educational attainment on the other. The special focus on household wealth is intuitively appealing especially when viewed against the backdrop of free primary education: that absence of an association between wealth and completion or non-completion of primary school would mean that the FPE programme has eliminated economic hardships as a barrier to schooling while presence of a statistically significant

association between the two would mean that schooling is still constrained by economic hardships.

Table 4.6 presents the results of logistic regression analysis of factors associated with dropping out of school at the primary level. These findings confirm existence of a statistically significant association between economic status of the household and primary school dropout net of all other factors. Specifically, children from the richest households have 72 percent lower odds for dropping out of school during primary school years compared with children from poor households, and the differences are statistically significant at 99 percent confidence level even after taking into consideration the effects of all other factors. Similarly, coming from household that falls in the middle of the wealth index is associated with 53 percent lower odds for primary school dropout (odds ratio of 0.47 and p-value of 0.009).

Table 4.6: Odds ratios from logistic regression showing the association between different characteristics and dropping out of school before completion of primary level of education (N=1081)

			Beta coefficients	Standard errors	Odds ratios	Significance (p values)
Household economic and non-economic characteristics	Wealth Index	(Poorest)				
		Middle	-0.758	0.290	0.469	0.009
		Richest	-1.268	0.367	0.281	0.001
	Father's education	(No education/primary only)				
		Secondary or higher	0.306	0.399	1.358	0.443
	Mother's education	(No education/primary only)				
		Secondary or higher	-1.217	0.338	0.296	0.000
	Indoor chores		0.212	0.120	1.236	0.077
	Unsupportive home environment		0.472	0.134	1.603	0.000
	Outdoor chores		0.128	0.113	1.137	0.254
	Number of household members		0.017	0.061	1.018	0.775
Community factors	District	(Buuri)				
		Igembe	2.113	0.389	8.277	0.000
	Distance to school		-0.221	0.153	0.801	0.149
	Type of school	(Public)				
		Private	-0.330	0.653	0.719	0.613
Individual attributes	Gender	(Male)				
		Female	-0.569	0.288	0.566	0.048
	Age	(15-17)				0.070
		18-19	-0.152	0.372	0.859	0.683
		20-24	0.496	0.333	1.642	0.136
	Age at first sex	(Had sex by age 14)				
		Had sex after age 14 or never had sex	-0.514	0.270	0.598	0.057

*Reference categories are in parentheses

It may, therefore, be noted that deprivation as reflected by low economic status remains a key determinant of primary school dropout and that it is most debilitating among the poorest households. Indeed, discussions with a key informant (a 19 year old boy who dropped out of school at standard four) on the causes of primary school dropout confirmed the link between poverty and schooling. According to him:

> This area is faced with so many challenges …. it's like school is seasonal. When the dry season sets in, most children from poor families leave school to go and look work to get maize flour. This makes this area a little bit complicated for effective learning. When the wet season sets in things are okay. Learning is continuous but when the dry season sets in, children are forced to move out of class because food is scarce.
> (Male primary school dropout aged 19 years, Maili Ikumi village, Buuri District)

Evidently, poor households face serious constraints in accessing education and may not benefit fully from the FPE programme. Household decision to withdraw children from school so as to engage in paid labour outside the home to boost family incomes, which is a challenge of low income households, may herald terminal exit from the school (O'Higgins et al. 2008; Obha 2008; Glennerster et al. 2011). It is also instructive that "Only a small percentage of parents are negative about education" in this community (KI-1). In other words, parents mean well for their children and they do understand the importance of education, but poverty compels them to make the hard decision of withdrawing their children from school. The link between low economic

ability and school dropout is supported further by the assertion by KI-1 when he argues: "He (father) left our home to go and live with this other woman leaving behind my helpless mother who had nothing to sell in order to take us to school".

The second objective of the study was to determine the direction and magnitude of the association between household non-economic factors or household "psychic wealth" on the one hand and educational attainment – in this case, completion of the primary level of education – on the other. As discussed earlier, the construct "psychic wealth" is based on the premise that any factor that undermines people's efforts and aspirations to live a long and successful life can be viewed as a source of capability deprivation. Such a factor is a form of "unfreedom" (Sen 1999) that needs to be remedied for the full realisation of human development. Although no monetary value can be attached to these factors (which may explain the low attention given to them in the implementation of the free primary education programme in Kenya), they are indeed powerful explanatory factors in educational attainment.

As hypothesised, these findings support the assertion that educational attainment is influenced by the "psychic wealth" of the household as measured by parental education, the balance between household chores and school, and the extent of "supportiveness" of the home environment, which vindicates the case to highlighting non-economic barriers to education in the context of free primary education. Borrowing from Amartya Sen (1999)

postulations about poverty, non-income deprivations are important predictors of school attainment to the extent that they compromise realisation of the individual's potentials of capabilities.

Although there seems to be no statistically significant association between father's level of education and primary school dropout, mother's level of education emerged as a strong predictor of school dropout prior to completion of the primary level of education. Children whose mothers had at least secondary level of education had 70 percent lower odds for dropping out of school before completion of primary compared with children whose mothers had no or only primary education all other factors being equal.

"Unsupportive" home environment (a factor derived from parental use of alcohol, parental conflict, and insufficient parental involvement in child's school work by the parents) was also found to be a strong predictor of primary school dropout: such an environment was associated with 60 percent higher odds for school dropout, and the finding is consistent with previous research. In contrast, engaging in indoor or outdoor chores was not associated with exiting from school before completion of primary education.

The third objective was to assess the link between community level factors and educational attainment, and the specific level of focus in this section is primary school. Analysis of the association between community-level factors and primary school dropout is guided by the argument that communities with

high levels of capability deprivation have little motivation to pursue education because of the paucity of returns to educational investment. The problem is cyclic in that low returns to education make individuals in these contexts not pursue high enough levels of schooling to experience significant returns, which in turn leads to low investment in education and supports the self-fulfilling prophesy – in that context – that education is not a useful means for personal development. Thus, the local culture of such communities may explicitly or implicitly approve of or even promote alternative behaviours including early marriage and childbearing (Mensch et all 2001; Lloyd 2006).

As noted earlier, place of residence means much more than a geographic location or an administrative unit. It sums up virtually everything about a group of people living in close proximity to each other and influencing each other and ultimately shaping overall community attitudes and normative behaviour. In a sense, therefore, district of residence becomes a measure of all those observed and unobserved variables that collectively define a community's culture.

According to Table 4.6, district is the most powerful explanatory factor in primary school dropout. All factors equal, children Igembe North district had more than 8 times higher odds for primary school dropout relative to those from Buuri district, and these differences are statistically significant at 99 percent confidence level. The source of this form of deprivation is not as much a function of culture or poverty – important as these factors maybe – but can

be traced to the dominant economic activity in Igembe North district: *miraa* production and trade. *Miraa* harvesting involves climbing up the *miraa* tree to pick and pack the young twigs, an activity which only young children aged between five and 14 years can do without breaking the feeble branches of the plant. There is a clear gender role differentiation in that only boys are allowed to carry out *miraa* harvesting and packing. The activity has huge immediate monetary benefits to the children and their households and acts as a powerful factor in pulling children out of school.

Another set of factors associated with educational attainment that were of interest in this study were individual attributes in general and gender of the child in particular. While decision to enter into formal education is made solely by parent, dropping out of school during primary school years may also be an individual child's decision in that the household may avail the requisite resources for schooling but the child can decide, at least to some extent, whether she will progress through the primary school years or not. This study posits that children are active players who consciously evaluate their environment and make personal decisions by carrying out a cost-benefit analysis based on the knowledge and skills accorded to them by their immediate social, cultural, and economic circumstances (O'Higgins et al. 2008). Whether the decision to exit from formal education is a parental one or a joint parent-child decision, or even a child's own personal decision, it is a

reflection of local social, economic, cultural and psychological milieu obtaining at a particular point in time.

Although analysis found a statistically significant association between gender and exiting the education system prior to primary school completion, the direction of association contradicts theory and much of empirical literature on girl child education: it is not the girl child who is disadvantaged in this context. Girls have 43 percent lower odds for primary school dropout relative to boys when all other factors are considered, and these results are statistically significant at 95 percent confidence level. In other words, these results indicated that it is the boy child who is more affected with respect to dropping out of school prior to completion of primary school.

Dropping out of school at this stage is not associated with age of the child but there is a weak association between age at sexual debut and school dropping. This association is in the hypothesised direction in that respondents who delayed sexual debut until they were more than fourteen years (or had not had sex at the time of the survey) have 40 percent lower likelihood of dropping out of school compared with their counterparts who had initiated sex by exact age 14.

4.5 School dropout after completion of primary education

4.5.1 Introduction

This section focuses on factors associated with school dropout after completion of the primary level of education, or non-entry into secondary school. This has been one of the main exit points in Kenya's education system since independence.

There have been some appreciable improvements in the recent past with respect to transitioning to secondary Kenya. The primary-to-secondary transition rate increased from less than 50 percent in late 1990s and early 2000s to 69.9 percent in 2009 as shown in Table 4.7. While this improvement is commendable, there is need to pay attention to the 30 percent who do not join secondary school because acquisition of secondary education is useful in equipping individuals with skills and knowledge necessary to participate in the modern economy. This study was guided by the view that transition to secondary school is influenced not only by individual and household factors but also by community level forces including state policies on education to the extent that they affect affordability, accessibility and availability of schools.

Table 4.7: Transition rate from primary to secondary school by gender, 1998-2010

Year in Std 8	Year in form 1	Enrolment In Std 8 ('000)			Enrolment In Form 1 ('000)			% Transiting to Form 1		
		Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1997	1998	224.6	209.3	433.9	102.4	92.8	195.3	45.6%	44.3%	45.0%
1998	1999	221	215.3	436.3	105.2	95.8	201	47.6%	44.5%	46.1%
1999	2000	246.6	228	474.6	108.1	97.2	205.3	43.8%	42.6%	43.3%
2000	2001	235.6	227.8	463.4	112.2	103.4	215.6	47.6%	45.4%	46.5%
2001	2002	261.7	246.6	508.3	116.2	105.2	221.5	44.4%	42.7%	43.6%
2002	2003	296.9	244.5	541.3	129.4	121.7	251.1	43.6%	49.8%	46.4%
2003	2004	303.9	284.1	588	132.6	118.6	251.2	43.6%	41.7%	42.7%
2004	2005	343	314.8	657.7	196.2	172.2	368.3	57.2%	54.7%	56.0%
2005	2006	352.8	318.7	643.5	195.7	173	368.7	55.5%	54.3%	57.3%
2006	2007	352.8	313.7	666.4	210	187	397	59.5%	59.6%	59.6%
2007	2008	372.1	332.7	704.7	227.4	194.5	421.9	61.1%	58.5%	59.9%
2008	2009	367.1	328.1	695.7	225.1	220.8	445.9	61.3%	67.3%	64.1%
2009	2010*	381.6	345.5	727.1	244.5	241.6	486.1	64.1%	69.9%	66.9%

Source: Source: Ministry of Education (MoE). 2010. Educational Statistical Booklet 2003-2009, Government Printers: Nairobi, Kenya

4.5.2 Characteristics of children who drop out of school after completion of primary school

The results presented in this section are based on analysis of the sub-sample of children who completed primary school, which involved comparison of those who subsequently proceeded to join secondary school with those who did not. The same procedures that were followed in the previous were used here; cross-tabulations were carried out and the strength of association between the selected clusters of predictors and the outcomes variable determined using Chi-square test. This was followed by fitting the same set

of predictors into a logistic regression model using "enter" method so as to retain all the predictors in the model.

Preliminary analysis of the link between economic status and non-entry into secondary school involved cross-tabulations with Chi-square test. Table 4.8 is a percent distribution of respondents who completed standard 8 at the time of the survey according to different background characteristics.

There is a strong association between the independent variables of the study and school dropout after completion of the primary level of education. First, although poor and middle economic status households have the same rate of school dropout at 36 percent, the proportion falls sharply to 16 percent among the richest households. These simple associations demonstrate that household economic status is a predictor of transitioning to secondary level. The percentage of children who did not enrol in secondary school reduces consistently with education level of parents but mother's level of education (compared with father's) exhibits the biggest reduction: from 43 percent to 17 percent for children of mothers with no formal education and those of mothers with university level of education respectively.

Table 4.8: Percent distribution of respondents who completed primary school but did not join secondary school according to parental characteristics (N=922)

Characteristic		Percent dropped out	Number	Pearson's Chi-square*
Wealth Index	Poorest	35.8	88	*
	Middle	35.7	115	
	Richest	15.8	56	
Father's education	No education	23.0	14	*
	Primary	30.1	126	
	Secondary	22.3	44	
	University	12.5	4	
Mother's education	No education	43.1	47	*
	Primary	26.8	134	
	Secondary	23.0	42	
	University	16.7	5	
Parents fought	Yes	24.9	48	
	No	23.0	91	
Household size/no. of people	4 or fewer people	24.8	57	
	5 or more people	29.0	196	
Father drank alcohol	Yes	28.4	52	
	No	25.8	145	
Mother drank alcohol	Yes	34.9	15	*
	No	26.2	201	
Frequency mother checked schoolwork	Often	29.7	46	*
	Sometimes	16.7	90	
	Rarely/never	52.7	108	
Frequency father checked schoolwork	Often	24.8	58	
	Sometimes	28.7	98	
	Rarely/never	28.2	69	
Total		28.1	259***	

* Means statistically significant at p<0.05

**Some respondents did not answer some questions in some instances because the questions did not apply to them or the questions were not answered although they should have been answered. Thus, percentages are based on valid cases only.

It is also evident that mother's use of alcohol is associated with her children's terminal exit from the formal education system after completion of primary school just as is her involvement in checking the child's schoolwork. On the other hand, domestic violence, household size, father's alcohol use status, and father's frequency of checking the child's school work are not statistically associated with terminal exit after completion of standard 8.

Table 4.9 presents a unique set of non-income factors, which capture the concept of time allocation between household chores and schoolwork among children. Generally, the more frequently the person engaged in household chores, the higher the likelihood of exiting from the formal education system after completion of the primary level, and apart from "fetching firewood", the differences across the categories are statistically significant at 95 percent confidence level. Worth emphasising is that respondents who said that they worked for pay (for example, in other people's farms) have the largest proportion that did not join high school. While 61 percent of children who said that they "often" worked for pay during their primary school years exited the formal education system after completion of the primary level of education, the proportion drops to 41 percent among those who reported "sometimes working for pay", and falls even further to 24 percent among those who "rarely or never worked for pay".

Table 4.9: Percent distribution of respondents who did not join form 1 according to frequency of engaging in different chores (N=922)

Characteristic	Categories	Percent	Number	Pearson chi-square*
Fetching firewood	Often	31.1	71	
	Sometimes	29.4	132	
	Rarely/never	22.2	54	
Fetching water	Often	36.7	98	*
	Sometimes	27.8	105	
	Rarely/never	19.8	54	
Cooking and washing	Often	42.6	118	*
	Sometimes	21.6	77	
	Rarely/never	21.9	62	
Grazing livestock	Often	43.9	50	*
	Sometimes	21.5	44	
	Rarely/never	26.8	160	
Working for pay e.g. Other people's farms	Often	61.4	35	*
	Sometimes	41.0	41	
	Rarely/never	23.8	180	
Total		28.1	259	

*Significant at $p<0.05$

The key finding here is that frequent engagement in household chores is correlated with non-entry into secondary level of education. However, at this level of analysis, it is not possible to rule out interaction between engaging in household duties and other factors that influence schooling such as parental education and household economic status. As argued earlier, it is entirely possible that children of more educated parents or those from rich households

may be relieved on the burden of engaging in time consuming household chores by hired labour. The challenge of teasing out the relative importance of these factors is addressed in multivariate analysis section.

4.5.3 Community factors and terminal exit after completion of primary education

According to Table 4.10, only type of school is strongly associated with not transitioning to secondary school among children who successfully completed the primary level of education. While 30 percent of children who attended public schools primary exited before enrolling into secondary school, the proportion is only 17 percent among those who attended private primary schools.

Table 4.10: School dropout after primary education according to community level factors

Characteristic	Categories	Percent dropped out	Number	Pearson chi-square*
District	Buuri	28.6	158	
	Igembe north	27.3	101	
Distance to school	2 KM or less	26.7	162	
	More than 2 KM	30.7	97	
Type of school	Public	29.6	242	*
	Private	16.2	17	
Total		28.1	259	

*Significant at p<0.05

It is interesting to note that district of residence, which was found to be the main explanatory factor for school dropout prior to completion of the primary

level, is not a key factors in transitioning to secondary. In other words, the rate of attrition after completion of the primary level of education is similar across the two districts.

4.5.4 Individual attributes and terminal exit after completion of primary school

Table 4.11 presents respondents who successfully completed the primary level of education but did not enrol into secondary school distributed according to individual characteristics. Only gender of the respondent is significantly associated with school dropout at this stage: about one third of girls who successfully completed standard 8 did not join Form 1 but the proportion of boys who exited at that level is only 23 percent.

Table 4.11: Distribution of respondents who completed standard 8 but did not enrol in secondary school by personal attributes

Characteristic	Categories	Percent	Number	Pearson Chi-square*
Gender	Male	23.4	99	*
	Female	32.1	160	
Age	15-17	28.1	81	
	18-19	26.3	66	
	20-24	29.2	112	
Age at first sex	Had sex by age 14	25.3	55	
	Had sex after 14 or never had sex	28.9	204	
Total		28.1	259	

4.5.5 Multivariate analysis of terminal exit after completion of primary education

The findings presented above are based on bivariate analysis hence they do not take into consideration the possible interactions between the variables. It is highly probable, for instance, that the frequency of checking the child's schoolwork by the mother is correlated with mother's alcohol use in that mothers who abuse alcohol are likely to check their children's homework less frequently compared with mother's who do not abuse alcohol because alcohol-abusing mothers are less often at home when the child is doing homework or may not be in the right frame of mind to guide the child. To take care of this problem and subsequently confirm or refute the results of bivariate analysis presented in the preceding subsections, logistic regression was carried out with all the predictors included in the model.

The first set of explanatory variables of interest in this study was economic status of the household. Table 4.12 shows the magnitude and direction of association between the different predictors of school dropout on the one hand and terminal exit after completion of primary school on the other. Overall, household economic status, mother's education, engaging in outdoor chores, distance to school and gender of the respondent were found to be statistically associated with terminal exit after completion of primary level of education.

More specifically, although children from middle income households are not statistically different from those from poor households with respect to

transitioning to secondary school, belonging to the richest bracket has odds ratios of 0.688 for not transitioning to high school relative to belonging to the poorest households when the confounding effects of all other variables in the model are taken into account. These differences are statistically significant at 99 percent confidence level.

There is also a significant association between household non-income factors and school dropout after completion of the primary level of education. For instance, respondents whose mothers had secondary or higher level of education had odds ratio of 0.593 and these differences are statistically significant at 95 percent confidence level. In contrast, father's education is not associated with exiting from the formal education system after completion of the primary level of education.

Analyses further demonstrate that engaging in outdoor chores (grazing, working for pay, e.g. in other people's farms) is a strong predictor of school dropout after completion of primary school. Children living in this kind of home environment are twice as likely to fail to enrol in secondary school compared with those not living in such an environment. On the other hand, engaging in indoor chores and living in an unsupportive home environment are not strongly associated with exit after completion of primary school.

Table 4.12: Odds ratios from logistic regression analysis showing the association between different characteristics and dropping out of school after completion of primary level of education (N=922)

			Beta coefficients	Standard errors	Odds ratios	Significance (p values)
Economic	Wealth Index	(Poorest)*				
		Middle	-0.373	0.255	0.688	0.143
		Richest	-1.173	0.290	0.310	0.000
Household non-income factors	Father's education	(No education/primary)				
		Secondary and above	0.025	0.264	1.025	0.924
	Mother's education	(No education/primary)				
		Secondary and above	-0.522	0.227	0.593	0.021
	Indoor chores		0.180	0.110	1.197	0.102
	Unsupportive home environment		0.064	0.123	1.067	0.600
	Outdoor chores		0.701	0.115	2.015	0.000
	Number of household members		0.037	0.050	1.037	0.464
Community factors	District	(Buuri)				
		Igembe	-0.321	0.250	0.726	0.199
	Distance to school		0.282	0.111	1.326	0.011
	Type of school	(Public)				
		Private	-0.310	0.365	0.733	0.395
Individual factors	Gender	(Male)				
		Female	0.549	0.232	1.731	0.018
	Age	(15-17)				
		18-19	0.189	0.260	1.207	0.469
		20-24	-0.236	0.258	0.789	0.360
	Age at first sex	(Had sex by age 14)				
		Had sex after age 14 or never had sex	0.048	0.236	1.049	0.840

*Reference categories are in parentheses

The three community-level factors included in the model were district, distance to school, and type of school. As argued earlier, district of residence is a proxy measure of the socio-cultural context in which schooling takes place and may support or impede acquisition of formal education. In contexts where education is given low premium, children may have low motivation to pursue education and may opt for alternative developmental trajectories including early marriage (Lloyd, 2006). It was further hypothesised that distance to school affects academic performance because of the pressure – both physical and psychological – it exerts on the learner. Finally, the literature demonstrates that private primary schools perform considerably better than public schools hence their students are more likely to make the transition to secondary school compared with those from public primary schools.

Analysis show that only distance to school is strongly associated with school dropout at this stage: one unit increase in the distance to school is associated with 1.326 odds for school dropout. In contrast, there is no statistically significant difference between Buuri and Igembe North districts with respect to primary-to-secondary transition. It may be recalled that "district" was found to be the most significant explanatory factor in school dropout prior to completion of primary level of education hence this finding shows a shift in the role of place of residence or context of school in explaining educational attainment.

With respect to individual attributes, the study found that female children have 1.731 odds for not transitioning to secondary school compared with male children, and the difference is statistically significant after controlling for the confounding effects of all other variables. Again just as with district, this finding is diametrically opposite of what was established at the previous transition (school dropout before completion of primary school) which showed that male children have higher odds for exiting from the formal education system compared with female children.

Although lifelong disadvantage brought about by truncation of education at any particular stage was not a core area of focus for this study, some attempts were made to assess views of school dropouts on their own assessment of the extent of deprivation they may suffer in future as a direct result of not progressing with education. These qualitative discussions aimed at assessing the veracity of the contention that poor childhood leads to poor adulthood.

According to these respondents, failure to join high school is a critical turning point for one's personal development to the extent that penetrating the modern economy requires specialised skills. Some have regrets especially if they consider themselves to be "bright" hence they could have attained high levels of education if they had been given a chance. To those who did not care much about joining high school because they did not pass end of primary examination, there is not much disadvantage because "even those who

completed class eight and even secondary school are suffering the same way. They are just married like me and are struggling with life as I am struggling" (19 year-old girl who did not join high school).

4.6 High school dropout

4.6.1 Introduction

The focus of this section is high school dropout, which is the last transition of interest in this study. Analyses were guided by the postulate that high school dropout is influenced by many of the same factors that cause school dropout at earlier stages as well as by a new set of factors that can be linked to the fact that individuals are also undergoing biological and social transitions brought about by the onset of puberty. This level of maturity means that individuals can, and indeed do, make decisions about their own schooling.

The same sets of predictors used in the previous two transitions were used in the analysis of high school dropout so as to understand their role throughout the child's educational career up to the secondary level of education. Additionally, type of secondary school attended, gender composition of the school, parental supervision during high school years, and child's use of any substance of abuse also become important predictors of schooling. Some variables used in analyses of school dropout at earlier stages were considered inapplicable at the high school level and were consequently excluded from the analysis of correlates of high school dropout. These were: distance to the primary school attended; frequency with which parents checked schoolwork

during earlier stages; and household chores that the child engaged in during primary school years. This is because majority of secondary schools in Kenya are boarding schools.

The sub-sample used in these analyses comprised respondents who ever enrolled in secondary but were not attending school at the time of the survey (that is, they had either completed the level or dropped out). It may be noted from the outset that analyses at this stage were faced with one data limitation namely lack of enough observations. Out of the 1200 respondents who participated in the survey, only 41 of them (or 3.4%) reported having exited the formal education system before completion of high school.

This, is an important "positive" finding because it demonstrates that exiting from the education system at high school is not a common occurrence in the two study sites. In other words, almost all children who get enrolled into high school do, indeed, complete that level of education. This finding is not wholly attributable to free secondary because most of the respondents in the subsample were not beneficiaries of the programme since the programme commenced in 2008 and data collection for this study was carried out in 2011[7]. In all likelihood, the rate of high school dropout will continue to reduce

[7] Generally, children complete high school by age 18 hence most of the respondents who were aged over 20 years had completed high school at the start of FSE programme. Respondents aged over 20 years constitute 44 percent of the "ever attended secondary school" subsample.

as the free secondary education programme becomes more effectively implemented.

From a methodological perspective, however, it should be emphasised that the paucity of observations militated against any robust statistical analysis hence this section presents percent distributions of respondents across the many variables of interest, and the only test of association between the predictors and the dependent variable (high school dropout) is Chi-square test. Qualitative data collected from key informants was then used to shed more light on the results of the quantitative analyses.

4.6.2 Household characteristics and high school dropout

An assessment of the association between each of the factors of interest and high school dropout using Pearson's chi-square test is presented in Table 4.13. The importance of economic status of the household in explaining high school dropout is confirmed by the finding that the richest households have proportionately lower rates of high school dropouts (6.8% among the richest and 15.2% among the poorest) and the differences are statistically significant at 95 percent confidence level.

Table 4.13: Distribution of respondents who dropped out of school at the secondary level according to various parental factors (N=41)

Characteristics	Categories	Percent dropped out	Number	Pearson Chi-square test*
Wealth Index	Poorest	15.2	17	*
	Middle	10.4	12	
	Richest	6.8	12	
Father's highest level of education	Primary or no education	6.5	13	
	Secondary or above	3.6	4	
Mother's highest level of education	Primary or no education	9.0	21	
	Secondary or above	6.7	8	
Parents ever fought	Yes	4.7	4	
	No	5.1	9	
Parental supervision	Strict	4.2	10	*
	Lax	15.3	13	
Household size	Four or fewer people	13.6	12	*
	5 or more people	6.1	17	
Total		10.2	41	

Another finding that appears to contradict previous research is the apparent lack of a significant statistical association between parental education and high school dropout. These results, though indicative due to absence of statistical controls, suggest that high school dropout is influenced by a different set of factors from those that explain school drop dropout at earlier

stages. In summary, these findings are not conclusive because available data did not support robust statistical analysis that would allow for inclusion of statistical controls.

4.6.3 Community factors and high school dropout

Community factors define the context in which learning occurs and are therefore hypothesised to influence educational attainment at all levels including high school. The four community factors that were studied are district of residence, general performance of the school relative to other schools according to respondent's assessment, and the nature and type of the school attended.

Table 4.14 is a percent distribution of respondents who dropped out of school during high school years according to various community factors. It also presents results of Chi-square test showing the strength of association between these factors and high school drop out. At 95 percent confidence level, Pearson's Chi-square test shows that there is a statistically significant association between school performance, type of school and school composition on the one hand and dropping out at high school level on the other. As hypothesised, children who attended schools which they considered to be poor academic performers as opposed to good performers, district schools as opposed to provincial or national schools, and schools that were mixed as opposed to single sex schools have proportionately higher percentages of school dropouts.

Table 4.14: Percent distribution of respondents who dropped out of the formal education system before they complete secondary education, by different characteristics (N=41)

		Percent dropped out	Number	Pearson's Chi-square*
District	Buuri	8.7	18	
	Igembe North	11.7	23	
Performance of school	Good performer	7.1	18	*
	Poor performer	13.5	19	
Nature of school	District	13.8	29	*
	Provincial/national	6.2	12	
Type of school	Single sex	4.9	13	*
	Mixed	18.3	22	
Total		10.2	41	

* Significant at p<0.05

4.6.4 Individual attributes and high school dropout

The nature of the association between individual level variables (gender, age at sexual debut, and abuse of alcohol, cigarettes and *miraa*) and high school dropout is presented on Table 4.15. Results demonstrate that although there are differences in the proportions of respondents who dropped out at high school across the different categories, only age at sexual debut is statistically significant. Specifically, children who had their sexual debut prior to age fourteen have proportionately higher rate of high school dropout compared with those who had their first sexual encounter after age 14 (13.7% and 7.8% respectively).

Table 4.15: Percent distribution of respondents according to individual attributes and high school dropout

Characteristic	Categories	Percent dropped out	Number	Pearson's Chi-square*
Gender	Male	8.7	18	
	Female	9.6	23	
Age at first sex	Had sex by age 14	13.6	14	*
	Had sex after age 14 or never had sex	7.8	27	
Drunk alcohol	Yes	8.3	6	
	No	9.2	35	
Smoked cigarettes	Yes	0.0	0**	
	No	9.7	41	
Chewed *miraa*	Yes	7.1	10	
	No	8.4	31	

*Significant at p<0.05; **One cell has expected count less than 5 hence Chi-square result is not realistic

The finding that use of substances of abuse such as alcohol, tobacco and *miraa* is not an important explanatory factor in dropping out of high school contradicts theoretical postulates on deviance and educational attainment. However, as noted earlier, the data do not support multivariate analysis of these associations, which would have been ideal because statistical controls could have been included.

The study carried out a detailed discussion with two key informants (one female and one male) who had dropped out of school during high school years

about the circumstances that led to their dropping out of school as well as their previous situation so as to shed more light on the factors associated with dropping out of school during the secondary level of education. The female informant, who was aged twenty years, dropped out towards the end of Form 2 and according to her, she had no intention of going back to school because she was already married to the father of her child.

While it was not possible to pinpoint any specific parental characteristic that could have contributed to her early initiation of childbearing, it emerged in the discussion that the economic problems were not to blame in her context. First, she came from a well off household relative to other households in her community and her school fees were fully paid at the time she got pregnant and dropped out of school. In addition, she had an older sibling who had successfully completed secondary school and two younger ones were in primary school. In her own words, she did not proceed because "I got pregnant by accident. I could have completed and passed but I got pregnant and did not want abortion because it is wrong. It's better to sacrifice school". Why did she not take advantage of the return to school policy? Things took a familiar course for many young pregnant girls in the study community: her parents and the boy's parents met and agreed that she should simply move in with the boy so that he could take responsibility for his actions. Her door back to school was tightly shut not only because she was now a mother and a

wife with parenting responsibilities in her hands but also by the fact that she got pregnant with her second child before the first one started walking.

The male respondent's exit from high school was more of an individual choice than an accident, and his academic destiny was largely shaped by the fact that he considered himself more of a businessman in waiting rather than a potential scholar. The decision to get out of the system for good was a culmination of many factors. First, he did not think he needed to go to high school in the first place and his performance until he left at Form 3 was not good: he readily admitted that he was never among the best performing students in academics. Second, he experienced frequent suspensions from school either because of lack of some school-related requirements such as school uniforms or because of disciplinary issues such as bullying other students or sneaking out of school. He simply got into "matatu" industry as a conductor during December holidays after completing Form 3.

Evidently, dropping out of school at the secondary level is affected by a few of the factors that are also responsible for school dropout at earlier stages (economic status of the household as measured by the wealth index and parental supervision) as well as by a few new variables that apply only to high school level. Children who attended mixed schools have higher proportions of school dropout compared with those from single sex schools. Gender of the respondent does not seem to explain why some children stay in school till completion of high school while others exit.

CHAPTER 5: TRACING THE PROGRESSION FROM PRIMARY TO SECONDARY LEVELS: A DISCUSSION

5.1 Introduction

Human capital theory posits that education is important in advancement of society because of the attendant private and public returns. Investment in human capital has been shown through empirical research to contribute to national economic output by increasing the productivity of workers (Oketch et al. 2008) as well as through its positive externalities (Manda et al., 2002; Olaniyan & Okemakinde, 2008). According to Oketch et al. (2008), equitable access to education of good quality has several benefits such as lowering poverty and inequality, accelerating economic growth, and improving health of infants and children. Olaniyan & Okemakinde (2008: 157) summarise this role thus:

> Economists regard education as both consumer and capital good because it offers utility to a consumer and also serves as an input into the production of other goods and services. As a capital good, education can be used to develop the human resources necessary for economic and social transformation. The focus on education as a capital good relates to the concept of human capital, which emphasizes that the development of skills is an important factor in production activities. It is widely accepted that education creates improved citizens and helps to upgrade the general standard of living in a society. Therefore, positive social change is likely to be associated with the production of qualitative citizenry.

The study sought to understand the place of the many barriers to educational attainment embedded in the community and the household which children

must contend with in their educational pursuit. The study sites were two rural communities because rural settings are associated with higher levels of poverty compared with urban areas (KNBS, 2007). By design, the definition of poverty in this study is rather broad: it incorporates income-related parameters at the household level – measured in the most reliable way by use of household's durable goods - but also goes on to include non-income deprivations that, in their own unique way, constitute "diminished opportunities" to exploit one's potential and to lead a fulfilling life. Non-income factors can be considered as forms of "unfreedoms" (Sen, 1999) that constrain individuals in their endeavour to achieve some defined socially acceptable personal objectives. Using this perspective, inadequacies in parenting, child abuse, poor parent-child relations, lax supervision by parents, and time-intensive household chores are viewed as aspects of poverty that affect schooling. In this study, these factors are presumed to fall within the realm of "psychic wealth" and have as important a role as "physical wealth" or income-related factors.

Although rural areas in Kenya have relatively higher levels of deprivation compared with urban areas (KNBS, 2007), they are not homogenous hence they can be ranked in a continuum from poorest to richest. The study was guided by the view that the relative position of the household in this continuum can predict which children would exit from the formal education system at different stages and which ones would stay in school. Household

decisions are made within the social, economic, cultural, and policy circumstances prevailing within the wider community hence analyses of factors affecting any educational transition should necessarily be situated in the context in which they occur.

The study further postulated that from the onset of puberty, schooling is influenced in a significant way by individual decision making to the extent that the child can decide to stay in school or exit somewhere along the way (Biddlecom et al., 2008). Individual attributes affect the process of acquiring behaviour as they modify a person's susceptibility to social influence that is exerted through reinforcement or modelling procedures (Bandura, 1992). It is for this reason that the study further postulated that individual agency in educational pursuit becomes progressively more and more important as the child grows older. The study also paid special attention to gender dimensions in educational attainment. The study had the following hypotheses:

1. There is significant association between household economic factors and educational attainment among male and female children;
2. There is a significant association between non-income factors and educational attainment among male and female children;
3. Educational attainment is influenced with community–level factors;
4. Educational attainment varies by gender.

Quantitative data was collected from a random sample of 1200 young people aged 15-24 years distributed equally across the two study sites, that is, Igembe North and Buuri districts. Since all the dependent variables were binary, logistic regression was the main analytic method. Principal components analysis was used to construct a household wealth index from household assets (television, radio, car, mobile phone, land and cattle), and the index was divided into three percentiles to represent "poor", "middle", and "rich" categories. Further, principal components analysis was used to reduce the dimension of household non-income variables since they measured the same construct, that is, household environment. Three components were extracted. The first component had high positive loadings for household chores that were "in-house" hence it was named "in-house chores" while the second was named "unsatisfactory home environment" because it had high positive loadings for variables that captured poor family relations (parental alcohol use and conflicts, infrequent involvement in the child's school etc) and the last component was called "out-door chores" because of its high positive loadings on chores that related to spending time away from home. Regression factor scores for these components were used in place of the original variables. The study also collected qualitative information from selected male and female respondents aged between 15 and 24 years who experienced any of the events of interest in the study so as to shed more light on factors associated with the respective transition.

Figures 5.1 summarises educational attainment of all male and female respondents who participated in the study. About 2 percent of the sample (or 18 respondents) reported that they had never attended school while 13 percent said they dropped out before completing the primary level and 8 percent were still in primary school. Slightly over 22 percent dropped out after completing the primary level (that is, did not join high school) while 3 percent dropped out before completion of high school. Eighteen percent were still in high school and 34 percent said they had completed that level.

Since a considerable number of respondents were still in primary school and secondary school hence they may or may not ultimately complete the respective level at the end of their educational careers, the percentages presented in this figure do not reflect the school dropout rates for any cohort of children in the strict sense of the term: the findings only reflect the level of education the respondent had achieved at the time of the survey. Thus, respondents who were still attending primary or secondary school were excluded from analysis of factors associated with school dropout for the respective level simply because their education status with respective to completion of the respective level was undefined.

Table 5.1: Schooling status of all respondents in the sample (N=1200)

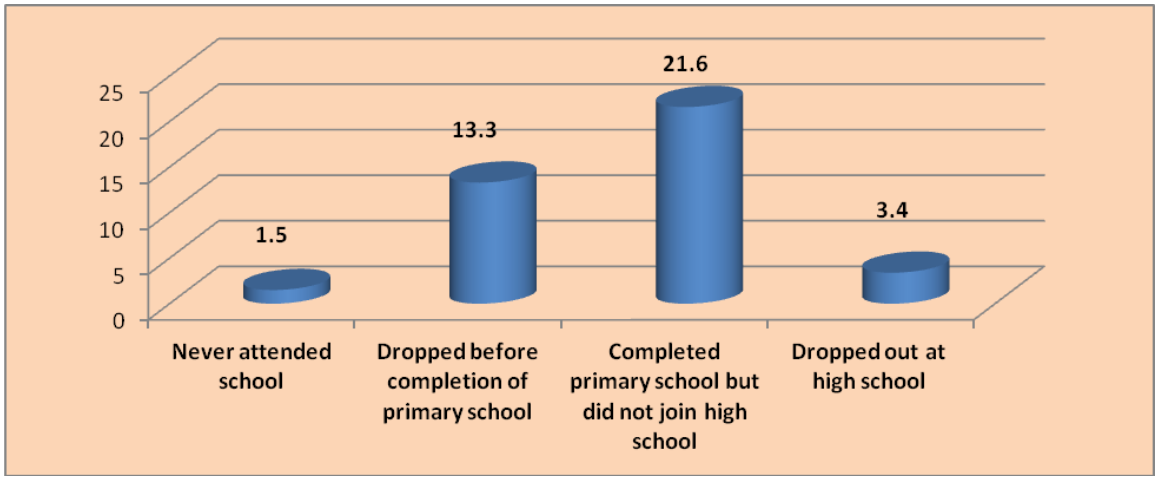
Category of respondents	Percent of total respondents	Number
Never attended school	1.5	18
Dropped out at primary level	13.3	159
Still in primary school	8.4	101
Dropped out after completing primary school	21.6	259
Dropped out at high school	3.4	41
Still in high school	18.0	216
Completed high school	33.8	406
Total	**100.0**	**1200**

Analyses of non-entry into formal education compared the 18 respondents who never attended school with the rest of the respondents (who ever attended school). Similarly, analyses of dropping out of school prior to completion of primary level, dropping out at the end of primary level, and dropping out during high school involved comparing dropouts at the respective stage with their counterparts who did not dropout out of school.

It may be recalled that the first transition, that is, non-entry into formal education system, had too few cases (18 respondents only) for any sophisticated statistical analysis of factors associated with experiencing that transition hence analysis and subsequent discussions were limited to only qualitative data. A description of characteristics of members of this unique group and policy implications of non-enrolment into formal education are presented in subsection 5.2 of this chapter. The proportion of respondents

who did not enrol into primary school or dropped out at different points is presented in Figure 5.1. The primary-to-secondary transition has the highest rate of wastage followed by dropping out during primary school years (21.6% and 13% respectively). On the other, non-enrolment and dropping out at the secondary school level are relatively rare events in the two study sites.

Figure 51: Percentage of respondents who dropped out of the formal education system at different exit points (N=1200)



Analysis of school drop out before completion of the primary level as well as non-entry into secondary school after completion of primary school had sufficient observations for multivariate analysis as implied in Figure 5.1. Table 5.2a presents the findings of multivariate analysis of factors associated with each of the two transitions. In the analysis of factors associated with the last transition, that is, high school dropout, variables that conceptually do not influence high school level such as frequency with which parents checked the

child's school work, household chores and distance to school were excluded[8] while other factors that are unique to high school such as gender composition of the school and drug and substance abuse were included in the analyses.

Tables 5.2a and 5.2b summarise the results of the analysis of each of the three transitions presented in the previous chapters[9]. The first table focuses on dropouts during primary school and after completion of the primary level. Results of analysis of factors associated with high school dropout, which are presented in Table 5.2b, are basic (that is, bivariate only) because data limitation militated against multivariate analysis.

[8] Majority of secondary schools in Kenya are boarding schools hence children at this level of education are not likely to be affected by these variables.

[9] Findings relating on non-entry into formal education system are not presented in the table because the data did not allow for any statistical analysis)

Table 5.2a: Odds ratios from logistic regression analysis of factors associated with school dropout points prior and after completion of the primary level of education

Characteristic	Categories	Dropout before completion of primary school	Dropout after primary school
		Odds ratios	Odds ratios
Wealth Index	(Poorest)		
	Middle	0.469*	0.688
	Richest	0.281*	0.31*
Father's education	(No education/primary only)		
	Secondary or higher	1.358	1.025
Mother's education	(No education/primary only)		
	Secondary or higher	0.296*	0.593*
Indoor chores		1.236	1.197
Unsupportive home environment		1.603*	1.067
Outdoor chores		1.137	2.015*
No. of household members		1.018	1.037
District	(Buuri)		
	Igembe	8.277*	0.726
Distance to primary school		0.801	1.326*
Type of primary school	(Public)		
	Private	0.719	0.733
Gender	(Male)		
	Female	0.566*	1.731*
Age	(15-17)		
	18-19	0.859	1.207
	20-24	1.642	0.789
Age at first sex	(Had sex by age 14)		
	Had sex after age 14 or never had sex	0.598	1.049

*Means significant $p<0.05$

Table 5.2b Factors associated with high school dropout

Characteristic	Categories	Percent dropped out	Pearson's Chi-square test
Wealth Index	Poorest	15.2	*
	Middle	10.4	
	Richest	6.8	
Father's education	Primary/no education	6.5	
	Secondary/above	3.6	
Mother's education	Primary/no education	9	
	Secondary or above	6.7	
Parents ever fought	Yes	4.7	
	No	5.1	
Parental supervision	Strict	4.2	*
	Lax	15.3	
Household size	4 or fewer people	13.6	*
	5 or more people	6.1	
District	Buuri	8.7	
	Igembe North	11.7	
Performance of school	Good performer	7.1	*
	Poor performer	13.5	
Type of school	Single sex	4.9	*
	Mixed	18.3	
Nature of school	District	13.8	*
	Provincial/national	6.2	
Gender	Male	8.7	
	Female	9.6	
Age at first sex	Had sex by age 14	13.6	
	Had sex after 14/never not had sex	7.8	
Drunk alcohol	Yes	8.3	
	No	9.2	
Smoked cigarettes	Yes	0	
	No	9.7	
Chewed *miraa*	Yes	7.1	
	No	8.4	

*Means significant at $p<0.05$

This chapter presents a critical interpretation of the findings presented in Chapter 4. Specifically, a discussion of the changes in the predictive power of the different factors in explaining dropping out of school at different stages is presented. The four exit points that the study focused on were: entry to formal education; exit prior to completion of primary level; terminal exit after primary level; and high school dropout. According to theories of poverty reduction as articulated by Yaqub (2002), giving a child a good start in life predicts the child's academic trajectory and consequently income. Thus, understanding the changes in the predictive power of different factors since commencement of primary school up to completion of high school in explaining school dropout is readily useful in timetabling of interventions for school retention and completion.

Thus, the chapter is organised according to three broad sets of factors to wit: household factors; community-level factors; and individual attributes (with a special focus on gender). This structure is informed by the objectives of the study and seeks to enable "visualisation" of the changes in the explanatory power of the different variables at different exit points.

5.2 Household factors and educational transitions

The first research question focused on the relationship between household characteristics and dropping out of school at different stages. These factors are important because, as the literature demonstrates, a home environment

that is financially, physically and psychologically supportive to the child is a prerequisite for child growth and development (Kirby, 2001). Indeed the evidence suggests that giving a child a "good start" in life is associated with better health and educational outcomes, and may serve as a key factor in mitigating poverty since it has positive implications on income and social development later in life (Yaqub, 2002). In this study, household factors were grouped into two broad categories namely income and non-income factors. The former were factors that could be considered as measures of "physical wealth" and the later as measures of "psychic wealth" that is, factors to which no monetary value can be attached such as number of household members, parental supervision and balance between household chores and school work among others.

These analyses demonstrate that the relative influence of these factors changes with the transition point in question. With respect to the first transition, economic status of the household is not an explanatory factor for non-entry into formal education system. In other words, income poverty is not to blame for non enrolment given that the study site is a high potential agricultural area and the cost of enrolling a child in primary school is well within the reach of most if not all households. All the respondents who reported that they had never attended school came from Igembe North where miraa trade has ensured that households have relatively high disposable incomes relative to Buuri district.

These findings are supported by empirical data from all rural districts in Kenya in 2007, which found that Imenti North was second least poor and Igembe third least poor with respect to food poverty (KNBS, 2007b). Evidently, household non-income factors such as absence of one or both parents and low parental education are the main explanatory variables for non-enrolment into formal education.

Although the number of observations does not allow firm conclusions, it is worth noting that 11 of the 18 respondents who had never attended school were male implying that males may be much more disadvantaged that females at this stage. It also appears that proportionately older respondents are more likely to reported having never attended school compared with their younger counterpart. Deprivation occasioned by non-entry into formal educational system is not only irreversible but also so severe that the likelihood of escaping income and non-income poverty is almost non-existent to the majority of the children. Lack of education at this stage removes a key capability from the individual to participate effectively in the modern economy and earn a decent living. It also radically curtails participation even in the local community's cultural and political processes to the extent that poverty undermines their confidence to articulate their views. Perhaps the biggest problem with this scenario is that when such children grow up and start their own families, their children too are likely to be poor given that there are no indications of the possibility of breaking the cycle of poverty at

the wider community level. It may be safe to conclude that the "poor children – poor parents" link commences with (or at the very least is enhanced or at least promoted by) failure to enrol in the formal education system.

People with no formal education are aware of the challenges they face and would like their own children to get some education so as to take a different developmental trajectory but this desire is often hindered by lack of the necessary facilities to support their children to achieve this dream.

Thus, non-entry into formal education system is the severest form of deprivation that a child can experiences (relative to exiting at later stages) because as the child grows older, the more the likelihood of reversing the situation diminishes. Clearly, the likelihood of commencing school well after childhood is low. The few cases of adults enrolling in standard one are the exception and not the rule because only an insignificant minority of adults or even youth with no formal education ever get enrolled into the formal education system.

Adults with no formal education can acquire some literacy skills through adult education programme but the extent of deprivation brought about by having no formal education cannot be wholly reversed because the goal of adult education in Kenya is to eliminate adult illiteracy rather than to transform beneficiaries into scholars or even central participants in the modern economy. According to National Adult Literacy Survey carried by the

Ministry of Education in 2007, 62 percent of the adult population has attained minimum literacy level hence 38 percent (7.8 million) of adults are illiterate. The study also found that 30 percent of young people aged 15 to 19 years and 49 percent of adults aged 45 to 49 years are illiterate. In all likelihood, virtually all the people who have never enrolled in formal education system are part of this group. The adult education sub-sector has been usually underfunded: it receives less that 1% of the total national education budget contrary to the international recommendations of 6 percent as articulated by the Belem Framework (MOE, 2012).

The hypothesised association between economic factors and successful negotiation of other exit points is largely supported by these analyses. First, the household's economic ability emerged as the most powerful explanatory factor. As shown in Table 5.2a, belonging to the wealthiest and the second wealthiest groups of households is associated with lower likelihood dropping out of school during the primary level and after completion of primary school relative to the poorest households net of all other factors (OR 0.469 and 0.281 middle and wealthiest households respectively). These differences are statistically significant at 95 percent confidence level. The same pattern is evident with respect to high school dropout as shown in Table 5.2b: proportionately fewer children from the wealthiest households reported dropping out of school prior to completion of primary school compared with those from poorer households. Specifically, the percentage of children from

the richest households who reported dropping out of high school is slightly less than half that of children from the poorest household (6.8% and 15.2% respectively).

Previous research has demonstrated that the influence of household economic status in educational attainment is pervasive with or without free education programmes. There are a number of probable pathways for this influence. Household economic status directly affects the ability to pay school-related costs such as fees and school uniforms. A study by Sawamura and Sifuna (2008) came to the conclusion that free primary education in Kenya is still not accessible to children from poor households because households were required to raise an estimated 10,000 Kenya shillings annually per child to meet the cost of uniforms, transportation, lunches, extra tuition, and other official or unofficial levels. According to Sawamura and Sifuna (2008: 108):

> A key issue is the fact that many schools still collect fees and/or levies skillfully from parents for their survival... Most schools whether high, medium or low cost schools charge parents some money to meet the gaps in their budgets. These payments are generally categorized as 'compulsory' or 'optional' payments. However, in fact, even optional payments such as extra/evening/Saturday tuition turn out to be compulsory as all pupils are expected to attend classes which are intended to provide them with extra coaching for examinations. To conceal these payments from the scrutiny of district education officers, they are often made under such labels as 'child support', 'furniture replacement' and so on.

The situation is a lot worse at the secondary level, which makes attainment of secondary education largely a preserve of economically well off households (Glennerster et al., 2011). For instance, "the costs for sending a child to the first year of day secondary school are about eight times the monthly income for employed parents, 12 to 17 times for self-employed parents and 19 to 20 times for peasant parents engaged in casual work" (Ohba, 2009:30). In addition, school uniforms are not covered in the free primary education programme, a cost that places extra burdens on parents.

Income-related deprivation is also linked to school attendance patterns in that children from wealthy households are relieved of the need to work for pay and suffer relatively fewer incidences of suspension from school because of fees and related expenses compared with poorer households. Conversely, low incomes lead to disruptions in school attendance through suspensions because of lack of fees, or children being withdrawn from school and put into the labour market to supplement household incomes, which may lead to poor academic scores and eventual exiting from the formal education system (Moyi, 2011). Or children may be forced to spend too much time doing non-academic activities in the household at the expense of school work since parents cannot afford paid help in the household hence poor academic scores and low motivation to pursue education.

The next set of factors in the regression models comprised variables that collectively constitute "physic wealth". These were: father's education;

mother's education; indoor chores; outdoor chores; unsupportive home environment; and household size. Parental characteristics and behaviours collectively define the home environment and shape the child's perception of the adequacy of support received from the household. Parents with high level of education have comparatively higher educational aspirations for their children and possess the requisite financial means to support their children to realise their schooling goals. On the other hand, parental conflict or domestic violence and alcohol abuse among of one or both parents negatively affects the child's connectedness to the family which may lead to truancy, disinterest in education, delinquency, alcohol and drug abuse, and early sexual initiation among other behaviours which may ultimately lead to truncation of education (Kirby, 2001).

All things equal, there is no statistically significant association between father's education and dropping out of school before or after completion of primary school (Table 5.2a). In contrast, mother's level of education was found to be a consistently important explanatory factor in the two transitions. Having a mother with at least some secondary education is associated with about 70 percent lower odds for dropping out of school prior to completing the primary level and about 40 percent lower odds for not joining secondary school compared with children whose parents had primary or no education. However, parental education is not associated with exiting the education system at high school.

Engaging in indoor household chores does not seem to affect dropping out of school at the two transitions but being involved in outdoor chores (grazing, working for pay, e.g. in other people's farms) is strongly associated with exiting from the formal education system after completion of primary school. These findings are consistent with the postulate that household chores can be viewed as a continuum from the "beneficial" on one end and "detrimental" on the other (Moyi, 2011; UNICEF, 2007). Thus, engaging in indoor chores (cooking, fetching water, collecting firewood) has no negative impact on the child's schooling hence they can be considered beneficial to the child while engaging in outdoor chores such as working for pay in other people's farms can be considered deleterious to a child's schooling. Not only are such children exploited by their employers but they also lack adequate time for school related work. Working for pay also insidiously undermines schooling by creating a work-centred rather than a school-centred mindset among children.

Similarly, "unsupportive home environment" (for example, experience of domestic violence) is a strong predictor of schooling as demonstrated by the fact that children living in such an environment have 60 percent higher odds for dropping out of school before completion of the primary level. This variable, however, is not strongly associated with not transitioning to secondary school. Analyses also found that strict parental supervision is associated with lower percentage of children who dropped out of school at the

secondary level compared with lax supervision. Finally, household size is not associated with experiencing any transition except high school drop out where larger household were found to have a lower rate of school dropout compared with smaller households.

These findings generally confirm that economic hardships are not the only causes of school dropout. Past research has demonstrated that other factors within the household as well as the school may be strong explanatory factors for school dropout at primary level. While free primary education policy focuses on addressing problems related to school fees, other equally important forces militate against progression through any schooling stage. For instance, poor households may withdraw their children from children and release them into the labour market to increase household income (Fuller and Liang 1999) or invest more in the education of the sons and less on the education of the daughters (Lloyd, 2006), or simply encourage the children to marry and start families of their own early if private returns to education are viewed as insignificant (Mensch et al., 2001). The amount of time a child spends on household chores may also predict the likelihood of school dropout because such chores take away time that would otherwise have been used in schoolwork, an imbalance that may lead to poor school performance (UNICEF, 1997).

Studies in this area support the resource dilution theory (Gage-Brandon 1994) which posits that larger households are associated with poorer

educational outcomes because of competition for scarce resources between children (Lloyd, 2006; Hannum & Buchmann, 2005), which is further confounded by the fact that larger households are also more likely to be poorer than smaller ones. However, some studies have found that in some situations especially where kin networks are strong, larger households may not portend any disadvantage but may, in fact, be supportive of educational attainment of their school-going members as demonstrated by Edun and Oguntola (2010) in a study in Nigeria.

5.3 The place of community factors in educational transitions

The guiding postulate here is that the social, physical, economic, and cultural contexts in which the individual lives has a profound effect in human behaviour. As argued earlier, in situations characterised by income and non-income deprivations, communities may place a low premium on education which leads to low investment in education, and which in turn translates into low returns to education. District of residence was the main contextual factor, and as argued in the preceding chapters, it can be considered the sum total of all those traits that differentiate one community from the other. Although districts are administrative units set up by the government to facilitate implementation of the government's policies, their boundaries are not random; instead they group communities according to some overt characteristics or traits such as belonging to a certain clan or sub-tribe, or language. There are a few rural districts that do indeed comprise of people

from different ethnolinguistic groups but those are the exception rather than the rule, and this exceptionality did not apply to the two districts that were the subject of this study. Although a lot broader than "neighbourhood' as used in sociological literature from the US, district of residence in this context can effectively be used to capture forces that operate at the macro-level to influence household and individual decisions and ultimately build the case for taking into consideration the context of school in implementing interventions meant to increase school retention and completion rates.

Other variables that were considered to operate at the macro level were distance to school (particularly for the primary level), type of school (public versus private for the primary and single-sex versus mixed schools for the secondary level) as well as perception of overall academic performance of the school as reported by the respondents, and nature of the school (local/district versus provincial/national schools). The latter were used only in the analyses of high school dropout because they are relevant only at that level[10]. These factors operate at the macro level and are linked not only to the community's economic and socio-cultural attributes but they are also a reflection of how

[10] Save for a few exceptions, primary schools in Kenya are virtually mixed-sex schools while secondary schools are mainly single–sex schools. Primary schools do not have a clear categorisation with respect to their catchment areas while secondary school have a clear hierarchy and somewhat defined catchment areas. At the top of the ladder are "national schools" which enrol the top students at the end of primary level examination (Kenya Certificate of Primary Education[KCPE]), followed by "provincial" schools which enrol the next level of students from across the province and their academic performance according to end of secondary school examination somewhere between national schools and district schools. District schools get their students from the neighbourhood who did not qualify to join elite national school or provincial school and their performance is always poorer than that of the other groups on average

efficiently or otherwise government policies on education are being implemented. Given the huge discrepancy between the number of primary schools and the number of secondary school, an important determinant of secondary school enrolment is availability of secondary school places. This variable, however, was not captured in this study because of the complexities involved in defining "lack of school places" from the individual respondent's point of view[11].

According to these analyses, district is the strongest predictor of dropping out of school before completion of the primary level of education. After taking into account the effects of all other factors, children from Igembe North district have slightly more than 8 times higher odds for dropping out of school prior to sitting the final primary level examination relative to those from Buuri district, and these different are statistically significant at 95 percent confidence level. However, the variable is not a powerful predictor of exiting after completing the primary level. Implied here is that the two districts are not statistically different with respect to transitioning to secondary school among children who complete the primary level. District of residence is not statistically correlated with high school dropout.

[11] The ratio of secondary to eligible children in a population would not accurately capture the extent of "lack of school places" because of the fact that not all children enrol in secondary schools within their respective districts.

Although there is no statistically significant association between distance to school and school dropout prior to completion of primary level, the variable is an important factor in terminal exit after completion of primary school. As shown in Table 9.1, a unit increase in the distance to school (measured in kilometres) is associated with 33 percent higher odds for non-progression to secondary school all factors considered.

At high school level, district schools and schools that were considered poor academically (as reported by the respondent) were associated with high percentages of high school dropout compared with their opposites. The differences were statistically significant at 95 percent confidence level.

Thus, the main explanatory factor for school dropout may be the school environment. First, children may feel that the school they are attending is a poor performer academically which means their prospects for advancing to higher levels of education or even completing the secondary level are particularly low, which in turn means that their perceived returns to education are low (Ohba, 2009; O'Higgins, 2009).

The school may give children an opportunity to experiment with sex, which may lead to pregnancy and school dropout. A study in Kenya showed that girls in mixed schools and day schools were more likely to be sexually active than girls from girls only schools and boarding schools (Adebayo, 1996). Schooling removes adolescents from their homes, provides them with

information that often contradicts parental instruction and allows young people of both sexes to interact without family supervision (Caldwell et al., 1998). In developing countries, educational pursuit aimed at securing a place in the modern economy has lengthened adolescence for females by increasing age at marriage and childbirth from soon after puberty to twenty years and beyond, which increases the likelihood of experimenting with sex before marriage.

A study in Kenya by Bosire et al (2008), for instance, found that children who attended single-sex schools were more likely to have high scores in mathematics compared to those in mixed school and that girl's performance showed particularly greater improvements (Bosire, 2008). In contrast, there are no statistically significant differences with respect to dropping out at high school across the two districts.

Research has demonstrated that low motivation or academic ability, alcohol and drug abuse, and disciplinary problems may push some children out of school (O'Higgins et al., 2008). Some studies indicate that girls have higher likelihood of dropping out at high school due to inadequacies in the school environment, which highlights the place of gender in educational attainment (Loyd, 2006; Mensch et al., 2001). The fact that children get into adolescence about the same time they join high school needs special attention. According to Biddlecom and et al. (2007: 119):

Among students who remain in school until adolescence, additional individual factors come into play in explaining ultimate educational attainment and the timing of school exit as young people themselves take up a larger role in determining educational outcomes. Transitions through puberty, premarital sexual experiences, pregnancy, motherhood and marriage can potentially compromise school careers.

However, results of these analyses show that gender is not an explanatory factor in exiting out of the formal education system once the learner has enrolled in high school. According to the sample of young people who participated in this study, male and female students have similar rates of dropping out of school prior to completion of secondary school. In other words, there is no evidence that either gender has statistically significant higher likelihood of school dropout once they enrol into high school.

5.4 Individual attributes and schooling

Gender of the child was identified in the literature as one of the key determinants of dropping out of school and the literature generally suggest that girls are more disadvantaged than boys. This is because households may have a skewed allocation of scarce resources in favour of boys and may even withdraw girls from school in favour of boys in resource-constrained settings (Bernstein & Hansen, 2006). Other reasons why girls are more likely than boys to perform poorly academically and to drop out of school besides

economic hardships include poor or insufficient hygiene facilities in schools, low teacher expectation of girls' performance (Mensch et al., 2001), and large number of chores relative to boys (Moyi, 2011; UNICEF, 1997). In this study, the three individual attributes analysed were gender, age of the respondent, and age at sexual debut.

Analyses demonstrate that gender is an important determinant of school dropout but the direction of association at the various educational transitions studied is not consistent with theory or empirical studies from other settings even in Kenya. As shown in Table 9.1, female respondents have lower odds for dropping out of school during primary school years relative to male respondents all things being equal, and the association is statistically significant at 95 percent confidence level. Implied here is that as children progress through primary school, it is the boy child who is more severely disadvantaged in these settings compared with the girl child. Although these findings are unexpected, qualitative analyses of constraints to primary school attendance show that indeed male children are much more likely to drop out of school during primary school. The reasons, however, are not rooted in poverty or culture. Rather the huge demand for unskilled labour in *miraa* harvesting is responsible for the gender differences in primary school dropout. *Miraa* harvesting involves climbing up the *miraa* tree to pick and pack the young twigs, an activity, which only young children aged between five and 14 years can do without breaking the feeble branches of the plant.

This activity has huge monetary returns in the short run. According to the one key informant, an education official in Laare division, it is not uncommon for children to brag that they earn more than teachers. This view, myopic as it may, has serious implications for schooling because:

> Students may give greater emphasis on the present, because they make erroneous predictions of future returns or underestimate the real gains from school or have negative expectations about the future, so they attach more weight to the current non pecuniary or monetary costs in calculating the school attainment decisions. Sociological and psychological research points to the importance of a student's social group in determining their active involvement in school. This literature … considers schools as institutions, with social goals besides imparting skill, and highlights that educational outcomes of students depend on their identification with the *school's social category* and its *ideal* student (emphasis in original).
>
> (O'Higgins, 2009: 7)

However, analysis of terminal exit after completion of the primary level shows that the odds for not transitioning to secondary school are skewed against girls, a finding that is consistent with most empirical studies in similar contexts as this study. After taking into account the role of all other factors in the analyses, girls have 1.731 odds ratios for not enrolling into high school relative to boys, and these differences are statistically significant at 95 percent confidence level. Thus, it can be concluded that although there is significant attrition among boys as they progress through primary school, those who "hold on" until they complete the primary level stand a better chance of getting into high school than girls.

At the last transition – high school dropout – there is no evidence that gender is an important explanatory factor, at least based on the bivariate analysis results presented in Table 5.2b in that both genders are associated with very similar proportions of dropout (8.7% among males and 9.6% among females). The one-percentage point difference in the proportions is also not statistically significant.

The severity of deprivation faced by children who drop out at high school is attenuated by the fact that the skills already acquired, albeit limited, can be utilised in the modern economy. Children who get into secondary school and acquire some secondary education should ideally have literacy and numeracy skills to carry out menial jobs or to effectively start their own small scale enterprises. (The current study, however, did not attempt to find out where children go after exiting from the formal education system.)

Given that Kenya has a return-to-school policy that encourages all children to resume schooling after breaks caused by, for example, unwanted pregnancy, it follows that children who drop out of school before completion of high school can resume their education even many years after exiting or simply register and sit the end of secondary education examination as private candidates.

CHAPTER 6: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The study sought to understand the nature and strength of the relationship between household, community, and individual factors on the one hand educational attainment among male and female children on the other. Educational attainment was assessed at four specific exit points: entry/non-entry into formal education; dropout out before completion of primary school; dropout after completion of the primary level; and dropout prior to completion of secondary school.

Analyses were based on a probability sample of 1200 young people aged 15-24 distributed equally across the two study sites, that is, Igembe North and Buuri districts. Since all the dependent variables were binary, logistic regression was the main analytic method. Principal components analysis was used to construct a household wealth index from household durable goods and assets (television, radio, car, mobile phone, land and cattle), and the index was divided into three percentiles to represent "poor", "middle", and "rich" categories. Further, principal components analysis was used to reduce the dimensions of household non-income variables since they measured the same construct, that is, "psychic wealth". Three components were extracted and named "in-house chores"; "unsatisfactory home environment" and "out-

door chores". Regression factor scores for these components were used in place of the original variables. The study also collected qualitative information from selected male and female respondents aged between 15 and 24 years who experienced any of the events of interest in the study as well as knowledgeable people in the educational sector.

6.2 Summary

The hypothesised link between household income and non-income factors on the one hand and children's educational transitions (entry/non-entry into primary school, exit before completion of primary school, exit after completion of primary school, and high school dropout) is largely supported by these analyses. First, the household's economic ability as reflected by long term economic status indicators (land, car, television, etc which were combined into a wealth index) emerged as the most powerful explanatory factor in all the educational transitions except non-entry into formal education. For instance, belonging to the wealthiest and the second wealthiest households is associated with 72 percent and 69 percent lower odds for dropping out of school during the primary level after completion of primary school respectively compared with the poorest households, and these differences are statistically significant at 95 percent confidence level even after taking account of all confounding factors. The same pattern is evident with respect to high school dropout: proportionately fewer children from the wealthiest

households reported dropping out of school prior to completion of high school compared with those from poorer households.

Although districts are administrative units set up by the government to facilitate implementation of its policies, their demarcations are not random but instead follow some overt characteristics or traits such as belonging to a certain clan or sub-tribe, or language. In a sense, therefore, district of residence becomes a measure of all those observed and unobserved variables that collectively define a community's culture. According to these analyses, district is the strongest predictor of dropping out of school before completion of the primary level of education. After taking into account the effects of all other factors, children from Igembe North district have slightly more than 8 times higher odds for dropping out of school prior to completing the primary level relative to those from Buuri district, and these different are statistically significant at 95 percent confidence level. However, the variable is not a powerful predictor of exiting after completing the primary level. Implied here is that the two districts are not significantly different with respect to transition into secondary school among children who complete the primary level. The same is also true for high school dropout.

Analyses further demonstrate that gender is an important determinant of school dropout but the direction of association at the various educational transitions studied is not consistent with theory or empirical studies from other settings even in Kenya. Female respondents have 43 percent lower odds

for dropping out of school during primary school years relative to male respondents all things being equal, and the association is statistically significant at 95 percent confidence level. This means that as children progress through primary school, it is the boy child who is more severely disadvantaged in these settings compared with the girl child. The reasons, however, are not rooted in poverty but rather in the huge demand for unskilled labour in *miraa* economy particularly in harvesting, an activity which is culturally reserved for only young boys under the age of 14. This activity has huge monetary returns in the short run.

However, analysis of terminal exit after completion of the primary level shows that the odds for not joining secondary school are skewed against girls, a finding that is consistent with most empirical studies in similar contexts as this study. After taking into account the role of all other factors in the analyses, girls have 73 percent higher odds for not enrolling into high school relative to boys and these differences are statistically significant at 95 percent confidence level. Evidently, there is marked wastage among boys as they progress through primary school, but those who "hold on" until they complete the primary level stand a better chance of getting into high school compared with girls. There is no evidence, however, that gender is an important explanatory factor in high school dropout, at least based on the bivariate analysis results. Boys and girls have very similar proportions of

dropouts (8.7% among males and 9.6% among females) at this stage. The one-percent point difference in the proportions is not statistically significant.

6.3 Conclusions

It is evident that the hypothesised link between the three sets of factors analysed in the study (community, household, individual as reflected in the study objectives) on the one hand and educational attainment on the other is largely confirmed. However, except for household economic status, the direction and magnitude of the association between these factors and children's educational attainment is not uniform across all the transitions studied.

Non-enrolment into primary school seem to be entirely a function of the household's non-income factors the main one being low premium placed on education by some households – and this is an exception rather than the rule because only 18 out of the 1200 respondents reported that they had never attended school. Terminal exit before completion of primary school as well as non-enrolment into secondary school are explicable in terms of household income and non-income deprivations.

The context in which schooling occurs as reflected by place of residence is also a powerful explanatory factor for primary school dropout: Igembe North was found to have eight times higher odds for primary school dropout compared with Buuri district all other factors held constant. Similarly, type of school

(single sex versus mixed) is statistically associated with high school dropout with markedly higher proportions of dropout being experienced among mixed schools compared with single sex schools[12].

The study also concludes that gender of the child is a powerful explanatory factor in educational attainment but the direction of effect varies with the level of education under consideration. Evidently, boys suffer proportionately higher educational than girls at lower levels (entry into primary school and exit before completion of primary level). Put in another way, the rate of school dropout before completion of the primary level of education is higher among boys compared with girls. There is, however, a "reversal of fortunes" after completion of primary school in that girls have higher odds for not joining secondary school compared with boys after controlling for other factors such as age, economic status of the household and district of residence. At the last transition studied, that is, high school dropout, gender is not an important explanatory factor. In other words, the rate of dropping between boys and girls is quite similar.

Exit before completion of high school seems to be affected more by school-level variables such as school performance (good versus poor performers),

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[12] All findings for the high school stage should be interpreted cautiously because they are based on bivariate analysis hence no statistical controls were included. Thus, it is entirely possible that mixed sex schools perform poorly because they admit academically poorer students compared with singe sex schools. This interaction could not be controlled for because the data did not allow multiple regression analysis

gender composition of the school (single-sex versus mixed), and school rank (district versus provincial/national schools) and less by household factors. Implied in this assertion is that different stages of the formal education are affected by a similar set of factors but high school dropout is largely a function of the school environment.

It is also instructive that these analyse have elucidated on the importance of taking a methodological approach that not only uses a broad range of variables – from income-related factors to "psychic wealth" as reflected by parental supervision and the balance between household chores and school work among others – but also factors embedded in the context in which schooling takes place while at the same time focusing on four critical transitions rather than each of them singly. The study also demonstrated the importance of using principal components analysis to reduce the dimensions of the data and by so doing gain useful insights into the barriers to schooling.

Thus, the key conclusions of the study can be summarised as follows. Household economic status is negatively correlated with dropping out of school at all the stages except non-enrolment into formal education – which appears to be entirely a function of non-income factors such as absence of both parents. Such factors are also explain why some children dropout of school during primary school years and also after completion of primary school. Such factors are also explain why some children dropout of school during primary school years and also after completion of primary school. For

example, children who reported engaging in outdoor chores "often" were found to have proportionately higher odds for dropping out of school during primary school when the confounding influence of all other factors is considered. Another key conclusion is that gender of the child has implications for educational attainment but the direction of associated is depends on the level of education under consideration. Boys appear to be more adversely affected by school with respect to dropping out of school during primary school years relative to girls. However, there is a reversal of the directly of this effect with respect to transitioning to secondary school where the girl child is the disadvantaged one.

This conclusion supports the next conclusion of the study: that the context where schooling occurs determines schooling outcomes. This concept was captured by "place of permanent residence" (specifically district), which was conceived in this study as the sum total of cultural, social and psychological milieu that gives a community its unique indentify. Thus, if the community views formal education as activity that is associated with decreased private returns relative to competing alternatives (e.g. early marriage or working in a miraa farm), education is usually affected in a profound negative way. This conclusion is based on the finding that, for instance, male children are withdrawn from school to offer the much needed labour in miraa farms in one of the study districts. As will be discussed in the next subsection, contextualising interventions is not a mere good practice; it is an

indispensable strategy in increasing schooling among the most disadvantaged subpopulations. National and even county aggregate data does not tell the full story. The answer to poor educational outcomes lies in understanding the situation at the micro level.

6.4 Recommendations

The goal of this study was to understand the natures of the many barriers that hinder progression of male and female children through primary and secondary level of education with a view to advising on contextualisation and timetabling of interventions for increasing the number of children entering the education system and ultimately completing high school. This approach was guided by the postulate that children in different stages have different needs which must to be addressed at the policy level to facilitate attainment of their educational goals. Out of necessity, the timetabling of interventions should pay attention to the context in which education takes place. Borrowing from Amartya Sen's (1999) postulate that deprivation has income and non-income dimensions, the study used a wide range of variables that were grouped into four categories namely: household economic factors; household non-economic factors; community factors; and individual attributes with special focus on gender of the child.

6.4.1 Policy implications

Analyses strongly confirmed the hypothesised close association between household's economic status and schooling as measured by exiting from the

education system at different stages. Although the free education programme was instituted in 2003 (hence most of the respondents in the study should have benefited from it), the evidence suggests that the programme has not adequately addressed economic barriers to schooling. This situation may be a result of the numerous official costs that are not covered by the FPE programme such as building fees and cost of school uniforms as well as unofficial costs including holiday tuition that are levied on parents.

Based on these observations, the study recommends strict enforcement of education for all principles which necessarily involves elimination of unofficial fees and harmonisation of all official fees. Equally important is the need for targeting of the poorest households for extra support beyond the generalised free education programme through local support mechanisms such as the community development fund (CDF). It is envisioned that CDF and other local community sources of funds can be used to support a kitty for the poorest of the poor because of their uniquely debilitating level of deprivation. Contextualisation of interventions should form the core of educational planning at both the national and the local levels.

Targeting of interventions should also take a gender dimension to the extent that male and female children have different odds for exiting from the education system at different stages. For instance, in the two study districts boys are significantly more disadvantaged at earlier stages (non-enrolment into the formal education system and dropout out before completion of

primary school) while girls are relatively more disadvantaged than boys with respect to entry into high school. In other words, the boy child is more affected at earlier stages in life while the girl child is affected more adversely at later stages. As noted earlier, these patterns may not hold in every context in the Kenyan society, which vindicates the need for targeting of interventions based on empirical data from the local communities rather than aggregated national or regional level data.

Truncation of education at any stage prior to completion of high school is associated with economic and capability deprivations and it its less reversible when it occurs early in a child's life, and conversely, more reversible at high levels of learning. In this regard, the study recommends interventions that broadly seek to ensure that all children not only enrol in school but also successfully join and complete high school. Such an endeavour should address all exit points in general but pay special attention to early exit points because children who get out of school at such stages can as well be considered to be "gone for good" their chances for poverty reversal are negligible. Enforcement of return to school policy can go a long way in ameliorating this problem. Participation in miraa harvesting by children need not herald truncation of education: communities and county education department should explore strategies to keep children in school even as they work in miraa farms such as limiting their participation to after school hours and weekends.

6.4.2 Future research in educational attainment

This study was based on a sample of 15-24 year-olds only hence it was not possible to establish the extent of deprivation later in life occasioned by truncation of education at any level prior to completion of high school. An analysis based on earnings and general wellbeing later in life (say, age 50) would be useful in testing the hypothesis that poor childhood leads to poor adulthood. Connected to this is the need for more research on children of parents who left school prior to completion of high so as to understand the dynamics of intergenerational transmission of poverty.

The current study focussed on quantity of education as a measure of educational attainment. The study design could not possibly address school-level quality aspects such as teacher capabilities and attitudes and the quality of learning acquired by the learner all of which affect the learner's connectedness to the school and ultimately influence pupil retention and performance. More investigation of qualitative aspects of schooling building on the findings of this study will be useful in advancing knowledge on barriers to educational attainment.

Finally, although this study is based on a sample of 1200 respondents, which was sufficient for advanced statistical analysis, multivariate analysis of correlates of non-entry into primary school and high school dropout could not be carried out because very few respondents dropped out of school at the two stages. This is a positive thing because it means that an overwhelming

majority of children in the two districts get enrolled in formal education system and that those who manage to get to high school rarely dropout. However, the handful who are not enrolled at all into the formal education system as well as the few who dropout at high school constitute an important and unique group whose problems should not be ignored. More qualitative research to shed light on their circumstances is recommended.

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ANNEXES

Annex 1: Survey Instruments

Structured questionnaire
Institute for Development Studies, University of Nairobi
Study on education in Buuri and Igembe North Districts

Questionnaire

Part 1: Household questionnaire (To be administered to Head of Household or in his/her absence, any responsible person			
	District: Buuri=1; Igembe North =2 **Type of site:** Rural=1; Urban=2 Village:_____	RA Name---------- Date of interview -----/----/--- Time interview ended ---------- hrs	**Report:** Interview complete=1; Not Completed=2 Supervisor's name ---------- Data entry clerk's name ----------
	Hello! My name is _____ and I am working on a study on education and health. The study is being carried out by for Mr Peter Koome from the Institute for Development Studies of the University of Nairobi and it targets young people aged 15 to 24. However, I would like you to tell me a few things about your household since you are the best placed person to tell me before I proceed to interview the selected person. Note that the information you provide is confidential and will be used for academic purposes only. This interview is not expected to cause you any harm or discomfort but if you feel uncomfortable with certain questions you can choose not to answer them. Is there a member of your household who is aged 15-24 years? **(IF YES CONTINUE, ELSE CLOSE THE INTERVIEW AND REPLACE WITH THE NEAREST HOUSEHOLD)**		

A1	Please give me the names of the persons who usually live in your household starting with the head of the household						
	Name	Age	Sex Male=1 Female=2	Relation to head of household[13]	What is (NAME) highest level of education?[14]	Is (NAME) currently attending school? YES=1 NO=2	Summaries
1							Total male
2							Total female
3							Total household
4							Total no. no education
5							Total 6-14 not in school
6							
7							
8							
9							

[13] Relationship to head of household codes: Head of household=1; Spouse to head of household=2; Son=3; Daughter=4; Niece/nephew=5; Grandchild=6; Other relative=7; Others (specify)=8_____

[14] No education=1; Some primary=2; Primary complete=3; Some secondary=4; Secondary complete=5; Some tertiary=6; Tertiary complete=7

Household background information

	I will now ask you a few other questions about your household. How many acres of land does your household own?	**RECORD NUMBER**: _____
	What is the main cash crop grown in your farm?	Coffee=1 *Miraa*=2 Tea= 3 None=4 Others=6 (specify) _____
	About how much money do you make per year from sale of all cash crops?	_____ KSH
	Do you cultivate food crops in your farm?	Yes=1 No=2
	About how much do you make per year from the sale of food crops such as maize, potatoes and beans per year?	_____ KSH
	How much do you earn from that business?	_____ KSH
	About how much does your household members who are employed earn per year in total?	_____ KSH
	How much does your household get from other sources such as remittances by relatives per year?	_____ KSH

Thank the person then using the KISH grid below, select the respondent to be interviewed and ask to speak to the selected person.

List all eligible youth (All aged 15-24; start with oldest)	Household number in the selected cluster (same as questionnaire number)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2.	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
3.	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
4.	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3
5.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5

Circle the selected respondent

SECTION 2: Main Questionnaire (for male and female respondents aged 15-24

Introduction to the selected respondent and consent

Hello! My name is _____ and I am working on a study on education in this district. The study is being carried out by the Institute for Development Studies of the University of Nairobi. The information you provide is confidential and will be used for academic purposes only. Your views are very important in understanding education and health issues facing the people of this area. It is also important that you are accurate and truthful with your answers. May we start? **Proceed if respondent agrees to be interviewed; else stop the interview**

PART 1: BACKGROUND

	RECORD NAME OF RESPONDENT		Name_____			
	OBSERVE AND RECORD GENDER OF THE RESPONDENT		Male=1 Female=2			
	What is your date of birth?		_____/_____/_____			
	How old were you at your last birthday (Compare and correct 10 and11 if inconsistent)					
	What is your religion?	Catholic=1; Protestant=2; Evangelical Christian=3 ; No religion=4; Other (Specify)=5----------				
	Does your household own the following		a. Car	YES=1	NO=2	
			b. Television	YES=1	NO=2	
	Do you currently live with both biological parents or with other people? (CIRCLE ONLY ONE RESPONSE)		Both biological parents=1 Biological mother only=2 Biological mother and step father=3 Biological father only=4 Biological father and step mother=5 Grandparent(s)=6 Other relative=7 Guardian (not a blood relation)=8 Other (specify)=9			

	What is the highest level of education of your …? (Read FATHER, then MOTHER)?	A. Father No education=1 Primary=2 Secondary=3 Diploma=4 University and above=5	B. Mother No education=1 Primary=2 Secondary=3 Diploma=4 University and above=5

				No father=6	No father=6
	What is the main occupation of your ….? (Read FATHER, then MOTHER)?			A. Father 1.Professional/formally employed=1 2. Farmer=2 3. Business/self employed=3 4. Manual/unskilled labourer=4 5.Homemaker=5 6. Student=6 7. Not employed=7 8. Others=8	B. Mother 1.Professional/formally employed=1 2. Farmer=2 3. Business/self employed=3 4. Manual/unskilled labourer=4 5.Homemaker=5 6. Student=6 7. Not employed=7 8. Others=8
	Let's now talk more about other behaviours at home. We will start with your father. → →	A. Does he take alcohol?	B. How frequently?	C. Does he attend Church/Mosque?	D. How frequently
		YES=1 NO=2	Very often=1 Not so often=2 Rarely/never=3	YES=1 NO=2	Regularly=1 Sometimes=2 Rarely/Never =3
	Now tell me about your mother → →	A. Does she take alcohol?	B. How frequently?	C. Does she attend Church/Mosque?	D. How frequently
		YES=1 NO=2	Very often=1 Not so often=2 Rarely/never=3	YES=1 NO=2	Regularly=1 Sometimes=2 Rarely/Never =3
	As you know, married people sometimes have disagreements and arguments. Does your father abuse or shout or push or beat your mother when they have disagreements?				YES=1 NO=2
	Does your mother abuse or shout or push or beat your father when they argue?				YES=1 NO=2

PART 2: ASSESSMENT OF CONDITIONS DURING EARLY CHILDHOOD

	ASK ALL Let us now focus on the period when you were young, that is, around the age at which children attending nursery school or standard 1. Please take your time to recall that period. During that time, did your household own the following?	a. Car	Yes=1	No=2	
		b. Motorbike	Yes=1	No=2	
		c. Mobile phone	Yes=1	No=2	
		d. Radio	Yes=1	No=2	
		e. Television	Yes=1	No=2	
	How many acres of land did your household have? Probe if they have sold or bought any more land since then to refine the estimate				
	How many heads cattle did your household have?	_____			
	Please tell me, how many people were you living within your household including yourself?	_____			
	How far was the nearest primary school from your home? (**IN METRES)** (PROBE TO CONFIRM ESTIMATE OF DISTANCE)	_____Metres			
	Were you living with your biological parents?	Both biological parents=1 Biological mother only=2 Biological mother and step father=3 Biological father only=4 Biological father and step mother=5 Grandparent(s)=6 Other relative=7 Guardian (not a blood relation)=8 Other (specify)=9			
	Ask all not living with both parents. Why were you not living with both parents?				

	What was the main occupation of your (**FATHER, MOTHER**)? → →	A. Father	B. Mother
		1.Professional/formally employed=1 2. Farmer=2 3. Business/self employed=3 4. Manual/unskilled labourer=4 5.Homemaker=5 6. Student=6 7. Not employed=7 8. Others=8	1.Professional/formally employed=1 2. Farmer=2 3. Business/self employed=3 4. Manual/unskilled labourer=4 5.Homemaker=5 6. Student=6 7. Not employed=7

				8. Others=8	
	Let's now talk more about other family issues during that time, starting with your father…. →→	A. Did he use to take alcohol?	B. How frequently?	C. Does he use to attend Church/Mosque?	D. How frequently
		YES=1 NO=2	Very often=1 Not so often=2 Rarely/never=3	YES=1 NO=2	Regularly=1 Sometimes=2 Rarely/Never =3
	Now tell me about your mother … →→	A. Did she use to take alcohol?	B. How frequently?	C. Did she use to attend Church/Mosque?	D. How frequently
		YES=1 NO=2	Very often=1 Not so often=2 Rarely/never=3	YES=1 NO=2	Regularly=1 Sometimes=2 Rarely/Never =3
	Still referring to that time, did your father and mother use to quarrel or fight for any reason?			YES=1 NO=2	

PART 3: SCHOOLING HISTORY

	Let us now talk about your schooling history. Have you ever attended school?	YES=1 *(Go to →→ 41)* NO=2 (Continue)	
	What is the main reason why you did not join standard 1?	Parents did not enrol me=1 Lacked school fees/uniform=2 Hated school=3 Decided to start working for pay =4 Other reasons (specify)=5----------	
	Please explain your answer a little more. (Go to→ → 68) → → → → → → → (Go to →→ 68)		

FOR ONLY THOSE WHO ATTENDED PRIMARY SCHOOL

	Is the primary school you attended within or outside this sub-location?	Within=1 Outside=2	
	How far was the school you attended from your home? (SHOULD BE THE SCHOOL THE RESPONDENT ATTENDED <u>MAINLY</u> IF HE/SHE HAS ATTENDED MORE THAN ONE SCHOOL)	_____ KILOMETRES	

	Was the school you attended public or private?	Public=1 Private=2	
	How many school uniforms did you usually have?	_____	
	Did you ever repeat a grade/class?	Yes=1 No=2	
	How many times did you repeat grades?	_____	
	On average, in which general position were you in class: was it among the top students, somewhere in the middle or among the bottom?	Top=1 Middle=2 Lowest=3	
	During your primary school years, how often did your mother use to check your homework?	Often=1 Sometimes=2 Rarely/never=3	
	How often did your father use to check your homework during those years	Often=1 Sometimes=2 Rarely/never=3	
	How often did you engage in the following chores after school on a normal day?		
	a. Fetching firewood	Often=1 Sometimes=2 Rarely/never=3	
	b. Fetching water	Often=1 Sometimes=2 Rarely/never=3	
	c. Working in the farm	Often=1 Sometimes=2 Rarely/never=3	
	d. Carrying out household chores such as cooking and washing	Often=1 Sometimes=2 Rarely/never=3	
	e. Grazing livestock	Often=1 Sometimes=2 Rarely/never=3	
	f. Working for pay (e.g. in other people's farms)	Often=1 Sometimes=2 Rarely/never=3	
	Did you complete standard 8?	Yes=1 ***(Go to →→ 51)*** No=2 **Continue**	
	At what specific class did you stop attending school?	1=1; 2=2; 3=3; 4=4; 5=5; 6=6; 7=7; 8=8	
	You told me that you completed standard 8; did you join form 1?	Yes=1 ***(Go to →→ 51)*** No=2 **Continue**	

<table>
<tr><td></td><td>What is the main reason why you did not join secondary school?</td><td colspan="3">Did not get any invitation=1
Was invited but lacked money=2
There was money but father refused=3
There was money but mother refused=4
There was money but guardian refused=5
Had got pregnant hence couldn't go to sec=6
Decided to start business or work for pay =7
Got married soon after completing class=8
Other reasons (specify)=9</td><td></td></tr>
<tr><td></td><td colspan="5">Please explain your answer. (PROBE BY ASKING THE FOLLOWING QUESTIONS) What would you say is the main reason? What really happened?

(Go to → 63) → → → → → → → → → → →→ → → → → → → → → → → → → → → → → (Go to → 63)</td></tr>
<tr><td></td><td colspan="4">What is the type of secondary school did you attend; was it (READ OPTIONS)
Boys boarding=1 Boys day=2 Boys day and boarding=3 Girls boarding=4 Girls day=5 Girls day and boarding=6
Mixed boarding=7 Mixed day=8 Mixed day and boarding=9</td><td></td></tr>
<tr><td></td><td>How would you describe your parent's/guardian's monitoring of your life during your secondary school years: was it strict or lax?</td><td colspan="3">Strict=1 Lax=2</td><td></td></tr>
<tr><td rowspan="5"></td><td rowspan="5">During your secondary school years, did you use any of these drugs even once? (READ THE OPTIONS)</td><td>Substance</td><td>YES =1</td><td>NO=2</td><td></td></tr>
<tr><td>a. Alcohol</td><td>1</td><td>2</td><td></td></tr>
<tr><td>b. Cigarettes</td><td>1</td><td>2</td><td></td></tr>
<tr><td>c. Miraa</td><td>1</td><td>2</td><td></td></tr>
<tr><td>d. Bhang</td><td>1</td><td>2</td><td></td></tr>
<tr><td rowspan="5"></td><td rowspan="5">How frequently did you use to take the following substances: was if often or rarely or never?
(READ THE OPTIONS)</td><td>Substance</td><td>Often</td><td>Rarely</td><td>Never used</td></tr>
<tr><td>a. Alcohol</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>b. Cigarettes</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>c. Miraa</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>d. Bhang</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td></td><td>What is the average total pocket money were you usually</td><td colspan="3"></td><td></td></tr>
</table>

	given per term?	_____ KSH	
	According to you, was your school a good performer or a poor performer academically?	Good performer=1 Poor performer=2 Average=3	
	Was it a district school, provincial school or national school?	District=1 Provincial=2 National=3	
	What was your general position in class then: was it among the best, somewhere in the middle or lowest section in the class?	Top=1 Middle=2 Bottom=3	
	Did you complete secondary school?	YES COMPLETED=1 STILL IN SCHOOL=2 DROPPED OUT =3	

FOR SECONDARY SCHOOL DROPOUTS ONLY

	Why did you stop attending school before you completed form 4?	Got pregnant then dropped out=1 Lacked money for fees=2 Lacked school uniform=3 Got expelled =4 Others (specify)=5	
	Please explain your answer a little more.		

PART 4: SEXUAL AND REPRODUCTIVE BEHAVIIOUR

	What is your current marital status? Are you… (READ THE OPTIONS. IF YOU ARE GIVEN ONLY MONTH AND YEAR, RECORD O1 FOR DAY)	Never married/single=1 Married/living together=2 Divorced/separated=4 Widowed=5	
	Please tell me the exact date you got married? (write first day of month if not sure of day)	_____/_____/_____	
	Have you ever had sex?	Yes=1 No=2	
	How old were you when you first had sex?	_____ YEARS	

Thank the respondent and close interview. Record the time interview ended: _____

In the space below, draw a rough map of location of household interviewed starting from the identified landmark

Key informant discussion guides

Discussion guide 1: For "Never attended school"

Instructions to moderator

This data collection approach involves detailed documentation of the target person's life. Every detail counts. Note that the guide below is only a guide. We need to discuss with the person freely to get the information hence you should deliberately let the discussion flow freely. In this regard, you may follow the guide as it is or may simply use any other approach or order of discussion. Focus on the objective and get as much information as possible from the respondent.

The overall objective is "To understand the circumstances that led the person drop out at high school and how different his or her life would have been if he or she had completed that level."

These are personal opinions hence everything the person says is actually the RIGHT answer.

Use a notebook. In the notebook, record the background information: Age, sex, marital status, location and district, date of interview, any other information

Make sure you carry out the interview away from other people – confidentially is essential

Questions

1. What is your view about education in this area?

2. Please describe the challenges faced by male and female children in accessing education in this area.

3. Why did you not attend school? (Explore and record in detail)

4. Do you think you are disadvantaged in any way because you never attended school?

5. Are those who enrolled in school better off than you today?

6. Will they be better off than you in future?

7. Why do you think so?

8. Looking back at the time you were a young child, do you think it was OK that you did not attend school? Why do you think so?

9. Would you like your children to study up to university level?

10. What is your view about the importance of education among children in this district today? Probe: Do you think those who attend school will be better off than those who will not attend school in future?

11. What else would you like to say about education in this area?

Discussion Guide 2: "School dropout before completion of primary school"

Instructions to moderator

This data collection approach involves detailed documentation of the target person's life. Every detail counts. Note that the guide below is only a guide. We need to discuss with the person freely to get the information hence you should deliberately let the discussion flow freely. In this regard, you may follow the guide as it is or may simply use any other approach or order of discussion. Focus on the objective and get as much information as possible from the respondent.

The overall objective is "To understand the circumstances that led the person drop out at high school and how different his or her life would have been if he or she had completed that level."

These are personal opinions hence everything the person says is actually the RIGHT answer.

Use a notebook. In the notebook, record the background information: Age, sex, marital status, location and district, date of interview, any other information

Make sure you carry out the interview away from other people – confidentially is essential

Questions

1. What is your view about education in this area?

2. Please describe the challenges faced by male and female children in accessing education in this area.

3. Why did you stop attending school? (Explore and record in detail)

4. Do you think you are disadvantaged in any way because stopped attending school?

5. Are those who continued in school better off than you today?

6. Will they be better off than you in future?

7. Why do you think so?

8. Looking back at the time you stopped attending school; do you think it was OK that you stopped attending school? Why do you think so?

9. Would you like your children to study up to university level? Why?

10. What is your view about the importance of education among children in this district today? Probe: Do you think those who attend school will be better off than those who will not attend school in future?

11. What else would you like to say about education in this area?

Discussion Guide 3: "School dropout after completion of primary school"

Instructions to moderator

This approach involves detailed documentation of the target person's life. Every detail counts. Note that the guide below is only a guide. We need to discuss with the person freely to get the information hence you should deliberately let the discussion flow freely. In this regard, you may follow the guide as it is or may simply use any other approach or order of discussion. Focus on the objective and get as much information as possible from the respondent.

The overall objective is "To understand the circumstances that led the person drop out at high school and how different his or her life would have been if he or she had completed that level."

These are personal opinions hence everything the person says is actually the RIGHT answer.

Use a notebook. In the notebook, record the background information: Age, sex, marital status, location and district, date of interview, any other information

Make sure you carry out the interview away from other people – confidentially is essential

Questions

1. What is your view about education in this area?

2. Please describe the challenges faced by male and female children in pursuing education in this area.

3. Why did you not join form 1 (**Explore and record in detail**)

4. Do you think you are disadvantaged in any way because you did not join form 1?

5. Are those who went to secondary school better off than you today?

6. Will they be better off than you in future?

7. Why do you think so?

8. Looking back at the time you stopped attending school (i.e. failed to join form 1); do you think it was OK that you didn't go to secondary school? Why do you think so?

9. Would you like your children to study up to university level? Why?

10. What is your view about the importance of education among children in this district today? Probe: Do you think those who attend secondary school will be better off than those who will not do so in future?

11. What else would you like to say about education in this area?

Discussion Guide 4: "School dropout before completing secondary school"

Instructions to moderator

This data collection approach involves detailed documentation of the target person's life. Every detail counts. Note that the guide below is only a guide. We need to discuss with the person freely to get the information hence you should deliberately let the discussion flow freely. In this regard, you may follow the guide as it is or may simply use any other approach or order of discussion. Focus on the objective and get as much information as possible from the respondent.

The overall objective is "To understand the circumstances that led the person drop out at high school and how different his or her life would have been if he or she had completed that level."

These are personal opinions hence everything the person says is actually the RIGHT answer.

Use a notebook. In the notebook, record the background information: Age, sex, marital status, location and district, date of interview, any other information

Make sure you carry out the interview away from other people – confidentially is essential

Questions

1. What is your view about education in this area?

2. Please describe the challenges faced by male and female children in pursuing education in this area.

3. Why did you leave school? (**Explore and record in detail**)

4. Do you think you are disadvantaged in any way because you did not complete secondary school?

5. Are those who finished secondary school better off than you today?

6. Will they be better off than you in future?

7. Why do you think so?

8. Looking back at the time you stopped attending school, do you think it was OK that you didn't complete secondary school? Why do you think so?

9. Would you like your children to study up to university level? Why?

10. What is your view about the importance of education among children in this district today? Probe: Do you think those who attend secondary school will be better off than those who will not do so in future?

11. What else would you like to say about education in this area?

Discussion Guide 5: Education Officers

Interviewer instructions

This data collection approach involves detailed documentation of the target person's life. Every detail counts. Note that the guide below is only a guide. We need to discuss with the person freely to get the information hence you should deliberately let the discussion flow freely. In this regard, you may follow the guide as it is or may simply use any other approach or order of discussion. Focus on the objective and get as much information as possible from the respondent.

The overall objective is "To understand the circumstances that led the person drop out at high school and how different his or her life would have been if he or she had completed that level."

These are personal opinions hence everything the person says is actually the RIGHT answer.

Use a notebook. In the notebook, record the background information: Age, sex, marital status, location and district, date of interview, any other information

Make sure you carry out the interview away from other people – confidentially is essential

Capture the following information prior to starting the discussion

Name of informant

Age

Sex

Date of interview

Region/name of office

Let the informant discuss all issues freely beyond the guiding questions

Discussion questions

1. What are the main challenges facing education in this area or community?

2. Please comment on the rates of school dropout. Which children are likely to drop out of school?

3. What do you consider to be the main reasons why children dropout of school in this community?

4. What can be done to increase retention and completion rates?

5. What else would you like to say about education in this community?

Annex 2: List of Counties in Kenya

Baringo
Bomet
Bungoma
Busia
Elgeyo Marakwet
Embu
Garissa
Homa Bay
Isiolo
Kajiado
Kakamega
Kericho
Kiambu
Kilifi
Kirinyaga
Kisii
Kisumu
Kitui
Kwale
Laikipia
Lamu
Machakos
Makueni
Mandera
Marsabit
Meru
Migori
Mombasa
Murang'a
Nairobi
Nakuru
Nandi
Narok
Nyamira
Nyandarua
Nyeri
Samburu
Siaya
Taita Taveta
Tana River
Tharaka Nithi
Trans Nzoia
Uasin Gishu
Vihiga
Wajir
West Pokot
Turkana

Annex 3: List of locations and clusters

District	Location	Cluster/village
Buuri	Ontulili	Kangaita Katheri
	Ntirimiti	Mutunyi Subuiga
	Naari	Gitimene Maitei Runkuru
	Kiirua	Kithima Nkando Kiirua
Igembe North	Antubetwe	Ndoleli Karichu Ruongo
	Njia	Ituulu K K Muuti Njia Cia Mwendwa
	Kabachi	Amwathi I Amwathi II
	Muringene	Kithare Thuuru