SCHOOLING HIDDEN COSTS:
THE CORRELATION BETWEEN HOME-BASED COSTS AND STUDENTS' TRANSITION RATE IN RWANDA

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Abstract:

Implementation of Fee-Free Schooling Policy is Rwanda's strategy to ensure equity and access to basic education. However, since the implementation of this policy, thousands of students have failed to participate in basic education hence exposing the Rwanda Educational System to wastage and failure to achieve the Universal Basic Education. The failure to enhance full participation of learners in education is attributed to several factors among them the home-based costs. This paper, therefore, discusses the impact of home-based costs on students' transition rate in tiers of 12 years education in Rwanda. It uses data collected from parents and headteachers to correlate home-based costs incurred by parents with students' transition rate in tiers of basic education in Rwanda. Findings from a multi-regression analysis revealed that the costs of school uniform, school material, home-coaching and transport could be highly correlated with students transition rate in tiers of 12YBE, particularly in O' level. It is therefore recommended that basic education stakeholders should understand that the realistic fee-free structure put in place by the Government of Rwanda must go together with a sustainable programme of students' financial assistance.

Keywords: Rwanda, fee-free schooling, home-based costs, hidden costs, O level, A level P level, 12YBE

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1. Introduction

Education is a tool to boost social-economic development. The lack of education leaves nations stranded in illiteracy and with low or no productivity (Campbell and Sherington, 2002). Therefore, nations have a quest to provide effective education to citizens by providing learning environments that are economically, socially, culturally and physically accessible for all children. It is for this quest that countries keep adapting and updating their basic education policies (UNESCO, 2006). Among other recently ratified policies, countries lengthened compulsory education and adopted strategies for their funding to ensure the students' participation rate is at its maximum level (OECD, 2015).

In Rwanda, the fee-free schooling policy was ratified in 2009 for the first 9 years and extended in 2012 to 12 years of basic education (Ministry of Education, 2013a). In line with the implementation of the fee-free schooling policy in basic education, there are two main sources of the government funding. The first is through capitation grant which is paid directly to schools. The capitation grant provides 3,500 Rwandan Francs (RWF) to every pupil per year. In addition, 50% of this capitation grant is directed towards purchasing school materials such as books, 35% to school maintenance and 15% to teacher trainings. The second source of funding is providing teachers' incentives per year where each teacher is given 12,500 RWF per year based on his/her performance. Both types of government funding are provided to ensure that all school-age children participate freely in all tiers of basic education (Mutesi and Paxton, 2012).

Despite the Rwanda's efforts to make basic education free, (Ministry of Education, 2014) and NISR (2015) shows that the transition through levels of basic education is approximately 75.9%, indicating an approximate of 24.1% wastage. Specifically, in 2014, Kirehe district showed a low level of students' transition rate (73.5%) whereas the intake rate was 112.4%. Likewise, in Kicukiro district, the students' transition rate (68.4%) was below the national average whereas the intake rate counted for 124.2%. Studies have shown that some schools are still charging some costs from households. Since these costs are not within the fee-free schooling policy, they can therefore, be referred to as hidden costs (King'ori, 2015).

A study done in Rwanda by Williams, Abbot and Mupenzi (2015) reveals that student's transition rate was highly affected by costs incurred by households when sending their children to school. These costs include costs of school uniforms, school materials, home-coaching and transport to and from schools. This study referred to these costs as hidden because they are not covered by any education policy in Rwanda (King'ori, 2015). In this view, this paper examined and interpreted the correlation between hidden costs on students' transition rate in 12 years of basic education in Rwanda.

2. Literature Review

2.1 Cost of School Uniform

In many researches, the cost of school uniform is viewed as an important determinant of students' transition rate. As such, household failure to provide school uniforms is among home-based factors that can have an impact on students' transition rate in tiers of basic education (Ananga, 2012). This is confirmed by Davies (2015), who adds that in England 99% of students are required to wear school uniform and the costs of which is a burden to households. In addition, Gentile and Imberman (2015) and Reed (2011) viewed school uniform as a strategy to retain students at school which can also determine their transition from grade to grade. However, reviewed literature failed to demonstrate the extent to which cost of school uniform affects students' participation. Further, they have not shown the estimated amount of what parents pay for each item of the school uniform. The present paper extends the existing information on the impact of home-based costs on students' transition rate in tiers of basic education in Rwanda.

2.2 Cost of Transport

Growing literature reveals that transport costs may lead to low student's attendance thereby affecting students' transition rate especially for children from areas where transport is necessary. Particularly, those from low economic backgrounds may not afford these expenses (Mason and Rozelle, 1998). Sigei and Tikoko (2014) established that low attendance in Kenyan schools was due to long distances between schools and homes. In Tanzania, Mugoro (2014) established that 46% of students fail to go to school because of lack of support on transport costs. This was also confirmed by Njoroge (2013) with an addition that poverty in families does not allow parents to cover the required transport costs. Asahi (2014) concluded that increased distance from or to home could be associated with students low scores which leads to low students' transition rate. However, reviewed literature failed to estimate the rate of change is students' transition rate that could be attributed to the cost of transport.

2.3 Cost of Home Coaching

Many studies refer to the cost of home-coaching as the cost of private tutoring. For instance, in a comparative study conducted in Thailand by Bray (1999), it was established that parents whose academic levels were not good enough to enable them to assist their children were forced to hire extra teachers for private tutoring. This was also confirmed in a study conducted in India by Kingdon and Teal (2005), where household ability to pay for private tutoring at home was significantly related to student's performance there by influencing students' transition rate. Studies by Choik (2012); Zhan et al. (2013) and Abuya et al., (2015) established that the cost of home coaching was real and an important determinant of students' transition rate. However, most of the reviewed literature failed to estimate the rate of change in students' transition rate that could be attributed to the cost of home coaching.

2.4 Cost of School Materials

Literature has reviewed that the cost of school materials is a threat to students' transition rate in basic education. A study done in England (Farthing, 2014) revealed that 21% of students could not get necessary books and appropriate stationery for their studies. According to (Carlos, 2014) and (Paulson, 2012) financial means to buy school materials can have significant effect on students' transition. However, most of reviewed literature failed to correlate the rate of change in students' transition rate that could be attributed to the cost of school materials.

3. Methodology

Data was collected from Kirehe and Kicukiro districts in Rwanda which were selected because of particularities found in students' participation in over years. In addition, these districts were a good representation of the rural and urban areas respectively. Probability and non-probability sampling techniques were used to sample study respondents. Whereas 30 out of 30 headteachers of 12 YBE were purposively, 395 parents were randomly sampled from Kicukiro and Kirehe districts.

Regarding parents, a two-stage cluster sampling technique was used to select 12YBE schools in each district at the first stage, followed by the selection of clusters of students within schools at the second stage. Since the study was interested in parents of students of a cohort that started the education cycle in 2013, clusters of students within schools were comprised of P4 students (upper primary cycle), S1 students (lower secondary cycle) and S4 students (upper secondary cycle). This gave a parent sample of 395.

Data was collected, using three main instruments. These are parents' questionnaire on hidden costs, headteachers' interview guide on hidden costs and school document analysis guide on students' participation. These instruments were originally in English version and later translated to Kinyarwanda before they were printed for data collection.

Data from parents' questionnaire was analyzed using quantitative methods while data from headteachers' interview guide was analyzed using qualitative methods. For quantitative data, the study used the Statistical Package for Social Sciences (SPSS) version 20 to generate standardized and non-standardized coefficient needed to establish the multiple regression equations. For qualitative data, the study used a combination of inductive and deductive methods to establish head-teachers' view on the pre-determined categories of hidden costs as well as those that emerged from interviews. Thereafter, the convergence of quantitative and qualitative findings was established.

4. Findings and Discussions

4.1 Impact of School Uniform Costs on Students Transition Rate

Table 1 gives an overview of regression analysis results related to the impact of school uniform costs on students transition rate.

The table show that the coefficient of determination was 0.27 in P' level, 0.82 in O' level and 0.17 in A' level of 12YBE. This implies that 82% of variations in students' transition rate in O' level could be attributed with school uniform costs. Furthermore, 27% and 17% of changes in students transition rate in P' and A' respectively could be accounted for by the costs of school uniform. The finding links the cost of school uniform to students' transition rate at the of 12YBE level of schooling. This study went further to establish whether there is any evidence to show that the cost of uniform could lead to increased or decreased students transition rate in P', O' and A' levels of 12YBE. The following regression equations show trends of the relationship between students' transition rate and the cost of school uniform.

$$T_P = 85.0 + 3.2x_1 - 0.1x_2 + 6.4x_3 - 0.2x_4 + 2.1x_5 + 0.2x_6 - 3.2x_7 \qquad (1)$$
$$+ 0.3x_8 + 0.9x_9 - 5.4x_{10} + \varepsilon(x)$$

$$T_O = 64.2 + 0.2x_1 + 1.3x_2 - 0.4x_3 + 0.1x_4 - 0.8x_5 + 3.5x_6 - 2.2x_7 \qquad (2)$$
$$- 0.12x_8 + 0.13x_9 + 2.09x_{10} + \varepsilon(x)$$

$$T_A = 54.5 + 0.4x_1 + 3.3x_2 + 1.9x_3 + 0.1x_4 - 6.1x_5 + 1.2x_6 - 4.1x_7 \qquad (3)$$
$$+ 0.9x_8 + 1.1x_9 + 1.3x_{10} + \varepsilon(x)$$

Where: T_P, T_O and T_A, represent the students transition rate in P', O' and A' cycles of 12YBE; X_{1-10} represents school uniform costs for school tie, shirt, short, skirt, socks, shoes, sport shoes, sport trouser, sport t-shirt and sweater and; $\varepsilon(x)$ is the chance variation (or disturbance) of predictors.

The study used y-intercept to explain the magnitude of changes in students' transition rate because of available cost of school uniform. As such, y-intercept shows the value of students' transition rate if all items of school uniform were valueless. In this view, Equation (1) shows that at y-intercept (X_{1-10} =0), the students transition rate in P' level would be 85.0, meaning that there would be a decrease of 8.8 from the average value (T_P = 93.8). Equation (2) indicates that at y-intercept, the students transition rate in O' cycle would be 64.2, meaning that there would be a decrease of 14.4 from the average value (T_O = 78.6). Likewise, Equation (3) shows that at y-intercept the students transition rate in A' level would be 54.5, meaning that there would be a decrease of 4.3 from the average value (T_A = 58.8). Therefore, this study concluded that the costs of school uniform were decreasing the students transition rate at all levels of 12YBE. This is more important in O' level.

Furthermore, an increase in the cost of school sweater (X_{10} = -5.4) and sport shoes (X_7 = -3.2) could decrease students' transition rate in primary level. This implies that if the cost of other school items were kept constant, an increase by one unit in the cost of school sweater would lead to a decrease in students' transition rate by 5.40 units. The school sweater seemed important because of many reasons, among them, the climate of

Rwanda. Rwanda has a temperate tropical highland climate, with lower temperatures. Young children in primary may not manage this low temperature without sweaters. Therefore, the lack of school sweater could lead to students' failure attend school which therefore leads to failure to transit from one level to another. The study also found that for an increase in one unit of cost of sport shoes, the students' transition rate would change by 3.2 units. This was true given that young children need protection especially during playing different games.

Table 1 further indicates that in O' and A' level, the transition rate was negatively affected by sport shoes. In O' level, the slope of sport shoes item was negative (-2.2), implying that an increase by one unit of cost of school sport shoes may lead to a decrease of students transition rate by 2.2. Likewise, in A' cycle, the cost of school sport shoes was negative (-4.1), meaning that an increase of one unit in the cost of school sport shoes would lead to a decrease of 4.1 units from the average value, in case the cost for all other items were kept constant. This implies that students in O' and A' levels, usually have just reached the adolescent stage (age between 12 and 18), they are strong and want to be involved in many games that require sport shoes. Therefore, sport shoes were an important item of school uniform because they protect students against injuries commonly associated with their work-out. In addition, for some particular sports or exercises, sport shoes can improve students' performance, allowing, for example, quick changes in direction.

Further analysis shows that the Beta values representing some school uniform costs were more significant. For example, Table 1 indicates that school short (Beta = 1.1) and school sweater (Beta = 0.9) were important predictors of transition rates in P' cycle. In addition, sport shoes and school socks were important predictors of students transition rate in O' and A' cycles. The study therefore concludes that a combination of school uniform cost is important in predicting students' transition rate in cycles of 12YBE.

These findings were collaborated by the head teachers' interview which confirmed that cost of some school items could have negative impact on students' transition rate. In addition, head teachers attributed parents' carelessness, ignorance and financial problems as other causes of low transition. For example, one headteacher from a rural area said:

> "*School uniforms are needed at school for the betterment of students. Students who put on uniforms always tend to be orderly and obtain better educational results. This is because there is better discipline and so facilitates the classroom management. Yes, some students have finished primary level but failed to transit to secondary level. The main challenge they have is that when they reach secondary school, the uniform changes. Instead of putting on shorts which are cheaper, they put on trousers which are relatively expensive. So, you will find some parents failing to buy for their children these school items. Especially uniform for girls seemed more expensive than for boys*". (Hidint14, 2017)

Another headteacher complemented this by saying:

"Uniforms are expensive and can be hard for parents to afford especially for children coming from low in-come families. In rural areas, materials for producing required school uniform are …always small quantities, and so are more costly than normal clothes. Often, they can only be bought from one or two special shops, which also push the price up. The cost of uniform often means that parents dislike it and it can lead to poor performance in schools." (Hidint23, 2017)

Generally, headteachers' views established that school uniform was important for better educational results and improved classroom management. However, it was also mentioned that due to economic background of families, some students fail to continue with their studies, especially when transiting from primary level to secondary level.

Both parents and headteachers place the cost of school uniform among the causes of low students' transition rate in the levels of the 12YBE in Rwanda. These findings directly support the Education Production Function Model, whereby school uniform costs are among educational inputs that can be attributed to students' transition rate as educational outputs. This is true in the context of Rwanda, because the education policy recommends the use of school uniform from primary to secondary levels of basic education (Government of Rwanda, 2016).

The findings are consistent to (Ananga, 2012), who classified the cost of school uniform among the factors that pull-out students from school and which prevent some students from returning to school. The present study showed that a considerable amount of 5000Rwf were supposed to be spent per parent on school uniform. With the level of poverty among some households, this figure can be a challenge. As it was explained by headteachers in this study, the cost of school uniform can be one of the causes of student dropout in Rwanda.

The cost of school uniform was an important predictor of students transition rate particularly in O' cycle, where it shares 82% of changes in students transition rate. This was also confirmed by (Davies, 2015) who established that the cost of uniform becomes important as students move from lower to higher level of education. In this study, evidence from parents gives trusted information about what cost they take for school uniform and which in turn can affect students transition.

Even though this can have some financial implications, the use of school uniform may improve discipline and sometimes educational outcomes (Baumannet al., 2016). The existing fee-free schooling policy does not cater for the cost of school uniform. Therefore, the cost of school uniform remains one of the challenges to the implementation of UPE in Rwanda.

4.2 Impact of Transport Costs on Students Transition Rate

Table 2 gives an overview of regression analysis results attributed to the impact of transport costs on students' transition rate in the three levels of 12YBE.

The Coefficient of determination (R square) was used to describe the percentage of variations in students' transition rate that can be attributed to transport costs. As

indicated in Table 2, the coefficients of determination in O' cycle was the highest at 0.91, followed by 0.38 in A' cycle and then 0.31 in P' cycle. This implies that 91% of changes in students' transition rate in O' level could be attributed to changes in transport costs. In addition, 38% of variations in students transition rate in A' cycle could be accounted for transport costs while 31% of changes in students transition rate in P' cycle could be shared with changes in transport costs. It therefore means that the cost of transport had an impact on students' transition rate and that the impact was higher in O' level of 12YBE. These findings could be attributed to different viable reasons including the fact that in Rwanda, when students transit from P' to O' level, they join schools that are located farther away from their homes. These schools require some transport expenses, which are usually not common to parents. In addition, by the time students reach A' level, parents are already acquainted with the cost of transport and it is no longer a major hindrance to school access. However, this impact is not clear about whether the cost of transport contributed positively or negatively to students' transition rate.

From Table 2 we can use the following regression equations to estimate the direction of the impact of transport costs on students' transition rate in 12YBE in Rwanda.

$$T_P = 87.6 + 2.1x_1 + \varepsilon(x) \tag{4}$$

$$T_O = 63.6 + 5.1x_1 + \varepsilon(x) \tag{5}$$

$$T_A = 50.9 + 2.7x_1 + \varepsilon(x) \tag{6}$$

Where: T_P, T_O and T_A, represent the students transition rate in P', O' and A' cycles of 12YBE respectively; X_1 represents costs for transport and; $\varepsilon(x)$ is the chance variation (or disturbance) of predictors.

To understand the effect of transport cost on students' transition rate, the study considered y-intercept. This intercept explains the quantity of students' transition rate when the cost of transport cost is valueless (Hoaglin, 2013). In this view, at P' level, Equation (4) shows that at y-intercept the students transition rate would be 87.6, meaning that it would decrease by 6.2 from its average value (TP = 93.8). Equation (5) shows that in O' level, at y-intercept the students transition rate would be 63.6, meaning that it would decrease by 15 from its average value (TO = 78.6). Furthermore, in A' level, at y-intercept the students transition rate would be 50.9, meaning that it would decrease by 7.9 from its average value (TA = 58.8). In general, if the cost of transport was valueless, the students' transition rate would decrease by some amount at all levels of 12YBE and that would be higher in O' level, the highest decrease being in O' level.

The direction of the impact of transport cost on students' transition rate can be explained by the sign of regression coefficients. From Equations (4), (5) and (6), regression coefficients are positive and define a positive correlation between predictor (transport costs) and students transition rate in P', O' and A' cycles of 12YBE. This implies that the more the transport cost the higher the students' transition rate. For example, the cost for transport ($X_1 = 5.10$) could be related to students transition rate in O' cycle of 12YBE when

compared to other cycles, meaning that an increase by one unit of cost of transport costs would lead to an increase of 5.1 units in students transition rate in O' level. Therefore, the key finding is that transport costs is attributed to some positive changes in students transition rate at all levels of 12YBE, meaning that the decrease in students transition rate should be attributed to factors other than the cost of transport.

Headteachers considered the cost of transport as important but not really affecting the students' transition rate in levels of 12YBE. The importance of transport cost was explained by the fact that there were school located far from households and which required some transport cost. Two headteacher shared the following experience:

"The Rwanda's initiative through the fee-free schooling was to ensure that distance to school is reduced. However, even with these developments, there are students who still walk long distances to or from home, perhaps, due to high transport fares in urban areas such as Kigali. And as such, it is very likely that these long distances to or from school have a negative impact on students' educational attainments. However, since I am heading this school, I have never seen a single student failing because of long distance." (Hidint20, 2017)

Another head teacher confirmed:

"May be the long distances to or from school affects their attentiveness in class because they reach tired. Some of them arrive at school sweaty, stressed and tired both physically and mentally, which may compromise their performance." (Hidint11, 2017)

Generally, headteachers confirmed the existence of transport cost, but downplayed its effect on students' transition rate. This finding is true given the Rwanda's initiatives to build many schools to reduce distances to schools. However, the fact that some students reach school stressed up and mentally disturbed may affect their performance. Therefore, the cost of transport can exist indirectly and in form of opportunity costs whereby those who stay near the school enjoy the free time between breaks whereas those taking long distances are disadvantaged.

The convergence for the two data sets was around two factual findings: first, the cost of transport can be attributed to some changes in students' transition rates in tiers of 12YBE. Second, the cost of transport cost could only contribute positively to students' transition rate. This finding agreed with the Education Production Function model whereby the cost of transport is related to students transition rate in 12YBE (Bowles, 1970). These findings are in agreement with Mason and Rozelle (1998) who established that some parents fail to pay for transport cost and decide to force their children to travel long distances to school.

Njoroge (2013) supports this argument adding that the cost of transport could affect students' academic performance. However, the present study shows that the impact of transport cost is always positive, meaning that transport cost will only

contributes to increasing students' transition rate in cycles of 12YBE. It was also established that the positive impact of cost for transport cost is higher in O' than in other levels.

4.3 Impact of Home-coaching Costs on Students Transition Rate

Table 3 gives an overview of regression analysis results related to the impact of home-coaching costs on students transition rate in cycles of 12YBE.

The coefficient of determination (R^2) was used to determine the impact of home-coaching cost on students transition rate in P', O' and A' levels of 12YBE in Rwanda. This coefficient was used to determine the amount of variability in students' transition rate that could be shared with home-coaching costs.

Table 3 indicates that the coefficient of determination in O' cycle is high at 0.81, in P' cycle is 0.37 and in A' cycle it is 0.33. We can therefore establish that about 81% of students' transition rate in O' cycle could be attributed to home-coaching costs. On the other side, 37% and 33% of changes in students transition rate in P' and A' levels of 12YBE accounted for home-coaching costs respectively.

Home-coaching costs therefore, have a significant impact on students' transition rate in cycles of 12YBE in Rwanda a position supported by Hahn (1971). From these results, it can be argued that the cost of home-coaching determines some changes in students' intake rate due to different reasons, including the fact that teachers can give homework which may require assistance from private tutors.

This study went further to establish the magnitude and direction of the impact of home-coaching cost on students transition rate that can be explained using the following regression equations:

$$T_P = 88.2 + 2.0x_1 + \varepsilon(x) \tag{7}$$

$$T_O = 66.9 + 4.3x_1 + \varepsilon(x) \tag{8}$$

$$T_A = 52.7 + 2.2x_1 + \varepsilon(x) \tag{9}$$

Where: T_P, T_O and T_A represent the students transition rate in P', O' and A' cycles of 12YBE; X_1 represents costs for home-coaching and; $\varepsilon(x)$ is the chance variation (or disturbance) of predictors.

For the regression equations, the study considered the y-intercept. This intercept explains the magnitude of students' transition rate if the cost of home-coaching was valueless. In this view, Equation (7) indicates that in P' level at y-intercept ($X_1 = 0$), the students transition rate would be 88.2, meaning that it will decrease by 5.6 from its average value ($T_P = 93.8$). In O' level, Equation (8) indicates that at y-intercept, the students transition rate would be 66.9, meaning that it would decrease by 11.7 from the average value ($T_O = 78.6$). In A' level, Equation (9) shows that at y-intercept the students transition rate would be 52.7, meaning that it would decrease by 6.1 from its average value ($T_A = 58.8$). Generally, regression Equations (7), (8) and (9) show that since parents pay for some private tutoring the students' transition rate gets higher at all levels of

12YBE. This implies that schools organize private tutoring to help learners pass national examinations.

To establish the direction of the impact of home-coaching costs on students' transition rate, the study considered the signs of regression coefficients (Hoaglin, 2013). In this case, from Equation (7), (8) and (9) the regression coefficients of the home-coaching costs were positive for the students' transition rate in the three cycles of 12YBE.

Therefore, we can conclude that when the cost of home-coaching increases, the students' transition rate increases. This finding implies that the cost of home-coaching is a contributing factor to increasing students' transition rate. In other words, home-coaching can only contribute to the increase in students' transition rate. Headteachers reported the reality of the existence of home-coaching cost. The collection of these charges was based on parental willingness. Furthermore, some headteachers tended to encourage the culture of home-coaching while others rejected the practices. For example, one headteachers in the urban area said:

"I really discourage organizing private tutoring at home because it distresses students, particularly those in primary level. Imagine a child is from school tired and would come home at 5pm and then sit down and study for another hour. Some students get tired of this habit as they need to relax. However, as students grow up and transfer to subsequent levels, the practice of home-coaching becomes important and meaningful." (Hidint01, 2017)

Another one indicated that:

"Most of education leaders do not support the private tutoring with argument that the children have a good education at school, where they spend about 8 hours every day. Assuredly, that is sufficient for their educational achievement. You do not need to push them through extra hours and hours of tutoring." (Hidnt05, 2017)

Another headteacher confirmed that the practice of home-coaching was very important to slow learners and those who miss important classes as it can help them to catch up with lessons:

"You know sometimes our classes are overclouded that you cannot cater for slow learners and finish the programme. In addition, home-coaching is needed for many viable reasons to help a child who has missed school because of illness, to support a child with special needs or to supplement home schooling. The coaching system helps learners to pass national examinations." (Hidint02, 2017)

The need for cost of home-coaching was real and needed for most headteachers. This finding disagreed with the current policies in education whereby students need ample time for their own concentration. If parents involve students in some extra-studying activities, this would consume their time to grasp what they learn during

normal teaching hours. However, headteachers could not rule out the fact that slow and irregular students need home-coaching to help them catch up with others. In addition, it was echoed that paying for home-coaching would increase chances to pass national examinations which determine the transition from one level to another level. Therefore, cost for home-coaching is real and can contribute to students' transition rate.

In Rwanda, the Ministry of Education discourages such practice and set some punitive measures for teachers caught doing the home-coaching. However, this has not stopped some households from benefitting from home-coaching services. In addition, given that the literacy level in Rwanda is at 68.3%, we can concur that some parents are unable to assist their children in doing their homework, signaling the importance of home-coaching for the betterment of student's performance (Government of Rwanda, 2015).

The convergence about the impact of home-coaching cost on students' transition rate was tied around two critical points: first, both headteachers and parents agreed that the practice of home-coaching would contribute to students' transition rate. This agrees with the Education Production Function model, whereby costs of home-coaching can be related to students transition rate (Bowles, 1970). Secondly both parents and headteachers established that the cost of home-coaching could only contribute positively to students' transition rate. This disagree with Abuya et al. (2015) who argued that the collection of home-coaching levies could be termed as teachers' incentives and this had been negatively affecting students' participation rate in Kenyan Schools.

These findings agreed with a study conducted in Hong Kong by Zhan et al., (2013), where it was established from students' perception that home-coaching was an important aspect in preparing for examinations. In Rwanda, the collection of home-coaching fees is not official, and the Government of Rwanda has been discouraging this culture with fear that it could affect students' transition. However, this study revealed that the cost of home-coaching could only contribute to increasing students' transition rate in tiers of 12YBE. Despite Abuja (2015) failure to link the cost of home-coaching on students' transition rate in Rwanda, at least they established that the practice of home-coaching was real and conducted by teachers looking for incentives. Therefore, it is imperative to conclude that home-coaching costs has a significant positive impact on students' transition rate in tiers of 12YBE and that the impact is higher in O' level compared to other levels.

4.4 Impact of School Materials Costs on Students Transition Rate

Table 4 gives an overview of regression analysis results related to the impact of school materials costs on students transition rate in cycles of 12YBE.

The study sought to establish the impact of school material costs on transition rate. This is crucial given the contextual background of education in Rwanda, whereby materials such as notebooks and writing utensils help students to organize, grasp and connect prior knowledge with new concepts. In addition, since the learner-centred methodology is being implemented in Rwanda, students need school materials to

enhance their studies as they do their own studies taking notes and making summaries for the later use. Table 4 shows that school materials have an impact in transition rate. However, the confirmed impact between these variables needed to be described in terms of magnitude and direction.

To determine the magnitude and direction of the impact of the cost of school materials on students' transition rate in P', O', and A' levels, the researcher used the following regression equations:

$$T_P = 86.6 + 1.2x_1 + 1.2x_2 + \varepsilon(x) \tag{10}$$
$$T_O = 62.1 + 3.2x_1 + 2.3x_2 + \varepsilon(x) \tag{11}$$
$$T_A = 50.4 - 0.6x_1 + 4.0x_2 + \varepsilon(x) \tag{12}$$

Where: T_P, T_O and T_A, represent the students transition rate in P', O' and A' cycles of 12YBE; X_{1-2} represents costs for note books and writing utensils and; $\varepsilon(x)$ is the chance variation (or disturbance) of predictors.

The study considered the y-intercept for Equations (10), (11) and (12). This intercept is noteworthy as it shows the point where the corresponding line of best fit crosses the vertical line (for students' transition rate). It also shows what would be the weight of students' transition rate if the costs of school materials were not incurred. Moreover, the regression equations show the sign of regression coefficient that determine the direction of the relationship under study.

At y-intercept, Equations (10) shows that students transition rate in P' level would be 86.6, meaning that it would decreased by 7.2 from its average value displayed in Table 4 (TP = 93.8). Equation (11) shows that at y-intercept, students transition rate in O' level would be 62.1, meaning that it would decrease by 16.5 from its average value displayed in Table 4 (TO = 78.6). Likewise, Equations (12) indicates that at y-intercept, students transition rate in A' level would be 50.4, meaning that it would decrease by 8.4 from its average value displayed in Table 4 (TA = 58.8). Generally, without school materials, the average value of students transition rate at all levels would reduce by some considerable amount.

Regarding the direction of the impact of cost of school materials on students transition rate, Equations (10), (11) and (12) indicate that all regression coefficients were positive in P' level, meaning that an increase by one unit of notebooks and writing utensils would lead to an increase in students transition rate by 1.2 units because of notebooks and by 1.2 because of writing materials. Likewise, in O' level, an increase by one unit of notebooks and writing utensils would lead to an increase in students' transition rate by 3.2 because of notebooks and by 2.3 because of writing utensils. These findings reflect the reality since school materials such as notebooks and writing utensils are considered as basic tools in the teaching and learning process.

Equation (12) indicates that in A' cycle, an increase by one unit of notebooks cost would lead to a decrease in students transition rates by 0.6 units whereas, an increase in one unit of writing utensils cost would increase the students transition rate by 4.0 units.

These findings imply that as students move to higher levels of education, they rely more on what they write in notebooks. Therefore, the lack of notebooks may lead to poor performance or failure to transfer to another level.

Qualitative findings from headteachers confirmed that cost of school materials could make some students fail to register or to transfer to levels of 12BYE. More importantly, the study revealed, students in lower levels such as primary tend to misuse school materials. This makes it difficult for parents to continue with their provision throughout a school term. One headteacher in the rural area shared the following view:

"Parents and caregivers help their children to get notebooks, pens, pencils. Especially, on the first day all students come with a complete set of these materials. However, as days surpass, young children tend to misuse these materials. This has been affecting parents, in case they can't provide additional materials in the middle of the term (Hidint08, 2017)".

Majority of the headteachers confirmed that school materials such as writing utensils and notebooks are not affecting the process of teaching and learning. One of advanced reasons is that these materials are not expensive hence every parent can afford to buy them. A headteacher confirmed that:

"I don't think there should be effect of costs of school materials on students' transition rate. Because first, these materials are cheap, second a student can use a dozen of notebooks throughout the school year." (Hidint22, 2017)

Finding from interviews with headteachers confirmed the availability of cost of school materials. But majority denied the fact that these materials could affect students' transition rate. Therefore, it can be concluded that the cost of school materials was not a threat to students' transition rate.

The convergence between parents' quantitative information and head teacher's qualitative information occur at the point where school materials make some changes in students' transition rate. This finding agrees with the Educational Production Function model whereby some inputs (school materials) could be attributed to some outputs (students transition rate), according to Bowles (1970).

The divergence emerges since quantitative findings showed that the absence of cost of school notebooks and writing utensils would lead to a decrease in students' transition rate by some amount, whereas qualitative information tends to concur that costs are there but could not be linked to students' transition rate. The first finding can be linked to Paulson (2012) who used cross-sectional data across different colleges to establish that school materials were having some impact on students' transition. Therefore, even for qualitative approach, the reality was that these materials could be attributed to some impact on students' intake rate. It thus confirms the existence of this impact.

It is imperative to note that fee-free schooling policy in Rwanda provides capitation grant for schools but only for to facilitate purchase of books and school's administrative endeavors. The policy does not provide support for notebooks and writing materials. In the end, many students' dropouts tend to be excused for the lack of school materials and hinder the implementation of education for all in Rwanda.

5. Conclusions

The study concludes that the home-based costs have higher impact on students' transition rate in O' level of 12YBE. As such, costs of school uniform, costs of school material cost of home-coaching and cost of transport has considerable high impact on students transition rate in O' level of 12 YBE. School headteachers confirmed that these home-based costs have some negative impact on students' transition rate. Reviewed literature linked these costs to poor students' educational outcomes. The Rwanda education policy and the fee-free schooling policy do not highlight these costs which can affect the UPE. It is, therefore, important to conclude that home-based costs are among causes of low students' transition rate in tiers of 12YBE, particularly in O' level.

6. Recommendations

The study recommended that basic education stakeholders should ensure that home-based costs essential for sending children to school are available and adequate. This is because failure to cover these costs would influence the students transition rates in basic education particularly in O' level. The study has shown that home-based costs such as school uniform, school materials and transport had been attributed to significant percentage of changes in students' transition rate in levels of basic education. The impact of home-based costs on students' transition rate was likely for older student. Furthermore, basic education stakeholders should understand that the realistic fee-free structure put in place by the Government of Rwanda must go together with a sustainable programme of students' financial assistance. Therefore, the government should include these costs in the capitation or as part of the fee free policy in Rwanda.

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Appendix

Table 1: Regression between School Uniform Costs and Students Transition Rate

Variables*	Descriptive		P' Level		O' Level		A' Level	
	M	SD	B	Beta	B	Beta	B	Beta
(Constant)			85.0		64.2		54.5	
School tie	2.5	1.4	3.2	0.4	0.2	0.0	0.4	0.1
School shirt	3.2	1.3	-0.1	0.0	1.3	0.3	3.3	0.9
School short	2.8	1.3	6.4	1.1	-0.4	-0.1	1.9	0.4
School skirt	3.1	1.2	-0.2	-0.1	0.1	0.0	0.1	0.0
School socks	2.8	1.4	2.1	0.3	-0.8	-0.1	-6.1	-1.1
School shoes	3.2	1.3	0.2	0.1	3.5	0.8	1.2	0.3
School sport shoes	2.8	1.4	-3.2	-0.6	-2.2	-0.4	-4.1	-0.8
School sport trousers	2.8	1.5	0.3	0.1	-0.1	0.0	0.2	0.1
School sport t-shirt	2.8	1.4	0.9	0.2	0.1	0.0	1.1	0.2
School sweater	2.9	1.4	-5.4	-0.9	2.1	0.4	1.3	0.3
Transition rate in P'	93.8	4.9	P =.000; R=.51; R^2=.27					
Transition rate in O'	78.6	7.1	p = .000; R=.91; R^2=.82					
Transition rate in A'	58.8	5.6	p = .000; R=.41; R^2=.17					

* N=371 parents
Source: Parent's questionnaire.

Table 2: Regression between Transport Costs and Students Transition Rates

Variables*	Descriptive		P' Level		O' Level		A' Level	
	M	SD	B	Beta	B	Beta	B	Beta
(Constant)			87.6		63.6		50.9	
Transport costs	3.0	1.3	2.1	0.6	5.1	1.0	2.7	0.6
Transition rate in P'	93.8	4.9	R=.55; R^2=.31; P=.000					
Transition rate in O'	78.6	7.1	R=.95; R^2=.91; P=.000					
Transition rate in A'	58.8	5.6	R=.62; R^2=.38; P=.000					

* N=371 parents
Source: Parent's questionnaire.

Table 3: Regression between Home-Coaching Costs and Students Transition Rates

Variables*	Descriptive		P' Level		O' Level		A' Level	
	M	SD	B	Beta	B	Beta	B	Beta
(Constant)			88.2		66.9		52.7	
Home-coaching costs	2.8	1.5	2.0	0.6	4.3	0.1	2.2	0.6
Transition rate in P'	93.8	4.9	R=.61; R^2=.37; P=.000					
Transition rate in O'	78.6	7.1	R=.90; R^2=.81; P=.000					
Transition rate in A'	58.8	5.6	R=.57; R^2=.33; P=.000					

* N=371 parents.

Table 4: Regression between School Material Costs and Students Transition Rate

Variables*	Descriptive		P' Level		O' Level		A' Level	
	M	SD	B	Beta	B	Beta	B	Beta
(Constant)			86.6		62.1		50.4	
School notebooks costs	3.4	1.4	1.2	0.4	3.2	0.2	-0.6	-0.1
Writing materials costs	2.6	1.1	1.2	0.3	2.3	0.4	4.0	0.8
Transition rate in P'	93.8	4.9	R=.60; R^2=.36; P=.000					
Transition rate in O'	78.6	7.1	R=.96; R^2=.93; P=.000					
Transition rate in A'	58.8	5.6	R=.67; R^2=.46; P=.000					

* N=371 parents.
Source: Parent's questionnaire survey.