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Government' Educational Expenditures on Students' Participation Rates in Public Boarding Secondary Schools in Rwanda

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Abstract
Purpose: This paper was carried out to indicate the government educational expenditures to a single student in public boarding secondary schools. This paper therefore, examines the government educational expenditure and its influence of students' access and completion in public boarding secondary schools in Rwanda.
Materials and Methods: The study used correlation research design and targeted all the 10schools of public secondary schools in Kicukiro and Ruhango districts and their 2disctricts education officers, 2186parents and 4382studnets. The sample size constituted all 10school head teachers and 2 district education officers, 126parents and 252students using Yamane (1967) formula. The data collected using interview guide and document analysis review, parents for interview guide and students for questionnaire. The data was analyzed using descriptive statistics such frequency, mean and standard deviation as well as inferential statistics like correlation and Chi square.
Results: Through data analysis, the study established that the average cost of education incurred by government to a single student in public boarding secondary schools was amounted at an average of 157,452Rwandan francs per year. However, the study found that there is a statistical significant relationship between government educational cost and student' access to public boarding school education ($r= 0.131$, $N=247$ and $P=0.040< 0.05$) implying that government educational expenditures determine a low students' chance to access in public boarding secondary schools in Rwanda. The study also found that school earns the average of 3,450,000 Rwandan francs from income generating activities and used to sustain the government' educational expenditure in public boarding secondary schools corresponding to 4,681Rwandan francs to a single students. Nevertheless, the study found that students' school completion reduced across the years 2017-2019 as varied from an average of 97students to78students per school in lower senior three and 104studnets to 84students in senior six. The results lead to the recommendation that government should increase its contribution to boarding secondary schools to increase the students' access and completion.
Conclusion: The study established that an average of 157,452 Rwandan francs given by government to each student per year in public boarding secondary school is too little compared to household educational cost to a single student that pays 558,900 Rwandan francs per year. This means that reducing the government education cost, increase the burden to households educational cost thus lead to decreasing the students' participation rate in public boarding secondary schools in Rwanda.
Keywords: Government educational expenditures, access, students' completion and public barding secondary schools.

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I. INTRODUCTION

Education should equally be served to youths in order to improve the economic status of future generation and countries as indicated by United Nations Children's Fund (UNICEF, 2016). This was supported by article 26 in paragraph 2 of universal declaration of human rights states that education should be directed to full development of human personality to improve the respect of human rights (World Bank, 2016). Since education is viewed as an investment, there is need to consider the cost involved. Educational cost is taken as an amount that a student, an institution of learning or the public has to spend up to educate an individual or a group of people (Joel, 2018).

The cost provided to any economic activity performed, could be valued in various ways in which all stakeholders take into consideration of such activities done in terms of education (Chepkoech, 2018). The cost provided in education may be sub-divided into two categories: Social cost and private cost. Social cost is such cost of education spent by the government. This type of education cost includes teachers' salaries, textbooks and school infrastructures for improving the welfare of citizens. There are many factors that can affect access to education. For instance, access to education in Pakistan is associated with income of parents where high-income youths usually channelized into high school preparatory courses (Memon & Muhammed, 2018). This implies that, the higher the income of parents, the greater the demands for students' education.

Since education has been perceived as an investment, governments and individuals have been investing in it. There has been a lot of concern as to who finances it as well. This can be attributed to complexities involved in financing education. These complexities arise from the fact that education has many sectors to finance ranging from pre-school to university and financing several components such as teaching and learning materials, physical facilities, and salaries for workers as well as social amenities (Pritchett, 2019). The complexities involved in financing education calls for a proper methodology of establishing the unit cost of education (Mutegi, 2015).

The organization for Education Co-operation and Development (OECD, 2017 & Mutegi, 2015), stated that the cost of education per student should be calculated due to the expenditure spent by educational institutions at the level of the related education to be acquired, with the number of students accessed. The average cost of equitable access to education identified, might be based on the ratio of cost of education per student and government educational expenditures that are also corresponded with the number of students, which should be represented as a percentage of Gross Domestic Product (GDP) per capita (Mutegi, 2015). According to Anit (2017) government educational expenditures could also affect students' educational access. This is mostly influenced by government intervention in education, which is responsible to ensure that opportunities for education are equitable and accessible across socio-economic groups done to make adequate school infrastructures and to increase the number of qualified teachers as well as reducing teacher: students' ratio, which results to the increase of students' participation in schooling (Anit, 2017).

Education access of students in secondary school in Sub-Saharan Africa (SSA) is lower than any other region of the world due to facing various problems related to the socio-economic status in such countries to help students to get effective education (Pritchett, 2019). Therefore, there is still a lack of students' access to secondary education, which is increasing, and this led to the lack of ability in the related countries to perform their effective economic growth and development strategies that help the governments to fund their community and to get an opportunity of expanding secondary education (World Bank, 2017).

In Africa, education system has been influenced by many economic transformations that countries have undergone in many years ago (Ebaidalla, 2018). Mainly, the adaptation of liberalization and free market policies have caused the reduction of public spending on education. Moreover, the reduction of educational expenditure provided by the government has contributed greatly in reducing the quality of public education where a big number of population is forced in private education which is financed by the households. This leads to a significant increase of households' education expenditures particularly the households of high income.

Table1: public education expenditure as a percentage of GDP in Rwanda and sample of Sub-Saharan African countries

Countries	2014	2015	2016	2017
Burundi	6.8	6.4	4.7	4.8
Cameroon	2.7	2.8	2.7	3.1
DRC	2.0	2.2	2.1	1.5
Ghana	6.2	5.9	5.8	4.5
Kenya	5.3	5.3	5.4	5.3
Rwanda	**4.3**	**3.8**	**3.5**	**3.2**
South Africa	6.1	6.0	6.0	6.1
Uganda	4.5	3.9	3.4	3.0
Tanzania	3.9	4.2	4.3	4.0

World Bank, 2018

The Table1 presents the public educational expenditures provided by the government as the percentage of Gross Domestic Product (GDP) in Rwanda and other sampled Sub-Saharan African Countries (SSAC) since 2014 up to 2017 where the government expenditure in Rwanda, on education as a percentage of GDP kept decreasing from 2014 until 2017. This implies that, this decrement of educational expenditures by government of Rwanda where the public educational expenditures as a percentage of GDP was 4.3 in 2014, 3.8 in 2015, 3.5 in 2016 and 3.2 in 2017 created a burden to households to pay a high cost of education. Therefore, this can be

attributed to one of the factors, which can affect the students' participation rate due to the increment of household educational expenditures.

Ministry of Education in Rwanda (MINEDUC, 2017) stated that the number of students accessing lower and upper secondary schools increased in the years of 2011 to 2016 from 486,437 to 553,739 because most of the students got an opportunity of being enrolled in 9YBE as well as 12YBE. This increased the transition rate of students in secondary level of education as well as gender equality, which was mentioned due to the effort of government of Rwanda by encouraging the retention of female students. However, the access to secondary school was still less equitable in the rural and urban area due to less government contribution in boarding secondary schools. This study therefore, sought to examine the government educational expenditures and its influence on students' participation rate in Rwanda.

II. LITERATURE REVIEW

The literature review of this paper presents the literature review based on various costs of education incurred by government to public boarding secondary schools in order to combat with illiteracy among youths.

School staff salary as the cost of education

Remunerations given to the school staffs are taken as the key determinants used to make teaching profession more attractive and relevance (Anang, 2018). Though, there are other factors that bring people into the profession such as the structure of working conditions, career prospects, profession development opportunities like professional trainings and workshops as well as recognition (Anang, 2018). These ensure that teachers are satisfied and sufficiently motivated so that they continue keeping the provision of high quality of teaching (Mwangie, 2020).

According to Education, Audiovisual and Culture Executive Agency (EACEA, 2018), the majority of countries in Europe, have clear statutory salary which is shared basing on the level of education that a teacher is registered in. Some levels of education such as pre-primary and primary education, teachers are paid less than those teachers who are registered in lower and upper secondary levels of education. Despite, there is a small difference of secondary teachers earning based on their profession where teachers in upper secondary, tend to get a greater statutory salary that the teachers who are registered in lower secondary level of education. EACEA (2018) also added that, there is some pushing progressions related to teachers' salary and incentives in the performance of their career within various European countries such as Denmark, Lithuania, Iceland, Norway, as well as Serbia. However, in these countries there is some difference in teachers' payments where there is a difference of 20 percent of the salary, which is paid to the beginning teachers, and the top expected range salary. Nevertheless, the top range salary is almost double the starting teacher's salary in some countries of Europe like Romania, Ireland, Greece, Portugal, Hungry and Austria (Dupas & Kremer, 2020).

Furthermore, the top range presented in statutory school staff salary, is determined by various factors like those that individual performance presented in the working place and time of in – service of an employ, which is taken as working experience. In some countries like United Kingdom, Sweden, and Liechtenstein, it takes approximately 28 years of working experience to reach at the level of getting top statutory range salary (Susan, 2019). According to the council of European Union (2014), the level of salaries and various incentives given to the employees in a given institution, is considered as the key determinant factors that attract people in various working sectors including teaching profession and performing various school activities.

According to UNESCO (2018), teachers and their actions in classroom setting, play fundamental impact on students learning conditions. Educational system is good because of the quality held by schoolteachers and the way that they are treated in their career, as they are people to which society charges them with simultaneously proving care for its children as well as developing their skills for both learning and living in a normal life. In this case, teachers are supposed to be remunerated due to their teaching services provided (Dupas & Kremer, 2020).

According to Vermeersh and Kremer (2016), salaries given to teachers and other school staff salaries as well as supporting staff salaries in various Sub-Saharan African countries, meet some limitations based on socio-economic status of the countries in Africa where such counties spend too much to in-service professional training and teachers support.

In Africa, there is a substantial variation happens in the size of budgets, given by government heading the country in educational sectors which should be done by basing on the total government spending (Susan, 2019). African countries Susan (2019) added that Morocco allocated about 26 percent of the total government educational expenditures with 18 percent, which was taken as the salaries given to teachers. Zimbabwe on the other hand, the government allocated approximately 8 percent of the total government expenditures in educational sector in which 100 percent this payment, was given directly to salaries distributed in education (UNESCO, 2018). Therefore, teachers in Sub-Saharan African countries experience too little spending of government in education sector especially on salaries paid to teachers. This therefore, comes as the results,

which affect the provision of quality education done to low valuation of teaching activities to teachers as their profession and also discouraging potential candidates who need to be one of the members doing teaching profession because of remunerations given to teachers and low allocated salaries in education sector (UNESCO, 2018).

Figazzolo (2020) suggested that teachers have to be paid a high salary compare to the salaries paid to the average citizens as they intend to be more educated than average citizens regardless to the income presented in the country. However, many sub-Saharan African countries are tracking on how they can get some opportunities, which could be used to make some investments, which can be used while increasing access to secondary schooling as it was stated by Organization for Economic Co-operation and Development (OECD, 2017).

In Rwanda, the Ministry of Economic Planning and Finance (MINECOFIN) distributes the public funding and it is subdivided into categories such as Capitation Grant (CG) and teachers' salaries (MINECOFIN, 2012). The capitation grant which is paid from the Ministry of Economic Planning and Finance is sent directly to school head teachers as they are taken as the school representatives of school setting especially in terms of school management and also this capitation grant is composed by two different elements related to two ways capitation grant payment. The first payment is paid basing on the number of students enrolled in school at the average of 21,000 Rwandan francs per students and this payment is paid once in a year. The second payment related to teacher' bonus due to teacher performance, which is paid per month per teacher, registered in education sector (Transparent International, 2012).

The allocation of capitation grant given to teachers teaching in public school in Rwanda, it taken as the formal consideration of teachers' bonus done, by basing on their performance presented in their teaching subject (MINEDUC, 2014). Nevertheless, such capitation grant, is given to all teachers teaching in secondary schools and it is taken as an addition to their salaries (MINEDUC, 2014). Therefore, the system of financing which is used to pay teachers, is automatically administered to all districts as they are thirty districts found in the whole country of Rwanda due to the fact that, educational budget is decentralized at the level of each district (MINECOFIN, 2012). Therefore, the assessments done in each district of Rwanda, to find out the number of students and teachers presented in each school setting where the school head teachers who are in charge of implementing of the daily school management activities have the duty of providing teachers' bonus to the respective teachers in school. Transparent international Rwanda (2012) presented the policy, which stated that 50 percent of capitation grant should be distributed to schools to buy the school textbooks, 35 percent of the same capitation grant should be allocated in the school maintenance and the remaining 15 percent should be allocated in teachers' professional trainings.

On the other hand, the educational funding provided by the state government for improving teachers' welfare, is teacher's salary. The salaries paid to teachers, are paid from the Ministry of Economic Planning and Finance and sent to teachers basing on the information and monitoring done at the district level (MINECOFIN, 2012). The basic teachers' salaries in secondary school in Rwanda are the same to all teachers teaching in public schools in Rwanda. However, the difference is for teacher's teacher' bonus may vary due to teacher's performance and other added teachers bonus provided by parents to those who are teaching in public boarding secondary schools and the total net starting salary of teachers teaching in secondary school is 113,709 Rwf for diploma (A1) teachers and 146,076 Rwf for bachelor (A0) teachers (MINEDUC, 2014).

Lillian and will (2020) stated that educational public funding system in Rwanda is flat. This implies that the given educational funding is established to ensure that students get equitable access to education regardless where they come from, or socio-economic status of their families and any eternal circumstances, they receive the same level of funding. The Figure 2.1 presents teacher' salary and school budget in Rwanda.

According to the Ministry of Education (MINEDUC, 2014), the distribution of public funding in secondary schools in Rwanda. It reveals that the total net teacher' salary in secondary school, is 113,709 Rwf for A1 teachers and 146,076 Rwf for A0 teachers. The bonus of 3 % of net salary counted due to teacher performance that varies from 60 % to 80 % or 5% of the same net salary counted due to teacher performance that varies from 80 % and above. MINEDUC (2014) also indicated that, government spends 56 Rwf per child per day to school feeding to support lunch fees paid by parents and 21,000 Rwf per child per year where 40 percent is used to support pedagogical activities, 30 percent to maintenance of the school infrastructures and 30 percent to other school running activities. However, the figure 2.1 also summarizes that, the total school funding by government, comprises teachers' salaries, capitation grant as well as school feeding, earmarked district funding and school textbooks and other school materials.

School material cost as the cost of education

The government and any other school stakeholders (Jonathan & Justine, 2018) supply the school materials, which are used by school, in the implementation of teaching activities as well as other school activities. To improve the students' participation to education where such supplied materials are taken as the major characteristic that emerged immediately all over the World especially in Europe (Jonathan & Justine,

2018). The distribution of school materials by the state government in Europe is done by basing on the students mean, which is presented in a given school like students chairs in classroom and beds to be allocated in the students hostels as a boarding school (Anang, 2018).

According to Bransford (2016), the school materials, which could be supplied by the government for the purpose of making effective teaching and learning process and to improve students' participation, are curriculum, school library textbooks as well as pedagogical materials like materials of school laboratory, chalkboard, white board and also other needed teaching and learning aids. According to Lindahi (2017), there is the major issue related to the development of curriculum to be used in formal secondary science education in the World, as well as the difficulties of making recruitment of science teachers. Mostly, Lindahi (2017) added that in various countries since the world like sprain and Poland, curriculum is considered as a major determinant of any education that can accumulate the students' retention in case curriculum is well prepared and implemented by qualified teachers.

Mercer *et al*. (2016) added that well prepared curriculum used in school setting, effective distribution of pedagogical materials like school library materials and qualified teachers whose effective communication to students during teaching and learning process, enhance students' access and completion. According to Lyons (2016), the cost spent to school materials to be supplied by the government in the developed countries, continued to be increased and this can have a greater effect on students' participation especially in secondary schools, as they need many materials. However, it was stated that, without proper school material supplies, it is virtually not possible to develop a meaningful and relevant education (Au, 2018).

In Kenya, the cost of school material supply is cheaper compared to European countries or North America, where school materials needed to be distributed by the government are supplied at high cost as it was stated by Organization, Economic for Cultural Development (OECD, 2013). Despite, the cost of school materials in Kenya is low than the cost of school materials in developed countries, some public secondary schools in Kenya do not have sufficient materials needed to be used in school setting like school library textbooks and well- equipped school laboratory (Handley, 2019).

In Rwanda, the establishment of cost strategic plan related to school materials provided by the government of Rwanda was done to make clear framework of policy, which was needed to be implemented in terms financing education (MINEDUC, 2017). This helped the government to effective planning in education related to Sector Budget Support (SBS) and support the discussion happened to focus and highlight the financial gap related to education as the Government of Rwanda (GOR, 2017) stated it. Through MINEDUC, resource allocation to public boarding secondary schools might be done due to Sector Budget Support (SBS) to education (Fofack, 2019). Public Expenditure Review (PER) showed that children get opportunity of accessing in 9YBE and 12YBE however it is still a challenge to students of public boarding secondary school where some school materials are allocated due to charges provided by households whose students participating in such public boarding secondary schools (Fofack, 2019).

According to the educational statistics presented by the Ministry of Education in Rwanda (MINEDUC, 2018), there is a greater number of students' participation in public secondary schools in Rwanda basing on the students increment in term of Gross Enrolment rate (GER) and Net Enrolment Rate (NER). However, there is a big gap in school material caused by the reduction of governmental school material supply. For instance, the number of students' desks was reduced in classroom setting in public boarding secondary school that could not match with the number of children who are supposed to be enrolled as they increase day to day (MINEDUC, 2018). Therefore, this can be one of the challenges affecting students' participation in education and conducive student learning condition. Secondly, there is an increment in distribution computers to be used in public secondary school in Rwanda, but there is still a challenge having access to such computer due to high student ration per computer where in 2017, one computer was supposed to be used by nine students in secondary school. Thirdly, the distribution of school reading textbooks was low, in all subjects taught in secondary school (MINEDUC, 2018).

Professional training cost as the cost of education

According to Linda and Madelyn (2017), teacher professional training refers to the structured professional learning added to teachers' knowledge and practices to improve effective students learning conditions, which can also enhance better learning outcomes. The formal professional development given to teachers represents a sub-set range of teachers' experience that may come to improve the quality of teachers (Linda & Madelyn, 2017). Therefore, the state government is the one of the most stakeholders of education sector, to finance professional development needed by teachers to help teachers to get opportunities of increasing their teaching career through getting professional relevance skills and to enhance effective learning condition in classroom setting (Allen *et al.,* 2015). The professional development platform that is also considered the opportunities offered to teachers to get professional content which must be done basing on duration and the amount of money invested by the government or any educational stakeholders (Shaha & Ellsworth, 2019).

The organization for education, co-operation and development (2019), conducted the study in Europe related to teacher professional development done through the provision of professional trainings, this organization stated that various professional training given to teachers teaching in public schools. Linda and Madelyn (2017) stated that the state government to support teachers to full participation in various professional should finance such trainings. For instance, professional workshop, conferences related to education, programs related to teachers' qualification, observation visits to other school, which helps to share knowledge and skills among teachers, participation in the network, related to teachers (Linda & Madelyn, 2017). This implies that professional development of teachers as well as individual or collaboration research related to various topics lead to improvement of both teacher and students' performance.

OECD (2016) added that the cost of teacher professional development provided by the state government, keeps increasing mostly in the provision of secondary education due to the fact that, the duration of preparing training programs given to secondary teachers takes long. Teachers who participated in the provision of professional development were at the rate of 88.5 percent (OECD, 2018). This shows that, there is a high cost invested in the provision of professional training to teachers by the government, which can also help schools to get high-qualified teachers and greater competent students which results to having high completion rate. Nevertheless, OECD (2016) presented that there is a part of unsatisfied demand raised by various teachers in a world, in which they stated that, there is a lack of interconnection between supports provided by the government to professional training and teachers development needs valued in terms of content and modes of delivery. Therefore, teachers noted that, what is the most effective to their development to be paid in full or partial of cost needed to participate in such given qualification programs so to enhance their living standards (Namit, 2017).

Raphael and Claudia (2012) conducted the study in Benin, related to teacher professional development in Sub-Saharan Africa, in which they presented that, most African countries are having the common issues related to the improvement of quality and equity in education, which should be maintained as the most factors that lead to having high students access in education. Cobbod and Dare (2017) added that professional development given to teachers should be emphasized by all African countries through having greater commitment related to financial context, which should be settled regularly and sufficiently to African teacher's professional development.

Leach (2015) stated that, in Sub-Saharan African countries, there is a big number of untrained and under qualified teachers in their career compared to professional development given to teachers in United States and in European countries due to the fact of having poverty and legacy of late colonialism in African countries. Kriek and Grayson (2019) also added that, the training format used in Sub-Saharan African countries, for the purpose of enhancing teacher professional development given in terms of lectures, workshops, seminars, colloquia, demonstration, simulations as well as micro-teaching. They also stated that, all of those kinds of training provided to teachers must be financed by the level of the state government to improve literacy skill of citizens (Kriek & Grayson, 2019). Having competent students' completion as well as developing professional teachers needs such content knowledge, teaching approaches and professional attitudes, which promote the quality of in-service teachers in their teaching activities, play a significant role in the promotion of students' participation to schooling.

Raphael and Claudia (2018) also stated that, there are some challenges that affect the implementation of teacher professional development in their daily performed school activities in Sub-Saharan African countries including Rwanda. This also affect the participant motivations known as teachers' motivation caused by the limited funding to be distributed in education sectors, lack of materials as well as lack of professional expertise and time of trainers. They also presented that, in Sub-Saharan African countries, there is insufficient of compensating the act of performing professional development activities (Raphael & Claudia, 2018). However, such provided professional development, enhances learning and practices of teachers.

Namit (2017) conducted the study in Ghana, which was related to the cost-effective ways, which can be used to train teachers, and stated that, African countries like Ghana, met a discouraged challenge related to the lack of trained teachers due social-economic status of the country, which results to influence the economic and education development of the country. Therefore, this low cost invested by the government, brought a real gap in the quality of teaching which affect students learning outcomes and their life perspective. Namit (2017) concluded that, the cost provided by the government to train the Untrained Teachers Diploma in Basic Education (UTDBE), improve their process of less planning and preparation, getting relevance classroom methodology and delivery as well as having effective classroom management techniques.

In Rwanda, teachers need a regular system of Continuing Professional Development (CPD), to improve literacy instructions related to teaching career (Amol & Krishna, 2017). Rwandan teachers suggested that, they need enough time of getting trainings for better learning and having enough skills related to teaching approaches and lesson planning. They also added that, continuing professional training should be flexible, in order to help teachers to participate in various trainings given by Rwanda Education Board (REB) and Non-Governmental Organizations (NGOs). This should also be linked to the increase of teachers' salaries and

incentives in order to reward professional development effort because the salary of secondary school teacher in Rwanda is associated with formal qualification got from university (Hilda, 2016).

NGO of Save the Children (2016) conducted the study related to continuing professional development in Rwanda, and stated that there is a big number of students in secondary schools in Rwanda whose performance is below the expected level of having ability related to both reading skills and writing skills. The NGO also found that, such low performance was caused by the insufficient professional trainings prepared by government to be given to secondary school teachers to help all Rwandan children to get fluent reading, writing skills and having proper counting. Therefore, Save the Children (2016) recommended that, the Ministry of Education (MINEDUC) should increase the cost of teacher professional. Joseph *et al.* (2020) also added that MINEDUC should work collaboratively with NGOs to enhance teacher training content in order to improve teacher literacy of instructions, which may result to high completion rate of competent students. However, the officers in charge of educational sector should become more collaboration that is formal and accountable to Education Quality Standards (EQS) given by Rwanda Education Board (REB) in order to increase the number of teachers participating in in continuing professional development and to set the budget that could be used to accomplish the regular training and school inspection.

School infrastructure cost as the cost of education

According to Roger *et al.* (2016), school infrastructures are all facilities required to make effective teaching and learning process such classrooms, outdoor learning and playgrounds, water and sanitation, administration buildings, storage, cooking building as well as boarding facilities. According to Barrett *et al.* (2019), the government and societies in the world try to develop their system of education by making effective in puts to education system. Barrett *et al.* (2019) stated that having relevance curriculum, well-compensated teachers, and having enough school infrastructures help the state government to ensure that, all children and youths have the opportunity of getting access to schooling in order to get knowledge and skills used to improve the quality of education. The quality of school infrastructures is very important and appropriate in educational planning and design that should be done basing on the number of students who are at the rage ages (Daniel & Cox, 2017). However, this could be based on number of students being enrolled in the related area of school environment and the amount of money needed to be invested by both government and society in general on the development of school infrastructures in order to improve the literacy of children in the country (Daniel & Cox, 2017).

Asim and Schmillen (2015) conducted the study in United State of America (USA), about students' access to education and school infrastructures, and they came with the findings stating that, high investment of government to school infrastructures, increases both school size and the cost of education per students, which may result to high completion rate with minimum dropout rate. However, there were some evidences showing that, small school got better academic results and high completion rate due to effective operation of educational cost done according to the broad variety of measures (Bringler *et al.*, 2018).

Bloom and Unterman (2020) conducted the same study and realized that, small schools are note effective solely by virtue of being small but rather than working better in case of students' access is low. They also added that small schools offer environment where teacher, students and parents find themselves as a part of community and deal with the issues related to learning conditions, diversity, governance and buildings like learning places. The study also found that, the large schools with completed infrastructures present various issues, which can affect students' participation rates such as high transportation costs, high administration overheads, low completion rates caused by high dropout rates, high vandalism rates as well as low teachers' satisfaction.

The school infrastructures can also meet geographical problems which can result to having small class sized school and also affect students' participation specifically in case of getting full students' accommodation (Petrosino *et al.*, 2020). Therefore, the schools must be more locally allocated within the area due to the density demand of the location.

Roger *et al*. (2016) stated that having inadequate school infrastructures in secondary school, is a challenge in Sub-Saharan countries to achieve all targets of education, specifically educational access to secondary education worldwide. The effective and safe learning environment in Sub-Saharan African countries need the estimate of USA dollars of 30 billion of making learning environment which is conducive to teaching and learning activities done for the purpose of reducing overcrowded classroom and making various adequate school buildings (World Bank, 2016). However, good provision of school infrastructures, which was noted by World Bank (2014) that the country itself, is sufficient or not to improve students' access to education. Therefore, the effective educational delivery should be done across the board specifically with those who are in charge providing qualified teachers as well as teaching and learning materials and adequate school infrastructures can support an educational programme to improve various educational inputs such as curriculum development, textbooks development and distribution of teacher trainings (Theunynck, 2019).

According to Max Lock Centre (2018), school and community, should be involved in the development of having education school infrastructures within school settings where such participation of both school and community, can improve the planning process of the related school infrastructures that can also enhance school maintenance. Therefore, educational planners responsible for school infrastructures, should emphasize on establishing effective school management (World Bank, 2016). This implies that setting strategies that could be used in planning and construction process, finding the source that may support the development of school infrastructures, finding how infrastructure priorities at school, should be identified and prioritized and how it might be fixed into the overall school planning process (World Bank, 2016).

The cost provided by the government or any school development partner, should be taken as the investment to be used in repairing and maintenance of the school infrastructures (Rheingans & Freeman, 2020). Therefore, the current deficit of school infrastructures presented in the school setting, can be caused by the lack of maintenance cost of the existing school building and insufficient capital cost over the life -long of the school infrastructures.

Wright *et al*. (2011) conducted the study related to capital and maintenance costs of the school infrastructures in Kenya, and stated that, Kenyan School Infrastructure Investment Program (SIIP) provided 5.7 billion to 4,686 public schools across 125 poorest districts on the country in 2005 to 2010. Wright *et al* (2011) also added the money spent to improve the existing infrastructures and building some new facilities. However, the initial building of the school facilities had invaluable cost baseline for various types of the school buildings. They also added that, the price needed to construct the school infrastructures varied villages and technologies which were used.

In Rwanda, the program of school infrastructures strengthened mainly secondary school and managed at district level (MINEDUC, 2018). This reduced over population presented in classroom setting to increase students' participation rates, where the number of secondary school classrooms in 2016 to 2017 has increased from 2.5 percent to 3.1 percent respectively within the schools of government aided and public schools (MINEDUC, 2018). The Ministry of Education added that, the number of schools whose primary, lower and upper secondary level of education, was increased from 31.17 percent to 31.30 percent in 2016 to 2017 respectively.

III. METHODOLOGY

This paper employed correlation research design to determine the relationship between education expenditures and students' participation. The target population was 6580 people including 2 district education officers of Kicukiro and Ruhango districts in Rwanda, 10 school head teachers and 4382 students corresponding to 2186 parents. Yamane formula was used to get the manageable sample size. Stratified sampling technique was also used to select a sample size of 252 students and 126 parents while the schools head teachers and district education officers were selected purposively. Questionnaire, interview guide and guided document analysis review were used as research instruments during data collected and were administered to the respondents of the study. Responses from the respondents were evaluated and then respondents were interviewed to ascertain their view on the quality of the questionnaires. The study used SPSS version 21 software in data management.

IV. FINDINGS AND DISCUSSIONS

This paper was developed to examine the influence of government educational expenditures on students' participation rate in public boarding secondary schools in Kicukiro and Ruhango districts in Rwanda in order to improve the social welfare to citizens of the country and reduce the illiteracy level among the youths. The amount of money gained by boarding schools through performing some income generating activities is also expressed as the support of government educational expenses. Therefore, this study sought to indicate the average amount of money spent by the government to education development and delivery in public boarding secondary schools located in Kicukiro and Ruhango districts. This study, also sought to establish the average number of students accessed as were able to enroll in boarding school, students' transfer and completion in public boarding secondary schools in Rwanda.

Students' participation in boarding schools in 2017 to 2020

The study establishes the average number of students' access per school of selected public boarding secondary schools across the year of 2017 to 2020. However, the study also presents the average of students' dropout and completion in selected public boarding secondary schools from 2017 to 2019. On the other hand, this study did not indicate the average number of students' dropout and completion in 2020 because school calendar was still running out.

Table2: Students' access rate in selected schools

Students accessed	2017	2018	2019	2020
Observations	10	10	10	10
Mean	707	698	689	737
Std. Dev.	185	203	202	216
Min	410	395	384	372
Max	976	1006	995	1055

Table1 presents the average number of students' access per school from 2017 to 2020 in selected public boarding secondary schools in Rwanda. The Table1 shows that the number of students accessing in public boarding secondary school reduced since 2017 to 2019 as they moved from the average of 707 to 689 students per school. This shows that students' access decreased by 1.2%. However, in 2020 students' access increased by 3.4% as they moved from 698 to 737 students. The results in Table2 present the average number of students' access by school location. Dearden *et al.* (2017) conducted a study in United Kingdom and revealed that an increase in education cost of £ 1000 found to decrease the student' access to education by 3.9% due to inequality in socio-economic status. This shows that students from lower social backgrounds get more affected.

Table3: Students' access by school location

School location		2017	2018	2019	2020
Urban area	**Observations**	2	2	2	2
	Mean	994.0000	992.5000	915.0000	1008.5000
	Std. Dev.	15.55635	16.97056	3.53553	23.33452
	Min	954.00	982.00	890.00	922.00
	Max	1010.00	1006.00	995.00	1015.00
Rural area	**Observations**	8	8	8	8
	Mean	643.1250	613.3750	605.2500	661.7500
	Std. Dev.	143.74028	141.05717	147.19642	166.80249
	Min	410.00	395.00	384.00	372.00
	Max	812.00	801.00	820.00	848.00

Table3 shows the average number of students' access by school location and it is clear that school located in urban areas, students indicate a greater number of accesses that schools located in rural areas of Rwanda. However, students' access in all schools reduced from 2017 to 2019. This implies that students' access in schools of urban areas decreased by 4.2% while students' access in rural areas decreased by 3.0% from 2017 to 2019. This also shows that students' access to public boarding secondary schools reduced more that schools in rural areas, which also indicates that education in urban area is more costly than in rural area. Table3 presents the data of 2017 to 2019 related to the average number of students' dropout per school.

Table4: Students' dropout rate in schools

Students' dropout	2017	2018	2019
Observations	10	10	10
Mean	12.3000	9.1000	13.0000
Std. Dev.	10.11105	5.78216	9.04311
Min	.00	1.00	.00
Max	32.00	16.00	28.00

Table4 shows dropout rate of students in public boarding secondary schools in Kicukiro and Ruhango district. The findings show that the average of students' dropout was 12 students in 2017 and 9students in 2018 and 13 students in 2019. This implies that students' dropout increased highly by 17.6% from 2018 to 2019. However, the study did not present the of students' dropout in 2020 as schools were not making completion of school calendar. Rebecca (2020) stated that when the cost of education becomes unmanageable, it could have a direct impact of school dropout rate. This also implies parents whose difficulties of socio-economic status get risk of ending school without completion. Table5 presents another indicator of students' participation, which is students' completion.

Table5: Students' completion in schools

Students' sections		2017	2018	2019
	Observations	10	10	10
	Mean	97.7000	92.1000	78.4000
Senior 3	**Std. Deviation**	34.05241	26.16380	20.36446
	Minimum	45.00	51.00	67.00
	Maximum	146.00	134.00	132.00
	Observations	10	10	10
	Mean	104.0000	108.9000	84.6667
Senior 6	**Std. Dev.**	35.44009	29.06487	28.99138
	Min	59.00	62.00	75.00
	Max	165.00	156.00	140.00

Table5 shows that there is an average of 97 students' completion in senior three in every school in 2017 in public boarding secondary schools. However, the minimum number of students' completion in schools was 45 students while others have 146 as the highest number. In 2018, there were an average of 92 students completed the lower secondary education. However, the minimum number of students' completion was 51 students and others were 134 students as the highest number. Table4.41 also shows that on average there is 78 students' completion in senior three in every school in 2019 in public boarding secondary schools. However, the minimum number of students' completion in schools was 45 students while others haves 132 as the highest number. This implies number of students completion reduced across the year 2017 to 2019 by 11% in lower section of public boarding secondary schools located in Kicukiro and Ruhango districts in Rwanda.

On the other hand, the study presents the situation of senior six students' completion from 2017 to 2019. Table 5 shows that on average there are 104 students' completion in senior six in every school in 2017 in public boarding secondary schools. However, the minimum number of students' completion in schools was 59 students while others have 165 students as the highest number. In 2018, there was an average of 108 students completed secondary education. However, the minimum number of students' completion was 62 students and others were 156 students as the highest number.

Table 5 also shows that on average there is 84 students' completion in senior six in every school in 20179 in public boarding secondary schools. However, the minimum number of students' completion in schools was 75 students while others haves 140 as the highest number. This implies number of students completion reduced across the year 2017 to 2019 by 10% in senior six of public boarding secondary schools located in Kicukiro and Ruhango districts in Rwanda. This also shows that senior three students' completion reduced by difference of 1% more that senior six students. Rebecca (2019) established that there is a gap between graduation rates between lower-income students and their higher income peers. This implies children from families of low income do not complete school accordingly due to financial burden related to education.

To calculate the cost of education incurred by the government was done by indicating the amount of money spent to each education expenditure while the investigations related to the variation of education expenditures by the government on the participation of students. This was done, by adding the average amount of money spent by government to a single school in every year on each item. The items were teaching staff salaries, both administrative and supporting school staff salaries, cost of textbooks and laboratory expenses, computer repair expenses, cost of students' participation in extracurricular activities, maintaining physical school facilities and cost of students' boarding lunch, communication bill, water and electricity and fuel.

The government education expenditures on different school activities

The further analysis is established to get the average amount of money incurred by the government to finance the public boarding secondary schools of Kicukiro and Ruhango districts per year. This was done to find out the average cost of education paid by the state government in various educational activities in each boarding school per year, which may also have an influence on students' participation in public boarding secondary schools in one way or another. It is in this regard that educational expenditures incurred by government on different activities or items in each public boarding secondary school, were thought to be the greater interest and in need of being established in this study. Therefore, the results in the Table6 show the amount of money spent on different activities in each school under investigation.

Table6: The government education costs to public boarding secondary schools

Items	Amount of money (Rwf/year)	Percentage
Teaching staff	60,721,836	52.33 percent
Administrative staff	12,505,980	10.78 percent
Supporting staff	11,016,000	9.49 percent
Textbooks	1,870,273	1.61 percent
Laboratory expenses	1,682,735	1.45 percent
Computer repair	1,121,532	0.97 percent
Extracurricular activities	1,613,745	1.39 percent
Maintenance of physical facilities	4,715,836	4.06 percent
Students boarding lunch	11,128,320	9.59 percent
Communication Bill	960,000	0.83 percent
Water and electricity	6,348,267	5.47 percent
Fuel	2,357,961	2.03 percent
Total	**116,042,485Rwf**	**100 Percent**

The results indicated in the Table6, present the boarding school expenditures in different school activities, which also are claimed to be big where the average government educational expenditures correspond to 116,042,485 Rwanda francs per year. In fact, 52.33 percent of the total expenditure in public boarding secondary schools in Kicukiro and Ruhango districts spent to teaching staff salaries. It is clear to note that there is a significant positive relationship between provision of higher salaries and fringe benefits of teachers that lead to the effective school performance (Pritchett, 2019). The second item spend the government in public boarding secondary schools goes to supporting staff salaries that claim to take 9.49percent of the total expenditure. This is also followed by the expenditure related to administrative staff salaries that also take 10.78 percent of the total expenditure.

The rationale to this is to increase the school staff salaries also increase the government expenditure. It is important to note that, a positive management of school staff enhances the school productivity that also led to the effective students' performance (Pritchett, 2019). The students in boarding school lunch that take 9.59 percent of the total government expenditures follow the expenditure spent to the school supporting staff. The results in the Table6 reveal that, 4.06 percent of the total expenditure is given to maintenance of the physical school facilities. This is followed by expenditures related to water and electricity used in boarding secondary schools that take 5.47percent of the total expenditures.

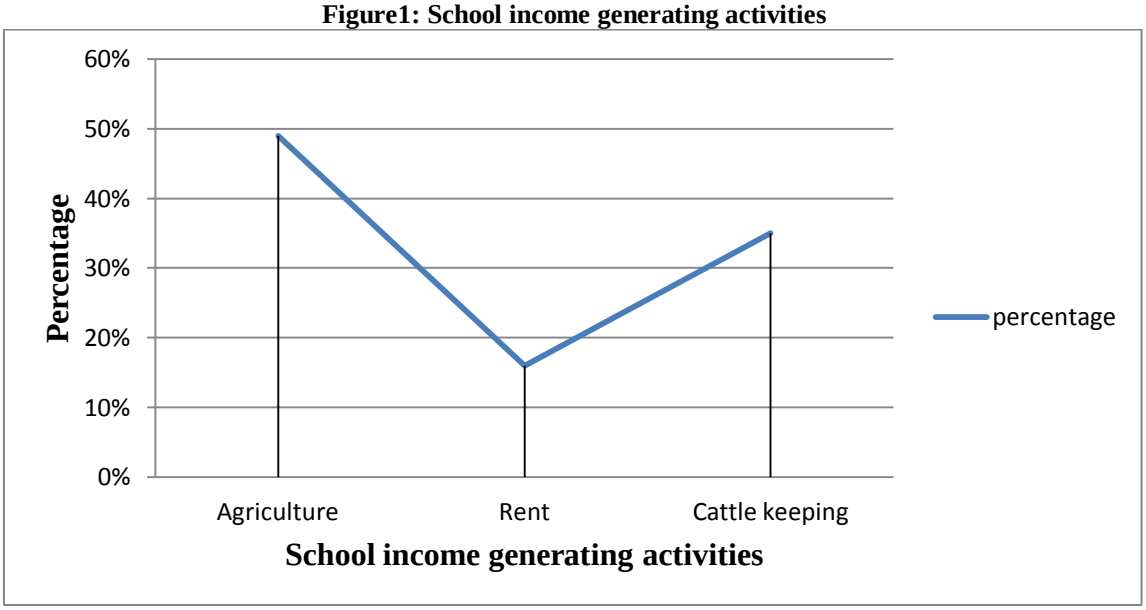
The Table6 also gives that, fuel as the government expenditure in boarding schools, takes 2.03 percent of the total expenditures. This is followed by government education expenditures related to buying textbooks used in boarding schools, which take 1.61 percent of the total expenditures. In the same vein, the Table6 also indicates that government education expenditures are also allocated to the school laboratories, which claim for 1.45 percent of the total expenditures. The findings in the Table6 further provide that, 1.39 percent of the total expenditure be spent to establishing the school extracurricular activities in school setting. This is also followed by repairing the school computers, which take 0.97 percent of the total expenditure.

Finally, the results in the Table6 reveal that the remaining government education expenditure, is 0.83 percent of the total government expenditure which is spent as the communication bill. Therefore, it is clearer to indicate that the amount of money provided to education development can correlate with the education performance. Hanushek (2017) revealed that the school performance may increase due to the increase of school expenditures. The insufficient financial capacity settled in education sector, may reduce the participation of students to education that may also harm the quality of education (UNESCO, 2018). However, it is also important to specify that the higher education expenditures, do not mean the improved school productivity. Hanushek (2017) supported that increased expenditures in education, bear expected fruits only when the education system indicates the ability to manage them effectively and efficiently.

School income-generating activities

This study sought to determine whether public boarding secondary school perform income generating activities that may support the school budget to fulfill the daily school requirements. This was also done to investigate whether the households and government education expenditures only achieve the performance of the school activities. Therefore, the school head teachers of public boarding secondary schools located in Kicukiro and Ruhango districts were further prompted to state the types of activities that they undertake to generate some income and they are presented in the Figure1.

Figure1: School income generating activities



The results indicated in the figure1, present some types of income generation activities performed by boarding secondary schools where the school head teachers were asked to indicate what they do in school community that can support the school budget. The school head teachers indicated that they perform various school activities that can generate some income such agriculture, renting the school infrastructures and making cattle keeping. The school head teachers of boarding schools in the two districts indicated that the activities performed that generate income make 3,450,000 Rwf per year for a single school. The results in the results in the figure2, give that, the majority of schools generate income from agriculture that support a portion of the students' school lunch in quality and in quantity at the level of 49 percent of the total income generated.

The results in the figure1 also provide that, boarding schools generate income from renting school infrastructures like school main hall, school playgrounds and school dormitories when students are in holidays. Renting school infrastructures earns 16 percent of the total income generated from activities performed by boarding schools as such income is used to maintain and repair some school infrastructures or buying some school materials that are needed urgently and also enhancing the students' welfare in school setting. Finally, the results in the figure1, also reveal that the remaining 35 percent of the total income generated by boarding schools, is got from establishing activities related to cattle keeping that help the students in boarding schools to get milk from school as well tea breakfast. This is an indication that boarding schools have resulted to developing alternative ways of making money to support the life of boarding school needs. According to Hanson (2014), the income generating activities performed by boarding schools, support parents and government to satisfy the education expenditures of boarding schools. Aloraini (2021) also added that boarding school feeding and other school activities use the income generated from the school activities.

Source of boarding school financing

To determine the amount contributed by education stakeholders, is taken as an interest to this study developed to investigate the education costs needed to make effective participation of students in public boarding secondary schools. This is because, it enhances getting information related to the amount provided by each educational stakeholder to education in public boarding secondary schools, which also indicates the level through which each education stakeholder is involved in education. Furthermore, it also helps to identify the level through which each education stakeholder manages a burden related to the cost of education. Therefore, it is in this regard, that this study went further to determine the amount of money spent by each sector. The Table7 gives an overview related to the amount of money provided by each sector of education stakeholders to support the participation of students in public boarding secondary schools located in Kicukiro and Ruhango districts per year.

Table7: The source of public boarding secondary school financing

Source	Amount
Government	116,042,485
Income generating activities	3,450,000
Parent contribution	558,900

From the results presented in the Table7, show various source of financing of public boarding secondary schools. Basing on the results in the Table7, it is clear that the source of boarding school financing comes from government, boarding school income generating activities and from households (parents) or guardians in order to support the school budget used by public boarding secondary schools located in Kicukiro and Ruhango districts. However, the implication for this, is that communities, donors as well as local Non – Governmental Organizations (NGOs) are not mobilized to support school budget needed in the performance of the school activities.

The results in Table7 reveal that the a single household (parent) or guardian is the most contributor to the boarding school budget per year in the two districts where the Table6, shows that a single household or parent/ guardian contributes 558,900 Rwandan francs to the total budget to be used by boarding schools per year. This was calculated by adding the average cost of education of a single parent to a single student per year plus the average cost of household' incidental expenses in selected public boarding secondary of Kicukiro and Ruhango district. Therefore, this average amount of money provided by parents is too high to some extent that education can continue to be a burden for parents whose children studying in public boarding secondary schools. The results in the Table7 show that apart from the contribution of parents or guardians, there is contribution given by government that values at average cost of 116,042,485 Rwandan francs as a single total school budget in order to support the boarding school daily activities per year.

This agrees with Bucheche (2020) that households cannot afford effectively the school payments rather than government accountability to education where the households' education expenditures could not keep their children in boarding secondary schools. Despite, Chepkoech (2018) revealed that households should give a contribution of 60% to boarding school running activities and government provides the remaining 40%. This indicates the contribution of parents and government in boarding secondary schools in Rwanda is different from what was established by the authors.

Finally, the results in the Table7 also the public boarding secondary schools, also get financial support from making income-generating activities that value at an average amount of 3,400,00 Rwanda francs per year used by schools through involving various activities in schools that provide income in school setting corresponding to 4,681Rwandan francs to a single student. UNESCO (2018) indicated that the schools should invest more activities that can support the schools needs and reduce the accountability of both households and government ready to meet the cost of education in boarding schools.

Apart from the costs of education incurred by both households and government to students in boarding secondary schools, this study did further analysis to indicate whether there is an association between students' participation in boarding schools by their ages. Results are as presented in Table8 as follows.

Table8: Chi-Square test of students' participation and student' age group

Chi-Square Test			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.380[a]	8	.397
Likelihood Ratio	11.351	8	.183
Linear-by-Linear Association	.635	1	.425
N of Valid Cases	247		

a. 4 cells (26.7%) have expected count less than 5. The minimum expected count is 1.60.

Table8 presents the results from Chi Square test that was established to indicate whether there is an association between students' participation and age of students. Table8 shows that there is no association between students' participation and age of students as Asymp. Sig. (2-sided) =. 183 less than .05 level of significance with the likelihood ratio of 11.351. However, the results show that there should be a violation of students' age to participation in boarding school of 26.7%. This also implies that the extent of student' age could not affect the level of students' participation rate in public boarding secondary schools. According to Grant, Amanda and James (2020), the participation of students in secondary school can be reduced at the earlier age of starting school because some parents fail to afford the school requirements.

The study also sought to determine whether there is an association between students' participation in public boarding secondary schools and ubudehe category (family socio-economic status). Results are as presented in Table9.

Table9: Chi square test on student' participation and ubudehe category

Chi square test			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	19.465[a]	12	.078
Likelihood Ratio	23.370	12	.025

Linear-by-Linear Association	7.575	1	.006
N of Valid Cases	247		

a. 7 cells (35.0%) have expected count less than 5. The minimum expected count is .73.

The findings in Table9 presents the Chi-square tests performed to indicate whether there is an association between students' participation and socio-economic status (ubudehe category) of students. The results show that there should a violation of students' ubudehe category to students' participation at 35%. However, the results also show that there is a degree of association between students' participation and socio-economic status (ubudehe category) of students as Asymp. Sig. (2-sided) = .000 less than .05 level of significance with the likelihood ration of 36.242. This also implies that the level of students' ubudehe category increases or decreases the level of students' participation. Gorard and See (2019) revealed that students from poor families are less likely to have full participation to secondary schools and those who do, are then less likely to have school completion due to a limited financial capacity.

The study also computed to find out whether there is a relationship between government educational cost and students' access to education and the results are presented in Table10.

Table10: Relationship between government education costs and students access to education

		Government education costs	students access to education
Government education costs	Pearson Correlation	1	.131*
	Sig. (2-tailed)		.040
	N	247	247

*. Correlation is significant at the 0.05 level (2-tailed).

The results presented in the Table10 indicate that there is a statistical significant relationship between government education cost and students' access to education (r=0.131, N=247 and P = 0.040< 0.05). This suggest that the amount of money incurred by government on education correlation with students' participation in boarding secondary schools. This also means that there is a low chance of students' participation to public boarding secondary schools due to government education cost.

V. CONCLUSION

The study established that an average of 157,452 Rwandan francs given by government to each student per year in public boarding secondary school is too little compared to household educational cost to a single student that pays 558,900 Rwandan francs per year. This means that reducing the government education cost, increase the burden to households educational cost thus lead to decreasing the students' participation rate in public boarding secondary schools in Rwanda.

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