The nine year basic education policy and secondary school internal efficiency: A case study in Rwanda

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ABSTRACT

This study examined the effect of implementing the Nine Year Basic Education (9YBE) policy on secondary school internal efficiency. The study followed a descriptive design. Data on students' enrolments and repetitions for consecutive school years, cohort 2014/15 and 2017/18, were collected from all five lower secondary schools in Ngoma and Tumba Sectors using a survey questionnaire. Besides, focus group discussions (FGDs) were used to collect views of head-teachers on the study variables. The reconstructed cohort flow analysis technique was used to determine indicators of internal efficiency. Summary statistics are presented in tables. Qualitative data from FGDs were analyzed through thematic content analysis with consideration of similarities and differences. The findings revealed (i) a positive change in students' promotion and repetition rates, (ii) students' survival rate to the last grade increased to 69.39% for the cohort 2017/18 from 50.72% for the cohort 2014/15, and (iii) wastage ratio declined from 1.62 for cohort 2014/15 to 1.33 for cohort 2017/18. Thus, school efficiency rose to 75.19% in 2017/18. Head-teachers attributed the positive change in internal efficiency indicators to the combination of 9YBE interventions including removal of school fees, school feeding, and flexibility in student progression, and increasing day secondary school in proximity of home. However, persistent high dropout rates indicated that the implementation of the 9YBE policy had not alleviated all disruptive forces against students' participation rates. It was therefore suggested to relook at policy interventions to address individual students' challenges at school and household levels and the management of older children in the school system.

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Introduction

Education is a dependable mechanism to improve people's lives through the acquisition of knowledge, skills and desirable attitudes. This consideration has led to heavy investment in education by both individuals and countries worldwide. Joint efforts by international organizations and countries have led to a high increase of primary students' participation in education during the EFA era (UNESCO, 2015). This posed a huge demand for post-primary education (Lange, 2015: 19) with considerable financial implications. EFA Global Monitoring Report, (2015) shows that the budget for achieving universal basic education up to secondary education in low and lower middle-income countries is averagely estimated at 340 billion US dollar between 2015 and 2030 from 149 billion in 2012. This huge investment is then expected to increase access to and participation in basic education and improve education quality by addressing any kind of marginalization. For UNESCO Institute for Statistics (2017) efforts should be mobilized and efficiently used to address the deficiency in ensuring access and quality education to all, especially to 617 million children and adolescents not reaching minimum proficiency due to various reasons worldwide. In Rwanda, the gap is still observed in secondary education. Gross and net enrolments and dropout rates at lower secondary education were 47.7%, 27.2% and 7.1% respectively in 2017/18 despite the adoption of Nine-Year Basic Education (9YBE) policy since 2008 (Ministry of Education [MINEDUC], 2018; 2008).

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The Nine Year Basic Education is an education policy that directs on access and participation in 9 years of schooling (World Bank, 2018); (Asia and Pacific Regional Bureau for Education, 2015), (Ministry of Education, Singapore, 2014); (Di Gropello, 2006). This is a fee-free education made of six years of primary and three years of secondary education (MINEDUC, 2008). Its implementation started in 2009 in all districts of Rwanda with the expectation to ameliorate students' flow rates, completion, survival rates and student-years taken by students to graduate the lower secondary education cycle (MINEDUC, 2013 & 2008). Since the 2013/14 school year, its implementation has been associated with different interventions including school feeding program, construction of new schools and classrooms, flexibility in students' progression between grades and levels. The purpose was to alleviate barriers against children to enrol and complete 9-years of schooling (MINEDUC, 2013). Unfortunately, empirical research on students' flow is quite missing in the framework of such a new policy.

This study, therefore, attempted to determine the changes in indicators of internal efficiency attributable to the implementation of the Nine Year Basic Education policy in day lower secondary schools in Tumba and Ngoma Sectors, Rwanda. A comparison of student-years, average duration of studies, wastage ratio, survival rate and coefficient of efficiency between cohort 2014/15 and 2017/18 formed the basis of the analysis. The paper starts with a summary of the literature review, followed by research methodology and thereafter presentation and discussions of findings. It ends with conclusions and policy implications.

Literature Review

Concept of School Internal Efficiency

At the school level, dropouts represent a menace for school internal efficiency by reducing the number of graduates compared to the overall number of enrolled learners. Repetitions delay students in the school system and bring unexpected and unplanned investments. For dropouts, resources invested before they leave school to become a wastage because the goal to turn them into knowledgeable and skilled citizens is not achieved. On another side, repetitions cause much spending and incur excessive student-years as compared to the ideal duration of the programme (Leighai, 2018; Adeoye & Olumide, 2014). Excessive repetitions can be also a hindrance of new enrollment as repetitors continue to occupy places of newcomers. Education system is, therefore, said internally efficiency if the rates of dropout and repetitions are minimal, hence low wastage rate. Accordingly, school internal efficiency is the relationship between resource inputs such as students, labour, time invested in the system and the product-outputs as graduates from the same resource inputs (UNESCO Institute for Statistics, 2009; Owolabi, 2006). In an ideal situation, the wastage ratio should be one. The deviation from 1 means a less efficient school system (Leighai, 2018; Adeoye & Olumide, 2014).

Internal efficiency indicators may be analysed via different indicators. Chang (2006) explains school internal efficiency as a measure of the number of years it takes a child to complete a given education cycle. The flow rates such as promotion, repetition and dropout rates are therefore indicators to measure the level of a school internal efficiency. Khatete (2018), UNESCO Institute for Statistics (2009) and Owolabi (2006) express students' performance, progression rates, survival, retentions, completion, wastage ratio, average duration of studies and coefficient of efficiency as foundational indicators to judge the efficacy of an education system or any intervention made available for improving access to and participation in education.

Furthermore, research findings on the causes of educational wastage by Kaume-Mwinzi (2017), on poverty-related causes of wastage and stagnation in Indian secondary schools by (Lyngkhohi, 2017), and dropouts in Malaysia by (Tamanna, 2014) provide evidence that poverty in form of lack of school fees and money for other school requirements, child labour and lack of transport to school is a hindrance to internal school efficiency. Poverty stimulates children from poor families to drop out of school. According to the findings from the above-mentioned authors, unplanned pregnancy, sickness for a long time, long-distance home-school, drug abuse, lack of family support, poor academic performance, starting school at an advance age, need to work for money among overage children to mention but a few are among the factors that let down the school performance and efficiency (Kaume-Mwinzi, 2017; Lyngkhohi, 2017; Tamanna, 2014). Consequently, policies and associated interventions countries put in place have been expected to remove all those disruptive forces against students' participation to permit high-level efficiency in school resources management.

Basic Education Policy and School Internal Efficiency

Since the declaration of human rights to education, especially rights to elementary education made of universal primary education, then followed by universal secondary education (UNESCO, 2013), research institutions and individuals have started to diagnose improvements made in educational coverage by level and type of education. Education policies countries put in place direct and guide the conduct of education activities by responding to the questions: (i) who should be educated? (ii) Which content to be taught and learnt? (iii) How to go about educating? And (iv) which resources to allocate? (Owolabi, 2005). Thus basic education policy defines terms and conditions for accessing and participating in what is considered to be elementary education. As this study is concerned, Nine Year Basic education policy falls under the category of basic education policies. Its purpose is to ensure high access to and participation in primary and lower secondary education through the removal of school fees (MINEDUC, 2008).

At lower secondary education, the policy implementation is accompanied with the construction of new school facilities to accommodate a huge number of learners completing primary school; provision of day secondary schools in proximity to children homes; provision of midday meal at school against the effects of food deprivation on students' enrollment and retention; and

flexibility in students' progression from grade to grade and transition to secondary schools (MINEDUC, 2018; 2015; 2013; Japan International Cooperation Agency (JICA), 2012).

Experiences from neighboring and other African countries show that the use of a combination of interventions in the implementation of basic education policy helps to improve students' access, participation and quality education. Findings by Taylor and Ogbogu (2016) indicate that school feeding programme in Osun State, Nigeria yielded an increase of pupils' enrolment, retention, school attendance and academic achievement. Education for All 2015 National Review Report for Uganda revealed that a combination of school fees abolition, reconstruction of new schools, an increase of capitation grant per learner, creation of guidance and counselling department to students, review of lower secondary education curriculum, distribution of equipment and machines to schools, introduction and launch of the Universal Secondary Education (USE), provision of meals in different schools especially in rural areas has increased the access and participation in education at both primary and secondary education levels. The number of learners in the primary one who reached the primary five rose to 60.9% in 2009 from 54.1% in 2008. Participation at secondary education level increased by 136.2% from 518,931 in 2000 to 1,225,692 in 2010. An increase was also experienced in the gender parity index (GPI) from 0.8 in 2000 to 0.9 in 2010 (Ministry of Education and Sport, 2015).

Moreover, a study by Ngome and Kikechi (2015) indicates a substantial increase in the number of students to 78,481 in 2015 from 350 in 1963 due to the construction of schools in Bungoma County, Kenya. Besides, Education for All 2015 National Review Report for Kenya indicate a success in enrolments and efficiency as a result of the combination of interventions. First, teacher management mechanisms, conducive school environment like integrating health, sanitation, nutrition and safety in the school system and implementing inclusive education were enforced. Second, providing midday meal for marginalized, hard-to-reach and vulnerable groups and expanding schools and low-cost boarding primary schools were reconsidered Third, reintegration and flexibility mechanisms like the re-entry of girls who dropped out of school due to pregnancy and early or forced marriage, flexibility in learners' progression between grades and automatic transfer between levels of basic education were adopted as the country embarked on Free Day Secondary Education. As results, the primary gross enrolment rate increased to 119.6 % in 2013 from 88.7% in 2000, and the net enrolment rate to 95.9 % in 2013. The transition rate to secondary education increased from 66.9 % in 2009 to 76.6 % in 2012. The gross and net enrolment rates in secondary schools increased from 28.8% in 2005 to 49.3% in 2013 and from 20.5 in 2005 to 33.1% in 2013 respectively (Ministry of Education, Science and Technology, 2015: 63-64).

More on that, Research shows that Universal Basic Education Policy in Ghana increased both enrolment and retention with a room to increase incentives for girls' rapid enrolment and retention as boy counterpart (Iddrisu, 2016). World Bank (2018) recognizes expansion of enrolment at primary education above 100% in 2010 for Sub-Saharan Africa and South Asia from 68% and 47% in both regions in the 1970s respectively due to child, household and institution centred interventions. At the secondary education level, enrolment rates rose above 50% except parts of Sub-Saharan Africa. However, the completion rate at secondary education was 35% in low-income countries as compared to 96 % in high-income countries in 2016. This is a worrying situation especially the high number of out-of-school school-age children and lower completion rate.

The recent records on Rwanda education system show a tremendous improvement in enrolments at basic education level due to the implementation of universal primary education in 2003, Nine Year Basic Education policy in 2009 and Twelve Year Basic Education in 2012 (MINEDUC, 2015 & 2008). For instance, primary education net enrolment rate increased from 95.4% in 2010 to 98.3% in 2018. At lower secondary education, the same indicator rose to 27.2% in 2018 from 18.3% in 2011 (MINEDUC, 2018 & 2014). A report by The International Bank for Reconstruction and Development (2011) however indicates unsatisfactory performance in indicators of internal efficiency. The coefficient of efficiency for 2008 primary level was only 39 % and the system required 18 against 6 student-years to produce one primary level graduate. For lower secondary education, the coefficient of efficiency declined to 82 % in 2008 compared with 91 % in 2002/03. Three years after the 9YBE policy was launched, MINEDUC (2014) indicated the persistence of high dropout (14.7%) and repetition (11.6%) rates at the end of the school year 2013 and this was likely to harm internal efficiency if nothing were done. MINEDUC (2018) show improvements in students' flow rates nationally. The promotion rates increased from 73.6% in 2013 to 81.9% in 2015/16 and 86.9% in 2017/18. Repetition rate declined from 11.6% in 2013 to 7.3% in 2016/17 and 6.0% in 2017/18. The dropout rate decreased from 14.7% in 2013 to 6.3% for 2016/17 then, however, rose to 7.1% in 2017/18. Despite these improvements students' flow rates nationally little is known about the changes that have occurred in the indicators of internal efficiency at the lower secondary education level nationally and locally.

Research and Methodology

The researchers adopted a descriptive study design. Data on students' enrolments and repetitions for the cohort 2014/15 and 2017/18 were collected from 5 day lower secondary schools in Ngoma and Tumba Sectors. Two schools were located in Ngoma sector while 3 others were located in Tumba Sector. Besides, primary data on the effect of the policy through its interventions on indicators of internal efficiency were gathered from 5 school head-teachers using Focused Group Discussion (FGDs). The late were selected purposively because they had been following the evolution of the policy implementation and its effects on students' participation rates. The schools were sampled because they fully adhere to the implementation of 9YBE policy since 2009. The cohort 2014/15 was chosen because it fell into the first year of the implementation of the Education Sector Strategic Plan (ESSP) 2013/18. Students in that cohort were expected to enjoy the education opportunities embedded in the new ESSP. The cohort 2017/18 was chosen because the year 2018 was set as the year to achieve the objective of the ESSP 2013/18.

The data on student's enrolments and repetitions for consecutive years were collected using a survey questionnaire and desk review of school annual reports. The researchers computed and presented the students' flow rates for each cohort through percentages desegregated by school location. The indicators of internal efficiency including student-years, average duration of studies, wastage ratio, survival rate and coefficient of efficiency were determined through the use of reconstructed cohort flow analysis method applied to 1000 students. Findings were presented, analysed and discussed hereunder.

Results and Discussions

Results

The results of this study are presented in two perspectives. First, researchers present and analyse students' flow rates in two sectors by cohort and then compare students' flow rates between two cohorts 2014/2015 and 2017/2018. Second, indicators of school internal efficiency in two sectors are computed, interpreted and compared based on the cohorts.

Analysis of Students' flow rates in Ngoma and Tumba Schools, cohort 2014/15

Students in lower secondary education in Rwanda education system have to do three grades, namely senior 1 (S1), senior 2 (S2) and senior 3 (S3), before completing the cycle. At the end of S₃ students sit for the national exam which qualifies them as graduates of lower secondary education, upon the success. Students who succeed in the exam are expected to move to the next level, upper secondary education either in general education or technical vocational education. Those who fail the national exam are allowed to repeat the grade (S₃). Below is the analysis of students' flow rates for the cohort 2014/15 in schools located in Ngoma and Tumba sectors.

Figure 1: Students' flow rates in Ngoma and Tumba Schools, Cohort 2014/15

The flow rates presented in Figure 1 illustrate a high students' promotion rate in Ngoma schools in S1 (69.25%) and S2 (65.78%) as compared to Tumba Schools. The repetition rates in Tumba Schools, S1 (14.56%) and S2 (12.06%) were higher than that observed in Ngoma Schools. The dropout rates in Ngoma schools, S1 (25.67%) and S2 (29.48%) were higher than the observed rate of dropouts in Tumba Schools. Concerning graduation rates, Tumba Schools performed at 96.57% compared to 96.56% in Ngoma Schools. The rate of failure was high in Ngoma Schools than in Tumba schools. Schools in Ngoma and Tumba Sectors performed with an average promotion rate equals to 65.67% in S1, then 63.82% in S2 and 96.56% as graduation rate. Overall average repetition rates were 9.82% in S1 and 8.40% in S2. The average dropout rates was 24.51% at the end of S1 and 27.78% for S2 and 2.57% at the end of S3.

As compared to the flow rates at the national level, the promotion rate to S2 in Ngoma Schools was 5.25 points less than national promotion rate (74.5%) in 2013 (MINEDUC, 2015: 29) while Tumba Schools were 12.41 points below the national rate. The national repetition rate at the end of S1 was 8.4% and was higher than that in Ngoma Schools (5.08%) but lower than 14.56% in Tumba schools. The rates of dropouts, that is 25.67% and 23.35% in Ngoma and Tumba Schools respectively were higher than the dropout rate in S1 (17.1%) nationally (MINEDUC, 2015).

For the senior 2, the comparative results show that schools in Ngoma and Tumba sectors scored below national record (73.9%) in promotion rate to S3. As the number of repeaters is concerned, the national repetition rate (8.3%) was below 12.06% in Tumba schools but almost double as compared to 4.73% in Ngoma Schools. The records on dropouts showed that the schools in Ngoma and

Tumba Sectors performed poorly as dropout rate at the end of S2 is concerned. The rate of dropout in Ngoma and Tumba schools was 29.48% and 26.07% correspondingly while the national dropout rate at the same grade stood at 17.8% in 2014.

Flow rates for cohort 2014/15 bring to conclude that the performance of day schools in Ngoma and Tumba Sectors as students' progression rate between grades is concerned was not satisfactory as compared to the national flow rates. But, the average graduation rate (96.56%) at the end of S3 was higher than 86.6% at the national level in 2014. The retention of students until they complete the cycle was disturbed by early leaving. The fluctuation in students' flow rate also indicated that students' progression principle was neither following automatic promotion nor 5% repetition principle as used to be claimed. Students' progression rates varied from one grade to another and from one school to another.

For the school head-teachers, the provision of 9YBE accelerated the rate of enrolment at lower secondary education. This was due to the removal of school fees and providing day secondary schools in the same compound with primary schools. However, it had been difficult to manage and maintain all students in the school system until they complete. Two major challenges were mentioned: (i) students had to pay other contributions in addition to the cost of learning materials. Children from poor families abandoned school because of lacking other fees and opportunity cost. (ii) Overage students were much attracted by jobs than school. As the quest to work for money raises, the number of dropouts increased. Some students were not supported by their families. The late wanted them to help families by looking after their siblings or do some earning works. This argumentation agrees with MINEDUC (2015) and JICA (2012) that enrolment rate at secondary education grew faster as consequences of Universal Primary Education and Nine Year Basic Education but it had been harder to maintain students until they complete the cycle.

Analysis of Students' flow rates in Ngoma and Tumba Schools, Cohort 2017/18

The implementation of 9YBE policy aimed to improve the experience in students' participation rates and internal efficiency at both primary and lower secondary education levels. Results from FGDs with head-teachers indicate that all planned 9YBE interventions were implemented as schools could do. Common 9YBE interventions include abolishing school fees, construction of new schools or classrooms, provision of school meals, and flexibility in cutting point for progression between grades and transition to the next level. The head-teachers further explained that the combination of interventions had remarkably contributed to the improvement of students' access and participation in secondary education. The construction of new schools in proximity of home reduced the long-distance used by students. School places increased for more students. Removal of school fees was a stimulus for parents to send their children to school. Excuses due to lack of school fees were a bit repressed. However, the contribution to the school feeding programme and other charges or cost of learning materials remained a barrier for some children to afford education. Head-teachers claimed to have a considerable number of students who had failed to pay the contributions.

Also, flexibility in student progression was another contributing factor to students' participation and internal efficiency by reducing the rate of repetition and dropouts. But FGDs results showed this flexibility as a hindrance to ensure high-quality education. The promotion of students who had not got pass mark to the next grade had increased the rate of promotion. But later on, those students dropped out from the school due to poor performance.

The findings from secondary data on students' flow rates for cohort 2017/18 as one of the cohorts benefited all 9YBE interventions revealed the following:

Figure 2: Students' flow rates in Ngoma and Tumba Schools, Cohort 2014/15

As illustrated in Figure 2, for the cohort 2017/18 the students enrolled in S1 in Ngoma schools were promoted to S2 at 87.4% compared to 86.3% in Tumba schools. The repetition rates in S1 were 5.3% and 0.4% in Ngoma and Tumba schools respectively. The dropout rates (13.3%) in Tumba schools at the end of S1 was 6 points high to 7.3% in Ngoma schools. For S2, Tumba Schools performed higher in promotion rates to S3 with 3.4 points higher than 73.2% in Ngoma Schools. Both repetition (4.8%) and dropout

(22.0%) rates at S2 were high in Ngoma Schools as compared to the records in Tumba Schools (repetition rate 2.2%; dropout rate 21.2%). The rate of graduation was high in Ngoma schools (97.2%) compared to that of Tumba Schools (94.6%). The number of students who failed and not returned to school at S3 was high in Tumba schools (5.4% dropouts) as compared to 2.8% in Ngoma Schools.

Generally, Ngoma Schools performed better in promotion and dropout rates for S1 and the number of graduates for the cohort 2017/18. On the other hand, Tumba Schools were better in promotion, repetition and dropout rates at S2. The average flow rates for Ngoma and Tumba schools revealed promotion rates of 86.84% and 74.89% for S1 and S2 respectively and graduation rate of 95.92% for the cohort 2017/18. Overall average repetition rates were 2.86% in S1 and 3.48% in S2. The average rate of dropouts was 10.29% at the end of S1 and 21.63% for S2 and 4.08% at the end of S3.

As compared to the national students' flow rates, the promotion rate to S2 in Ngoma Schools was 0.2 points high to national promotion rate (87.2%) in 2017 (MINEDUC, 2018: 45). Tumba Schools scored 0.9 points less than the national rate. The average promotion rate to S2 (86.84%) for Ngoma and Tumba schools was lower than the national promotion rate to S2. The national repetition rate at the end of S1 was 6% and was higher than actual repetition rates in Ngoma and Tumba Schools. Conversely, the dropout rate in Tumba schools was 5.8 points high to the national dropout rate (6.9%) at the end of S1. The comparison of the same indicators at the end of S2 revealed that promotion rates in Ngoma and Tumba schools were less 13.3 points and 9.9 points respectively than that of national records (86.5%) for S2. This situation may be attributed to high dropout rates in Ngoma and Tumba schools estimated at 22% and 21.2% respectively. Nationally, the dropout rate at the end of S2 was 7.5% in 2017/18.

These findings on cohort 2017/18 bring to conclude that promotion rates increased in all grades, repetition rate declined remarkably but the school system continued to suffer high dropout rate. The persistence of early school leaving was experienced in urban as well as in semi-urban schools. Though improvements were attributable to the implementation of combined 9YBE interventions, head-teachers suspected lack of contribution to school feeding and cost of learning materials, promoting students who failed to next high grade which results in poor performance, and overage students as among other contributing factors to the high number of dropouts.

Comparison between students' flow rates for cohort 2014/15 and 2017/18

To ensure whether the implementation of 9YBE policy along with its interventions changed the situation in students' flow rates, records for the cohort 2014/15 and 2017/18 were compared and presented.

Figure 3: Comparison of students' flow rates between the cohort 2014/15 and 2017/18

The findings in figure 3 reveal that the promotion rate to S2 and S3 were improved from 65.67% and 63.82% in 2014/15 to 86.84% and 74.89% in 2017/18 respectively. This was a gain of 21.17 points to S2 and 11.07 points to S3. Besides, there was a remarkable decrease in the rates of repetitions and dropouts. At the end of senior 1, the repetition rate declined down to 2.86% in 2017/18 from 9.82% in 2014/15. For dropouts, there was a decline of 14.22 points from 24.51% in 2014/15 to 10.29% in 2017/18. Findings on S2 indicate a decrease in both repetition and dropout rates. The repetition rate declined down to 3.48% in 2017/18 from 8.40% in 2014/15. The dropout rate decreased from 27.78% in 2014/15 to 21.63% in 2017/18. However, the graduation rate declined down to 95.92% in 2017/18 from 96.56% in 2014/15.

The gain in promotion rate and decline in both repetition and dropout rates at all grades serves as an evidence that the implementation of 9YBE by combining different interventions had improved students' flow rates in day lower secondary schools in Ngoma and Tumba Sectors, Rwanda. However, more effort had been needed to reduce the persistent high dropouts.

Indicators of internal efficiency for the cohort 2014/15 and 2017/18

Huge investment made available to basic education provision has attracted attention to evaluate the extent to which the level of school internal efficiency improved. The number of graduates and the duration of studies per graduate was expected to increase with a minimum rate of wastage. Thus, the school system was called to retain all enrolled students in the system until they complete. The rate of dropouts and repetitions were expected to be minimal as much as possible.

Table 1: Indicators of internal efficiency for the cohort 2014/15

Indicators	Ngoma Schools	Tumba Schools
Ideal total student-Years	3000	3000
Ideal total graduate	1000	1000
Ideal years-input per graduate	3	3
Actual total student-years	2327	2513
Actual total graduates	490	500
Actual total dropout	510	500
Actual total repeaters	94	274
Actual Number of student-year to produce graduates	1471	1500
Actual years-input per graduate	4.7	5
Actual wastage ratio	1.57	1.67
Actual Survival rate	50.38	51.05
Actual coefficient of efficiency	0.6320	0.5971

The findings in Table 1 illustrate the indicators of internal efficiency for the cohort 2014/15 in Ngoma and Tumba Schools. Students enrolled in lower secondary education level were expected to graduate with a minimum of 3 years-inputs. This means that within a perfect situation, the ideal total student-years for a cohort of 1000 would be 3000 student-years and the wastage ratio would be 1. However, due to the dropouts and repeaters, it was not possible to reach the ideal situation. For the cohort 2014/15 with 1000 students in Ngoma and Tumba schools, the actual total student years were 2327 and 2513 respectively. This had led to 490 and 500 actual total graduates in those schools correspondingly. The low number of graduates was a result of actual total dropouts which were 510 and 500 in Ngoma and Tumba schools in that order. The number of student-years to produce the graduate were 1471 in Ngoma schools and 1500 in Tumba Schools. The actual total repeaters were 94 and 274 in Ngoma and Tumba schools respectively.

It had taken 4.7 student years-input instead of 3 years-input a student in Ngoma schools to graduate lower secondary education. In Tumba schools, a student took 5 student years-input to graduate. As a result, the wastage ratio was 1.57 in Ngoma Schools and 1.67 in Tumba Schools. Ngoma schools were 63.20% internally efficiency while Tumba school were 59.71% efficient. Considering that the aim of providing 9YBE was to have all students remain and complete the cycle, the findings revealed a poor performance in resources management in Ngoma and Tumba schools. Besides, the objective of universalizing lower secondary education was not achieved for cohort 2014/15. The students' survival rates were very small in all studied schools. The survival rate was 50.38% in Ngoma schools and 51.05% in Tumba schools. The school system in those two sectors suffered high dropout rates. Particularly, cohort 2014/15 in Ngoma schools suffered a big number of dropouts while in Tumba schools the number of repeaters was a challenge. This findings, therefore, justified the need for interventions to alleviate disruptive forces against school internal efficiency.

The Education Sector Strategic Plan 2013/18 provides information on the plan to give a new lease of life to students' participation rates in basic education, particularly in lower secondary education. Priority was, therefore, given to the construction of new schools and classrooms, improving the number and quality of teachers, availability of teaching and learning resources at the school level, the involvement of parents and the community in the daily school management, reform of examination and students' progression practices, extension of capitation grant to day schools and development of school feeding programme owned by communities (Ministry of Education, 2013). Thus, what happened to internal efficiency indicators after an amalgamation of interventions?

Table 2: Indicators of internal efficiency for the cohort 2017/18

Indicators	Ngoma Schools	Tumba Schools
Actual total students – years	2735	2568
Actual total graduates	690	642
Actual total dropout	310	358
Actual total repeaters	102	24
Actual Number of student-year to produce graduates	2070	1926
Actual years – input per graduate	4	4
Actual wastage rate	1.33	1.33
Actual survival rate	70.96	67.82
Actual coefficient of efficiency	0.7518	0.7518

The findings in Table 2 indicate that Ngoma Schools used 2070 student-years to produce 690 graduates while Tumba schools used 1926 student-years to produce 642 graduates. The number of total dropouts was high in Tumba schools (358) compared to Ngoma Schools (310 dropouts). On another side, schools in Ngoma sector encountered a high number of repeaters than schools in Tumba Sector. In contrast to cohort 2014/15, schools in Tumba and Ngoma sectors were able to graduate a student within 4 years-inputs. The wastage ratio for cohort 2017/18 was 1.33 which made the school system in both sectors to be 75.18% efficient. The rate of survivals to the last grade (S3) was 70.96% in Ngoma schools and 67.82% in Tumba schools.

Comparison of internal efficiency indicators between cohort 2014/15 and 2017/18

By comparing each indicator, the findings indicate the gain in the number of graduates in favour of cohort 2017/18 for all schools. In Ngoma schools, the number of graduates rose to 690 from 490 while in Tumba schools increased to 642 from 500 graduates. There was a remarkable decline of 200 dropouts in Ngoma schools and 142 dropouts in Tumba schools. However, the number of repeaters increased in Ngoma schools from 94 to 102. For Tumba schools, it was possible to decrease the number of repeaters to 24 from 274 repeaters.

A remarkable achievement was also experienced in the years-input used by the student to graduate. Schools in Ngoma Sector managed to graduate a student with 4 year-inputs compared to the situation for the cohort 2014/15. The student years-input was 4.7 for the cohort 2014/15. Tumba schools decreased the years-input per graduate from 5 to 4 years-inputs. This achievement had positively affected the rate of wastage where it declined down to 1.33 from 1.57 in Ngoma Schools and 1.67 in Tumba Schools.

The rate of internal efficiency, therefore, increased to 75.67% from 63.20% in Ngoma Schools and to 74.97% from 61.45% in Tumba schools. This indicates that Tumba schools were able to raise the level of efficiency faster than Ngoma schools. About students' survival rate, all schools were able to raise the rate of survival rates. Ngoma schools reached 70.96% from 50.38% whilst Tumba schools reached 67.82% from 51.05% survival rates.

The findings on indicators of internal efficiency suggest that the implementation of 9YBE policy with all its interventions has made possible the improvement in indicators of internal efficiency in day lower secondary schools located in Tumba sector which is a semi-urban area as well as the schools in Ngoma sector which is in an urban setting.

Discussions

The findings of this study on students' flow rates and implementation of 9YBE policy validate the relevance of combining interventions to improve students' participation rates as equally reported by Taylor and Ogbogu (2016) on the effect of school feeding programme in Osun State, Nigeria on the increase of pupils' enrolment, retention, school attendance and academic achievement; by Education for All 2015 National Review Report for Uganda where the combination of learner and school centred interventions increased the number of learners in primary one who reached primary five from 60.9% in 2009 from 54.1% in 2008 and gross enrolment rate at secondary education level by 136.2% from school year 2000 to school 2010. (Ministry of Education and Sport, 2015); by Ngome and Kikechi (2015) on educational wastage in Kenya, with a substantial increase in the number of students due to construction of schools in Bungoma County, Kenya; by Education for All 2015 National Review Report for Kenya whereby amalgamation of interventions in the provision of basic education resulted in an increase of transition rate to secondary education from 66.9 % in 2009 to 76.6 % in 2012, and of net enrolment rates in secondary schools from 20.5% in 2005 to 33.1 % in 2013 (Ministry of Education, Science and Technology, 2015).

The findings on indicators of internal efficiency agreed with the findings by (Iddrisu, 2016) that the implementation of Universal Basic Education Policy in Ghana increased both enrolment and retention rates. However, the system continued to suffer the number of dropouts and repeaters. The findings of this study indicate a remarkable improvement in school efficiency in contrast to the findings

by the International Bank for Reconstruction and Development (2011) that Rwandan basic education status has a shocking school internal efficiency to retain students until completion. Due to the implementation of 9YBE policy and combined intervention level of internal efficiency was restored up to 75.76% at lower secondary education.

The head-teachers' views that positive change in students' flow rate and indicators of internal efficiency is due to the implementation of 9YBE policy are supported by (Samuel, Mulwa, Migosi, & Kamau, 2017) who found a statistically significant association between school- curriculum overload, staffing, School fees, management support, distance to school results availability of teaching and learning facilities and educational wastage in public secondary schools in Kathiani Sub-county. The study findings are also in agreement with Madeleine, (2018) who found the existence of a significant relationship between teaching aids availability and school repetition rate. The supply of teaching and learning resources to schools is among the interventions that improved the internal efficiency by reducing the rate of repetitions in Ngoma and Tumba schools. In the same way, the findings validate Dufitumukiza (2020) and Snilstveit, et al. (2015) on the efficacy of child, household and institution centred interventions to improve the average duration of studies per graduate, wastage ratio, survival rate and internal efficiency when administered properly.

The similarity in indicators of internal efficiency in Ngoma and Tumba schools was observed in the other countries. This was the case in Kericho County, in Kenya where the proportion of total wastage due to student dropout ranged between 49.3% to 83.7 compared to the proportion of total wastage due to student repetition between 6.8% and 50.7% (Bernard & Orodho, 2018, p. 76). Similar performance was also found by Adeoye and Olumide, (2014) in Ekiti south senatorial district of Ekiti state, Nigeria whereby the wastage ratio was 1.3 to graduate six years of secondary school by the cohort 2003/2004. Thus, the secondary school system in Ekiti south senatorial district was 76.9% internally efficient. For Owolabi (2006) a wastage ratio such 1.3 could be interpreted as minimal. This led to the conclusion that the implementation of 9YBE policy had promoted internal efficiency by reducing the rate of wastage and increasing efficiency.

Conclusions

This study aimed to examine the change brought by the implementation of the Nine Year Basic Education 9YBE in indicators of internal efficiency in day secondary schools in Ngoma and Tumba sectors, Rwanda. The findings provided considerable evidences to conclude that there had been a positive change in students' flow rates and indicators of internal efficiency due to the implementation of 9YBE policy. The gain in promotion rate and decline in both repetition and dropout rates at all grades serves as a confirmation that the implementation of 9YBE by combining different interventions that address child, household and school problems improves students' flow rates. Besides, the study findings lead to the agreement with others' research findings that the amalgamation of child, household and institution-based interventions in the implementation of education policies which are similar to 9YBE policy have many chances to improve indicators of internal efficiency. The latter include but not limited to the rates of survival, completion, graduation and wastage and average duration of studies per graduate and coefficient of internal efficiency. Also, the findings led to the conclusion that schools in urban and rural settings, are likely to experience the same situation in students' flow rates and indicators of internal efficiency if the interventions in place are properly administered. The study findings, however, revealed a persistently high number of dropouts which is an indication that the implementation of 9YBE policy was not able to remove all disruptive forces against students' participation rates and school internal efficiency. This poses a hindrance to the realization of human capital targets, Rwanda vision 2020 and Sustainable Development Goals which the country commits to achieve.

Therefore, there is a need to adjust the current 9YBE interventions to address both collective and individual students' challenges at school and household levels. The management of older children in the school system could not only be done through the reduction of school fees and the provision of school meal. Policy should guide on how the school system meets the developing adult needs among overage children. This might be, for example, the shift to work based curriculum. Overage children would be likely to remain in school until completion if the way the curriculum is taught gives them a room to develop competences to cope with the employment world instead of merely general education. Besides, the role of parents' involvement in daily school management should be reinforced to control external forces that push students to either repeat or dropout out from school.

References

- Adeoye, Y. M., & Olumide, S. A. (2014). Wastage of Secondary Education in Ekiti South Senatorial District of Ekiti State. *International Journal of Asian Social Science*, 4(12), 1155-1162.
- Africa-America Institute (AAI). (2015). State Of Education In Africa Report 2015: A Report Card On The Progress, Opportunities And Challenges Confronting The African Education Sector. New York: Africa-America Institute.
- Africa-America Institute. (2015). State Of Education In Africa Report 2015: A Report Card On The Progress, Opportunities And Challenges Confronting The African Education Sector. New York: Africa-America Institute.
- Asia and Pacific Regional Bureau for Education. (2015). Asia-Pacific Regional Education for All Report A Synthesis of the National EFA Reports. Paris: UNESCO & UNESCO Bangkok Office.
- Belfield, C. R. (2014). The Economic Burden Of High School Dropouts And School Suspensions In Florida. Florida: Center For Civil Rights Remedies, Civil Rights Project/Proyecto Derechos Civiles - UCLA.

- Bernard, O., & Orodho, A. J. (2018). Wastage in Public Secondary Schools: Strategies to Reduce Effects of Home-Based Variables in Kericho County, Kenya. *Greener Journal of Educational Research*, 8(4), 076-084. <https://doi.org/10.15580/GJER.2018.4.060718078>
- Chang, G.-C. (2006). National Education Sector Development Plan: A Result-Based Planning Handbook. Paris: UNESCO.
- Chimombo, J. P. (2005). Issues In Basic Education In Developing Countries: An Exploration Of Policy Options For Improved Delivery. CICE Hiroshima University, *Journal Of International Cooperation In Education*, 8(1), 129-152.
- Commission Staff Working Party. (2010). Reducing Early School Leaving. Accompanying Document To The Proposal For A Council Recommendation On Policies To Reduce Early School Leaving.
- Di Gropello, E. (2006). Meeting the challenges of secondary education in Latin America and East Asia: Improving Efficiency and Resource Mobilization. (E. D-Gropello, Ed.) Washington DC: The International Bank for Reconstruction and Development/World Bank. <https://doi.org/10.1596/978-0-8213-6645-5>
- Dudley, S. (1969). The Meaning Of Development. New Delhi: Eleventh World Conference Of The Society For International Development.
- Dufitumukiza, A. (2020). Students' Internal Efficiency in Public Day Schools in Ngoma Sector, Huye District of Rwanda. *International Journal for Innovation Education and Research*, 8(4), 391-398. <https://doi.org/10.31686/ijer.vol8.iss4.2296>
- Duryea, S., & Arends-Kuenning, M. (2001). School Attendance, Child Labor And Local Labor Markets In Urban Brazil. Crises And Disasters: Measurement And Mitigation Of Their Human Cost (Pp. 1-26). Inter-American Development Bank.
- EFA Global Monitoring Report. (2015). Policy Paper 18: Pricing the Right to Education: The Cost of Reaching New Targets by 2030. Paris: UNESCO.
- Eidimtas, A., & Juceviciene, P. (2014). Factors Influencing School Leavers Decision To Enrol In Higher Education. *Procedia - Social And Behavioral Sciences*, 116(2014), 3983-3988.
- Gatete, C. (2016). The Rwanda We Want: Towards Vision 2050, National Dialogue Presentation. National Dialogue, (Pp. 1-20). Kigali. Retrieved From https://www.google.com/url?sa=T&Rct=J&Q=&Escr=S&Source=Web&Cd=1&Cad=Rja&Uact=8&Ved=2ahukewi4yfnk0jvmahvmuxokhqrxcnyqfjaeegqiarac&Url=Http%3A%2F%2Fwww.Minecofin.Gov.Rw%2Ffileadmin%2Fuser_upload%2Fhon_Gatete_Umushyikirano_Presentation_2016.Pdf&Usg=Aovvaw18d
- Harrington, E. P., Fogg, P. N., & Dickson, H. A. (2010). The Fiscal Consequences Of Dropping Out Of High School In The Los Angeles Metro Area. Boston, Massachusetts: Center For Labor Market Studies - Northeastern University.
- Iddrisu, I. (2016). Universal Basic Education Policy: Impact on Enrolment and Retention. *Journal of Education and Practice*, 7(17), 141-148.
- Japan International Cooperation Agency (JICA). (2012). Basic Education Sector Analysis Report: Rwanda. Tokyo: International Development Center of Japan Inc. (IDCJ).
- Kapur, R. (2018, October 17). Educational Wastage: A Major Hindrance Within The Progression Of Individual, Communities And National. Retrieved From Researchgate: <https://www.researchgate.net/publication/324029740>
- Kaume-Mwinzi, R. K. (2017). Causes of Education Wastage and Mitigation Strategies in Public Secondary Schools in Kitui Central Sub County in Kitui County, Kenya. *International Journal of Academic Research in Education*, 3(1), 21-32.
- Khatete, I. (2014). Education Has Remained the Most Crucial Contributor To The Social, Political And Economic Development of Any Nation. *International Journal for Innovation Education And Research*, 2(2), 21-39. Retrieved From <https://doi.org/10.31686/Ijer.Vol2.Iss2.143>
- Khatete, I. (2018). Influence of School-Based Policies on Internal Efficiency in Public Day Secondary Schools in Nyatike Sub County, Kenya. *American Journal of Educational Research*, 6(3), 161-169. <https://doi.org/10.12691/education-6-3-1>
- Lange, S. (2015). Achieving Teaching Quality in Sub-Saharan Africa: Empirical Results from Cascade Training. Bamberg: Springer VS.
- Leighai, B. M. (2018). Estimating the Socio-Economic Implications of Wastage Rate in the Nigerian University Education System. *International Journal of Scientific Research in Education*, 11(1), 90-98. Retrieved from <http://www.ijrsre.com>
- Lyngkhoi, P. (2017). Poverty: Cause of Wastage and Stagnation at Secondary School in Meghalaya. *International Journal of Humanities & Social Science Studies*, 3(5), 340-346.
- Madeleine, L. (2018). The Effects of Educational Inputs on Wastage in Secondary Schools in Meme Division: Appraisal from the Perspective of Infrastructural Resources. *International Journal of Trend in Scientific Research and Development (IJTSRD)*, 2(5), 2028-2041. Retrieved from www.ijtsrd.com
- Ministry of Education And Sport. (2015). Education For All 2015 National Review Report: Uganda. Kampala: Ministry of Education And Sport.
- Ministry of Education, Science And and Technology. (2015). Education For All 2015 National Review Report: Kenya. Nairobi: Ministry of Education, Science and Technology.
- Ministry of Education, Singapore. (2014). Education for All 2015 National Review Report: Singapore. UNESCO.
- Ministry of Education. (2008). Nine Year Basic Education Implementation: Fast Track Strategies. Kigali: Ministry of Education.
- Ministry of Education. (2013). Education Sector Strategic Plan 2013/14 – 2017/18, Kigali. Kigali: Ministry of Education.
- Ministry of Education. (2014). 2014 Education Statistical Yearbook. Kigali: Ministry of Education.
- Ministry Of Education. (2015). Education For All 2015 National Review Report: Rwanda. Kigali: Ministry Of Education.

- Ministry Of Education. (2016). 2016 Education Statistical Yearbook. Kigali: Ministry Of Education.
- Ministry of Education. (2018). 2018 Education Statistics. Kigali: Ministry of Education, Republic of Rwanda.
- Muganda, A. J., Simiyu, A. M., & Riechi, A. (2016). Factors Affecting Subsidized Free Day Secondary Education In Enhancing Learners Retention In Secondary Schools In Kenya. *Journal of Education And Practice*, 7 (20), 49-55.
- Mukonyi, P. W., & Onkware, K. (2020). Strategies Used to Improve Participation of Students in Secondary School Education in Kakamega County, Kenya. *International Journal of Education and Research*, 8(5), 1-18.
- Muriithi, E. M., & Oluoch, C. A. (2018). Influence of School Feeding Program On Enrolment Rate In Public Preschools In Langata Sub-County Nairobi, Kenya. *International Journal of Innovative Research & Development*, 7(4), 141-147.
- Mwaka, M., & Njogu, K. (2014). The Effect of Expanding Access Of Day Secondary Schools: Evidence From Kenya. *International Journal Of Education And Research*, 2(1), 1-10.
- Ngome, C. K., & Kikechi, R. W. (2015). Educational Wastage in Kenya: A Threat of Internal Efficiency in Bungoma County Secondary Education. *Journal of Educational Policy and Entrepreneurial Research (JEPER)*, 2(10), 131-137. Retrieved from <http://www.ztjournals.com/index.php/jeper>
- Owolabi, S. J. (2006). Quantitative Methods of Educational Planning (1st Ed.). Mborode: Lucky Odoni (Nig.) Entreprises.
- Samuel, S. M., Mulwa, M. D., Migosi, J., & Kamau, L. M. (2017). Influence Of of School-Based Factors on Educational Wastage In in Public Secondary Schools In in Machakos County, Kenya. *International Journal of Humanities And and Social Science*, Vol. 7(1), 257-262. Retrieved from www.ijhssnet.com
- Snilstveit, B., Gallagher, E., Phillips, D., Vojtkova, M., Eyers, J., Dafni Skaldiou, S. J., Davies, P. (2015). Education Interventions Ffor Improving the Access To to And and Quality Ofof, Education iIn Low- And and Middle-Income Countries: A Systematic Review Title Registration. International Initiative For for Impact Evaluation (3ie).
- Tamanna, P. (2014). Dropping-Out Of of School In in Malaysia: What We we Know know And and What what Needs needs To to Be be Donedone. Institute For for Democracy And and Economic Affairs. Policy IDEAS No. 14. Retrieved From from www.ideas.org.my
- Taylor, A. D., & Ogbogu, O. C. (2016). The Effects Of of School Feeding Programme On on Enrolment And and Performance Of of Public Elementary School Pupils in Osun State, Nigeria. *World Journal of Education*, 6(3), 39-47. <https://doi.org/10.5430/wje.v6n3p39>
- The International Bank for Reconstruction and Development . (2011). Rwanda Education Country Status Report Toward Quality Enhancement and Achievement of Universal Nine Year Basic Education an Education System in Transition; A Nation in Transition. Washington, DC: The World Bank. Retrieved from https://poledakar.iiep.unesco.org/sites/default/files/fields/publication_files/resen_rwanda_0.pdf
- UNESCO (2013). UNESCO handbook on Education Policy Analysis and Programming: Education Policy Analysis. Bangkok: UNESCO.
- UNESCO (2015). EFA Global Monitoring Report. (2015). Education For All 2000-2015: Achievements And Challenges Summary. Paris: UNESCO..
- UNESCO Institute for Statistics. (2009). Education Indicators Technical Guidelines. Paris: UNESCO. Retrieved January 21, 2020, from http://uis.unesco.org/sites/default/files/documents/education-indicators-technical-guidelines-en_0.pdf
- UNESCO Institute For Statistics. (2017). Information Paper No. 47: Counting The Number Of Children Not Learning: Methodology For A Global Composite Indicator For Education. Montreal: UNESCO.
- UNESCO Institute for Statistics. (2017). More than one-half of children and adolescents are not learning worldwide. Fact Sheet 46. Paris: Unescostat. Retrieved March 18, 2020, from <http://uis.unesco.org/sites/default/files/documents/fs46-more-than-half-children-not-learning-en-2017.pdf>
- Wanjala, G., & Koriyow, H. A. (2017). Impact Of Subsidized Fees On Students' Access To Quality Education In Public Secondary Schools In Wajir County, Kenya. *International Journal Of Education And Research*, 5(7), 247-262. Retrieved From www.ijern.com
- Wanjiku, M. N. (2014). Determinants Of Education Wastage In Public Secondary Schools In Laikipia West District Laikipia County, Kenya: A Master Thesis. Nairobi: Kenyatta University.
- World Bank. (2009). Abolishing School Fees In Africa: Lessons From Ethiopia, Ghana, Kenya, Malawi, And Mozambique. Washington DC: *The International Bank For Reconstruction And Development / World Bank*.
- World Bank. (2018). Learning to Realize Education's S Promise. Washington: International Bank for Reconstruction and Development / The World Bank. <https://doi.org/10.1596/978-1-4648-1096-1>