
Effects of the School Improvement Grant (SIG) on Student Enrolment in Public Basic Schools in the Gambia

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Abstract: This study examined the effects of the School Improvement Grant (SIG) on student enrolment in public basic schools in The Gambia. The study uses both descriptive and inferential analysis to study the trends of school improvement grants and school enrolment from the 2014/2015 to 2018/2019 academic years. The study also runs an econometric estimation model of panel regression data analysis to assess the effects of the SIG program on enrollment and student performance taking into consideration other outcome variables that have effects on enrolment. The other outcome indicator variables that were considered in the model are class size, student-qualified teacher ratio, and student classroom ratio. Using school-level data over the period 2015-2019 across the country, the study results indicate that school improvement grants positively and significantly affect school enrollment. On the other hand, the study also indicates that school improvement grant has not had any significant effect on these key education outcomes. Finally, using survey response data from headteachers, teachers, education officers, and cluster monitors, the study revealed that delay in the release of the SIG, the inadequacy of the SIG to cover all the school activity costs, misapplication of the SIG by school heads, poor monitoring and evaluation of the SIG and limited coverage of the SIG are major challenges surrounding the efficiency of the SIG policy. The study, therefore, recommended the need for an urgent policy intervention to enhance effective disbursements and management of SIG for all public schools and that the government of The Gambia should make it a matter of policy to increase the amount of the school improvement grant. The study further suggested that basic learning materials and infrastructural facilities should always be provided by the government to schools to help cut down the burden on parents and to also promote effective teaching and learning.

Keywords: SIG, Enrolment, Class-Size, Student-Qualified Teacher Ratio

1. Introduction

1.1. Background

Education is a process aimed at the development of individuals, dispelling ignorance, and improving the moral values in society, thus working towards collective well-being. Education forms the basis for lifelong learning and instils confidence in an individual to face challenges, solve problems and make better decisions. Through education, people acquire skills to become more independent and become aware of opportunities and rights. Also, with education, people become more responsible and informed citizens, and have a role in politics and society. Economists also observed that education systems could provide pathways

to economic advancement (OECD [1], Ross, Paviot, & Genevois [2]).

Education is an absolute right for every human being. It potentiates to free all citizens from the shackles of unawareness, poverty, and disempowerment, and endow them with the capacity to be designers of their destiny, and catalysts of entrepreneurship, innovation, and global citizenship. Education promises to “fundamentally and instrumentally” advance human capacity, self-esteem, and individual well-being without which there can be no expressive national development, social progress, and the transformation of the world.

All nations are making good and encouraging progress towards reducing the number of out-of-school children as far as educational enrolment is concerned. Specifically, sub-

Sahara Africa has witnessed an unprecedented 25% increase in enrolment between 1998/99 and 2002/2003 academic year (ADEA [3]). Most countries make sure that children have access to free, compulsory, and good-quality primary education. Nonetheless, progress on governments action to lessen the rate of “out of school” children globally has not been encouraging, particularly in Africa where most of the world’s out-of-school children live.

The Government of the Gambia committed itself to developing its human resource base with priority given to free basic education for all as well as achieve Universal Primary Education (UPE) by striving to make sure that children everywhere, regardless of gender, will be able to complete a full course of basic education level by 2030 (GPE [4]). The Gambia Government’s efforts to achieve the SDGs on education has reflected in the many policy frameworks and reports such as the Education Sector Policy 2016-2030 and the Education Sector Strategic Plan 2016-2030.

The Education Sector Policy document provides a policy framework that sets out the national agenda for the delivery of quality education in the Gambia for the period 2016 to 2030 (MoBSE [5]). One of the main policy priorities in the document is improving access to quality education for all, particularly girls, for greater gender equity. The Education Sector Strategic Plan (ESSP) was informed by many documents and policy frameworks especially the goals for education for All and the Sustainable Development Goals (SDGs) in education that is to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all by 2030.

The government of the Gambia in its drive to achieve access to quality basic education for all has over the years instituted significant measures and programs one of which includes the introduction of the School Improvement Grant. The SIG was initiated by the government of the Gambia with the support of the World Bank and Global Partnership in Education (GPE) aimed to provide beneficiary schools with funds in a bit to reduce the cost burden on households in educating their children in public schools. SIG is designed to increase access to quality education in the school system.

Despite improved participation, as of 2019 twenty per cent (20%) of children in Sub-Saharan Africa are “unlikely to ever enter school,” on par in percentage terms with the global figure. This figure is exceeded by Southern Asia at 28% but in absolute terms, there are 12.5 million (one in four) who will never enter school in Southern Asia, compared to 32.2 million (one in five) in Sub-Saharan Africa (Keith M. Lewin [6]). Globally, Sub-Saharan Africa has the poorest rate of education exclusion—more than one in every five children aged 6-11 are out of school, followed by one in every three youth between 11-14 years of age (Keith M. Lewin [7]).

Empirical studies have shown that a lack of education exacerbates social inequalities and increases the likelihood of poverty (Caturianas, Užpelkienė [8]). Furthermore, “the lack of educational opportunities for children frequently reinforces their subjection to various other human rights violations” (EFA Working Document [9]). Therefore,

combating social exclusion has to start with ensuring equal access to quality education for all.

In recognition of the importance of education, the Gambia government remains highly steadfast in developing its human resource base with priority given to basic education and that led to the free basic education for girls and free basic education for all policy. For this reason, the government through the Ministry of Basic & Secondary Education (MoBSE) has initiated educational programs to promote enrolment at the basic level of education. These programs include the Scholarship Trust Fund for Girls, the President’s Empowerment of Girls Education Project (PEGEP), the School Feeding Program (or School Meals Program), and most recently the School Improvement Grant (SIG), which are all implemented under its policy theme “Accessible, Equitable and Inclusive Quality Education for Sustainable Development” (MoBSE [10]).

The SIG was initiated by the government of the Gambia with the support of the World Bank and the Global Partnership in Education (GPE) to remove all levies and burdens that could hinder Gambian children from attending school. SIG policy is addressing mainly the equity issues in the Gambia educational system (World Bank [11]). More specifically, SIG is designed to increase access and retention in the school system. The School Improvement Grant provides beneficiary schools with funds. In a bit to reduce the cost burden on households in educating their children in public schools, the education sector has abolished all forms of fees and levies in public basic and secondary education and subsequently introduced the payments of school improvement grants to support public schools to undertake school improvement initiatives informed by an effective school development planning process. The SIG has been implemented in all public Lower Basic Schools (LBS), Upper Basic Schools (UBS), and Basic Cycle Schools (BCS) since September 2014. In September 2015, it was extended for implementation in all public Senior Secondary Schools (SSS).

The SIG program is expected to influence school enrolment rates, dropout rates, and performance by abolishing all school levies to create free access to education for all, and ensuring that children have access to needed learning materials (MoBSE SIG guideline [12]). However, to my knowledge, there is no published study on the effects of the SIG program on enrolment and student academic performance in The Gambia. Data from monitoring reports show that access to education remains low for some children and parents and guardians continue to incur education expenses that are presumably covered by the program. These issues raise fundamental questions about the sufficiency of the grant; the effectiveness of the implementation of the program; the frequency and timeliness of disbursements; the administration of the grants at the school level; etc. Given the centrality of the program in the Ministry of Basic and Secondary Education (MOBSE)’s education for all agenda, an assessment of the SIG program and its effects on school enrolment and student performance will guide policymakers in the implementation, design, and scaling up of the SIG program.

The introduction of SIG serves as a replacement for revenue lost by schools due to the abolition of school fees and contributions. The SIG allowed all children regardless of their financial status to go attend school. This reduced social segregation as children from poor background could now afford to attend school (Uwazi, [13]). School Improvement Grants are intended to cover the expenses on the day-to-day running expenses of the school such as the provision of teaching materials and resources, maintenance of the school environment, staff development, payment of utility bills, etc. School Improvement Grant policies represent a major reform in educational management. Before the SIG policy, schools that had very little or no say about financial management, now receive grants directly from the central government. They are at present not only asked to deal with these grants but also to use them more or less as they see fit to improve the school's functioning and quality.

The School Improvement Grant influences supply-side limitations to education as it assures the obtainability of more learning and teaching materials (Levacic and Downes, [14]). The School Improvement Plan which illustrates the budget proposal details the spending distributions and financial outlays of each school, which may be scrutinized by any interested party. Therefore, provided the proper systems of checks and balances are in place, all those who handle funds for schools must do so in an accountable manner (Levacic, [15]).

The School Improvement Grant is one of the latest measures the Gambia Ministry of Basic & Secondary Education has taken to increase access to quality basic education as shown in the Education Sector Strategic Plan 2016-2030 (MoBSE [16]). The Ministry of Basic & Secondary Education with support from the World Bank and the Global Partnership in Education has developed a policy aimed at eradicating all public-school fees for primary and secondary education by 2015. With a \$6.9 million GPE grant, the government of The Gambia is expected to improve the quality of teaching and learning in primary schools, build new classrooms and labs and strengthen the governance and management of the country's education system. As part of the overall program, the School Improvement Grants are provided to all public schools yearly through a fixed variable determined by the number of students enroll in a school. SIG management structures have been developed to ensure effective use of the funds at all levels. The newly constituted Association of School Management Committee Executive helps to sensitize parents about the use of the grants to garner their support in developing constructive School Improvement Plans (SIPs) and to provide oversight in the use of the funds. To ensure that these funds are cautiously utilized and accurately accounted for, MoBSE continues to reinforce the fiduciary structures that oversee these areas of disbursements and procurement.

1.2. Research Questions

This study seeks to answer the following research questions:

- a) What are the trends of school improvement grants and school enrolment by region in the Gambia?
- b) What is the effect of the School Improvement Grant (SIG) on school enrolment?
- c) What are the challenges facing the implementation of the SIG policy in The Gambia?

1.3. Research Objectives

The overall objective of the study is to examine the effects of SIG on student enrolment in public basic schools in The Gambia. The specific objectives are to:

- a) To study the trends of school improvement grants and student enrolment by region in the Gambia.
- b) To assess the effects of the School Improvement Grant on school enrolment.
- c) To assess the challenges facing the implementation of the School Improvement Grant policy in the Gambia.

1.4. Research Hypotheses

The study was based on the following research hypotheses:

Ho (1): There is no trend relationship between SIG and student enrolment.

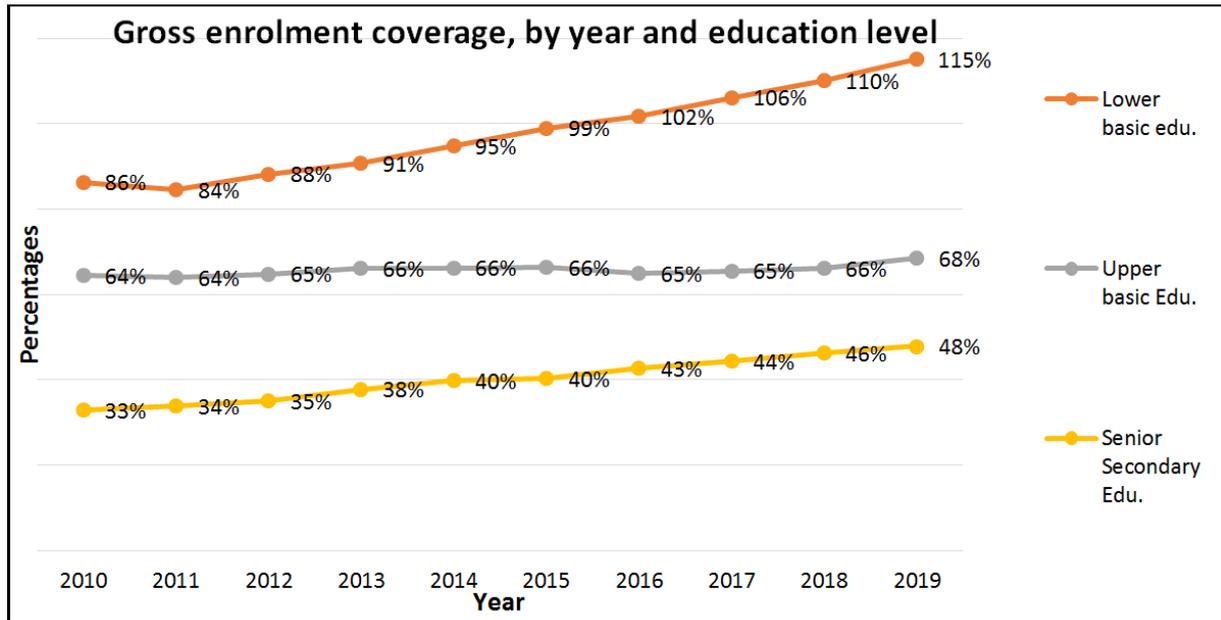
Ho (2): There is no significant relationship between SIG and school enrolment.

2. Literature Review

Education is the key to creating, adapting, and spreading knowledge but the gains in access to education have been unevenly distributed, with the poor seldom getting their fair share (World Bank, [17]). According to the "Revised Education Policy 1988–2003", The Gambia's most precious resource is its people; a wealth that must be developed for the good of the individual and the nation alike. It is recognized that investment in education is key to economic growth, and that, by increasing the productivity of a people, education contributes to better income distribution and the reduction of poverty. Education is also regarded as an essential service to improving people's well-being and their capacity to better themselves and improve their environment. In recognition of this fact, The Gambia continues to strive to provide equal educational opportunities for all its citizens based on the guidelines and the economic development prospects of the country.

In the Gambia, government expenditure on education is less than 18% of total public expenditure except for the period 2000-2009 when it had seen an increase. During the same period, basic education received more than half of these funds (MoBSE [18]). The education system depends greatly on donor financing, which represents 39% of the total education budget.

Gross enrolment has increased from 2010 to 2019 (See figure 1). The upper basic schools' gross enrolment coverage is almost flat but slightly increase. The senior secondary and lower basic gross enrolment trends are increasing over time but the lower basic enrolment trend is growing faster.



Source: MoBSE EMIS data.

Figure 1. The trend in gross enrolment coverage, by education level, 2010-2019.

2.1. Theoretical Review

The theoretical review highlighted the following theories related to the study. They are Human Capital Theory (HCT), Public Choice Theory and Education, Cognitive Resource Theory, and Social Cognitive Theory.

2.1.1. Human Capital Theory (HCT)

Adam Smith, in *The Wealth of Nations* (1976) formulated the basis of what was later to become the science of human capital. The human capital theory relies on the proposition that formal education is highly influential and necessary to advance the productive capacity of a population. In short, human capital theorists claim that an educated population is an industrious population. The theory stresses how education increases the productivity and efficiency of workforces by increasing the level of cognitive stock of economically productive human competency, which is a product of innate abilities and investment in human beings. The delivery of formal education is seen as a venture in human capital, which proponents of the theory have considered as equally or even more worthwhile than that of physical capital (Psacharopoupulos & Woodhall [19]).

The success of any country in terms of human growth and development is mainly dependent upon the physical and human capital stock. Therefore, recent social research focuses on the behavioral sciences of humanity about economic productivity. In general, human capital represents the resources each individual develops to improve economic efficiency. Furthermore, human capital is concerned with the adoption of education policies and development.

Several studies in the field of economic growth and development have shown that improvements in education

accelerate productivity and contribute to the development of technology, thus improving human capital. More than anything else, it has been the remarkable growth in East Asia that has given education and human capital their current popularity in the field of economic growth and development.

In its study and statistical analysis in 1993, The World Bank report suggested that an improvement in education is a significant explanatory variable for East Asian economic growth (World Bank [20]). The first step in modeling how the massive increase in education fast-tracked economic progress and development is to look at education as an investment in human capital. Another view of the role of education in the success of the economy is to view education as positive externalities that help educate part of the community and the whole community benefits.

Education plays a noteworthy role in the growth of a nation’s economy; thus, educational spending is found to constitute a form of investment (UK Essays [21]). Education increases people’s chances of employment in the labor market allows people to reap pecuniary and non-pecuniary returns and offer opportunities for job mobility. Education is a source of economic development and growth only if it is anti-traditional to the extent that it liberates, stimulates, and informs the individual and teaches him how and why to make demands.

Even though it has been proven that the human capital theory and educational systems work beautifully for the development of individuals and nations, especially developing nations. However, there are implications involved, especially about the differences in policies and expenditures on education. The HCT stresses the need for policymakers to make a significant investment in the expansion of educational systems. While some countries may

be hesitant to invest in education, the positive returns from this investment will significantly outweigh the costs. Many the developing countries have therefore realized that the prime mechanism for developing human knowledge is the education system. Thus, governments invest huge sums of money in education, not only as an attempt to impart knowledge and skills to individuals but as well as to impart ideas, morals, attitudes, and ambitions that may be in the nation's best developmental interest.

2.1.2. Public Choice Theory and Education

Buchanan and Tullock are the seminal developers of public choice theory. They examined political engagement and collective action from the perspective of decision-making individual who participates in the political process in which group choices are made. Public choice theory is a theory of collective choice that is made up of individual actions. It applies the principles of private economic behaviour or market-based theory to collective action, particularly governmental actions, and the issues that arise from public decision-making.

According to public choice theory, decision-making in education should occur at the smallest unit possible, the parent. Education should be decentralized and allow for local decision-making to limit decision-making and external costs.

Advocates for limited government in education have faith in that people are compelled into forms of education they do not desire or forced to pay for the education of others when the government monopolizes education by being the main provider or too involved in it. Limited government supporters also argue that increasing accountability and support structures drive up costs and genuine private enterprise is driven out of the field, stifling innovation and progress, when the government is too involved. Opponents of limited government cite that increased discretion at the local level leads to increased inequality, intra-, and inter-district, as local authorities are so narrowly focused on local demand that varying standards are developed across boundaries. Wealth and opportunity disparities also become factors when geographic challenges and resources are taken into account.

Critics of the theory applied to education argue that it only functions with the self-interested subject and does not take into account other variables, such as the individual as a philanthropist who is not only focused on self-gain. Additionally, opponents of public choice theory as applied to education propose that the education system should be viewed less from an economic standpoint and more as a complex system built on cultural formations and public demands. This idea is confirmed in Devine's critique of education from the view of the market or public choice standpoint, as she states, "For, saddest of all, it is the market itself, in a world focused on norms and efficiency, that poses the biggest threat to the ability of teachers to "deliver the curriculum"- that is, to conform and perform.

2.1.3. Cognitive Resource Theory

Fiedler and Garcia [22] first developed the Cognitive Resource Theory (CRT) and were further taken on board by

Kiprono *et al* [23]. in 2015. The theory suggests that intelligence, experience, and other cognitive resources are factors in leadership success. Cognitive resources denote the leaders' cleverness, ability, and technical capability. CRT has a belief that training leads to improved job performance. This theory is relevant to the current study on the management of the School Improvement Grant (SIG) as, according to (Kiprono *et al.* in 2015, it stresses the fact that the school management committees (SMCs) need to have the right intellectual abilities, technical capability, and essential knowledge to be effective in their work. By being competent, it means that the SMCs, in this case, the school committees, can adequately perform their management functions (Kiprono *et al.* [24]). Apart from emphasizing training that leads to improved performance, this theory provides a framework that is helpful, to the local councils in the West Coast Region, in understanding factors that influence the efficiency of the school management committees (SMCs). The theory helps in the collection, analysis, and interpretation of data on financial management training and job experience.

2.1.4. Social Cognitive Theory

Bandura, 1977 established the Social Cognitive Theory (SCT) which emphasizes the importance of the dynamic interaction between environmental, behavioural, and personal factors within an individual as they make decisions about actions and behaviours. To better understand the decline in school enrolment, it is important to consider internal factors that influence decision-making, choice, and behaviour in addition to demographic factors and attitudes. The SCT outlines several factors including self-efficacy and outcome expectancies, which can influence an individual's behaviour affecting their decision to school enrolment (Luszczynska & Schwarzer, [26]).

Self-efficacy is defined as one's beliefs about their own ability to learn or perform tasks (Tadayon Nabavi, Raziieh [27]). Self-efficacy theory advocates that an individual's achievement can be explained and predicted by self-efficacy and outcome expectancy (Tadayon Nabavi, Raziieh [28]). According to the SCT, behaviour change is made possible by a personal sense of control (Tadayon Nabavi, Raziieh [29]). Outcome expectancies are another core construct of SCT. Outcome expectancy refers to a person's beliefs related to the potential consequences of a behaviour or activity. (Rodgers and Brawley [30]) suggest that outcome expectancy is created by the interaction of two factors: (a) outcome likelihood, which is the probability that a particular action will lead to a certain outcome, and (b) outcome values, which refer to the individual meaning associated with the potential outcomes of the behaviour.

2.2. Empirical Review

The impact of grants on enrolment is one of the most argued issues among educationalists and policymakers in both developing and developed countries in recent decades. This has been a contested topic debated widely in the literature without reaching any conclusive outcome. Some

concluded a positive effect, some negative, and the rest had no effects.

With regards to the enormous amount of governments funding to schools, no wonder some literature detailing the effectiveness of government funding on the enrolment and academic performance of students. Some of these studies have found funding to be useful in increasing student enrolment and improving the academic performance of students and some have not seen a positive significant impact of funding on students' academic achievement.

Several studies covering different groups of countries and different periods have found that school grant is an important determinant of enrolment and performance. The study will provide evidence on the effect of school improvement grants on enrolment and students' academic performance in The Gambia, its implementation, and sufficiency.

Carlson and Lavertu [31] used a Regression Discontinuity Design (RDD) approach with data from Ohio, studied the impact of School using the more rigorous method, and found that SIG led to a statistically significant increase of up to 0.20 standard deviations in both literacy and numeracy achievement. With data from San Francisco Unified School District, Sun, Penner, and Loeb (2017) used a difference-in-differences approach and found a statistically significant increase of 0.24 and 0.12 standard deviations in literacy and numeracy achievement in the third year of the SIG program.

Blimpo et al. [32] did a study on the effects of Gambian female scholarship programs on the academic performance of secondary school students. They found that the number of students taking the high school exit exam increased due to the girls' scholarship program, consistent with the presence of financial constraints on enrolment in secondary school. Their study also found a significant increase in enrolment among girls aged 13-18. Furthermore, their research found that the female scholarship program increased test scores in English Language and Mathematics.

Using a comparative interrupted time-series approach, LiCalsi, Citkowicz, Friedman, and Brown [33] drew on data from eight districts in Massachusetts. Their study found that SIG was associated with an increase of 0.22 standard deviations in math and reading. Using data on 71 non-SIG schools and 11 SIG schools from Philadelphia. They found that the SIG turnaround and restart models were positively associated with grade-level effect sizes in elementary and middle schools of 1.11 standard deviations in math and 0.83 standard deviations in reading.

Cameiro et al. [34] conducted a study on the impact of a Senegalese school grants program on student academic performance and on probable mechanisms that could motivate the change in school performance persuaded by such a program. The study found that school grant leads to a positive impact on student learning, especially on girls and students with high capability levels at baseline, at a cost-effectiveness rate proportionate with other interventions that intend to improve education outcomes in low-income countries. The study recommends that resources distributed

in a regionalized manner can have positive impacts on students.

Kuunyangna [35] also did a study on the problems related to the implementation of Ghana's capitation grant policy. The objective of the study was to assess the application of the capitation grant policy of the government and its continuity. The study, therefore, examined the implementation blockages in the Wa-Municipality of the Upper West Region of Ghana.

The study found that the amount of the capitation grant being disbursed cannot meet the basic expenditure needs of the schools. The study also discovered that the grant funds were not always disbursed on time. The study further revealed some lapses in the spending procedures for the expenditure of the fund.

Tessa *et al.* [36] conducted a study comparing public and private schools at the primary and secondary levels, before and after the Free Primary Education reform. They found that the abolition of user fees for government primary schools in Kenya in 2003 did not significantly increase net Enrolment in public schools. Their study found that the abolition of user fees shifted demand toward private schooling, evidenced by a simultaneous increase in private primary-school Enrolment and fee levels.

Osei et al. [37] conduct research on the effects of Ghana's capitation grant on education outcomes. The study aimed to assess the impacts of the capitation grant on students' pass rate at the Basic Education Certificate Examination (BECE), gross enrolment ratios, and gender variances in pass rates. The study using regression analysis, found that; the capitation grant doesn't have any significant impact on BECE pass rates in Ghana; the study also revealed that capitation grant and gross Enrolment have no significant relationship.

3. Methodology

The research adopted a descriptive and correlational research design approach. The study adopted the triangulation method (i.e., the combination of both primary and secondary data collection). The analysis is done using econometric techniques to establish the effects of school improvement grants on school enrolment in The Gambia. An extensive literature review was undertaken to inform the researcher about the various methods used in this type of study. Cross-sectional data of all public Basic Cycle and Upper Basic Schools that exist before the introduction of the SIG was used. Data collection instruments such as structured and semi-structured questionnaires were used as a source of primary data to find out the challenges surrounding the SIG and its implementation in all the selected basic schools and the Regional Education Office in West Coast Region.

The area of the study covers all the Basic Cycle and Upper Basic Schools in the Gambia that benefit from the school improvement grant from the year 2015 to 2019. The target population of the study was 124 basic cycle and upper basic schools in all the six (6) Regions and from all the forty-two (2) districts in the Gambia. The total number of such schools

benefitting from the SIG is 124. The sample size of the study is also 124. Therefore, the population and the sample are the same.

In an effort to answer the last research question (challenges facing the implementation of the SIG policy), the study employed purposive sampling and due to financial constraints, a sample size of 242 is used. It should be mentioned again that research of this nature requires huge financial resources to be able to get useful data for the analysis. In the process of data collection, some respondents may prove quite problematic and may even demand some financial tokens before availing themselves of interviews. Consequently, the researcher uses this sample and focuses on only region 2 as a case study.

The elements interviewed on the challenges of the SIG are Headteachers, Teachers, Education Officers, and Cluster Monitors. Region two (2) was selected based on the following reasons;

- 1) It is the region with the highest number of schools (more than 31%).
- 2) It is the region with the highest enrolment.
- 3) It is the only region that combines both rural and urban characteristics.

$$Enrol_{it} = \beta_0 + \beta_1 SIG_{it} + \beta_2 Class_size_{it} + \beta_3 SQTR_{it} + \beta_4 SCRR_{it} + v_{it} \quad (1)$$

Where: $i = 1, 2, \dots, N$; $t = 1, 2, \dots, T$ and $v_{it} = \mu_i + \varepsilon_{it}$, Also μ_i Unobservable school specific effect;

ε_{it} The disturbance term;

$Enrol_{it}$ Enrollment of school i at time t ;

SIG_{it} Amount of grant receive by school i at time t ;

$Class_size_{it}$ Class size of school i at time t ;

$SQTR_{it}$ Student-qualified teacher ratio of school i at time t ;

$SCRR_{it}$ Student-classroom ratio of school i at time t ;

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \beta_1, \beta_2, \beta_3, \beta_4$ Coefficients;

α_0, β_0 Constants.

The vector of disturbance terms v_{it} is assumed to be uncorrelated with the regressors and the α_i 's and β_i 's have zero mean and constant variance. The pooled OLS estimation of the model restricts the coefficients on the regressors to be common across i and t . A less restrictive estimation technique allows the slope to vary over time and across schools. The model is estimated as a fixed effects (FE) model if the group-specific effect is assumed constant (but allowed to differ across units). The random effects (RE) model is estimated by assuming heterogeneity in the group-specific effects. Although the researcher conducted a Hausman test which guides the choice of the appropriateness of the estimation techniques, in this paper, we merely estimate all as a way of checking the robustness of the results obtained. But the discussions are mostly based on the most appropriate model.

Enrollment (Enrol): In this study, Enrollment refers to the number of children enrolled in a level (BCS or UBS), regardless of age at a particular period.

School Improvement Grant (SIG): In this study, the school improvement grants are funds provided by the government to schools that are intended to be spent on the day-to-day

All the headteachers of the sampled schools were interviewed. One teacher for each grade level was also interviewed as well. In the event of multiple classes for the same grade, a random process was used to determine the teacher to be sampled for that grade. Education officials at the Regional Education Directorate two (2) including all the 15 Cluster Monitors in the region were interviewed as well.

Data on school enrolment and other determinant variables of school enrolment such as class size, student-qualified teacher ratio, and grant amount came from the Ministry of Education annual data for all the 124 Basic Cycle and Upper Basic Schools. Second, to examine the impact of SIG on student academic performance, we obtained student-level results data from the West Africa Examination Council. We examined these GABECE student outcomes for the 2015, 2016, 2017, 2018, and 2019 school years. Third, to provide evidence on the challenges surrounding the SIG and its implementations, we collected primary data through a structured questionnaire from headteachers, teachers, cluster monitors, and education officials in region two (2).

Model Specification

The statistical models below were used to investigate the effect of SIG on school enrolment and student performance;

running costs of the schools; for example, cleaning, lighting, maintenance of school premises and grounds and the provision of teaching and learning materials.

Student-Qualified Teacher Ratio (SQTR): Average number of students per qualified teacher in a given level of education.

Class size: Average number of students per class in a given school.

Student Classroom Ratio (SCRR): Average number of students per classroom in a given school.

4. Analysis and Discussions

The data shows that out of the 242 respondents 89 (37%) are male and 153 (63%) are female. 127 respondents (52%) were at least 40 years old. Twenty-three per cent (23%) of the respondent are in the age group 20-29 years and 25% are in the age category of 30-39 years. By professional status, 180 (74%) were teachers, 16% were school heads, 6% were cluster monitors, and 4% were Education Officers. Out of the 242 respondents, 110 (46%) have a university education 126 (52%) have tertiary education most specifically Higher Teachers' Certificate and only 6 (2%) have secondary education.

4.1. Trends of School Improvement Grants and Student Enrolment by Region in the Gambia

4.1.1. Total Enrolment by Region

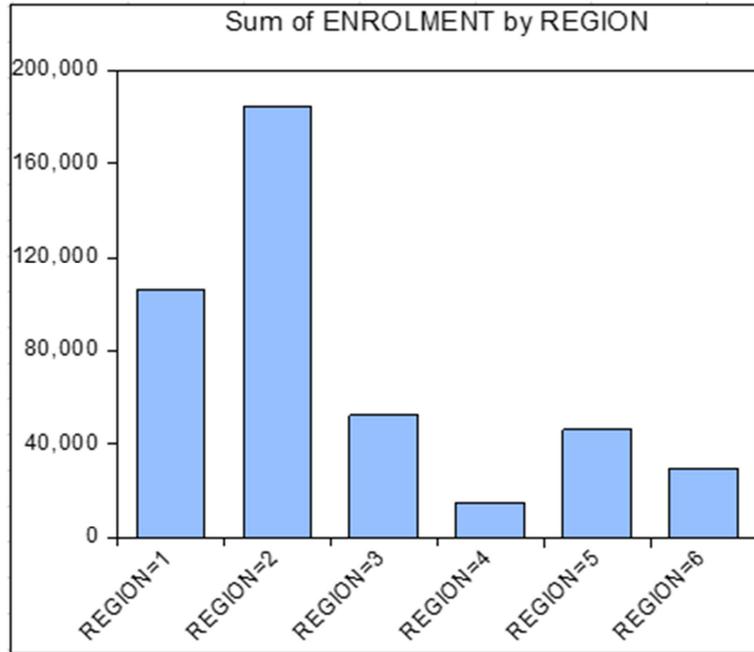
Figure 2 illustrates total school enrolment by region. Region 2 is the largest and with the highest school enrolment in the country. The total enrolment in Region 2 is around

185,000. Region 4 has the smallest number of student enrolments at about 18,000 pupils.

4.1.2. Trends Analysis

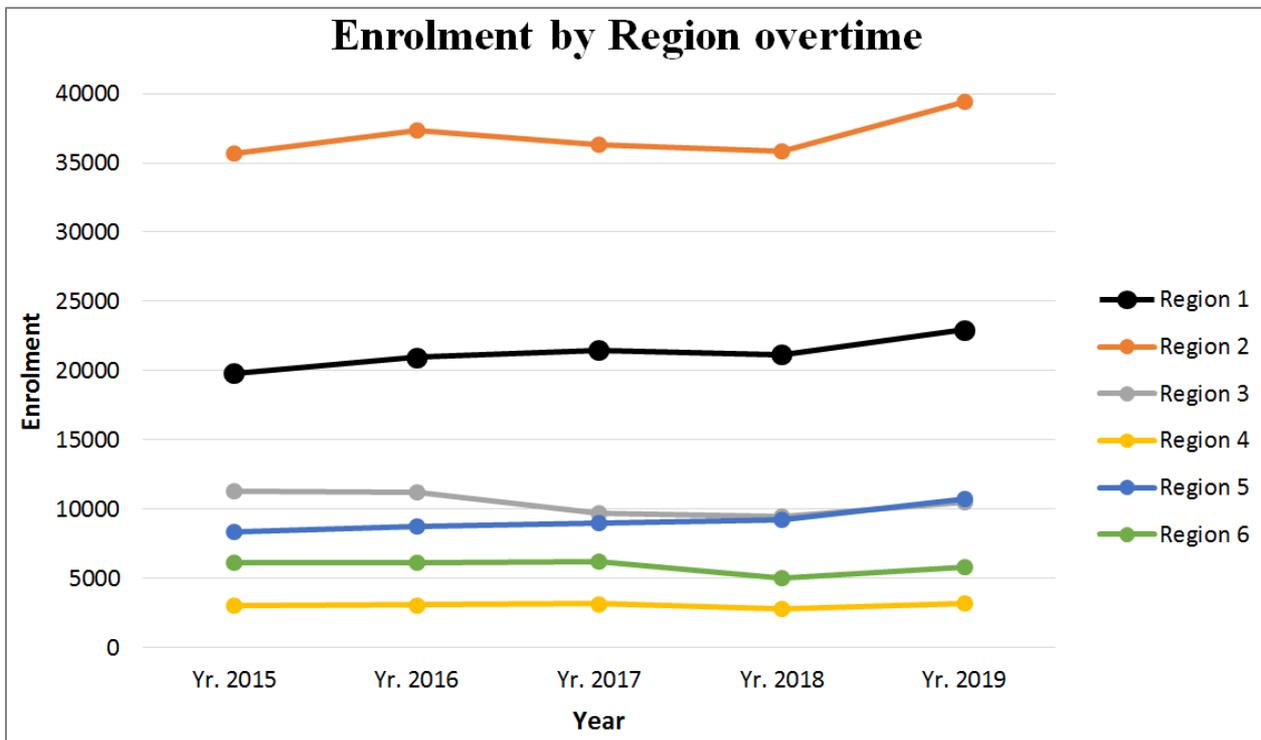
The graphs below illustrate the growing trend of school enrolment, class size, student-qualified teacher ratio, and student-classroom ratio.

Figure 3 shows the trend of school enrolment for each regional education directorate from 2015 to 2019. It shows an increasing trend of enrolment in regions 1, 2, and 5. The growth trend of school enrolment in regions 3, 4, and 6 is almost flat as illustrated in figure 3. Region 2 continued to be the region with the highest number of students followed by region 1.



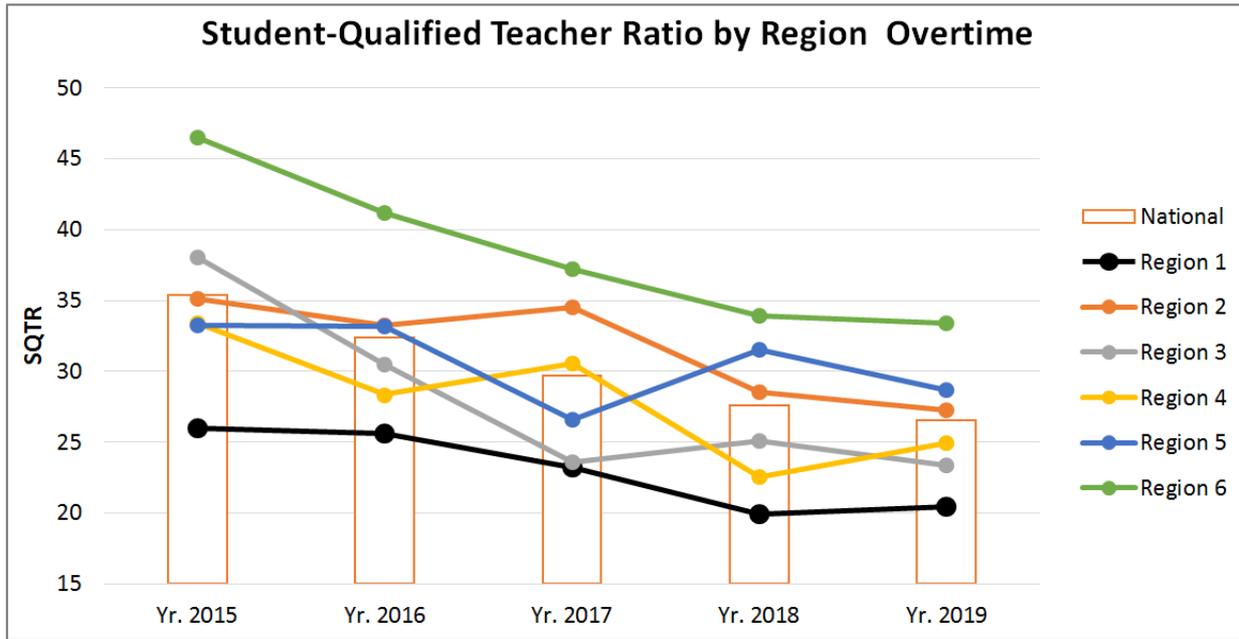
Source: Author computation (2021).

Figure 2. School Enrolment by Region.



Source: Author computation (2021).

Figure 3. Enrolment trend by Region Overtime.



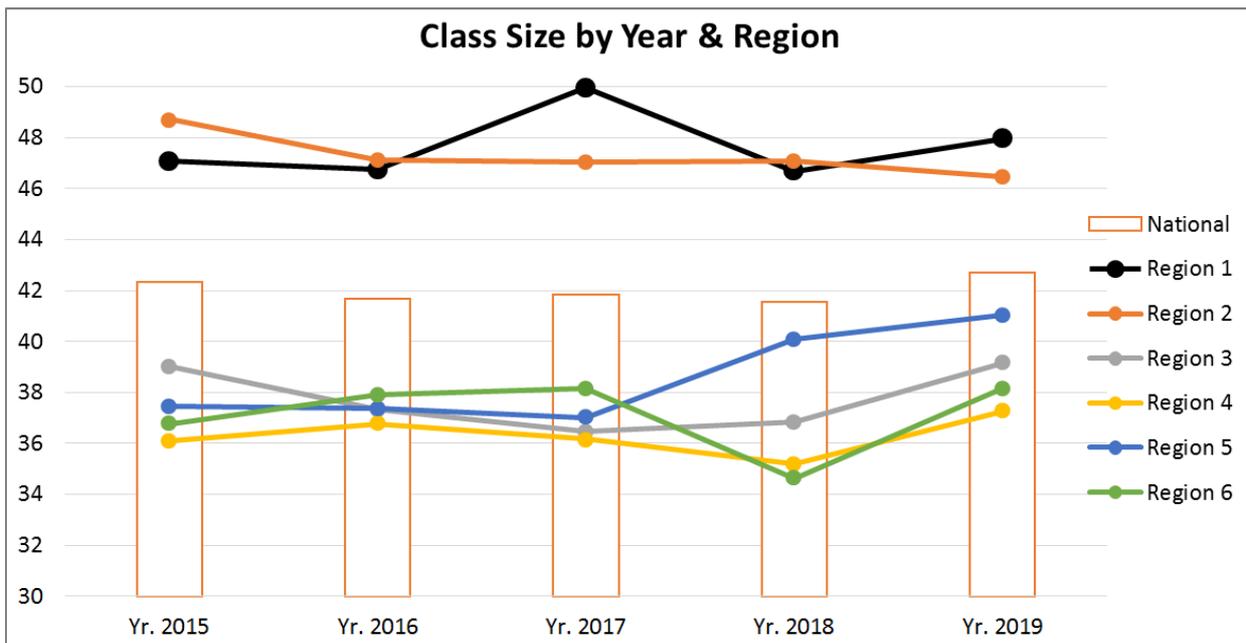
Source: Author computation (2021).

Figure 4. Student-Qualified Teacher Ratio Trend by Region Overtime.

Figure 4 shows the student-qualified teacher ratio (SQTR) for Basic Cycle and Upper Basic Schools by region for the 2015/2016 to 2019/2020 academic years. A smaller student/qualified teacher ratio is better for the quality of education needed. Fewer students for one teacher means that the teacher will be able to have more one-on-one time with his/her students. From the figure, it is seen that the ratios decreased from 2015 to 2020 in all the regions. From 2015 to 2016, all the SQTR decreased except for regions 2 and 4 while the rest of the regions experienced a drop in SQTR.

From 2017 to 2018, regions 3 and 5 experienced a decrease in SQTR while the rest dropped. Regions 1 and 4 surged between 2018 and 2019 while the rest of the regions experienced a reduction in SQTR. Overall, region 2 has the highest SQTR and Region 6 has the lowest in the country.

Figure 5 displays the class size by region. Regions 1 and 2 have the highest-class size of between 47 to 50 students. Region 1 recorded the highest class size of 50 in 2017. All the regions except region 2 experienced an increase in class size between 2018 and 2019.



Source: Author computation (2021).

Figure 5. The trend of Class size by Region Overtime.

4.2. Effects of School Improvement Grant on School Enrolment

4.2.1. Correlation Analysis

The Pearson Correlation test was used to determine if there is a correlation between any of the two variables. The Pearson Correlation is a measure of how well two variables are related. It shows the linear relationship between two sets

of data. If $p \leq 0.05$ is it a significant relationship. The correlation matrix as illustrated in Table 1 shows a strong positive correlation between SIG and enrolment of 0.992. The correlation matrix further reveals that there is a weak relationship between SIG amount and student-qualified teacher ratio (0.162). Enrolment is positively correlated with class size, SQTR, and SCRR but SCRR is very weak.

Table 1. Correlation matrix.

	SIG	Enrolment	Class_size	SQTR	SCRR	schtype_id
SIG	1					
Enrolment	0.992	1				
Class_size	0.676	0.668	1			
SQTR	0.162	0.181	0.327	1		
SCRR	0.565	0.557	0.575	0.179	1	
schtype_id	0.097	0.000	0.215	-0.137	0.119	1

Source: Author computation (2021).

4.2.2. Test of Hypotheses

The Hausman (1978) specification test is regularly employed for choosing between the fixed- and random-effects estimators for panel data. The random-effects estimator is based on the assumption that there is zero correlation between the regressors and the error term, a situation that should be considered the exception rather than the rule. It is therefore not surprising that this null hypothesis is often not found to endure empirical scrutiny. If the test statistic, which contrasts the fixed- and random-effects estimates, rejects the null, applied researchers generally discard the random effects and base their conclusions on the fixed-effects (FE) estimates.

Table 2. Hausman test results for the Enrolment variable.

Hausman fe re	
$H_0 =$ Random effect model is appropriate	
$H_1 =$ Fixed effect model is appropriate	
Results	
Chi2 (4)	110.03
Prob>chi2	0.0000

Source: Author computation (2021).

To decide between fixed or random effects, the researcher ran a Hausman test where the null hypothesis is that the preferred model is random effects vs. the alternative fixed effects. It basically tests whether the unique errors (u_i) are correlated with the regressors, the null hypothesis is they are not. The results of the Hausman test from Table 2 suggest that the fixed-effects model is appropriate for analyzing the impact of the SIG on enrolment. A p-value of <0.05 suggests

rejection of H_0 . Hence FE is the appropriate model.

4.2.3. Fixed Effects Model for Enrolment

Table 3 shows the fixed effects results for the impact of the school improvement grant on enrolment. The results indicate that a school improvement grant (SIG) has a positive on school enrolment.

The size of the class and significant effect is negatively related to enrolment and the relationship is significant. SQTR is negative and significantly related to enrolment.

Table 3. Regression results of the impact of SIG on Enrolment.

Dependent variable (Enrolment)	Coefficient
SIG	0.00201*** (-1.71E-05)
Class_size	-0.718*** (-0.211)
SQTR	0.258** (-0.103)
SCRR	-0.0832 (-0.0633)
Constant	-51.36*** (-9.357)
Observations	618
R-squared	0.969
Number of ID	124

Source: Author computation (2021).

Note: Figures in parenthesis are standard errors and *, ** and *** indicate significance at less than 10%, 5%, and 1%, respectively.

Table 4 shows that SIG has a positive and significant effect on enrolment in all the regions. SIG is meant to increase enrolment numbers and it is working.

Table 4. Regression results of effects of SIG on Enrolment by Region (FEM).

Dependent Variable	Enrolment					
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6
SIG	0.00174*** (-5.66E-06)	0.00202*** (-3.53E-05)	0.00215*** (-3.01E-05)	0.00223*** (-8.82E-05)	0.00209*** (-4.27E-05)	0.00201*** (-3.22E-05)
Class_size	0.0152 (-0.079)	-0.933 (-0.59)	-0.998*** (-0.343)	-1.471** (-0.593)	-0.699** (-0.348)	-0.612** (-0.282)

Dependent Variable	Enrolment					
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6
SQTR	-0.0215 (-0.0779)	0.742** (-0.298)	0.0328 (-0.156)	0.454 (-0.282)	-0.450*** (-0.152)	0.0994 (-0.12)
SCRR	-0.00702 (-0.0338)	0.00562 (-0.131)	-0.216 (-0.151)	-0.241 (-0.161)	-0.444*** (-0.0958)	0.0276 (-0.104)
Constant	15.01*** (-4.118)	-68.89** (-27.96)	-40.76*** (-14.87)	-30.86 (-20.12)	6.324 (-13.65)	-41.44*** (-9.765)
Observations	80	194	109	45	115	75
R-squared	1	0.959	0.987	0.972	0.971	0.99
Number of ID	16	39	22	9	23	15

Source: Author computation (2021).

Note: Figures in parenthesis are standard errors and *, ** and *** indicate significance at less than 10%, 5%, and 1%, respectively.

4.3. Challenges Facing the Implementation of the School Improvement Grant Policy in the Gambia

In an effort to find out and document the challenges and problems surrounding the implementation of the SIG, respondents (Headteachers, Teachers, Education Officers, and Cluster Monitors) were asked to express their opinions on the challenges facing the implementation of the SIG policy. In response, 82% claimed that the SIG is inadequate to cover all school activities. In response to whether the headteachers do strictly follow the SIG guidelines, 50% of the respondents state that school heads are not strictly following the implementation guidelines of the SIG, 50% accept that the headteachers adhered to the SIG guideline while 2% claimed not to know anything about the question. The remaining 48% of the respondents claimed that school heads do not adhere to the SIG guidelines as prescribed in the SIG policy document. The study findings further indicated that 54% of the respondents believe that headteachers embezzled the SIG; while 46% of them argue that headteachers did not misapply the SIG fund. In addition, 52% of the

respondents believed that the SIG has created a big conflict between school heads and teachers.

Furthermore, 55% of the respondents suggest that there is no proper monitoring and evaluation of the SIG. In response to whether headteachers do connive with others to misuse the SIG, 61% of the respondents claimed that Headteachers and Education Officers especially the Regional Education Directors do connive together to misuse the school improvement grant. Additionally, only 22% claimed the Headteachers and Cluster Monitors do connive to misuse the SIG.

One of the main challenges of the SIG highlighted by respondents is the delay in the disbursement of the SIG funds to schools; more than 85% of the respondents claim that SIG is not released to schools on time. Additionally, 78% of the respondents agreed that the SIG has made parents irresponsible and take less care of their children's education since they are not spending their own money. In responding to whether Headteachers do involve School Management Committees (SMC) and teachers in the implementation of the SIG, 56% of the respondents agreed that teachers and SMCs are not involved in the implementation of the SIG.

Table 5. Respondents' Opinion on the Problems Surrounding the SIG.

Statement	Percentage (%)		
	Don't know	No	Yes
SIG is adequate to cover all school activities	0.5	81.9	17.6
School heads strictly follow the SIG guideline	1.9	50.0	48.1
School heads most of the time misapply the SIG fund	2.4	43.8	53.8
SIG creates conflict between teachers and headteachers	1.9	46.2	51.9
SIG has brought a big burden on school heads	1.0	57.1	41.9
There is enough M&E of the SIG Implementation	1.0	54.8	44.3
Education Officers connive with school heads to misuse the SIG	3.8	61.0	35.2
Cluster monitors connive with school heads to misuse the SIG	3.8	73.8	22.4
School heads do not involve teachers and SMC in the SIG expenditure process	1.4	42.4	56.2
School heads do not follow due procedure before the reimbursement of SIG	3.3	59.5	37.1
Processes involved in the SIG are too cumbersome to some school heads	1.9	34.3	63.8
SIG has made some parents irresponsible	0.5	21.9	77.6
School improvement grant is released on time	1.9	85.7	12.4

Source: Field Survey, January 2021.

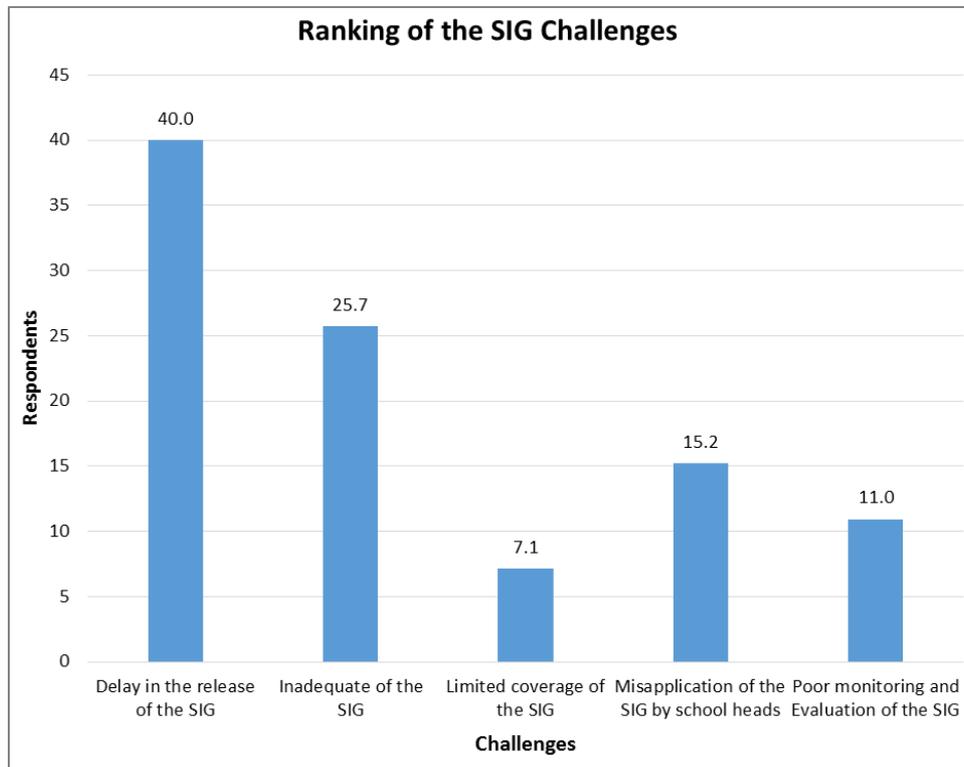
4.4. Ranking of the Main Challenges of SIG

In this section, the researcher was interested in identifying the most challenging factors impeding the smoothing and efficient implementation of the SIG. In doing so, the

respondents were asked to rank each of the five main challenges of SIG. The ranking was done in the order of first to fifth positions starting with the most challenging issue as the first position. In response to this task, 40% of the respondents identified the delay in the release of the SIG as

the first position meaning that it’s the most serious challenge impeding the efficiency of the SIG policy and its objectives. Inadequacy of the SIG to cover all the school activity costs is ranked as the second most challenging issue, Misapplication

of the SIG by school heads is ranked the third position, poor monitoring and evaluation of the SIG are ranked fourth while the limited coverage of the SIG was ranked fifth most challenge of the SIG implementation.



Source: Field Survey, January 2021

Figure 6. Ranking of the SIG Challenges.

5. Discussion of Findings

This research question was aimed at ascertaining the effects of the School Improvement Grant (SIG) on school Enrolment. In this regard, a fixed-effects regression model was used to establish the relationship. The results indicate that school improvement grants (SIG) had a positive and significant effect on school enrolment.

Findings from this present study are consistent with the abundance of studies. All of these studies stressed that there is a positive relationship between School Improvement Grant and school enrolment (Vermeersch & Kremer, 2005; UNICEF Report; Ahadzie, [38]. Specifically, Vermeersch and Kremer examined the effect of school grants on school access and participation in Kenya and found that school access and participation went up in Kenyan preschools where grants were provided than in comparison to schools where there were none. This is not surprising because, in many African countries, parents face significant private costs of education, either for school fees or for other inputs such as uniforms which sometimes prevent them from sending their wards to school. Notwithstanding this, the present study findings contradict the findings of Osei et al. [39] In his study on the topic “effects of the capitation grant on education

outcome in Ghana”, he found that the capitation grant (Which is called SIG in the Gambia) has no direct influence on students’ enrollment.

This research question sought to find out the most challenging factors impeding the smoothing and efficient implementation of the school improvement grant. The study found that the school improvement grant is without challenges. Some of the major challenges impeding the implementation of the improvement policy are; delay in the release of the SIG, the inadequacy of the SIG to cover all the school activity costs, misapplication of the SIG by school heads, poor monitoring and evaluation of the SIG and limited coverage of the SIG. 40% of the respondents claimed that delay in the disbursement of the SIG to schools is the most serious challenge that impedes the efficiency of the SIG policy and its objectives.

6. Conclusion and Recommendation

The study revealed several findings and summarized according to the research objectives as follows:

- 1) Using panel regression analysis, the study indicates that school improvement grants (SIG) had a positive and significant effect on school enrolment.
- 2) The study found that the school improvement grant is

without challenges. Some of the major challenges impeding the implementation of the improvement policy are; delay in the release of the SIG, the inadequacy of the SIG to cover all the school activity costs, misapplication of the SIG by school heads, poor monitoring and evaluation of the SIG and limited coverage of the SIG. 40% of the respondents claimed that delay in the disbursement of the SIG to schools is the most serious challenge impeding the efficiency of the SIG policy and its objectives.

Education is seen to be the basic prerequisite to economic development and growth. For this reason, making education accessible and affordable to all including the poor has, over the years, been the prime target of governments, NGOs, and philanthropists in the global world.

Some governments have tried in making education at the basic level free and compulsory to enable all children of school-going age to take advantage of it. It is in the light of this that, in 2014 the Ministry of Basic and Secondary Education (MOBSE), with the support of the World Bank (WB) and the Global Partnership for Education, established a School Improvement Grant (SIG) in The Gambia. SIG aimed at abolishing school fees and other school-related costs to improve access to and the quality of education for school-going children.

The study aimed at finding out the effects of the School Improvement Grant on enrolment and students' academic performance as well as to find out challenges bedeviling the proper functioning of the SIG in The Gambia. Using a panel regression analysis, the results indicate that school improvement grants (SIG) had a positive and significant effect on school enrolment. However, in terms of other indicators such as the student-qualified teacher ratio and class size, the results were mixed. For instance, class size generally decreases up to 2018 and then sharply increased in 2019. Furthermore, the results indicated that school improvement grants (SIG) had no significant impact on student academic performance. Finally, the study highlighted some major challenges bedeviling the proper function of the SIG policy.

In conclusion, we noted that although the findings from the study are somewhat surprising, it may be a result of the fact that it is too early to begin to see significant effects of the school improvement grants on student academic performance. This is so because the school improvement grants were introduced less than seven (7) years ago in The Gambia. A longer period is needed to observe a more consistent effect of the school improvement grant on educational indicators in The Gambia.

From the findings of the study, the following economic policy implications and recommendations are suggested:

- 1) The study suggests the need for an urgent policy intervention to enhance effective disbursements and management of the SIG for all public schools in The Gambia. This also requires adequate and timely budgetary disbursement of the SIG to schools.
- 2) MoBSE should initiate the establishment of a strategy

or rule of how the fund should be distributed and managed. This can help improve understanding of how funds are generated, how to deal with insufficiency of textbooks, insufficiency of classrooms, how to deal with the increasing number of pupils, and what to do when grants are delayed.

- 3) MoBSE needs to consider strengthening the financial management capacities of the headteachers, teachers, and SMCs to undertake their responsibilities and ease their work.
- 4) The parents through School Management Committee (SMC) are urged to strengthen control in SIG spending by ensuring regular follow-ups of the improvement grant spending in all the public schools.
- 5) The discrepancies observed between the data of EMIS, WAEC, World Bank Indicators (WBI), and UIS suggest that there are issues with MoBSE's data management system. Indeed, many officers in the ministry of basic education in the Gambia are appointed with less or no background in statistics. Errors in the dataset from the school and regional level will likely not be detected by this personnel, which will eventually, affect the quality of the national dataset. I, therefore, suggest that the MoBSE should strive to recruit personnel with statistics backgrounds to work as regional statistic officers to address these problems.

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