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Impact of Free Education Policy on Secondary Schools' Academic Performance in Tanzania

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Abstract: *Free education policy in Tanzanian public secondary schools was introduced formally in January 2016, by the Tanzania' fifth phase government. Since its implementation there have been a notable increase of students' enrollment in schools which might jeopardizes the quality of the education if the enrollment is not matched with the available education resources. It is in the light of this background that this study was set to examine impact of free education policy for secondary schools' academic performance in Tanzania. Academic performance of a secondary school was measured as percentage of students who passed a national form examination with at least division four. Data were taken from the National Examination Council of Tanzania website for students who took their national form four examinations in 2014 and 2018. The study employed a difference in difference method to assess the impact of free education policy on secondary schools' academic performance. The results indicate that the free education policy, despites increasing enrolment of students it is yet to bring negative examination performance. Much as free education policy has other advantages like increasing education access and promoting equality, the government should keep the policy live while keeping an eye on schools' performance. Specifically, the government should strengthen school facilities availability, notably chairs, desks and class rooms, as well as keeping incentives for school teachers.*

Key Words: *school performance, counterfactual, impact.*

1. INTRODUCTION:

Primary and secondary education are in most countries regarded as the basic education that should be acquired by all citizens to foster a country's social economic development (CREATE, 2007). Many countries across the world implements free education policy for primary and secondary schools due to the fact that school fees are a barrier to education access (HakiElimu, 2017).

Tanzanian like other countries in East Africa announced and implemented a free education policy for students in primary and secondary schools in 2016. The free education policy in Tanzania has rather a long history dating back to years after independence (HakiElimu 2017). In 1963 education was being offered freely both in primary and secondary schools. However, the government capacity to implement the policy went down in late 1970's up to early 1990's which resulted in a gradual introduction of schools' fees and other contributions by parents. These fees and parents' contribution were more remarkable during the second phase, third phase and fourth phase governments. This scenario to some extent decreased children access to primary and secondary education.

The fifth phase government picking suggestions from the past governments formally announced and implemented free education policy at the beginning of the year 2016. By free education the government meant the abolition of school fees and other parents' contribution which of -course varied from one school to another. Some of these contributions were being used by the schools to finance chairs and desks as well as incentives for teachers.

The implementation of free education policy has encountered a number of challenges which desire the attention of the government and other education stakeholders. Godda (2018), argues that free education policy in secondary schools has brought up increased number of students which has led to lack of funds to cover up school needs including facilities such as desks and chairs. Godda (2018), further argues free education policy has also been misperceived by some parents who thought that free education meant everything free including school uniforms. Mberege and Rwechengura (2017) had similar inference regarding free education policy. Although their observation was not on secondary schools rather in primary schools, they noted that despite increased enrollment rate, free education policy faces challenges associated with insufficient qualified teachers and teaching materials, lack of school buildings and staff accommodation. For the case of insufficient number of teachers in schools, the available teachers could use some extra time during weekends and or after class hours to teach as long as parents were ready to provide some financial assistance. But after introduction of the free education police in schools, teachers were not allowed at all to collect any funds from parents. Mashala (2019) attempted to discuss among other impact of free education policy on secondary schools students' performance. Despite the fact that the study's analysis could not effectively isolate the impact of other factors

apart from the policy itself, the author contends that performance in public secondary schools is still very low. The study also noted an increase in students' enrollment and teachers, but the study was skeptical about the quality of the offered education.

What has been found in Tanzania has also been observed in other countries in Africa. Muindi (2011) in Yata district Kenya found that free education policy led to shortage of teachers owing to increased number of students, lack of funds, overcrowded classes and shortage of books. likewise, Khamati and Nyongesa (2013), in Mumias district in Kenya observed that the management capacity of the principals, time of funds disbursement to schools and parental support have a negative influence on the implementation of free secondary education. Therefore, the study recommends compulsory management education training among schools' heads and timely inspection of the schools' performance. Asankha and Takashi (undate) contend that even though universal free secondary policy in Uganda implemented in 2007 has led to an increase in enrollment, there is still a lot of efforts which need to be done to strengthen the quality of the offered education. Notably the government and other stake holders need to improve basic school facilities such as desks, blackboards, chairs, drinking water, and toilet facilities especially in rural secondary schools. A study by Wanjara and Ali (2017) in Kenya established that even after the introduction of subsidized fee the enrollments rates remained low, because finances to support Free Tuition Secondary Education were inadequate and delayed before disbursement. Consequently, the implementation of subsidized fees programme by the government of Kenya did not greatly influence access to quality education in public secondary schools in Wajir County.

The observation made in Tanzania and in other countries implementing free education policy suggests that the policy faces a number of challenges which could impede the education quality. Logically speaking an increased quantity of any product can seriously affect its quality unless otherwise the amount of resources needed to produce the product is matched with the produced quantity. In the education perspectives, given increased students' enrollment, their education would demand among other things. increased number of teachers, chairs and desks, toilet facility, Laboratories, books and others. When these resources are not matched, they may lead to students' underperformance. With the exceptional of Mashala (2019), the rest of the studies on impact of free education policy in Tanzania have not examined its impact on academic performance. Infact even Mashalla (2019) time series observation on students pass rate can be questionable in terms of attributing the impact to the policy itself unless a clear methodology is outlined to control for confounding variables. This study aims to assess the impact of free education policy on secondary schools' performance using a methodology which would isolate other factors contributing to students' performance.

2. METHODOLOGY:

2.1 Study Design

The study employed a quasi-experimental study using difference in difference method which would assess public schools' performance having controlled for time variation (before and after policy implementation) as well as a school being public or private.

2.2 Study area, unit of study, and population under study

The study was done in Tanzania focusing on all secondary schools in Tanzania. The unit of study was an individual secondary school. The choice of a secondary school as a unit of study came from the fact that students cannot be a unit of study much as those who were there before the implementation of the policy are no longer in school. The only option is to use a school as a unit of study because most of the schools are still in existence across the years. By the virtue of the study design both public and private secondary schools were involved in the study, with private secondary schools providing a comparison group(counterfactual) to public secondary schools where a free education policy is being implemented.

2.3 Sampling procedure and sample size

The study established the 2014 pass rate of public secondary schools as 72.9% and aimed to detect pass rate of at least 5 % as meaningfully pass rate. Using the power rate of 84% and 5% level of significance the established sample size was 160 number of schools for either public or private schools. Therefore, the total sample size was 320 schools. This figure is quite reasonable as it makes nearly 10% of total number of secondary schools in Tanzania and which according to Vishwakarma (2017), the sample size of 10% of the population in social science research is sufficiently accurate for arriving at any plausible conclusion. Having established the sample size schools were randomly selected from a list of schools with national form four examinations results as displayed in the National Examination Council of Tanzania (NECTA) website.

2.4 Data collection

Data were collected from the NECTA websites for years before policy implementation and years after policy implementation. The study was done in June 2019 during which period the policy had been implemented for nearly four

years. The form four graduate in existence by the time of this study were the graduates for the year 2018, who had enjoyed free education policy only in 2016, 2017, and 2018. Therefore, the study opted to compare the 2018 form four graduates against the graduates in years before policy implementation. A number of past years could have been a possible choice. However, to many years away from 2018 would risk an influence of a number of macro events which might remove comparability. Therefore, for the sake of comparability the study opted to consider the graduates in the year 2014 to be compared with graduates in the year 2018.

The collected data were percentage of students who passed form four national examination in each school, and whether a school was a public or a private school. The study treated a student to have a passed if he/she had a division four or above. The use of percentage of passed students rather the number of passed students was meant to bring comparability for all the schools much as the number of students who sat for national form four examination was varying from one school to another.

2.5 Model for Data Analysis

The study used difference in difference (DD) method for data analysis. The difference in difference method is an improvement over both a paired t test and an independent t test. With a paired t test, one could have compared performance of public secondary schools before implementation of the policy and after the implementation. By doing so one assumes that the policy is the only factor responsible for changes something which may not be true. Similarly, with an independent t test one could compare performance of public secondary schools versus performance of private secondary schools, assuming that the two groups are comparable. That is unobservable and observable school characteristics which can influence performance are the same across the two types of schools an assumption which is not necessarily valid.

The DD method use a multiple linear regression model which does not assume that either of the assumptions proposed above is true. The model put dummies for time when a project ws implemented and for the types of schools. These dummies are meant to control time effect and school types effect and thereby not assuming either of the assumption. The model additionally put interaction between time and school type and regard this as a true measure of the policy implementation.

The logic of the interaction term stems from the following: if truly the free education policy has an impact then the difference between performance in schools where the policy is implemented against performance in schools where it is not implemented should be different in the year of implementation against the year when it was not implemented. Likewise, the difference of before policy performance and after policy performance in schools where the policy is being implemented should be different against the difference of before policy performance and after policy performance in schools where the policy is not implemented.

Suppose we call the interaction effect as "policy" then in model formulation the interaction effect is given as, policy=year* school type, where the symbol star means multiplication. The model is then specified as follows:

$y_i = \beta_o + \beta_1 year_i + \beta_2 schooltype_i + \beta_3 Policy + \varepsilon$----------(1)

Where y_i= school performance measured as a percentage of passed candidates in a school in years 2014 and 2018.

Year=1 if the score belongs to the year 2018, and =0 if the score belongs to year 2014

school type =1 if a school is a government secondary school, and =0 if it is a private secondary school

Policy=interaction effect between a school and the year of free education policy implementation

3. RESULTS AND DISCUSSION:

Before running the difference in difference model, some results based on both independent t test and paired t tests are produced and their weaknesses discussed as hinted before in section 2.4

3.1. Two sample independent T test to compare private and public secondary school performance before and after Free education policy

The independent t test results reveal that the private schools mean percentage pass rate was 89.95% whereas public school mean percentage pass rate was 72.9%. The p-value=0.00, suggesting a significant difference in performance. Therefore, private secondary schools had higher performance before the policy implementation. Likewise, after policy implementation, the independent t test reveal that the private schools mean percentage pass rate was 96.4% whereas the public-school percentage rate pass was 81.2%. Therefore, once again the private school's performance is still higher compared to that of public-school performance even after policy implementation.

The fact that private schools leads in performance both before policy implementation and after policy implementation may somehow suggest that the policy has not worked. However, as argued earlier these results could still be questionable much as there might be school characteristics such as location, quality of enrolled students, extent of teacher motivation, funding opportunities, or type of leadership that might influence school performance. These

factors are not the same in private and public schools. Therefore, these results call for the use of a DD method to assess the policy effect

3.2 Paired T test to compare before policy and after policy performance of both private and public schools

For both private and public secondary schools there is an improvement. For public secondary schools the pass rate was 72.87% in 2014 while in 2018 it was 81.30%, the difference being statistically significant (p=0.000). similar situation is also exhibited in private secondary schools where the pass rate was 89.9% in 2014 and 96.5% in 2018. The difference was also statistically significant (p=0.000).

These results show that even though there appears to be an increase in public secondary schools' performance, the scenario is also reflected in private secondary schools, and one may not necessarily argue that free education policy has improved public secondary schools' performance.

Like argued before results from both, an independent t test as well as a paired t test could be problematic much as they are susceptible to confounding variables. To get rid of such confounding variables a DD method put in form of a multiple linear regression model specified in section 2.4 was executed using STATA software version 15 and the results are given below:

3.3 The Difference in Difference estimates

Table 1: Estimates from a Difference in Difference Method

pass percentage	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
year	6.525	2.099	3.110	0.002	2.394	10.656
school type	-16.95	2.099	-8.070	0.000	-21.081	-12.819
policy	1.8	2.969	0.610	0.545	-4.041	7.641
_cons	89.85	1.484	60.530	0.000	86.929	92.771
R-squared=0.30						
P-value=0.000						
F=47.43						
n=320						

Results from Table1 shows that the fitted model is highly significant (p=0.000) with a reasonable explanatory power (adjusted Square=30%). The results indicated that indeed both time dummy and School type dummy are significant. The results indicate that overall there have been an increase in student's performance in 2018 compared to performance in 2014 in both private and public secondary schools. These results could be highlighting an increased awareness on importance of education by parents in both private and public secondary schools.

As for the school type results indicated that generally private schools perform better compared to public school consistent with what was observed before. These results highlight the need of finding why are private schools doing better than government schools. Probably private schools have invested much in education resources such as on school buildings and teachers 'motivation as well as in school studying environment.

For the free education policy, the results indicated that the policy effect is non-significant, but with a positive effect. These results are both surprising and encouraging. Expectedly one would expect the policy to have a negative effect given the increased enrollment of students which may not match with the needed facilities. However, it could be that government efforts to meet the needed school facilities has on contrary offset the anticipated negative effect. But this is by assuming that the quality of national examinations and assessment in general have remained the same before and after the free education policy The fact that it is not significant could be implying that the policy is yet to produce the desired results and that time should be given for policy makers to see the true effect of free education policy.

Apparently, there is no study on free education effect on secondary schools' performance in Tanzania which could be directly compared with this study especially in terms of methodology, even though Mashala (2019) conclusion appears to somehow concur with the study' findings that free education policy has a slight impact on secondary schools 'academic performance.

The study also made an attempt to examine the impact of the free education policy across different zones in the country, much as schools for the study came from different zones. An examination across the lake zone, northern zone, central zone, southern highland zone, coat zone, Eastern zone and western zone of the country revealed the following results as shown in Table 2.

Table2: Difference in Difference Estimates across the zones

	Southern highland			Coastal Zone			Northern Zone		
pass percentage	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t
year	7.04	3.625	0.055	7.04	3.625	0.055	3.6	4.911	0.468
school type	-19.6	3.625	0.000	-19.6	3.625	0.000	-27	4.911	0.000
policy	4.28	5.127	0.406	4.28	5.127	0.406	9.9	6.945	0.163
_cons	89.44	2.563	0.000	89.44	2.563	0.000	95.2	3.472	0.000
adjusted R -square	0.365			0.287			0.538		
p-value	0.000			0.002			0.000		
F	19.97			6.24			16.140		
n	100			40			40.000		

Table 3: Difference in Difference Estimates across the zones

	Western Zone			Central zone			Lake zone		
pass percentage	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t	Coef.	Std. Err.	P>t
year	7.5	6.800	0.277	6.3	6.423	0.333	5.533	4.378	0.212
school type	2.8	6.800	0.683	19.9	6.423	0.004	-18.20	4.378	0.000
policy	-0.8	9.616	0.934	5.4	9.084	0.556	-5.467	6.192	0.381
_cons	78.6	4.808	0.000	91.4	4.542	0.000	93.400	3.096	0.000
adjusted R -square	-0.015			0.286			0.429		
p-value	0.4955			0.002			0.000		
F	0.81			6.21			15.770		
n	40			40			60		

Results from zonal estimates reveal that with the exceptional of western zone and lake zone, the rest of the zones are consistent with the general results that policy has a positive but non-significant effect. The negative sign is not a good indication of the policy performance in the western and Lake zone. Even though insignificant, it might imply that in the near future while other zones are blessing for a possible significant positive policy effect, the two zones could be awaiting for a possible significant negative policy effect. This is especially the case for a west zone where p-value for the policy is very large (0.934). The government and other education stakeholders need to closely monitor the policy performance in these two zones.

However, even though in general the policy effect is not significant but suggesting a positive influence, for the northern zone, the p-value for the policy is not very large (p=0.16) suggesting that possibly in the near future it might indicate positive results for school performance in the zone. But this is only likely if there are measures that are currently taken to offset the negative effects and also if such measures will persist. This is by considering the research observation just a year of implementation of the free education policy that the abolition of school fees has left significant gaps in school budgets where schools are not able to fund basic needs they previously paid for with parents' contributions (additional fees charged by schools to pay for running costs), including school construction and renovation, the purchase of learning materials, and hiring of additional teachers (Tibasima, 2017). Nevertheless, these results could be suggesting that secondary schools in that area have somehow minimized challenges associated with free education policy.

4. CONCLUSION AND RECOMMENDATION:

The study using a difference in difference method and comparing form Iv graduates in year 2018 against the graduates in year 2014, has shown that so far, the policy has exhibited a non-significant positive effect which is quite surprising. One would expect that an increased production of any product with unmatched resources could lead to poor product quality. While it is true that the government has made efforts to provide facilities like chairs and desks as well as increasing number of teachers, still there is a deficit of such facilities. The implication could be, the policy effect needs to be given more time or that the government campaign to match the education resources to the increased students' enrollment has somehow worked.

5. Areas for Further Studies:

It should be understood that this study has used division four and above to calculate a school pass rate. But it should be born in mind that candidates with division IV can rarely be allocated to a high school or in a college, therefore similar study ought to use division III and above as pass limits to work out a school pass rate. The author recommends a follow up study which will encompass more years of form IV graduates (from2019 and above) and also using a school pass rate based on division III or above. Further justification of results of the study like this should involve determining if the nature of both National and school-based examinations including the quality of assessment procedures in general have remained the same before and after the policy. In addition, a panel data can be constructed using schools' regions as panel and employ panel data method which might improve the results.

Together with the aforesaid arguments, the only way forward to strengthen the policy is to ensure that school facilities match with the enrolled number of students as well as providing incentives for school teachers.

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