

Influence Of Public  
Private Partnership Model  
On Improving Pupils'  
Academic Performance  
In Kilimanjaro Region,  
Tanzania

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**ABSTRACT**

In spite of long time use of the Public Private Partnership (PPP) model and many roles played by private educational partners in Tanzania, the extent to which the model has influenced schools'/pupils' academic performance in Tanzania is not empirically known. The study on which this manuscript is based was focused on filling in this gap in knowledge and make a scientific documentation on the actual contribution of the PPP model towards improving schools'/pupils' academic performance in Kilimanjaro Region. Specifically, this manuscript (i) identifies educational interventions played by private partners and (ii) examines the extent to which the PPP model has improved schools'/pupils' academic performance in Kilimanjaro Region. Data were collected through a structured questionnaire, key informant interviews and observation. Sixteen primary schools were selected from two strata of (16 schools with PPP and 14 schools without PPP interventions). Difference-in-difference (DiD), t-test and an ordinal logistic regression model were run to determine the influence of each PPP educational intervention on schools'/pupils' academic performance in Kilimanjaro Region. It was found that the private educational partners had implemented three categories of interventions that had assisted to improve schools' and pupils' academic performance. Also, the results showed that school infrastructure was the category that used a larger amount of money (70.7%) than any other category of interventions implemented by private educational partners for the previous four years (2010 to 2015) in Kilimanjaro Region. In view of these results, it is concluded that the PPP model is an effective development tool that assists to reduce educational challenges hence improves pupils' academic performance in a given school. Also, it was concluded that schools with PPP interventions stand a better chance of improving schools'/pupils' academic performance than schools without PPP interventions. In connection to these conclusions, it is recommended that authorities of Moshi District and Moshi Municipality should set strategies that will inspire more private development partners to continue supporting and investing in improving schools'/pupils' academic performance.

**Key words:** Influence, PPP model, Quality education, Kilimanjaro, Tanzania

**1. INTRODUCTION**

For over eight decades the Public and Private Partnership (PPP) model has been promoted as a key strategy for enforcing socio-economic development in many countries in the world. In particular the PPP model has been used in the provision of public services such as health and education in most of the developing countries and underserved low income communities (Blacke, 2004). The driving forces for adopting and using PPP model are based on conscious policy design and inefficiency of the public sector to provide quality services to all people due to budgetary constraints. Voluntary demand-driven factors due to increased gap for accessing quality social services also enforced private sector to collaborate with government. Structural adjustment programmes imposed by international monetary institutions also enforced many of the developing countries to

open doors to private partners for supporting and investing in provision of social services for complementing government efforts towards development (Heather and Kathleen, 2007).

The contributions of the PPP model to some of the developed and middle economy countries including India, Singapore, South Africa and Brazil are scientifically documented and mostly known to the general public. For example, the PPP model has proved to contribute substantially to provision of quality services to many people of China, particularly in the health sector where ten health centres were built and operated through PPP in the rural villages of Fujian province. Between 1994 and 2000 more than 2,500 pupils from poor families in Tai Po Rural District of Hong Kong accessed primary school through a voucher system which was organized through the PPP model. PPP studies conducted in the education sector, particularly in the Uttar Pradesh state of India have shown that the PPP model has led to significant statistical contributions towards improving the quality of secondary education whereby 102,000 Mathematics books were provided to 102 public schools (Gunnigan and Rajput, 2010). Also, a study by Patrons *et al.* (2009) on the benefits of the PPP model in Sub-Saharan African countries revealed that various numbers of socio-economic interventions are done but the actual contributions on pupils' academic performance were not scientifically documented nor known to the communities. Ravallion (2011) asserted that lack of scientific documentation may lead information and experience generated from any PPP intervention to fail to reach others. Scientific documentation of such PPP interventions is essential for providing contemporary professionals and future generations with the opportunities to know, learn, and benefit from the past knowledge and experiences.

The extent of statistical contributions of the PPP model toward improving the desired policy outcomes (good academic performance in regard to this study) depends on the nature and number of educational interventions implemented by partners in a certain community/school. In Tanzania, many private educational partners, both local and international, collaborate and support the government by implementing various interventions. According to Itika *et al.* (2011), Tanzania has provided a more positive experience of a case where aid donors have particularly been supportive towards improving the quality of social services. A study by TEN (2004) and another one by Mpamila (2007) remarked that many private partners have been implementing various interventions in Kilimanjaro Region, but the specific educational interventions done as well as their statistical contributions on improving pupils' academic performance were neither empirically known nor documented scientifically. Ravallion (2011) asserts that the dual roles that private partners play should be identified, and their actual contributions towards improving the quality of education should be documented and well known to the beneficiaries and the general public.

Since there was little supportive evidence to suggest that the PPP model has empirically contributed to improving schools'/pupils' academic performance in Tanzania, there was a need to conduct this study to fill in the gap and document the empirical findings. Specifically, the objectives of this paper were to: (i) identify

educational interventions implemented by private educational partners through the PPP model towards improving schools'/pupils' academic performance and (ii) examine the extent to which the PPP model has improved schools'/pupils' academic performance in Kilimanjaro Region. This manuscript answers one main research question, "What were the roles/interventions mostly implemented by private partners towards improving the schools'/pupils' academic performance in Kilimanjaro Region primary schools?" Moreover, two hypotheses were tested, namely (1) There is no statistically significant difference in academic performance between schools/pupils with PPP and those without PPP interventions in Kilimanjaro Region, and (2) Interventions played by private educational partners do not have statistically significant influence on the chances of pupils being grouped in the best category of academic performance).

In this paper, the PPP model was referred to as a developmental approach whereby public entities collaborate with private development partners towards achieving a certain desired policy outcome, good academic performance in regard to this study. Private development partners were referred to as organizations (for-profit and not-for-profit), philanthropic groups and individuals that collaborate and support a primary school in the process of improving the quality of education. Schools'/pupils' academic performance was considered as the end result of the whole processes of improving the quality of primary education in this manuscript. Schools' and pupils' academic performance was directly considered to be influenced by the roles/interventions implemented by both partners that are in partnership.

The paper was guided by the stakeholder theory as advocated by Stephen Ross and Barry Mitnick (1967, cited by Farah and Rivzi, 2007). The theory is based on the assumption that the collaboration and relationship synergies that exist among different partners (government institutions and private partners) are basically established with the aim of improving the provision of quality socio-economic services. The relationships occur when these partners invite each other to work in a collaborative manner by sharing their expertise, resources and experiences based on the outlined appropriate collaboration arrangement (Akintoye and Hardcastle, 2003). Various private development partners do support the government of Tanzania by playing different roles and interventions that lead to improvement of schools'/pupils' academic performance in Tanzania. The private partners collaborating with the Government Tanzania in improving the quality of primary education in Kilimanjaro Region include Childreach International-Tanzania, FT Kilimanjaro, Compassion-Tanzania, TPC Limited, Camara Education of Tanzania, ViAFRICA and HakiElimu Tanzania. It is believed that involving different stakeholders in the process of improving the quality of education is expected to respond to broader and more educational challenges than to narrow this responsibility to a single partner (TEN, 2011). The stakeholder theory fitted well in this study as it assisted the researcher to identify categories of educational interventions that are played by private education partners towards improving schools'/pupils' academic performance in Kilimanjaro Region. What resources do private partners assist the government towards improving the schools'/pupils' academic performance was assessed as a key variable. Then later the actual

contributions of each intervention implemented by private educational partner(s) towards improving schools'/pupils' academic performance were determined.

## 2. METHODOLOGY

This manuscript is based on a research which was conducted in Moshi District Council and Moshi Municipality in Kilimanjaro Region, Tanzania. The places were selected purposively due to the facts that they had many private educational partners which they had been collaborating with since the 1960s (URT, 2014a). Furthermore, Kilimanjaro is among the regions that have been doing better in standard seven national examinations for a number of years. So, the study was meant for determining whether conducive school environment for teaching-learning as well as good academic performance of primary schools in Kilimanjaro Region is associated with the interventions and kinds of support provided by private partners through the PPP model.

Eight primary schools were chosen from a group of sixteen PPP primary schools (with PPP schools) and another eight primary schools were also chosen from a group of fourteen public primary schools that had no support from any private partner (without PPP schools). A total of sixteen primary schools were chosen. Moreover, two teachers and four pupils studying in standard seven were randomly selected from each of the chosen schools.

Data based on the roles of private educational partners were collected through a structured questionnaire and observation through the use of a checklist of items. Key informant interviews using an interview guide were also used to collect qualitative information. Secondary data about school academic performance for the years 2010 to 2014 (with and without PPP schools) were collected from the studied schools and from offices of the District and Municipal Education Officers. The collected quantitative data were analyzed using IBM Statistical Package for Social Sciences (SPSS) and MS Excel software whereby descriptive statistics were computed. Moreover, inferential analysis was done whereby difference-in-difference (DiD) and ordinal logistic regression models were run to examine the influence of PPP interventions on improving schools'/pupils' academic performance. DiD technique was used to test the first hypothesis whereby the difference in-different (counterfactual) of school academic performance between with and without PPP schools was calculated. The DiD method has advantages of controlling for unobserved characteristics of the individual and time invariant. It has the ability to show *what would have happened* if a participant had not participated in a programme (White, 2008), hence, the comparison of what happened to the outcome *with* and an outcome *without* an intervention. If the two groups were identical, except only that one group participated in a programme and the other one did not, then DiD method guarantees that any observable difference in the outcomes is associated with the programme that is PPP interventions in this paper (Paul *et al.*, 2011). Thereafter, ordinal logistic regression model was used to test the second hypothesis. School academic performance for the year 2015 was considered

as an outcome (Y) in the ordinal logistic regression model used. Three categories of school academic performance were determined: 2 = best performance (80 – 100%), 1 = average performance (41 – 79%) and 0= poor performance (0 – 40%) whereby best academic performance was the rank level of reference in this study.

### 3. RESULTS AND DISCUSSIONS

Largely, the discussion of this chapter focuses on various educational interventions implemented by private partners and the extent to which the PPP model improved schools'/pupils' academic performance in Kilimanjaro Region.

#### 3.1 EDUCATION LEVEL OF TEACHERS

The study findings presented in Table 1 show that most of the studied schools were staffed with teachers with certificates in education (59.5%), the level that is recognized for teaching in primary schools in Tanzania. This implies that the government ensured that a basic factor for quality education provision is adhered to by all schools. Schools with PPP were found to have teachers of more education levels (Diploma and Degree in Education) than teachers in schools without PPP. URT (2014b) reports that a well-qualified teacher is an important factor for effective delivery of lessons due to mastering subject matters and understanding of pedagogic content knowledge, a condition which influences the process of providing quality education. Various private educational partners, particularly Childreach International and FT-Kilimanjaro, have implemented different interventions that have improved teaching skills of teachers (capacity building). These include financing teachers to attend various on job training seminars, payment of salaries to teachers teaching remedial classes in PPP schools and exchange programmes of teachers between PPP school and a school from outside the country. This paper reveals that teachers in PPP schools have a better chance to improve their teaching skills and carrier compared to teachers in schools without PPP.

Table 1: Education level of teachers in schools With PPP and schools Without PPP Interventions (n=32)

Levels of education	With PPP		Without PPP		Total	%
	Male	Female	Male	Female		
Primary education plus modules	0	0	1	0	1	3
Certificate in education (Form four only)	2	4	6	3	15	47
Certificate in education plus form six	2	1	0	1	4	12.5
Diploma in education	2	3	1	1	7	21.5
Degree in education	1	1	2	1	5	16
Total	7	9	10	6	32	100

Source: Authors' survey

#### 3.2 TOTAL NUMBER OF TEACHERS AND PUPILS IN THE SCHOOLS STUDIED

The findings in Table 2 show that schools with PPP had more pupils (6,269) compared to schools without PPP where the total number of pupils was 3,220. The findings indicate that schools without PPP had a low Pupil: Teacher Ratios (PTR) of 1: 28 compared to schools with PPP with a PTR of 1: 42. Also, Table 2 indicates that

there was a variation of PTR; some schools had high PTR while others had low PTR. Many schools with PPP were found to have higher PTR than the set standard of 1: 45. This indicates that schools with PPP had conducive teaching-learning environment hence many parents are attracted to enrol their children there, a situation which causes the schools to have many pupils compared to the number of teachers available. Commenting on this during a focus group discussion, a board member of Shirimatunda PPP school said:

High school PTR is thought to be caused by high enrolment rate in the schools due to school environment being good, a situation which is influenced by the interventions done by private educational partners.

In regard to this, the head teacher of Benjamin Mkapa Primary School said:

Some of the parents are lobbying the school authority strategically for their children to be enrolled or transferred to the school (with PPP) due to the fact that the school has conducive environment for teaching and learning for both teachers and pupils.

Table 2: Pupils teacher ratio (PTR) to schools with and schools without PPP interventions (n = 32)

With PPP Schools				Without PPP Schools			
Name of school	Pupils	Teachers	PTR	Name of school	Pupils	Teachers	PTR
Mandela	1065	23	1:46	Kiborloni	734	22	1:33
Kaloleni	1069	20	1:54	Mnazi	757	21	1:36
Jitegemee	996	20	1:50	Msandaka	388	14	1:28
J.K.Nyerere	426	19	1:23	Dr.Omary Juma	195	12	1:16
Kilimanjaro	709	19	1:37	Kisaseni	153	6	1:26
Shirimatunda	718	27	1:27	Himo-Poyo	365	15	1:24
Benjamin Mkapa	1025	16	1:64	Rongoma	363	18	1:20
Ronga	261	4	1:65	Kidia	265	6	1:44
Total	6 269	148	1:42		3 220	114	1:28

Source: Authors' survey

### 3.3 EDUCATIONAL INTERVENTIONS IMPLEMENTED BY PRIVATE PARTNERS TO PPP SCHOOLS

It was found that the private educational partners that were collaborating with the public primary schools had implemented a number of interventions that focused on improving pupils' academic performance in Kilimanjaro Region in various ways. The findings, as presented in Table 3, show three categories of interventions that were implemented by private educational partners in the studied schools. The identified categories are renovation and construction of school infrastructure, provision of teaching-learning materials, and financing/provision of other quality education support services. Each of the identified categories comprised various types of interventions/roles as described and discussed in detail in the following sub topics.

#### 3.3.1 RENOVATION AND CONSTRUCTION OF SCHOOL INFRASTRUCTURE

The results in Table 3 show that school infrastructure was the second most important role (40.6%) that was implemented by private educational partners in public primary schools. Also, the results show that school infrastructure was the first category to use large amount of money (70.7%) compared with any other category of academic performance interventions implemented by private educational partners for the previous four years

(2010 to 2015) in Kilimanjaro Region. The implemented interventions that focused on improving and increasing school infrastructure included renovation and construction of classrooms, toilet holes, roofed corridors, teachers' houses, libraries, modern kitchens, dining halls, teachers' offices and provision of desks, chairs and tables. Other school infrastructures implemented in this category were installation of water system, construction of school fences and building playing pitches for pupils and teachers.

Adequate number of classrooms had a very significant positive effect on students' attendance rates while the overcrowded classrooms are associated with decreased levels of pupils' engagement and, therefore, decreased levels of learning (Buckley *et al.*, 2004). The study findings reveal that availability of adequate number of classrooms reduces pupils' overcrowdings hence gives teachers flexible instructional space for effective teaching, and pupils with complex or special educational needs are easily served. Furthermore, evidence in Bangladesh, Ecuador, India, Indonesia, Peru, and Uganda indicates that teachers in schools with enough teachers' houses have, on average, 10% less absenteeism than teachers in schools with deficient houses (Branham, 2004).

During focus group discussions most of the parents and school board committee members declared that:

The intervened school infrastructures to our school have close and direct influence toward improving the quality of primary education; and that's why the government and private partners are spending a lot of money on them.

The results coincide with those of a study by Rose (2006) who asserted that availability of adequate numbers of school infrastructure is a key important condition to be met by academic institutions as these influence teachers and pupils to fully participate in the teaching-learning process. And thus, the study findings indicate that there **is a direct relationship between school infrastructure and educational performance**, and that investments in educational infrastructure contribute to improve the quality of education and the economic performance of countries.

### **3.3.2 FINANCING OTHER SUPPORT SERVICES TO QUALITY EDUCATION**

The results in Table 3 show that financing quality education services was the first intervention (50%) that was mostly implemented by private educational partners to the public primary schools in Kilimanjaro Region. Also, Table 3 indicates that financing quality education services was the second category to use huge amount of money (26.3%) compared to other categories of quality education improvement interventions done by private partners for the previous four years (2010 to 2015) in Kilimanjaro Region. Farah and Rivzi (2007) asserted that quality education improvement processes should ensure the availability of other support services other than school infrastructure and teaching-learning materials. Among the projects that were implemented to ensure that educational support services are available to PPP schools were installation of water systems (tap points, pump machine and water storage tanks), provision of school uniforms, shoes, bags, provision of food/cooking materials (maize, beans and sugar) as well as construction of play grounds and provision of playing tools. Other

interventions that focused on this category were provision of free transport to teachers, payment of school fees to pupils from poor families, construction of school fences, financing seminars to members of the school board and teachers teaching lower classes. The findings show that, through the use of the PPP model, many schools were connected with water system (tap points, pump machine and water storage tanks). Also, provision of food/cooking materials to pupils was among the services that were mostly implemented to schools in Kilimanjaro Region for the year 2010 to 2015.

During a focus group discussion at Ronga Primary School, most parents concluded by saying that:

The mostly implemented projects by private educational partners at our school have assisted to improve pupils' academic performance as previously pupils lacked concentration while learning in the classroom due to remaining starved for the whole day. Also, previously, our pupils were wasting a lot of time just walking long distances for fetching water.

White (2009), in his study on the government expenditure to primary education in India, found that quality education support services are more costly financially that's why pupils in public and community schools lack access to them hence need of assistance from private educational partners. The study findings showed that financing for sufficient availability of water services at school assists to increase pupils' attendance hence improved pupils' academic performance. This urges decision-makers and key educational stakeholders to increase investment in availability of clean and safe water in primary schools as this will help keep the promise of meeting the sustainable development goals of access to quality primary education. Furthermore, the study revealed that availability of school feeding programmes enhances pupils' attendance and their participation in extra school curricular activities. Also, Ahmed (2004) suggests that financing availability and accessibility of school food programmes plays a great role in improving pupils' behaviour, cognition, and academic performance. Wearing of school uniforms was considered being among the vehicles to improve pupils' behaviour, discipline, school attendance and academic achievement (Breitenbach, 2010). Based on school uniform during a focus group discussion with parents at Kaloleni Primary School, it was said that:

"Special school wears generate a tangible sense of identity and belonging among pupils, and subsequently helps to create a safe environment both in and out of the school".

Commenting on the same, a school board member at Ronga Primary School also said that:

*"A School uniform acts as a socioeconomic leveller and ensures* that every child is treated equally in the eyes of their peers, so I do insist that all parents should ensure that their school-going children are provided with proper school uniforms."

Also, a study conducted in rural Southwest Georgia found higher rate of school absenteeism among pupils with no proper school uniforms compared to pupils with proper school uniforms (Russell, 2012).

### **3.3.3 PROVISION OF TEACHING AND LEARNING MATERIALS**

This paper revealed that government entities and private educational partners in Kilimanjaro Region collaborated with the aim to ensure that all pupils/schools had enough number of teaching and learning

materials. But the results in Table 3 show that provision of such materials was rarely done (9.4%) to PPP schools. Also, the results showed that private educational partners spent little amount of money (3.0%) on provision of teaching-learning materials compared to other categories of quality education improvement interventions done during the previous four years (2010 to 2015) in Kilimanjaro Region. The study findings illustrate that few numbers of subject text books, computers, desks, tables, chairs, exercise books, pens and pencils were supported and provided to studied PPP schools/pupils.

Chonjo (1994), who, in his study, assessed the quality of education in Tanzanian primary schools, concluded that the critical shortage of teaching-learning materials, particularly textbooks and other teaching-learning materials, has affected the quality of education a great deal. During data collection pupils' noises were heard from far distances. One would think that pupils were playing because of the loud noise they were making, as they scrambled for a textbook, the only one that was available for them to share. Governments' investment in textbooks in developing countries is often little and unpredictable; thus serious shortage of textbooks affects academic performance of pupils (UNESCO, 2016).

The study findings revealed that lack of electricity and absence of safe and standard classrooms caused some schools not to be provided with computers as well as not being connected to internet services by private partners. These results correspond with those of a study by Rose (2009) who found that lack of electricity in learning institutions hinders improving schools'/pupils' academic performance due to the fact that learners are not doing practical lessons based on modern tools recommended in their training curricula such as computers. During a key informant interview the Head teacher of Himo-Pofo Primary School it was emphasised that:

Availability and accessibility of teaching and learning materials, particularly subject text books and desks, are still a big challenge in this school, a situation which hinders the process of providing quality education in my school.

The study findings indicate that a considerable number of pupils in some of primary schools in Kilimanjaro Region were still studying in poor conditions from a ratio of one desk to seven pupils (1:7), making it harder for them to perform well academically. Imbalance number between pupils and subject textbooks caused some pupils not to concentrate on the taught subject topic (s). This bad education situation causes some pupils to complete standard seven with minimum literacy and numeracy competencies compared to the expected ones. Furthermore, the study results showed that private educational partners have improved the learning environment by increasing the desk to pupil ratio to the recommended government target of 1: 3 from the previous ratio of 1: 10.

The study findings indicate that inadequate number of teaching-learning materials (subject text books, desks, tables and chairs) is among the factors that lead to poor quality of education.

Table 3: Mostly Implemented interventions by private educational partners to PPP schools (n= 32)

Roles played	Teachers' Responses		Total amount used (Tshs)	Per cent
	n	%		
Renovation and construction of school infrastructures	13	40.6	717,016,760	70.7
Provision of teaching learning materials	3	9.4	28,642,865	3.0
Financing other quality educational support services	16	50	267,322,125	26.3
<b>Total</b>	<b>32</b>	<b>100</b>	<b>1,012,981,750</b>	<b>100.0</b>

Source: Authors' survey

### 3.4 THE EXTENT TO WHICH PPP MODEL HAS IMPROVED SCHOOLS'/PUPILS' ACADEMIC PERFORMANCE

Literature on the contribution of the PPP model shows that the extents of PPP model contribution to improving the quality of public services such as education differ from one country to another one and sometimes the variation can be experienced within the same country (World Bank *et al.*, 2014). The study analyzed the actual contribution of the PPP model to improving the quality of primary education in Kilimanjaro Region, and the results are discussed in the following sub-sections.

#### 3.4.1 PPP MODEL AND SCHOOL/PUPILS' ACADEMIC PERFORMANCE

The study examined the extent to which the interventions implemented by private educational partners have contributed to improving schools'/pupils' academic performance in Kilimanjaro Region. The results in Table 4 show that schools with PPP had better academic performance with a mean score of 14.6, compared to schools without PPP which scored a mean of 8.9 with a mean difference of 7.5. Furthermore, the results in Tables 4 show that there was statistical difference in school academic performance in standard seven national examinations between with PPP and without PPP schools. In regard to these results, the first studied null hypothesis (There is no statistically significant difference in academic performance between schools with and those without PPP in Kilimanjaro Region) is rejected, and the alternative hypothesis is confirmed. Thus, the most plausible reason that caused this difference is that the PPP schools received various types of educational support that assisted to improve schools'/pupils' academic performance while the other group (without PPP schools) did not receive such interventions.

Table 4: Difference in difference (DiD) in the pupils' academic performance in Std Seven National Exams between with and without PPP schools(n = 32)

School	Without PPP		Differences	Schools	With PPP		Differences	DiD
	Before	After			Before	After		
Kiborloni	79	85	6	Mandela	78	99	21	15
Mnazi	80	91	11	Kaloleni	78	92	14	3
Rongoma	78	91	13	Jitegemee	79	97	18	5
Msandaka	76	79	3	J.K.Nyerere	77	98	21	18
Kisaseni	77	86	9	Kilimanjaro	80	100	20	11
Kidia	70	75	5	Shirimatunda	78	84	6	1
Himo-Pofo	77	85	8	Ronga	76	79	3	(5)

Dr.Omary Juma	76	92	16	Benjamini Mkapa	79	93	14	(2)
Total			71				117	60
Mean			8.9				14.6	7.5

$p = 0.008$ ; Source: Authors' survey

### 3.4.2 ACTUAL CONTRIBUTION OF PPP INTERVENTIONS TO SCHOOLS'/PUPILS' ACADEMIC PERFORMANCE

After assessing the contribution of the PPP model to pupils' literacy and numeracy competencies, the study used an ordinal logistic regression model to examine the extent to which each PPP intervention contributed to improving schools' academic performance. The model was run based on schools' academic performance for the previous five years, 2010-2015. Literature on the PPP model and education argues that the PPP model does offer a considerable contribution towards improving the quality of education provided that the PPP framework is well designed to provide conducive environment for both partners to interplay their roles. The researcher conceptualizes and hypothesizes that PPP intervention as independent variables do influence schools'/pupils' academic performance. The outputs of ordinal logistic regression model in Table 5 show that renovation or construction of classrooms, teachers' offices, and modern kitchens as well as construction and connection of water systems/points to the school variables had statistically significant influence on the chances of improving pupils'/schools' academic performance at best level ( $p < 0.05$ ). These findings do support results of a study by Patrinos (2009) who found significant influence of the number of classrooms and availability of water sources within school compounds on improving students' academic performance. Other remaining variables entered in the model had positive influence on pupils'/schools' academic performance, although they were not statistically significant at 0.05. The extent to which each PPP intervention that was entered in the model contributed to improving the academic performance of the studied primary schools is described in the following paragraphs.

Table 5: Outputs of ordinal logistic regression model ( $n = 32$ )

Variables	B	S.E.	Wald	P-value	Exp (B)	95% C.I. for Exp(B)	
						Lower	Upper
Classrooms renovated or constructed by PPP	2.430	1.785	2.124	0.032*	3.789	0.235	6.045
Desks provided by PPP	0.020	0.0212	1.013	0.712	1.123	0.679	1.032
Toilet holes renovated or constructed by PPP	0.403	0.356	1.354	0.156	1.212	0.563	3.245
Teachers' houses renovated or constructed by PPP	0.645	1.375	1.342	0.314	4.235	0.218	2.765
Teachers' offices renovated or constructed by PPP	0.218	2.678	2.213	0.035*	3.567	0.672	1.103
Whether PPP provided food	0.0268	1.182	1.367	0.378	4.782	0.569	0.567
Whether PPP constructed modern kitchen	0.719	1.387	1.173	0.023*	1.756	0.0542	0.231
Whether PPP constructed/connected water system/points	0.691	0.648	3.021	0.034*	4.174	0.0536	0.875
Books provided	0.004	0.003	1.023	0.062	1.123	0.752	0.739
Whether PPP provided exercise books, pens and pencils	0.876	0.478	6.134	0.312	0.003	0.0489	0.253

Whether PPP financed seminars to school committee members and teachers	0.284	1.105	5.084	0.673	0.001	0.0203	4.184
Constant	16.025	11.286	1.672	0.0754	0.035		

\*Statistically significant at the 5% level

Renovation or construction of classrooms, as shown in Table 5, had positive influence on chances of improving pupils academic performance in the national examination ( $\beta = 2.430$ ) at  $p < 0.05$ . The Wald statistic value implies that if other factors in the model remain constant, an increase in number of classrooms by a unit will increase the likelihood of improving the schools'/pupils' academic performance (best performer) by 2.124 chances. The exponential  $\beta$  coefficient (odds ratios) shows that renovation or construction of classrooms was 3.789 times more likely to improve the quality of education. This finding is supported by an observation reported in a study by Ravallion (2001) that revealed the need for renovating and constructing more classrooms in rural primary schools of Southern Uganda so as to provide conducive school environment for teaching and learning between pupils and teachers. The study findings also showed a maximum of 93 pupils' classroom ratio (PCR) in the surveyed primary schools. For all the surveyed schools to have a sufficient PCR, they were supposed to have 1,511 classrooms, but there were only 1,016 classrooms with a deficit of 495 classrooms. In regard to these findings, more interventions focusing on constructing classrooms in the studied areas are needed in order to cope with the larger number of pupils enrolled in the primary schools. If the government and private partners respond positively to this role, the school academic performance in Kilimanjaro Region will improve.

Construction of modern kitchens was also found to have significant influence on improving the schools'/pupils' academic performance in Kilimanjaro Region. The results in Table 5 show that modern kitchens had a positive relationship and significant influence on the improvement of the schools'/pupils' academic performance ( $\beta = 0.719$ ) at  $p < 0.05$ . The Wald statistic value (1.173) implies that if other factors in the model remain constant, having a modern kitchen will increase by 1.173 chances of school academic performance improving (best performer). So, more time will be available for study, time provision of food and saving funds for other utilities. The exponential  $\beta$  coefficient (odds ratios) shows that renovation or construction of modern kitchens was 1.756 times more likely to affect the school from improving pupils' academic performance. These findings are not surprising; they are in line with findings of a study by Jyoti *et al.* (2005) who found that modern kitchens that use small energy do influence and contribute to the process of improving pupils' academic performance at school. The findings also showed that most of the public schools in Kilimanjaro Region were found to use more of the traditional kitchens that needed a lot of energy and were more time consuming. In regard to this, finding more interventions focusing on the construction of modern kitchens that use less energy is highly needed to ensure qualities of good education are adhered to in the studied public primary schools.

Construction and connection of water systems/points to the school was also found to have a positive relationship and a significant influence on the improvement of school academic performance ( $\beta = 0.691$ ) at  $p < 0.05$ . The

Wald statistic value of this variable implies that if other factors in the model remain constant, having constructed and connected water storage/points to the school increases the likelihood of improving pupils' academic performance (best performers) by 3.021 chances. The exponential  $\beta$  coefficient (odds ratios) shows that construction and connection of water systems/points was 4.174 times more likely to affect the school from improving pupils' academic performance. This finding is supported by an observation reported in a study by Lwaitama (2008) and Mpamila (2007) that revealed the need of connecting schools with water services as well as providing their water storage facilities. This intervention had reduced the pupils' chore of fetching water from far distances hence concentrate on learning while at school. Also, results showed that pupils in the studied public schools were wasting a lot of time for fetching water from far distances of about 750 metres. Intervention based on construction of water systems and connecting schools with water services around need to be capitalized so as to reduce wastage of time used on fetching water hence more time will be used on teaching and learning by teachers and pupils respectively.

The summarized results of the analysed logistic regression model shows that the omnibus (goodness of fit) coefficient test value was less than 0.05 (0.022) indicating that the model was highly significant and fitted the variables while the Hosmer and Lemeshow test showed an insignificant value that was above 0.05 (0.890) indicating that the model was also worthwhile. Also, the outputs of the logistic regression model indicated that between 53.8% and 72.5 % of the model variability was explained by the independent variables entered in the model. In regard to these results, the studied second null hypothesis educational interventions implemented (kinds of support provided) by private educational partners does not have statistically significant influence on improving the schools'/pupils' academic performance at best level in Kilimanjaro Region) is rejected and the alternative hypothesis is confirmed.

#### **4. CONCLUSIONS AND RECOMMENDATIONS**

Private educational partners that collaborated with primary schools in Kilimanjaro Region implemented a number of educational interventions that have helped to reduce educational challenges facing primary schools. These included renovation and construction of school infrastructure, provision of teaching and learning materials and financing other quality education support services. In view of these results, it is concluded that the PPP model is an effective development tool that does assist the government on improving pupils' academic performance in a given school. In connection to this conclusion, it is recommended that authorities of Moshi District and Moshi Municipality should set strategies that will inspire more private development partners to continue supporting and investing in improving schools'/pupils' academic performance in Kilimanjaro Region. PPP educational interventions were found to have a significant contribution to improving schools'/pupils' academic performance whereby schools with PPP interventions were found to have better academic

performance compared to schools without PPP. Based on this result, it is concluded that PPP schools stand a good chance to improve schools'/pupils' academic performance. In regard to this conclusion, it is recommended that educational authorities in Kilimanjaro Region should form plans for continuous collaboration in the education sector with private partners, particularly to primary schools facing educational challenges in the region.

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