Effects of public private partnerships on education service delivery in Uganda: *A comparative analysis of technical efficiency of secondary schools in Mukono district.*

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ABSTRACT

The 2015 Public Private Partnership Act makes provision for policy stability in order to reduce private sector uncertainty on investment, develop institutional capacities for technical analysis, monitoring and management of public private partnerships (PPP Act, 2015). Through the use of a comparative research design, this paper examined whether secondary schools under Public Private Partnership (PPP) arrangement are more efficient in regard to UCE pass rate and enrollment when compared to schools which are not under partnership. The study further examined whether management styles impact efficiency of secondary schools. Using primary data from a sample of 95 secondary schools in Mukono district we find that Non-PPP schools are more efficient than those under PPP in regards to pass rate. However, in respect to enrollment, schools under PPP were found to be more efficient and management was found to be significantly impacting on the efficiency of schools. On this ground a number of recommendations are made to ensure that PPP is of greater benefit to Ugandans.

Key words: Public Private Partnerships, Efficiency, Education, schools, Uganda.

1. Introduction

Secondary school education provisioning is greatly determined by the quality of systems which underpin clients' needs. Systems' strengthening for Public Private Partnerships is critical for equitable resource sharing. Even when resources are allocated for provision of services, a large portion of the resources might not reach the intended clients, in some cases, services may not even be provided because frontline providers do not show up to work, are not well equipped resulting in to poor delivery and thus not benefiting the intended beneficiaries (Abdullah, 2006a, Johnes, 2013).

In recent past, many developing countries because of the growing importance of service sector to their economies, have promoted a number of interventions to supplement the traditional means of service delivery through fiscal budgets; the role of measures like Public Private Partnerships is now fronted as another means to achieve the desired education out comes (Ahmed, 2000). Public Private Partnership (PPP) refers to public and private sector actors, working together on the basis of shared objectives, strategies and agreed monitoring and evaluation criteria (Ahmed, 2000 in Masereka, 2009).

In spite of the continued financial and human resource support through the Public Private Partnerships, there remains a big gap in education service delivery in Uganda. Education outcome such as pass rate, enrollment, and progression are still stagnant. This has put the PPP interventions in question particularly whether their promotion in the education sector has had any significant impact or not. Part of the problem is the failure to understand the actual shared contribution of the private sector and public sector within the framework of an established partnership. There is need to understand the extent to which such partnership contributes to the efficiency in the provision of education generally. In spite of the above, few researchers have endeavored to examine the impact of PPP on education service delivery in Uganda (World Bank.2011, Grimsey, 2002). The study therefore investigated the impact of public-private partnership on education service delivery by comparing the efficiency of PPP schools (Schools under partnership of the government and Private sector) and Non- PPP schools (Purely government and Purely private) in Uganda taking a case of Mukono district.

In Uganda, a national PPP framework policy was put in place in 2010 to guide the stake holders in conducting their operations. The framework defines public private partnership as a medium to long term contractual arrangement between public and private sector to finance, construct, manage and or maintain a public infrastructure or the provision of public service; in this it involves the sharing of risks and rewards, and delivering desired policy out comes that are in the public interest.

This PPP framework applies to Uganda government ministries, autonomous government departments, Local authorities and statutory corporations directly responsible for delivering public services. It applies to selection and development of public infrastructures and any related services as potential PPP in the context of meeting Uganda's overall economic and social development objectives and priorities.

In education sector, due to continued pressure to meet education for all goals, Ministry of Education and Sports adopted the overarching program of the PPP (the Universal Secondary Education plan) after the Universal Post Primary Education and Training (UPPET) was launched in February 2007. In 2007 Uganda became the first country in sub-Saharan Africa to introduce and implement the Universal Secondary Education (USE) program, USE as a component of UPPET covers lower secondary education (senior one to senior four). The main reason for the creation of the USE program is to address the large inflows of student from primary level that is to say to create access to secondary education.

The partnership means that, a student who has passed at primary level can study in a private school implementing USE, and these schools are called PPP schools; under the partnership. Private schools apply to the Ministry of Education and Sports (MoES) and must meet a set of certification and quality benchmarks. These include: (i) being registered with the MoES, (ii) have adequate infrastructure, (iii) show demonstrated support from locally elected officials membership and education officials, (iv) institute a board of governors with government and parental and (v) have sufficient certified teaching staff (Habyarimana, 2015).

Schools under the partnership, sign a Memorandum of Understanding (MoU) with the government through which they are given a capitation grant of 47,000 per child enrolled to cover non-boarding fees, and that the school will not charge any other non-

boarding fee to the student. Government schools under USE are called government aided schools. Government aided schools have teachers from which the wage is paid by government and receive instruction materials. The capitation grant to the government aided schools is therefore lower.

The program is phased into the entire school over the course of several years, with Senior 1 in the first year, and additional grades added as the first cohort progresses through secondary education. Participating schools have control over the student selection process, may enroll as many students as they want, and can continue to enroll non-USE students (private students) for a fee. Participating private schools must institute a board of governors that makes decisions concerning budgets and expenses. The board of governors is expected to administer the property of the school as well as ensure that the school is operated in such a manner as to ensure the learning and safety of students and staff.

The number of secondary schools participating in PPP has steadily grown in Uganda. As of February 2010, there were 545 participating private schools. This number has grown to 874 schools as of the end of the 2014 school year. Mukono district in particular has 32 PPP schools. The percentage of USE students enrolled in private schools has grown from 25% in 2008 to 45% in 2014-2015 (MoE, 2015). Schools that participate in the PPP program in Uganda are typically not elite private schools catering for wealthier families. PPP schools are usually started by communities or entrepreneurs in response to the lack of government-operated schools in the area. As such, these schools are not the high performing elite schools typically associated with the private school provision in advanced economies.

Although there is growth in public private partnership in education sector with an aim of providing education for all, a big efficiency gap remains. Part of the problem is the failure to understand the actual shared contribution of the private sector and public sector within the framework of an established partnership. There is need to understand the extent to which such partnership contributes to the efficiency in the provision of education generally.

The general objective of this study was to find out whether secondary schools under public private partnerships are more efficient in education service delivery as compared

to secondary schools which are not under public private partnership in Uganda taking a case of Mukono district. The intention is to examine whether the inputs in the two types of secondary schools are used appropriately to produce best output in terms of pass rate in UCE exams and number of students enrolled, in this the paper examines the question; *How different is the level of technical efficiency among PPP schools from that of non PPP schools?*

The rest of the paper is organized as follows. Part 2 presents a literature review while part 3 presents methodology. Part 4 Presentation and interpretation of findings and part 5 conclusions, and recommendations

2. Literature review

Technical efficiency measures the pure relation between inputs and outputs taking the production possibility frontier into account, with technical efficiency we look at what level of output can be produced with the use of a given level of inputs (Mandl, Dierx and llzkovitz, 2008), other researchers like Fredriksen (2010) go on to define technical efficiency as the effectiveness by which a set of inputs is used to produce out puts. It also refers to the capacity of line agencies to use allocated resources in a manner that ensures the efficient and effective delivery of public goods and services (World Bank, 1998 in Boateng, 2014).

According to Boateng (2014), to be technically efficient, a government should put in to consideration a number of things that is to say; it should be performance-orientated; be able to remit funds to schools on time; ensure that all funds leaving central government reach the intended beneficiaries; schedule supervisory visits to schools; and ensure that schools remain accountable by publishing and regularly auditing their accounts. However, a number of African countries even with tireless efforts fail to attain efficiency with reasons mainly surrounding the education system. For instance, large school size makes management very difficult, as well as low teacher to student ratio (Mandl et al, 2008).

Studies by (Afonso and St. Aubyn, 2006; Nyanya 2015) cited other factors outside the education system. According to these studies, efficiency scores changes significantly when taking environment factors such as GDP/capita and education of parents into account. Basing on their studies even some countries outside Africa like Portugal,

Hungary and Spain where seen to be performing inefficiently mainly due to their low GDP, this is confirmed by the OECD especially for Portugal and Finland. Such findings portray the need and importance of improving our knowledge on the sources of efficiency as with this it can be helpful in identifying and working on the sources of inefficiency; below are the various determinants of technical efficiency and there effect on the education sector performance

In regard to class size, (Cooze, 2001) found out that there is some evidence to show that 'learning group' size increases student's achievement and in this he put it that a smaller size of the class enables the teachers to have some time with almost each of the students which is later transformed in to better performance. Related to the above however, (Thomas, 1982) found out that even within the same classrooms the amount of time teachers spend with each student varies considerably and is associated with differences in achievement for each student, and as a result students would perform differently basing on how much time the teacher spends on each student since verbal aptitude, and relationship between student and teacher directly impacts on the student's performance, this is in line with Summers and Wolfe, (1977); Levin, (1969); Hanushek, (1981) and Thomas (1977).

According to (Geeta,1996), whereas traditionally most governments have preferred to keep all or most of educational production in the public domain for fairness reasons, shortage in budgetary resource mainly as the number of students increase and as a result of this many governments have re-examined the role of the private sector in education. The above situation is really true even in Uganda today where the private sector is highly involved in running and management of schools, single handedly or in partnership with the government.

In most cases, private schools are more efficient than publically managed schools, something which is due to a number of reasons most notably the fact private schools are accountable to parents who pay their fees, this is very true in Uganda where parents try to look out for those better performing private schools however expensive they are since they ensure their children will pass well. The other point highlighted is the high competition among providers which ensures good quality of service (Geeta, 1996).

According to Odumbe, simatwa and Ayodo (2015), teacher's qualification plays a great role in defining efficiency of a school, teachers qualification in their study was found to be having a positive influence on the performance of students, in line with above they further show that teacher qualification and training, contribute positively to the kind of output that is obtained in the learning process something which is consistent with reports by Karani et al (1995), who reported that, teacher resource is one of the most important inputs into the education system, and their efficient management and utilization is critical to the quality of learning outcomes. Nyanya (2015) also supports the above by finding the teachers' academic level as a major factor in determining performance he shows that due to this in Nigeria many educational institutions where being opened up to help teachers with no required academic and professional training, he identified Kenya to be in the same boat as Nigeria, he further identified other researchers like Eshiwani et al (1988) to have established that the level of education of a teacher matters in school performance in examinations, looking at the situation in Uganda this is really true as many schools keep on fighting for qualified teachers to employ in their teachers (Sempungu, 2011).

In regard to use of facilities, Nyanya (2015) and Gilbert (1996), have shown that there is a direct relationship between the qualities of school facilities available and school products. In this, a close relationship exists between the physical environment and academic performance of students. School facilities consist of all the building in the schools for both academic and non-academic activities, equipment for academic and non-academic activities, areas for sports and games, landscape, farms and gardens including trees, roads, and paths. Other physical facilities include furniture and toilet facilities, lighting, acoustics, storage facilities, ICT, food services, special facilities for the physically challenged people. It should be noted that teaching and learning processes do not take place in a vacuum but rather in an environment well-structured to facilitate learning.

Stoner, Freeman and Gilbert (1996), described the environment of an institution as all elements relevant to its operation including direct and indirect achievement elements. The importance of facilities is also identified by (Odumbe, simatwa and Ayodo 2015),

who in the view of their respondents showed school performance to be influenced more by the effective use of the prevailing school facilities. Okories (2001) also supports the above by showing that the utilization of the school facilities brings about fruitful learning outcomes as it stimulates and motivates students, which does not differ a lot from (Yang, 2014) who identifies school facilities and academic achievement of students to be associated directly. In other words, other things being equal, as school facilities increase the number of good successes or promoted children increases, and vice versa.

3.0 Methods

3.1 Research design and study setting

In this study we adopted a comparative research design; and in this it compared secondary schools under PPP with those which are not under PPP. Comparative research design is used in a number of studies because it is distinctive in measuring the independent variable in categories or groups (McMillan, 2008), this was true even with this research as the independent variable PPP was compared to different groups which are; schools under public private partnerships and those outside partnerships. Our interest was in studying the effect of PPP in education service delivery, the survey concentrated on comparing selected PPP and Non PPP (Purely private and purely public) secondary schools in Mukono district.

3.2 Study sample and Data collection Method

The study was designed to survey secondary schools in Mukono district which are categorized in to schools under public private partnership and those which are nonpublic private partnerships. There are 32 schools under PPP and 93 which are Non PPP this makes a total of 125 schools and using Yamane (1967)'s formulae of sample size determination we narrowed down to 95 schools. This is illustrated below;

$$n \quad = \quad \frac{N}{1 + Ne^2}$$

Where   n   =   Sample Size

                  N   =   Total Population

                  e =   Confidence level

Therefore: $n = \frac{125}{1+125(0.05)^2} = 95$ schools

3.2.1 Sampling

Our study used stratified simple random sampling in which the selection of study respondents was done by a Probability Proportional to Size (PPS) sampling method. Probability proportional to size (PPS) is a sampling technique for use with surveys or mini-surveys in which the probability of selecting a sampling unit is proportional to the size of its population. It gives a probability (i.e., random, representative) sample (Leedy, 1980). In other words, the number of respondents selected from each management category was based on the number of schools there.

Table 1: Distribution of number of secondary schools selected randomly by type of Management

Management	Number of schools	Percentage Proportion to total size	Number of schools selected
Public private partnership	32	26	25
Non- public private partnership	93	74	70
Total	125	100	95

3.2.2 Data collection Method

The study used primary data which was got from the selected schools in Mukono using a questionnaire, it was collected directly by the researchers from the school heads; these were mainly the head teacher, in some cases it was the deputy head teacher or some other person delegated by the school head to do so.

3.3 Study variables

Efficiency is best measured by comparing education expenditures with education outcomes (Winkler and Sondergaard, 2008), a number of variables were used to explain this relationship, the researcher looked at the output of the different categories of

schools in terms of number of pass rates and number of students attracted to the schools(school enrollment), the variables used included; exam results, education level of teachers, experience of the head teacher, education level of school heads, number of teachers, availability and adequacy of facilities. Below is a summary of the variables and their definitions. The stochastic frontier analysis was used to measure efficiency.

Table 2: list of all variables in the study and their measurements.

Dependent variable	Definition
Performance of schools	
• Pass rate)	Number of students with the preferred grades (in this case grade 1 to 3) as a percentage of all students who sat for the UCE exams.
• School enrollment	Number of students registered in the entire school
Independent variable	
School management type	Being under Public private partnership or not being in this partnership
Intervening variables	
Education level of teachers	Level of education attained by the teachers
Experience of administrators	Years in service of the top administrators in schools like head teachers, their deputies.
Facilities	Number of class rooms, libraries, laboratory and many others.
Number of teachers	Number of teaching personnel at all levels
Education level of school heads	Level of education attained by the school heads
Proportion of teachers with bachelor's degree	Number of teachers with bachelor's degree as a proportion of the entire number of teachers.

3.4 Measuring performance of schools

There is little consensus of opinion and much disagreement about how to measure service quality. One service quality measurement model that has been extensively applied is the SERVQUAL model (Shahin, 2005). However, due to concertation on Techinical efficiency this paper used the Stochastic Frontier model.

In economic literature it's difficult to measure performance of an organization that uses multiple inputs, researchers have adopted the concept of technical efficiency. In this study because school performance is an example of single output and multiple input production, the study adopts the widely used econometric approach for measuring technical efficiency based on the Stochastic frontier model.

The canonical formulation that serves as the foundation for other variations is the model developed by Aigner, Lovell, and Schmidt (1977) which is written as;

$$y = \beta' x + v - u,$$

Where; y is the observed outcome (in case of this study it is the output produced by a particular secondary school in term of graduates with desired grades and number of students enrolled), $\beta'x + v$ is the optimal, frontier goal (maximal production output by the secondary schools) pursued by the individual, $\beta'x$ is the deterministic part of the frontier and v is the stochastic part (it accounts for random variation in output due to factors beyond the control of the school management for example natural calamities). The two parts together constitute the stochastic frontier. The amount by which the observed individual fails to reach the optimum (the frontier) is u, that is to say it is the inefficiency, in the case of education it would mean a school producing few students with the desired grades and enrolling few students even with employing a number of inputs like qualified teachers, good infrastructures.

The empirical secondary school production frontier is specified and identified in the form of Battese and Coelli (1992) model as follows;

$$Y_{it} = X'_{it}\ \beta' + Z$$

Where;

$$\beta' = (\beta_0, \beta_1, \beta_2, \beta_3, \beta_4);$$

X' = (XTR, AF, PTB, EOH, and ELH) these are the inputs used in production such that:

XTR is the number of teachers, that is to say the number of teachers in either the Public Private Partnership secondary school

AF is adequacy of facilities, this meant the level at which the available facilities are enough in relation to the school's demand.

PTB is proportion of teachers with bachelor's degree.

EOH is experience of school heads

ELH is education level of school heads

Y is the performance index of candidates in terms of pass rate, it is also performance index in terms of school enrollment.

One of the advantages of SFA over other measures of Techinical efficiency like DEA is the fact that it can be used to compare schools with similar inputs, adjusting for external characteristics, and comparing all schools against the most efficient schools. And also, it imposes a less restrictive functional form on the association between inputs and outputs and so, allows for managerial and technical efficiencies to be influential (Agasisti and Belfield, 2014).

The stochastic frontier estimation approach has the underlying assumption that all production units under examination are directly comparable. It may be the case, however, that the cost associated with a given level of production may be higher in one organization than in another for reasons that may reflect differences in the cost and production structures of different organizations rather than differences in efficiency.

4. Data Analysis and Results

We used a Cobb Douglas stochastic frontier Analysis to estimate the model, the five key basic inputs used were number of teachers, adequacy of facilities, education proportion (proportion of teachers with bachelor's degree), and experience of school heads and availability of facilities. Pass rate and enrollment of students were taken as the dependent variable. This analysis was done in STATA version 12. In addition to the descriptive statistics presented in Table 3, we also carried out a correlation analysis to ensure that the data was suitable for a stochastic analysis.

4.1 School production in puts

In this study, the researcher considered the following factors (proportion of teachers with bachelor's degree, percentage availability of facilities, percentage adequacy of facilities, number of teachers, experience of head teachers and education level of school heads) as the key production in puts, the following table describes these input a cross management.

Table 3: Results for mean difference in the major school in puts by management type in Mukono district.

Variable	Non- PPP	PPP	Difference in means	P- value
	Mean	Mean		
Proportion of teachers with bachelor's degree	0.662	0.542	0.12	0.0358**
% availability of facilities	91.2	82.67	8.53	0.0077*
% adequacy of facilities	69.76	56.7	13.06	0.0212**
Number of teachers	29.71	32.32	2.61	0.4475
Experience of head teachers	1.23	1.44	0.212	0.068
Education level of school heads	1.11	1.2	0.0857	0.289

Source: Primary data, **P<0.01, *P<0.05

Table 3 above shows that, there is a significant difference in means at 5% between Non- PPP and PPP schools in regards to proportion of teachers with bachelor's degree, the discrepancy in the means in favor of non PPP schools shows that non PPP schools have a high rate of exposure to high qualified teachers than PPPs schools which leads to higher level of efficiency when compared to Non PPP schools as supported by Abali and Odumayo (2006) who identified in their study that the quality and academic qualification of teachers remains a major determinant of the academic achievement of the students in all categories of schools, also Odumbe, simatwa and Ayodo (2015) supports the above by showing teachers qualification, experience and amount of education and knowledge to be positively related to performance in national examinations. Also Goldhaber and Dominic (2010) supports the above by sighting the

importance of having a degree and above in specific areas on the performance of students, according to their study teachers who were certified in mathematics and had Bachelor's degree and Masers degree in mathematics were associated with higher student mathematics test scores and in the same way teachers with Bachelor's degrees in science were associated with higher student science test scores, which brings out the importance of teachers qualifications on students' performance.

There was also a statistically significant difference in means in regards to percentage availability of facilities at 1%, and this explains high level of efficiency as supported by Eshiwani (1993) who shows availability of physical facilities such as classrooms, toilets, dormitories, libraries, dining halls, textbooks and learning aids such as overhead projectors as one of the factors responsible for inefficiency of schools. Owoeye (2011) also supports the view that availability of facilities plays a vital role in ensuring good performance of students, according to his study availability of facilities is potent to high academic achievement of students and in this he recommends the Government to provide material resources to rural/urban locations to enhance teaching and learning processes.

The above table also shows that percentage adequacy of facilities is statistically different across Non PPP and PPP schools. PPP schools recorded having 56.7% of the facilities in adequacy, On the other side the average percentage adequacy of facilities in non PPP schools was 69.76, meaning that on average 69.76% of the facilities were adequate in this type of schools. Looking at this the non PPP schools had a higher percentage of adequacy of facilities which explains higher efficiency when the two are compared due to the positive relationship between percentage adequacy of facilities and pass rate as seen in table 13. It should also be noted that according to the table above, there was insignificant difference in regards to numbers of teachers, experience of head teachers and education level of head teachers a cross Non PPP and PPP schools.

4.3 Correlation analysis
To understand whether there is a relationship between the school main school inputs and school out puts correlation analysis was employed and the results are presented in

the table 13. According to the table there is a negative, weak and insignificant relationship between the pass rate of students in the various schools and the experience of the head teachers, this implies that the higher the experience of the teacher the lower the pass rate of students and the lower the experience of the head teachers the higher the pass rate, this is likely to be due to the fact people who are highly experienced tend not to work hard looking at their past success which is not the case with people who are just entering a field as these people always try to work hard in order to prove that they can really perform. On the other hand, enrollment was also positively correlated with experience of head teacher though the correlation was not statistically significant. The study found out that there is a significant Positive but weak relationship between pass rate and the percentage availability of the facilities, in regards to enrollment there is a negative, weak and significant relationship at 5% between enrollment and percentage availability of facilities

Table 4: Results for correlation between Pass rate, enrollment and factors of efficiency (experiences of head teachers, Percentage availability of facilities and Percentage adequacy of facilities) for Secondary schools in Mukono district.

Efficiency Factors	Pass rate		Enrollment	
	Coefficient	P- value	Coefficient	P-value
Experience of Head teacher	-0.0397	0.702	0.127	0.219
Percentage availability of facilities	0.2194	0.033*	-0.228	0.026*
Percentage adequacy of facilities	0.1665	0.107	0.132	0.201
Education level of school heads	-0.021	0.838	0.146	0.159
Number of teachers	0.019	0.853	0.634	0.000**
Proportion with degree	0.165	0.110	0.127	0.221

Source: Primary data, **p<0.01, *p<0.05

4.3.0 Measuring technical efficiency of schools

In order to measure efficiency of schools a stochastic frontier production was estimated using the sfcross stata command. Cobb Douglas stochastic frontier Analysis was used to estimate the model, the five key basic inputs used were number of teachers, adequacy of facilities and education proportion (proportion of teachers with bachelor's degree),

and experience of school heads and availability of facilities. Pass rate and enrollment of students were taken as the dependent variable. The results of the Cobb Douglas model are shown in Table 5.

Table 5: Results for the stochastic model (Cobb Douglas) for Secondary schools in Mukono district.

Input	Symbol	Pass rate		School Enrollment	
		Coefficient	P. value	Coefficient	P. value
Number of teachers	β0	-0.0031	0.000*	0.818	0.000*
Adequacy of facilities	β1	0.078	0.000*	0.070	0.375
Proportion of teachers with degrees	β2	0.0334	0.000*	0.348	0.022**
Experience of school heads	β3	0.363	0.000*	0.219	0.230
Availability of facilities	β4	0.180	0.000*	1.245	0.000*

Source: primary data, **p<0.01, *p<0.05

In the estimated stochastic model, the coefficients of all the inputs were statistically significant at 1% in regards to pass rate, and a part from number of teachers the natural logs of all the other inputs had a positive coefficient. The coefficient for number of teachers was surprisingly negative, this mean that as the number of teachers' increase the pass rate of students reduces, this is not a common case as an increase in the number of teachers would lead to an increase in the pass rate of students as a result of reduced teacher to students' ratio, but this negative relationship may be as a result of laziness which can come up when there is an increases in the number of work force as everyone then looks at the other to perform and thus ending up with no one performing.

The coefficient of Inadequacy of facilities was positive, this means that an increase in adequacy of facilities (teacher's houses, class rooms, laboratory, and library) leads to an increase in the pass rate of students, this is perhaps true as adequacy of facilities

creates a conducive environment favoring passing of students. The positive coefficient of proportion of teachers with bachelor's degree means that when the proportion of teachers with bachelor's degree increases the pass rate of students also increases, this is true as the education level of teachers greatly influences what the students learn and the rate of passing afterwards. The positive coefficient of availability of facilities means that an increase in the availability of resources result in to an increase in the pass rate and a decrease leads to a reduction in the pass rate.

The findings showed schools under PPP to be more efficient than those under public private partnership in regards to pass which is as a result of the Nonpublic private partnership schools performing better than PPP schools in the major influential factors of efficiency like adequacy of facilities, number of teachers, proportion of teachers with bachelor degree, a number of researchers like Akinwumiju and Orimoloye (1987), Babalola (2004) support the above by often showing schools with the above factors to be more efficient with the schools without them.

In regards to enrollment, only the coefficient of number of teachers, proportion of teachers with bachelor's and availability of facilities were statistically significant, but all the input had a positive coefficient and these positive coefficients can be explained below, a positive coefficient of number of teachers means that an increase in the number of teachers leads to an increase in the number of students enrolled and a reduction in the number of teachers leads to a reduction in the number of students enrolled this is due to the fact that when teachers are prettily available in schools students are attracted to join such schools. The coefficient for Inadequacy of facilities being positive means that an increase in adequacy of facilities leads to an increment in the number of students enrolled, this may be due to the fact that parents prefer to take their children to schools which have the facilities in adequacy since this means that these schools can perform better.

In regards to the proportion of teachers with bachelor's degree the positive coefficient means that an increment in the proportion of teachers with bachelor's degree leads to an increment in the number of students being enrolled, this could be due to the fact that teachers with high levels lead to good performance of students which attracts more students to join such schools. Low level of education of teachers leads to poor performance which leads to low enrollment. The positive coefficient of Inexperience of

head teachers means that as the head teachers' experience increases also the number of student enrolled increases this can be attributed to the good academic performance and management which come along with the experience of the head teachers on the other hand inexperienced head teachers leads to low enrollment.

In regards to enrollment schools under PPP were found to be more efficient than those which are not under public private partnership, meaning that in regards to enrolling students in to schools Public private partnerships is really doing a good job, this is mainly due to the fact that students can now access secondary education at a very low cost which has enabled even the poor to access education. The above is supported by the finding in one article by Mwesigye in Monitor 28/4 2016 page 4 in which he indicated that the partnership between the government and private operators has potential to meet goals for providing equitable access to quality education

4.3.1 Efficiency scores by management

In order to make a clear understanding on which category of schools performs better, a comparison was made in regards to efficiency scores developed from the Cobb Douglas model a long side management. The findings showed schools under PPP to be more efficient than those under public private partnership in regards to pass rate with an average efficiency score of 80.2% as compared to the 66.7% of the schools which are under the partnership as seen in figure 1 below. This was a result of the Nonpublic private partnership schools performing better than PPP schools in the major influential factors of efficiency like adequacy of facilities, number of teachers, proportion of teachers with bachelor degree as seen in table 3.
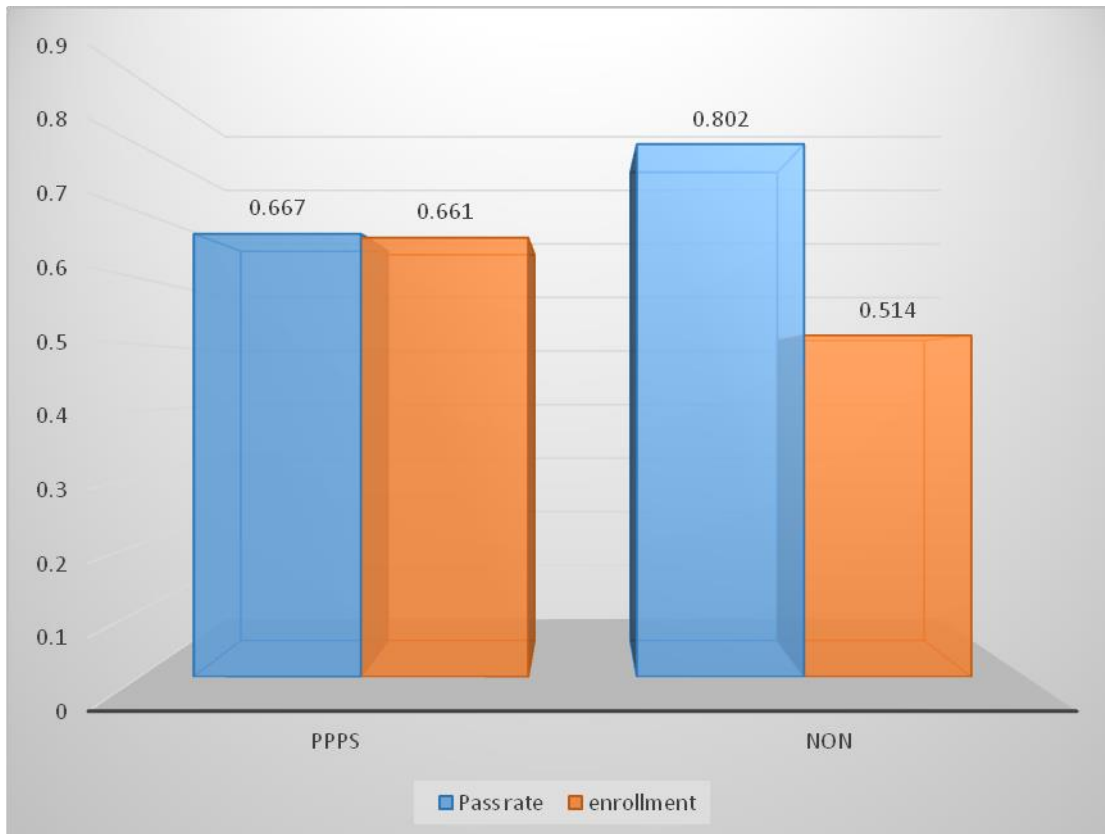
Figure 1 Distribution of secondary schools Efficiency scores by management in Mukono district.

Source: Primary data

In regards to enrollment schools under PPP were found to be more efficient than those which are not under public private partnership with an average efficiency score of 66.1% as compared to the 51.4% of those schools which are not under the partnership. This means that in regards to enrolling students in to schools PPP is really doing a good job, this is mainly due to the fact that students can now access secondary education at a very low cost which has enabled even the poor to access education.

In order to clearly explain the magnitude of efficiency in PPP and Non PPP schools the researcher divided efficiency in to three levels which are small efficiency level, medium efficiency level and high efficiency. It was discovered that most of the PPP schools were performing at a low level of efficiency, which might mainly be due to poor performance in most of the influential factors of efficiency like facilities, this is supported by researchers like Okories (2001) who shows that factors like proper utilization of the school facilities bring about fruitful learning outcomes as it stimulates and motivates students. A limited percentage of PPP schools fall under the medium and

high levels of efficiency. On the other hand, there was a very minimal percentage of PPP schools under Non PPP, which means that most of these schools where performing efficiently as they had all the favorable factors in place as buoyed by Nyanya (2015).

5.0 Conclusions, and recommendations

In situations where the government cannot fully provide for the education needs of all the nation's children with the use of only its traditional government schools, there is a need for it to join hand with the private sector through partnerships. This increases numbers of children graduating from primary level to secondary education level. Based on this PPP in the education sector is a useful tool for achieving the government's educational policy objectives, however PPP alone is not remedy to achieving the Millennium Development Goals as this more generally will require much broader reform programs.

Finally, while the reasons behind our result of PPP schools superiority in enrollment, and Non- PPP schools superiority in pass rate are being supported by a number of researchers (Okories, 2001; Nyanya, 2015 and Babalola, 2004), additional research with nationwide data on Uganda is warranted in order to be confident about the generalizability of the conclusions reached.

5.2 Recommendations

Based on the findings of the study, the following recommendations are put forward in order to ensure that the public private partnership has an overall impact not only on enrollment but also on the pass rate of students in order to meet goals for providing equitable access to quality education.

There should be adequate supply of school physical facilities such as classrooms, science laboratories, workshops, library services, as the schools under public private partnership were found to be lacking in this area therefore in order to be efficient in service delivery the supply of these facilities has to be adequate since they catalyze the performance of the students.

There should be an increment in the number of teachers with bachelor's degree, this was found to be a major hindrance to the performance of students, it should be noted that the qualification of teachers remains a major determinant of the academic achievement of the students in all categories of schools. (Abali and Odumayo, 2006)

therefore the government has to do whatever it takes like giving good salaries in order to encourage teachers with degrees in to the PPP schools as this will lead too good performance.

5.3 Limitations of the study

Some school heads were not willing to give the researchers information as they were finding it hard to believe that the research was purely academic because of fear of exposure of mainly there school performance to their competitors. As a result, the researchers had to spend more time convincing them that it was purely for academic purpose.

Also some schools never had some important information of the study like performance of students and number of students enrolled which required to wait for some time to look for this information and some even requested me to go back on other days which made data collection take more days than planned.

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