An Input-Output Analysis of Public and Private Secondary Schools in Lagos, Nigeria

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Abstract
This study undertook an administrative and managerial input-output analysis of public and private secondary schools in Lagos State from 2006 to 2010. Teachers, students, infrastructural facilities, curriculum were used as input variables while the students’ academic performance in the JSSCE and SSSCE were the output variables. The study made use of 4,000 teachers and 400 principals as sample selected through stratified random sampling technique from 200 public and 200 private Junior and Senior secondary schools in Lagos State. Two research questions and two hypotheses were raised in the study. The data were gathered through the use of validated and reliable instruments for teachers and principals titled Secondary Education Development Questionnaire for Teachers (SEDQT) and Secondary Education Development Questionnaire for Principals (SEDQP) respectively. While the reliability coefficient for SEDQT was found to be 0.89 that of SEDQP was 0.90. Analysis of data reveals that a significant difference existed in the means of infrastructural facilities between the public and private secondary schools. However, there is no significant mean difference in JSSCE and SSSCE results between the public and private secondary schools. The study concludes that the mix in the differentials of input between the public and private secondary schools prompted the variations in academic and moral output of the products. These findings provide vivid evidence for recommendations such as improving quality of input through training and re-training of public and private secondary schools teaching staff and adopting quality assurance measures towards increasing the internal efficiency of the schools.

Keywords: literary life, curriculum input, public good, social necessity, Human inputs

Introduction
Education as an enterprise is as old as man and it is relevant to every generation for the transmission of culture, knowledge and values of the society. The Federal Republic of Nigeria in its National Policy on Education (FRN, 2004), states that education is the greatest investment that the nation can make for the quick development of economic, political, social and human resources.

Before then, education has spurred various levels of government into actions on how to provide adequately for the various levels of the enterprise. According to Ejiogu (1986), the first actual involvement of government in the funding of education was in 1883. This was in line with the Education Ordinance of 1882, which directed that a grant of £425 be paid to the missions, which were running the formal schools. It took the form of granting annual subsidy, which was well below actual educational expenditure. It is worthy to note, however, that traditional education pre-dated the advent of Western formal education in 1843. The inputs of missionary educational enterprise were to prepare young men for a commercial and literary life. Secondary schools’ curriculum input focused on English, with a bit of Latin, and Mathematics and recitations of poetry depending on the ability of the teachers supplemented by leading members of the community such as government officials, doctors, traders and the clergy.
The expected output from these educationists radiates round a literary life. Secondary schools as at then were owned by missionaries who were the proprietors; each school was made to reflect the respective home-base background of the proprietors. Education being a social necessity is regarded by some scholars to be a public good while some believe that what is being invested in education should be reaped by the investor. In this sense, the investor could be an individual of the society. The establishment of many private schools has contributed in no small way in satisfying peoples wants as to which schools their children and wards would attend, but at the same time the inherent costs of private schools and the Lagos State Government position of free secondary education places the low income earners who desire the best in terms of quality education for their children but cannot at times pay the exorbitant fees of the private schools in a difficult situation.

Private schools these days tend to provide boarding facilities as well as modern equipment including computers, interactive (white) board and employment of graduate teachers who are capable of handling the modern facilities put in place. Parents in consideration of these facilities would be eager to pay the high fees thereby leading to high cost of education. It is imperative to note that low-income earners generally cannot afford to send their children/wards to these expensive private secondary schools. Hence the children of this class attend the public secondary school with minimal costs and tuition free opportunity. The situation of school facilities in place and commitment of teaching and non teaching personnel in secondary schools could be adduced as reasons for the profitability of either private or public secondary schools by consumers of secondary education in the state. The inputs variables such as infrastructural facilities provided by the secondary school for teaching and learning process, irrespective of the ownership of the schools remain indispensable variables used to produce quality output.

The secondary schools in Lagos State operates through systems guided by regulatory agencies of the Lagos State Ministry of Education to guarantee quality services by both public and private secondary schools in order to have quality output through students success in their academics at both junior and senior secondary school levels.

Theoretical Framework

This study centres on the Systems theory as presented by Draft (2008) and the principle of quality control cum assurance at the secondary level of education. This is in view of private entrepreneurship and current developments and advancement of education supported by the public-private participation as a means of improving the state of education in Lagos State and in Nigeria as a whole.

Systems Theory: A system is a set of interrelated parts that function as a whole to achieve a common purpose. A system functions by acquiring inputs from the external environment, transforming them in some way, and discharging outputs back to the environment. Students are admitted into secondary schools from the society and transformed as output back to the society.

According to Draft (2008), the basic systems theory of organizations consists of five components: inputs, a transformation process, outputs, feedback, and the environment.
(i) Inputs are the materials, human, financial, or information resources used to produce goods and services. In secondary education systems, the material inputs include infrastructural facilities provided by the school for teaching and learning processes. Human inputs are the various mix of teaching and non-teaching staff.

(ii) The transformation process is management’s use of production technology to change the inputs into outputs.

(iii) Outputs include the organization’s products and services. In secondary school systems, the output elements include students’ academic performance in public examinations, students’ level of discipline and activities in the society.

(iv) Feedback is knowledge of the results that influence the selection of inputs during the next cycle of the process. This entails standards for secondary school enrolment and,

(v) The environment surrounding the organization includes the social, political, and economic forces.

However, it is pertinent to note that the application of systems theory in education will assist the educational administrator to:

- fostering educational issues and how it affects the output of the students;
- it is important to secondary schools in accomplishing their mission of all students learning process;
- it is also important for later development of inputs into the secondary schools system;
- systems theory gives a relevant framework for academic performance of secondary schools in Lagos State.

The five factors in a systems theory are to a large extent, the essence of the benefits reported by the literature on the standard in all types of implementations of input variables to generate a better output of secondary education.
In secondary education system, the material input includes infrastructural facilities provided by the school for teaching and learning process. Human inputs are the various mixes of teaching and non-teaching staff. The transformation process is the school management and teachers’ use of new teaching methods to change the inputs to outputs. In secondary school system, the output elements include students’ academic performance in public examinations, students’ level of discipline and activities in the society. Feedback is knowledge of the SSCE results that influence the selection of inputs during the next cycle of the process. This entails standards for secondary school enrolment and, the environment surrounding the school includes the social, political, and economic forces that will engage the output from secondary schools.

With reference to the figure 2, the process-based quality system of secondary education denotes that quality inputs into secondary education will yield a value – adding activities from stakeholders’ requirements to product realization to education customers/stakeholders satisfaction (output).

**Statement of the Problem**

Government has shown a lot of commitment in encouraging private entrepreneurship at secondary level education as a partner in the provision of quality education to the teeming population, which cannot be undertaken alone by the state.
Thus, private individuals and groups establish their own schools, albeit on competitive basis and manage them within the framework of the National Policy on Education (NPE). Private schools charge their own fees, formulate their own admission policy, recruit their own teachers and of course have their own career guidelines.

Thus, the satisfaction derived by the rich and poor in terms of quality secondary education in the state constitute a problem between the public and private schools on quality control albeit, on ensuring quality inputs and quality output.

Thus, the focus of the study was to find out the extent to which private entrepreneurship has contributed to secondary education in Lagos State. Moreover, the study was to find out if the input by either or both government and the private hands has really been justified by the output. Yet, the study was to find out the problems encountered by both the government and the private entrepreneurs in the delivery of secondary education in Lagos State.

**Research Questions**
The following research questions were generated for the study.

i. What is the state of infrastructural facilities in public and private secondary schools in Lagos State?

ii. Is there any difference in the academic performance of products of public and private secondary schools in Lagos State?

**Research Hypotheses**
The following hypotheses were formulated to guide the study:

i. There is no significant difference in the provision of infrastructural facilities between public and private secondary schools in Lagos State.

ii. There is no significant difference in academic performance between public and private secondary schools in Lagos State.

This study covered all the 612 Junior and Senior Public Secondary Schools in Lagos State. Also, a total of Two Hundred and Three (203) private secondary schools approved in all the 20 Local Governments of Lagos State are also covered by the study.

**Methodology**
The study adopts a descriptive survey research method; it looked into public secondary schools and private secondary schools and made an attempt to describe these two categories of secondary schools with respect to the identified input and The population for this study consisted of all the Public Junior and Secondary Schools and the approved private secondary schools in all the Local Government Areas of Lagos State. The population also consisted of all the staff in these public and private secondary schools.

**Sample and Sampling Techniques**
The sample of public and private secondary schools was obtained using the stratified sampling method. Lagos State comprises of 20 Local Governments and, in each of the 20 Local Government Areas, five public Junior Secondary Schools and five public Senior Secondary Schools were randomly selected as part of the sample. In addition, five private secondary schools were selected from each Local Government to be part of the sample. Each private secondary school was taken as a two-in-one school since most of them are not yet completely separated into Junior and Senior Secondary Schools as in the case with the public schools.

Thus, a total of 200 public (100 Junior Secondary Schools and 100 Senior Secondary Schools) and 100 private secondary schools were used for the study (See appendix for list of schools). However, for the purpose of analysis, the Basic 7-9 classes in the private schools were taken as the Junior School and SSS 1-3 classes were taken as the Senior School. This is reflected in the distribution of questionnaire copies for the private schools which in essence gives a total population of 200 private secondary schools used.

Two hundred principals were sampled for the public secondary schools while two hundred principals/coordinators constituted the sample from private schools. The private schools appoint coordinators for the Junior secondary classes. Four Thousand teachers were randomly sampled in all the schools at 10 teachers from each of the 400 sampled schools.
Instrumentation

Two questionnaires served as research instruments for this study. The first is tagged Secondary Education Development Questionnaire for Principals (SEDQP). This was used to elicit information from principals regarding educational development of public and private secondary schools in Lagos State. It is divided into three parts: the first requested information on school records while the second part contained fifteen items with responses structured on a four point Likert-type Scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) that elicited data for hypotheses testing. The third part consisted of records observation format I and II. Records Observation I sought information on Junior Secondary School Certificate Examination and Senior Secondary School Certificate Examination results of the participating schools. While Records Observation II was used for secondary data collection from the Federal and State Ministries of Education and Office of Statistics.

The second questionnaire is tagged Secondary Education Development Questionnaire for Teachers (SEDQT). This was used to elicit information from teachers. It is divided into two parts, the first part on bio-data while the second part contains fifteen items structured to elicit information for hypotheses testing, and similar to those on SEDQT. Each of the items in the second part was structured on a four point Likert-type scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). Before administration, the questionnaire were validated and the result of the reliability test for SEDQT was $r = 0.89$ while for SEDQP $r=0.90$. This revealed that the two instruments were highly reliable for the study.

Descriptive Analysis

Question 1

What is the state of infrastructural facilities in public and private secondary schools in Lagos State?

In an attempt to answer this question, the State Ministry of Education records on facilities were explored along with the checklist from the sampled secondary schools to arrive at Tables 1 and 2 respectively.

Table 1: State of Infrastructural Facilities in Public and Private Secondary Schools in Lagos State

<table>
<thead>
<tr>
<th>Summary of Facilities</th>
<th>Public %Available</th>
<th>Private % Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water and Electricity</td>
<td>47.56</td>
<td>61.33</td>
</tr>
<tr>
<td>Recreational Facilities</td>
<td>50.57</td>
<td>40.51</td>
</tr>
<tr>
<td>Physical Condition of Classrooms</td>
<td>53.00</td>
<td>69.50</td>
</tr>
<tr>
<td>Toilet Facilities</td>
<td>63.83</td>
<td>72.12</td>
</tr>
<tr>
<td>Security/Environment</td>
<td>74.45</td>
<td>79.10</td>
</tr>
<tr>
<td>Health Services</td>
<td>51.13</td>
<td>64.17</td>
</tr>
</tbody>
</table>

Source: Lagos State Ministry of Education

Table 1 shows that the availability of water and electricity in public secondary schools was 47.56% as against that of the private secondary schools which ranked 61.33%. A cursory observation of the table indicates that recreational facilities (50.57%), Physical condition of classrooms (53.00%), toilets facilities (63.83%), security/environment (74.45%) and health services (51.13%) in private secondary schools were higher than in the public secondary schools with 47.56%; 50.57%; 53.00%; 63.83; 74.45%; 51.13% respectively. See figure 3 for the histogram representing table 1.
Figure 3: Graphical illustration of Percentage State of Infrastructural Facilities derived from Table 1.

Inventories taken from the fieldwork was employed to arrive at table 2.

Table 2: State of Infrastructural Facilities of Sampled Public and Private Secondary Schools in Lagos State

<table>
<thead>
<tr>
<th>Summary of Facilities</th>
<th>Public %Available</th>
<th>Private % Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water and Electricity</td>
<td>33.51</td>
<td>72.03</td>
</tr>
<tr>
<td>Recreational Facilities</td>
<td>51.34</td>
<td>62.57</td>
</tr>
<tr>
<td>Physical Condition of Classrooms</td>
<td>48.01</td>
<td>65.20</td>
</tr>
<tr>
<td>Toilet Facilities</td>
<td>72.23</td>
<td>70.10</td>
</tr>
<tr>
<td>Security/Environment</td>
<td>77.42</td>
<td>82.13</td>
</tr>
<tr>
<td>Health Services</td>
<td>50.16</td>
<td>54.19</td>
</tr>
</tbody>
</table>

Source: Fieldwork

In a similar vein, Table 2 reveals that the availability of water and electricity in public secondary schools was 33.51% as against that of the private secondary schools which ranked 72.03%. A closer observation of the table indicates that recreational facilities (62.57%), physical condition of classrooms (65.20%), security/environment (82.13%) and health services (54.19%) in private secondary schools were higher than in public secondary schools with 51.34%; 48.01%; 77.23%; 50.16% of the facilities respectively with the exception of toilet facilities which ranked 72.42% higher than 70.10% for private secondary schools.
Considering the analysis of Tables 1, 2, and figures 3 and 4 there are similarities between the secondary data from the Lagos State Ministry of Education and data of the fieldwork.

Results

Hypothesis One

There is no significant difference in the provision of infrastructural facilities between public and private secondary schools in Lagos State.

A preliminary classification of available infrastructural facilities into six groups (Water and Electricity, Recreational Facilities, Physical Conditions of Classrooms, Toilet Facilities, Security/Environment, and Health Services) was performed and rated accordingly.

The difference between the public and private secondary schools available infrastructure was subjected to test with one-way ANOVA.

Table 3: Summary of One-way ANOVA in the Provision of Infrastructural Facilities Between Public and Private Secondary Schools in Lagos State from 2003 to 2007

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F-cal</th>
<th>F-tab</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>177.79</td>
<td>1</td>
<td>177.79</td>
<td>1.26</td>
<td>.288</td>
<td>P&lt;.05*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>1413.60</td>
<td>10</td>
<td>141.36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1591.40</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Significant

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From the information in Table 3, the result shows that a significant difference existed between the available infrastructural facilities in public and private secondary schools in Lagos State. df= (1, 10), F-cal=1.26 > F-tab = .288; P< .05.

Thus, the null hypothesis is rejected; hence, there is a significant difference in the provision of infrastructural facilities between the public and private secondary schools in Lagos State.

**Hypothesis Two**

There is no significant difference in academic performance between public and private secondary schools in Lagos State.

In testing this hypothesis, the academic performance of students in the Junior Secondary Certificate Examination (result) and Senior Secondary Certificate Examination (result) of the sampled schools were subjected to Independent t-test analysis.

**Table 4: Summary of Percentage Difference in the Academic Performance between the Public and Private Junior Secondary Schools in Lagos State from 2006 to 2010**

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>SEM</th>
<th>df</th>
<th>t-cal</th>
<th>t-tab</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Jnr.Sec. Schools</td>
<td>100</td>
<td>25.1025</td>
<td>19.07951</td>
<td>4.26631</td>
<td>99</td>
<td>.276</td>
<td>1.96</td>
<td>P&gt;.05</td>
</tr>
<tr>
<td>Private Jnr.Sec. Schools</td>
<td>100</td>
<td>23.4635</td>
<td>18.41829</td>
<td>4.11845</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NS = Not Significant**

The t-test result presented in Table 4 was used in establishing whether or not significant difference existed between the means. The data on the table shows that the t-cal. = .276 and is less than the t-table value of 1.96 at P>.05 and at df = 99. The implication of this is that the differences observed in the JSCE results between the public and the private junior secondary schools are not significant.

**Table 5: Summary of Percentage Difference in the Means of Academic Performance between the Public and Private Senior Secondary Schools in Lagos State from 2006 to 2010**

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SEM</th>
<th>df</th>
<th>t-cal</th>
<th>t-tab</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Snr.Sec. Schools</td>
<td>100</td>
<td>23.2900</td>
<td>18.21361</td>
<td>4.07269</td>
<td>99</td>
<td>1.878</td>
<td>1.96</td>
<td>P&gt;.05</td>
</tr>
<tr>
<td>Private Snr.Sec. Schools</td>
<td>100</td>
<td>23.4635</td>
<td>18.41829</td>
<td>4.11845</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NS = Not Significant**

The t-test analysis performed reveals that there is no significant difference in the means of academic performance of students in the SSCE between the public and private senior secondary schools as the t-cal is less than the t-tab at p>.05 and df =99 (t-cal=1.878; t-tab=1.96) The hypothesis is therefore accepted.

**Discussion of Findings**

An in-depth analysis of the education system in Nigeria before and after independence in 1960 necessitates a symbiotic appraisal of the inputs and output of public and private secondary schools in Lagos State. It is on this basis that this study was founded and carried out.
The output produced by the education system is intangible. It cannot be measured like industrial output such as number of tins, electronics, commodities etc. The objective of education and academic performance determines what can be produced each year by the public and private secondary schools. The measurement of educational output through academic performance of secondary school leavers attempt to apply quality criterion to output measurement as is done in the industrial sector (Gbadamosiu, 2008). The major goal of the school is to enhance learning and by extension academic achievement.

However, one needs not be told that this goal is not being achieved as expected. At least, the analysis of each year’s results of public examination is being published in the national daily newspapers by public examination bodies. On the poor performance of students in public examinations, Obanya (2009), lamented that Nigerian industries no longer on the whole take the certificates awarded by their face value. This shows that performance of student is nothing to write home about. Also, low output of public and private secondary schools has necessitated the argument for the Post University Matriculation Examinations conducted by most of the tertiary institutions in Nigeria. This is for the stakeholders to evaluate the students’ feedback on what is supposed to have been taught in the classroom setting (Akanbi, 2006).

The inputs of teachers and non-teacher, buildings, students and other educational goods and service such as water, electricity, consumable materials, postal and telephone services and so on, affect the academic performance of the students.

On the provision of infrastructural facilities as a driver of elites to enrol their children into private secondary schools without minding the active resource inputs in such schools, from the researcher’s result, most of the public schools were infrastructurally deficient, that is, shortage of seats for students, dilapidated school building and classroom but, the story was different in private secondary schools. This outcome was corroborated by Babalola (2004) in a study on learning and resource materials in schools that thoughtfully designed school facility can complement a well planned programme. While a poorly designed facility can hamper the best of school programmes even with well qualified teachers.

As a resource input, it is, therefore, the responsibility of the school and teachers to keep clean, neat, attractive and colourful classrooms in order to promote optimum learning. A cursory look at the education records of both public and private secondary schools, with reference to senior secondary school certificate examination results, reveal a downward trend in school academic performance. The poor academic performance can be linked to poor resources inputs in the schools as revealed by this study which is in line with the submission of scholars such as Akinwumiju and Orimoloye (1987).

This study reveals that more professional and experienced teachers were found in public secondary schools than in the private secondary schools and this is also corroborated by the field survey conducted by National Centre for Education and Statistics (2009). Results also indicate that a significant difference exists in the quality of teachers between the public and private secondary schools in Lagos State. This is in congruence with the findings of Oderinde (2008) that the public secondary schools have 86.6% professionally qualified teachers while private schools have 56% and 67.2% in returned schools. Akanbi (2006) identifies that the quality of teachers remains a major determinant of the academic achievement of the students in both public and private secondary schools.

It could also be suggested that in private secondary schools, most principals have not been adequately trained or exposed for the tasks they perform; such principals have lost the power to enforce discipline of both staff and students in the secondary schools (Akpofure and N’dupu, 1998).

However, Ndu (2001) warns that a great caution must be taken to provide a proper orientation to the private sector who owns schools whether they are multinational agencies or internal non-governmental agencies or business and industrial houses, on the basis that school business requires a quality engineering through professionally qualified and experienced teaching staff for qualitative output of the secondary school products. It was also found that only few private secondary schools in Lagos State have long serving teachers who are professionally qualified, this also supported by the findings of Fareo and Okotoni (2009) that the combination of physical environment, teaching materials and teachers’ technical skills which varies have significant influence on students academic performance.
Conclusion

It can be concluded from the findings of this study that though public secondary schools have a higher advantage of quality professional teachers over private secondary schools, low level of (teacher) discipline stands as a limiting factor to their optimal performance. Also, shortage of seats for students, dilapidated school buildings and classrooms, stuffy and rowdy classrooms have affected the academic output of the public secondary schools than the private with better infrastructural facilities in Lagos State.

Recommendations

Based on the findings in this study, the following recommendations are made:

1. Rapid changes in the society and declining quality of educational products have called for efficient supervision of schools. The growing complexity of the school system; including both public and private secondary schools call for a comprehensive overhauling of the academic activities of the schools in Lagos State.
2. Recently, the Lagos State Government has been training and retraining public secondary school teaching staff without ensuring that the private secondary schools do the same for their teaching staff. Since the products of public and private schools are from and for the society, the State Ministry of Education should mandate the proprietors of private secondary schools to sponsor their teachers on training programme possibly alongside the public secondary school teachers.
3. There is the urgent need for a State Government sponsored Retreat for all the secondary schools in Lagos State, both public and private, for a frank talk and dialogue, for the purpose of coming up with a radical plan of action based on mutual respect, recognition, understanding, collaboration, and reality directed towards checkmating the mass failure in public examinations (WAEC and NECO).
4. Quality control measures that could help reduce wastage in the secondary school system are inevitable and the required enabling environment must be created. The argument for the wide spread adoption of quality management in education by Shaw in Adegoke (2003) should be the basis for the management of both public and private secondary schools in Lagos State.
5. Hence, there is an urgent demand for a systematic, purposeful, diagnostic, problem-solving, honest and comprehensive appraisal of the input, process and output of the secondary schools in Lagos State and those found deficient either in public or private should be re-engineered or closed down.
6. The Lagos State Ministry of Education should formulate a policy that will mandate both the public and private secondary schools to employ a full-time guidance counselor in the secondary school to deal with deviant behaviours and rehabilitate habitual deviants. This is in line with the submission of Nwana (1998).
7. In an attempt to combat mass failure in public examinations, a study of the examination procedures and the psychometric characteristics of public examinations to assess the contribution of the assessment process to the incidence of mass failure should be embarked upon immediately. This is to ascertain if the input-output analysis of schools is reflected by the true picture of examination outcome.
References


