

UNIT COST AND STUDENTS' ACADEMIC PERFORMANCE

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Abstract

This study investigated through empirical methods the influence of unit cost of university education on students' academic performance, the 'ex post facto' research design, using seven randomly selected faculties out of eleven faculties in the university. The statistical tools used include the Person Product Moment Correlation, Analysis of Variance, Linear Regression, Multiple Regressions. A level of significance of 0.05 was chosen contrary to expectation, findings revealed a non-significant influence of unit cost of university education on students academic performance. But there were significant differences in students' academic performance in the sampled faculties, even though there were no significant differences in the unit cost of education in these faculties. The significant difference in students' academic performance among faculties can be attributed to their resource situation and socio-economic factors. Hence, the study recommended public support for university education so as to improve both the learning situation and the students' academic performance.

Introduction

Nations all over the world continue to devote huge amounts of money to university education annually. This level of education produces technical experts required for turning around the economy. African nations are not left out in the zeal to develop university education. In April, 1959, the Federal Government of Nigeria constituted the Ashby Commission to investigate and report Nigeria's manpower needs for a period of twenty years (1960-1980). The Commission was led by Sir Eric Ashby. It comprised three Nigerians, three Americans and three Britons. The Commission reported imbalance between one level of education and the other, limited admission opportunities for primary school leavers, few school teachers were qualified and certificated, that the Nigerian education system was parochial and literary and

imbalance between the development of education between the North and Southern parts of Nigeria.

The Commission thereafter recommended the expansion and improvement of primary and secondary education, the upgrading of the University College at Ibadan to a full-fledged university and the establishment of three other universities at Nsukka, Ife and Zaria. It also recommended the establishment of a National Universities Commission in Nigeria so that the universities will maintain uniform academic standards. The post-secondary school system was to produce the post-independence high-level manpower needs of Nigeria.

The Nigerian governments lay a lot of emphasis on university education. Both the state and federal governments invest in this form of education. There are twenty-four federal, one military and fifteen state universities in the country. They provide scholarship awards for indigent undergraduates of the universities in the country. Private individuals and organizations also invest in university education.

Unit cost of university education is a good measure of the extent of funding of university education. This study seeks to establish a relationship between unit cost of university education and students academic performance. The magnitude of the educational cost incurred is very important in determining the extent to which the educational institutions achieve their set goals. The Recurrent cost ought to be of product quality. But contrary to this, existing literature shows that there exists no significant relationship between spending on education and the students' academic achievement.

Babalola (2001) reported that universities effort at reducing costs per students had an insignificant effect on academic performance. There have been a number of attempts to review research in other countries on determinants of students' academic achievement. In a study of 17 developing countries, Alexander and Simons (1975) found out that expenditure variables were not important predictors of students' academic achievement but some identified teacher characteristics; which were directly linked with measures of achievement. Also, Hanushek (1979) emphasized the fact that there is no significant relationship between per pupil expenditure and achievement and specific purchased inputs such as teacher experience. In another study, Hanushek (1981), who made a quantitative synthesis of 130 econometric studies, concluded that available research evidence

suggests that there is no significant relationship between expenditure and academic performance of students and that the traditional remedies, such as reducing class size or hiring better trained teachers, are unlikely to improve matters.

On the contrary, a World Bank Report (1988) pointed out that one explanation for the low quality of education in Africa is that expenditure per student – a highly aggregated proxy for educational inputs – is very low by world standards. The report stressed that the low expenditure per students has certainly constrained educational achievement in Sub-sahara Africa. In a related study, Oni (1992) citing Gardner in his study in U.S.A. argued that the attainment of education goals depended on what teachers were capable of achieving.

Gaudet (1994) and Brucey (1995) observed that while increasing spending will not automatically produce increased achievement, even though adequate funds are necessary to ensure quality of schools. Some other factors influence students' academic performance. Apart from institutional and educational cost, certain socio-economic factors also influence students' academic performance. Levy (1971) confirmed this in his study of the drop-out pattern in 42 countries comprising 15 from Latin America, 14 from Africa and the Middle East.

However, this study is limited to the investigation of the relationship between unit cost of university education and undergraduate students' academic performance in the University of Ibadan.

The Problem

Normal expectation is that unit cost of university education and students' academic performance move in the same direction, that is, students' academic performance should be improving as the unit cost of university education increases. Existing literature provides contradictory evidences. One school of thought argues that the higher the unit cost of university education the better the students' academic performance. While another school of thought argues that there is no significant relationship between these two variables. Hence, this study is interested in establishing the extent to which unit cost of education influences undergraduate students' academic performance in Nigeria, using the University of Ibadan as a case study.

Governments all over the world continue to devote greater proportion of its annual expenditure to education with the hope that it would improve the learning situation in their schools, students learning outcomes and skill acquisition.

Consequent upon the recovery of Japan from the ravages of the Second World War, economists of education began to link investment in education to both individual and national development. Japan invested huge amounts of money on education after the Second World War. This enabled the country to witness rapid socio-economic and industrial development. The implication of this analogy is that greater investment in education will improve the learning situation in schools, students' skill acquisition capacity, and thus students' academic performance.

Research Hypotheses

The following research hypotheses were generated to guide this study:

1. Unit cost does not vary significantly among the sampled faculties in the University of Ibadan.
2. Unit cost and students' academic performance are not significantly related in the sampled faculties at the University of Ibadan.
3. Students' academic performance does not vary significantly among the sampled faculties at the University of Ibadan.
4. Unit cost has no significant influence on students' academic performance in the sampled faculties at the University of Ibadan.
5. There is no significant relationship between academic staff unit cost and students' academic performance in the sampled faculties at the University of Ibadan.
6. There is no significant relationship between non - academic staff unit cost and students' academic performance in the sampled faculties at the University of Ibadan.

Research Design and Methodology

This study was conducted '**ex post facto**' and made use of descriptive survey design. This design was adopted because the variables being investigated cannot be controlled by the investigator as the event had occurred. The main target of this study is the entire university

consisting of eleven faculties. The sampling technique adopted for this study is the stratified random sampling technique. Seven (7) out of the eleven (11) faculties in the university were randomly selected. All the departments in the sampled faculties were taken as samples. Table 1 show the number of departments in the sampled faculties.

Table 1: Departmental Sample

S/No.	Faculty	Department	Sample
1.	Arts	10	10
2.	Education	8	8
3.	Law	2	2
4.	Social Sciences	5	5
5.	Sciences	9	9
6.	Technology	7	7
7.	Agriculture & Forestry	7	7
	Total	48	48

Source: Field survey

A data collection format was used to collect relevant data from the Academic Planning Division of the University on the students' enrolment, their performance and the total cost incurred by the institution, on salaries and non salary, personal emolument, goods and services. To ensure the validity of the research instruments, it was validated by four experts in Educational Planning and Statistics. They modified and approved the instruments before it was administered. The reliability of an instrument indicate how consistent an instrument is in measuring what it is expected to measure. The reliability of the format used herein was estimated through the use of the test retest method that yielded reliability co-efficient of 0.96. The Polytechnic, Ibadan in Nigeria serving as the field test. The research instrument was administered by the researchers to officers in the Planning Division of the University. The researcher made adequate follow u visits to the planning units to ensure that necessary and accurate facts were provided.

The data collected for the study were analyzed using the following statistical tools: Analysis of Variance, Pearson Product Moment Correlation, Linear Regression and Multiple Regression. The decision point was the 0.05 level of significance. Students' performance

analysis was also carried out by attaching weight to all the classes of degree. First Class had a weight of 5, Second Class Upper division had a weight of 4, the Second Class Lower division had a weight of 3, Third Class had the weight of 2, and the weight of 1 was attached to a Pass degree.

Reports of findings

This section is discussed under each of the research hypotheses;

Hypothesis 1: Unit cost does not vary significantly among the sampled faculties in the university

Table 2: Test of differences in unit cost among faculties ANOVA

Unit Cost	Sum of Squares	df	Mean Square	F	P	Remarks
Between Groups	2.2E + 09	6	3.7E +08	.509	0.792	Not. Sig.
Within Groups	1.0E + 10	14	7.3E + 08			
Total	1.3E + 10	20				

$P > 0.05$

Table 2 shows that average cost by faculty (F value of 0.509) is not significant at alpha level of 0.05 since $P > 0.05$. Hence, the hypothesis is rejected.

Hypothesis 2: Unit Cost and student academic performance are not significantly related.

Table 3: Test of relationship between unit cost and academic performance

Variable	N	R	P	Remarks
Unit Cost Performance	21	0.074	0.751	Not Significant

$P > 0.05$

Since $P > 0.05$, we do not reject the hypothesis that cost and student academic performance are not significantly related.

Hypothesis 3: Students academic performance does not vary significantly among the sampled faculties in the university.

Table 4: Analysis of variance showing differences in academic performance amongst faculties

Unit Cost	Sum of Squares	df	Mean Square	F	P	Remarks
Between Groups	9426623	6	1571104	4.984	.006	Significant
Within Groups	4413249	14	315232.0			
Total	1.4E + 07	20				

$P > 0.05$

In the Table 4, $P < 0.05$, hence we reject the hypothesis that there is no significant difference in performance among the sample faculties. We therefore conclude that a significant difference exists in students' academic performance among the sampled faculties.

Hypothesis 4: Unit cost has no significant influence on students' academic performance

Table 5: Linear Regression Test showing the influence of unit cost on students' academic performance

Unit Cost	Sum of Squares	df	Mean Square	F	P	Remarks
Regression	75382.52	1	75382.52	0.104	0.751 ^a	Not. Sig.
Residual	1.4E + 07	19	724446.8			
Total	1.4E + 07	20				

$P > 0.05$

Table 5 shows a P – value of 0.751 and F = value of 0.104. Hence, Table 5 we do not reject the hypothesis that unit cost which is the predictor had no significant influence on academic performance which is the dependent variable.

Hypothesis 5: There is no significant relationship between academic staff unit cost and students academic performance

Table 6: Test of relationship between academic unit cost and students' academic performance

Variable	N	R	P	Remarks
Performance Academic Unit Cost	3	0.995	0.065	Not Significant

$P > 0.05$

Table 6, shows a non-significant relationship between academic unit cost and students academic performance. We therefore, do not reject the hypothesis.

Hypothesis 6: There is no significant relationship between non - academic staff unit cost and students' academic performance.

Table 7: Test of relationship between overall unit cost and students' academic performance

Variables	N	R	P	Remarks
Performance of Non-Academic Unit Cost	3	0.989	0.096	Not Significant

$P > 0.05$

Table 7 reveals a non-significant relationship between non academic staff unit cost and students' academic performance. Hence, the hypothesis is not rejected. This means that a significant relationship does not exist between academic performance and unit cost.

Discussion

The results of this study are to be discussed under: structure of unit cost; relationship between unit cost and students' academic performance; relationship between academic staff unit cost and students learning achievement; and relationship between non-academic staff unit cost and students' learning achievement.

Structure of Unit Cost

Apart from knowing the cost per student, capital cost per student, academic unit cost can also be calculated. Adequate knowledge about unit cost reveals the internal efficiency of any educational system. Unit

cost is assumed to vary from time to time and the factors responsible for variations in unit cost among students are the school age, the school size, class size, teacher quality, student teacher ration and average teacher salaries.

From the result of findings, there exists no significant difference among the sampled faculties as the F value of 0.509 in Table 2 is not significant at the alpha level of 0.05. It was also discovered that none of these factors listed as the cause of variation in unit cost could lead to any difference among the sampled faculties. The existence of insignificant difference in unit cost among sampled faculties is not in consonance with the assertion of Reff (1972), who observed that expenditure varies among faculties with the faculty of Medical Sciences recording the highest due to relative higher financial allocation ratio. Awopegba (1986), was also of the opinion that classroom based courses on the average were less expensive than laboratory - based courses and that cost is constantly highest in the College of Medicine and lowest in the Faculty of Education.

On the contrary, Longe (1981), affirmed that average teacher salaries and student teacher ratio were the most important variables in terms of contributions to the variation in unit cost. Likewise, Akangbou (1987) included average length of stay in service and age of teachers among factors that influence cost.

Relationship between Unit cost and Students' Learning Achievement

From the study, it was discovered that there exists no significant relationship between unit cost and students learning achievement. In Table 3, the value of P (0.75) was greater than the alpha level of significance 0.05. The insignificant relationship between the two variables implies that a change in unit cost does not lead to a significant change in students' learning achievement. This finding confirms the findings of Alexander and Simons (1975) who affirmed that expenditure variables were not important predictors of students' learning achievement. Also, Hanushek (1979 and 1981) affirmed that there exists no significant relationship between per pupil expenditure and students' learning achievement. Babalola(2001) reported that the universities efforts at reducing cost per student had an insignificant effect on students' learning achievement. In contrast, World Bank (1988) emphasised that the main cause of low quality education in

Africa is that expenditure per student, a highly aggregated proxy for education inputs, very low as compared to world standards. Romney (1982) and Babangida (1987) declared that poor financing is the major cause of failure in community education.

Differences in Students Learning Achievement

This study established that there is a significant difference in performance among the sampled faculties. This was shown in Table 4 where the value of $P(0.006)$ is less than the alpha value of 0.05 thereby rejecting the hypothesis that: Students learning achievement does not vary among faculties in the University. Table 4 showed the variations in students' learning achievement among faculties. This finding attests to Ojoawo (1989) and Fabunmi (1997) that reported the existence of a significant difference in the learning achievement of secondary school students in the Senior School Certificate Examinations (SSCE) conducted by the West African Examinations Council (WAEC).

Relationship between Academic Staff Unit Cost and Students Learning Achievement

From the findings, it was discovered that there exists no significant relationship between academic staff unit cost and students learning achievement. The result is against the assumption that highly qualified academic personnel will enhance better learning achievement. It is therefore necessary to emphasize that the existence of highly qualified academic personnel is essential, but not a sufficient condition for better academic achievement, as the existence of qualified personnel who are not committed does not guarantee students learning achievement. Hanushek (1981) concluded that available research evidence suggests that there is no relationship between expenditure and students learning achievement. Contrary to this discovery that the existence of a better qualified teacher is not a guarantee for better learning achievement of students, the National Policy on Education (NPE) emphasized that no education system can rise above the quality of its teaching staff. Bajah (1979), Omisade (1985) and Thomas (1980) also found a significant positive relationship between teachers qualification and students learning achievement.

Relationship between Non - Academic Staff Unit Cost and Students Learning Achievement

Table 5 revealed a non-significant relationship between non-academic staff unit cost and students learning achievement. This is in consonance with Bracey (1975) who argued that United States spends more on its schools than other nations, yet the money makes no difference in students achievement. However, Oguntoye (1983) in an input-output analysis on Nigerian secondary schools discovered that there is a positive correlation between recurrent expenditure on maintenance and repairs and quality of secondary education in Ogun state.

Conclusion

The study established that unit cost has no significant influence on students learning achievement. This means that there is no significant positive relationship between students learning achievement and unit cost. Thus, a change in unit cost does not lead to a proportionate change in students learning achievement. It was also established that despite the insignificant relationship between unit cost and students learning achievement, there is a significant difference in students learning achievement among sampled faculties. This difference can be attributed to differing resource situations and some socio - economic factors. All kinds of experiences acquired either within and out of school are educative and therefore influence students learning achievement in school. It is important to emphasize that parents socio-economic characteristics do affect average students learning achievement.

Guadet (1994) in examining school and student performance as measured by an educational assessment test revealed that high spending does not ensure good achievement, rather it was suggested that other factors influence learning outcomes as least as much as spending. Akinwumiju and Orimoloye (1987) affirmed that factors such as school enrolment, location of school, age of the school, adequacy of resources (human, material, physical and financial resources), appropriateness and adequacy of curriculum also affect students learning achievement.

References

- Akangbou, S.D. (1987). *The Economics of Education: An Introduction*, Shaneson C.I. Ltd, Ibadan. Nigeria.
- Akinwumiju, J.A and Orimoloye, P.S. (1987). *Accountability in Public Examinations: The Situation in Nigeria (1985 WAEC/GCE O' Level Examination) in Mass Failure in public Examinations, Causes and Problems*. In A, Dada (Eds). Heinmann Educational Books Ltd, Ibadan. Nigeria.
- Alexander, L and Simon, J. (1975). *The Determinant of School Achievement in Developing Countries: The Educational Production Function*. World Bank Staff Working Paper No. 21, Washington DC, USA.
- Awopegba, P.O. (1986). *Factors Affecting the Cost of University Education in Nigeria: A Case Study of the University of Benin*. Unpublished M.Ed Dissertation, University of Ibadan. Nigeria.
- Babalola, J.B. (2001). *University Funding Responses and Performance Under a Declining Economy in Nigeria*. Educational Planning and policy Unit; University of Ibadan, Ibadan. Nigeria.
- Babangida, I.B. (1987). *Government Plans to Make Education Accessible to All, Says Babangida*. The Guardian Newspaper, April 25.
- Bajah, S.T. (1979). *Correlates of Students Extrinsic School Environment: Factors with Levels of Attainment in a Standardised Test in Chemistry*. Journal of STAN 18 (1): 49 - 62.
- Bracey, G.W. (1995). *Debunking the Myths about Money For Schools*. Educational Leadership, Vol. 53, No 3. Pp 65 - 69.
- Fabunmi, M. (1997). *Differential Allocation of Educational Resources and Secondary School Academic Performance in Edo State, Nigeria (1987 – 1994)*. Unpublished Ph.D Thesis, University of Ibadan, Nigeria.
- Gaudet, R.D. (1994). *The Impact of School Spending on Student Achievement: Result of MEAP Statenide Texts*. New England Journal of Public Policy. Vol. No 1 Pp 9 – 28.
- Hanushek, E.A. (1979). *Conceptual and Empirical Issues in The Estimation of Production Functions*. Journal of Human Resources, 14 (3). Summer 351 - 387.
- Levy, M.B. (1971). *Determinants of Primary Dropouts in Developing Countries in Comparative Education Review*. February.

- Longe, R.S. (1981). Factors Influencing Current Cost of Secondary Education in Oyo State of Nigeria. Unpublished Ph.D Thesis of the University of Ibadan. Nigeria.
- Oguntoye, A.O. (1983). Input - Output Analysis in Nigerian Secondary School System, Lagos Educational Review: A Journal of Students in Education. Vol. 2, No 1, 1983.
- Omisade, V.O. (1985). Impact of School Management Environment on Students Output Quality in Oyo State Secondary Schools. Unpublished Ph.D Thesis, University of Ibadan, Ibadan. Nigeria.
- Oni, J.O. (1992). Resources and Resource Utilization as Correlates of Schools Academic Performance in the Secondary Pre-vocational Education in Ogun State. Unpublished Ph.D Thesis of the University of Ibadan, Ibadan. Nigeria.
- Ojoawo, A.O (1989). Effects of Differential Distribution of Resources Allocation on Schools Performance in WAEC Examinations in Oyo State, Nigeria, 1984 - 1987. Unpublished Ph.D Thesis, University of Ibadan, Ibadan. Nigeria.
- Reff, H.F. (1972). Thailand Educational Cost Analysis. Educational Cost Analysis in Action 1 Paris: UNESCO - IIEP. Pp 213.
- Romney, V.A. (1992). National Networking for State Community Education Capacity Building. 1991.
- Thomas, H. (1990). Educational Cost and Performance. A Cost Effectiveness Analysis; Cassel Education, Ltd. London.
- Wending, W. (1981). Educational Resources and Students Achievement. Good News for Schools. Journal of Education Finance. Vol. 7, No 1. Pp 44 – 63.
- World Bank (1988). Education in Sub Saharan Africa, Policies for Adjustment Revitalization and Expansion. The World Bank, Washington. D.C.