

Social Cost Analysis of Secondary Education in South West Nigeria (1996-2001)

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ABSTRACT The study examined the trend in social unit cost of secondary education in the southwest of Nigeria between 1996 and 2001. The findings revealed that unit costs and student's enrolment were inversely related while marginal cost remained higher than unit cost for most years of study. Some cost effective measures were recommended to attain economies of scale.

INTRODUCTION

Education is both a private and social investment, which contributes to economic development and raises the incomes of the poor as much as investment in physical capital does. The governments of Nigeria and in particular, governments in the south-west Nigeria have long realized and recognized the importance of investment in education. This recognition of the great need for investment in human capital took root in 1955 when the then western region launched the universal primary education (UPE) Programme. Since then, subsequent civilian governments in this region have continued to invest in education. The most important educational policy decisions taken since then have been the abolition of tuition fees and the takeover of all missionary schools.

Since then, education has been the constitutional responsibility of the governments and this has resulted in rapid and unabated increase in demand for education. The rapid and unabated increase in demand for education at all levels has its attendant consequences on educational expenditure.

Costs in this study are used to signify direct school expenditure incurred by governments. Akangbou (1987) and Adeyemi (1998) defined direct social costs of education to imply the actual financial expenditures on education by governments, which include teachers and non-teachers salaries and allowances, expenditures on books equipment, stationary and transport, imputed rent on educational buildings, maintenance cost and other expenditures on goods and services.

In its broad usage, cost implies the resources

(money, materials, and men) used up for the operation of a business enterprise (Lipsey, 1976; Aghenta, 1993). Cost in education represents the real resources in terms of money and sacrifices that are used up to produce an educated person.

Generally, costs in education are classified into social and private costs. To Akangbou (1987) social costs represent social investment or government expenditures on education while private costs are costs incurred by the individuals and their households. Social and private costs are further divided into direct and indirect costs. Direct social and direct private costs refer to the actual direct expenditures by governments and individuals or their parents in providing education.

The direct social cost of education which is the focus of this study is further distinguished as recurrent social cost (RSC) and capital social cost (CSC), both added together to give the total social cost (TSC) of education, i.e. $TSC = RSC + CSC$. Recurrent social cost refers to those costs that "recur regularly and covers expenditures on goods and services that bring immediate and short-lived benefits" (Psacharo-poulos and Woodhall, 1997). Thus, expenditures on consumable goods such as materials and personnel salaries, rent, interests, grants etc used up within an accounting year are classified as recurrent expenditure (cost). While capital (cost) expenditures include the purchase of durable assets such as buildings or equipment, that are expected to yield benefits over a longer period. To Psacharopoulos and Woodhall (1997), the crucial distinction between recurrent and capital cost lies in the source of finance. To them, recurrent expenditures are financed from current income or revenue, while capital expenditures are financed

by loans from international agencies as well as other sources of income.

More often than not, educational planners and managers are encouraged to translate all educational inputs in school operation into monetary value to make feasible, the quantification of the cost of producing a unit of graduate. Thus, in actual cost analysis, educational planners, like economists, use most, the unit cost concept as basis for measurement.

Unit cost analysis in education provides useful guide to educational planners and managers as they provide information on the actual cost involved in producing a graduate at any level of education. It indeed, gives an insight into the pattern of educational expenditures. The various cost concepts are relevant as they help governments to make choices and take varied decisions. For example, the need to compare costs over the years, for projection of financial needs, the need to either expand existing facilities or build new schools and decisions about alternative educational technologies (Aghenta, 1984; Psacharopoul and Woodhall, 1997). Cost analysis is very significant in investment planning and financing of education. It is directed at making available in very clear terms, the value of a project or what would be needed to guarantee acquisition. Moreover, Adeyemi (1998), Pacharopoulos and Woodhall, (1997) asserted that cost analysis gives an idea about educational efficiency, which is measured in terms of the utilization of real resources. Cost analysis is often used to identify possible cost reductions. Indeed, the need for cost reducing measures and more generally for policies towards cost-effectiveness is everywhere present and is now becoming more obvious than ever before.

Governments invest huge amounts of money on education, being the largest growth industry in the world. This indicates that over the years and in most countries, education remains the largest devourer of taxpayers' money (Coombs, 1985; Fafunwa, 1986). It is however astonishing that so little is known about the behaviour of educational costs, particularly by educational administrators and governments in developing countries. Ideally, decisions to introduce new educational programmes, expansion of existing ones and employment of new teachers are supposed to be preceded by a careful analysis of cost functions. Nevertheless, as UNESCO (1980), Coombs (1985), Psacharopoulos and Woodhall (1997) pointed out, such decisions in actual practice often represent political act of faith rather

than a careful analysis of cost functions. Hence, more often than not, the conventional line-item budget is designed to satisfy the needs of auditors, not the needs of cost-conscious educational managers seeking ways to improve the efficiency and effectiveness of their school system. It is in the light of this that this study examines the following questions:

1. What is the relationship between growth in student enrolment and increase in total social costs (TSC) incurred by the states during the period of study?
2. What is the trend in recurrent social cost (RSC) and capital social cost (CSC) for the period under review?
3. What is the trend in total unit cost (TUC), recurrent unit cost (RUC) per student (RUCs) and per teacher (RUCt) for the period of study?
4. Does the unit cost (RUCs, and RUCt, TUCs & MC) vary significantly among the states and in the years of study?

METHODOLOGY

The study adopted the descriptive research design. This is because the variables of study-teachers, and non-teachers salaries and allowances and the other cost items and students enrolment are on-going events with influences on current and future conditions (Hassan, 1995).

The population of study was made up of the public secondary schools in six states of the federation, namely: EKITI, LAGOS, OGUN, ONDO, OSUN, and OYO states. The two stage random sampling technique was adopted to select three states – OGUN, ONDO, and OSUN states, which formed the subject of the study. The entire public secondary schools in the three states sampled that are financed entirely by the state governments were used for the study.

Instrumentation: The main instrument for the study was a cost analysis checklist (CAC), which was used to collect the following data:

1. Secondary schools enrolment for the period 1996-2001
2. Number of teachers and non-teaching staff in all the states from 1996-2001.
3. Salaries of the teaching and non-teaching staff for each of the year 1996-2001.
4. Total subventions to all schools in the states for each of the years 1996-2001.
5. Total amount spent on capital projects in all secondary schools in the states for each of the years (1996-2001).

Data collection and Analysis: The data for the study were collected from the statistics division of the various ministries of education of the states sampled. The researcher made use of teachers who are external or distant degree students of the Delta State University, but are indigenes and residents of the sampled states. The authorizing ministry officials duly authenticated the data collected.

In analyzing the data, they were first coded and summed up. Then, these formulae were used to compute the unit costs.

$$1. TSC = RSC + CSC$$

Where TSC = Total Social Cost

RSC=Recurrent social cost, made up of the salaries and allowances of teachers and non-teachers plus total subventions for consumables

CSC=Capital social costs are costs for capital or fixed or durable projects.

$$2. TUC = TSC / N_s$$

Where TUC is Total Unit Cost.

TSC=Total Social Cost

N_s=Number of students enrolled

$$3. RUC_s = RSC / N_s$$

Where RUC_s=Recurrent unit cost per student

N_s=Number of students enrolled

RSC=Recurrent social cost.

$$4. RUC_t = RSC_t / N_t$$

Where RUC_t=Recurrent unit cost per teacher

RSC_t=Recurrent social cost (teachers salaries and allowances).

N_t=Number of teachers employed for the period.

$$5. MC_s = \Delta TSC / \Delta N_s; \text{ where:}$$

MC_s=Marginal cost of an additional student enrolled

ΔTSC=Change in Total social cost

ΔN_s=Change in Number of students enrolled.

Graphs and tables were used to present the results.

RESULTS

Table 1 shows the total student enrolment in the three states from 1996 to 2001: the teaching and non-teaching staff strength, their salaries and allowances for each of the states and years of study. It also shows the total subventions and capital votes to the schools. This Table conveys all the data collected for the study and it is used to compute all other Tables and graphs. The data reveals that the states did not release money for capital projects during the period of study, particularly during the military dictatorship (1996-1998).

Research Question One: What is the relationship between growth in student enrolment and increase in total social costs (TSC) incurred by the states during the period of study?

As shown in Table 2, of the three states studied, only OGUN experienced growth rate in student enrolment all through the period. . All through the military era (1996-1998), ONDO state witnessed steady decline in student enrolment until 1999 and beyond when it started to experience increased growth rate in enrolment (38.22%) in 2000. The highest rate of decrease in enrolment was in OSUN State (-45.14% in 1999 and -25.13% in 2001). She experienced steady decline in student enrolment in all the years of study except in 1998 with 7.95% growth rate.

Research Question Two: What is the trend in recurrent social cost (RSC) and capital social cost (CSC) for the period under review?

The states experienced consistent increase in total cost (TSC) for the period under review, except OSUN State, which had zero growth rates for the year 2001. OGUN State recorded the highest growth rate of (TSC) in 1998 (1817 %) while OSUN State recorded the highest rate of decrease (-35.7%) in 1999. As shown in Table 3 only OGUN State provided funds for capital expenditure for five of the six years of study. ONDO State on the other hand, provided for capital expenditure for three years while OSUN provided for, only in two of the six years of study. It was only OGUN State that also provided the highest amount of capital vote, which was as high as 57.1% of total cost in the 1998 academic year.

Research Question Three: What is the trend in Total Unit Cost (TUC); Recurrent Unit Cost (RUC) per student (RUC_s); and per teacher (RUC_t) for the period of study?

The data in Table 4 indicates that the states recorded steady increase in recurrent unit costs per student and teacher (RUC_s and RUC_t) all over the years of study. In all the years, OGUN State recorded the lowest unit costs per student and teacher (RUC_s and RUC_t) respectively. The (RUC_t) remained high and above the RUC_s in all the years and among the states.

Research Question Four: Does the unit cost (RUC_s, RUC_t, TUCs and MC) vary significantly among the states and years of study?

As shown in Tables 2, 3 and 4 the RUC_s and RUC_t varied significantly among the states and years of study. For example, the variation in RUC_s in OGUN State remained significant for the period. It rose merely from N96.5 in 1996 to 7, 120.9 in 2000

Table I: Trend in student enrolment and cost of education

Year	State	Total Student Enrolment		Staff Strength		Recurrent Cost				Capital Social Cost (CSC)		Total Social Cost (TSC)
						Salaries/ Allowances		Sub Ventions		Total Recurrent Cost (TRC)		
		Teachers		Non Teachers		N		TRC		CSC		
		Teach- ing	Non Teaching	Total								
1996	OGUN	233607	4760	1200	5960	15467362	6889452.2	180000	22536814.2	22536814.2	22536814.2	
	ONDO	146422	6192	698	6890	800369408.1		8785320	809154728.1	809154728.1	809154728.1	
1997	OGUN	248231	5150	1342	6492	17355760.52	7401165	203000	24959925.52	2489992	27449917.52	
	ONDO	141998	6282	818	7100	8031123330		8519880	8039643210		8039643210	
1998	OGUN	260245	22000	8542	30542	393694280	18886608	10000000	422580888		422580888	
	OGUN	258158	5206	1526	6732	225000143	750000.48	237000	225987143.5	300237190	526224333.5	
1999	ONDO	133416	6755	858	7613	964562402.1		8004960	972567362.1		972567362.1	
	OGUN	265330	22555	8542	31097	3959878900	18906950	11785454	3990571304		3990571304	
2000	OGUN	270188	5320	1576	6896	692203283	230734428	261000	92319871	92319871	1015518582	
	ONDO	136230	6546	880	7426	1068442343		8173800	1076616143	24306218.19	1100922361	
2001	OGUN	145566	15785	6244	22029	2536956487	15465784	12000000	2564422271		2564422271	
	OGUN	284219	5192	1582	6774	1517733888	505911296	235000	2023880184	2023820.44	2025904004	
2002	ONDO	188302	8133	1002	9135	4140552266		11298120	4151850386	62987006.2	4214837392	
	OGUN	140550	15785	6244	22029	2536956487	15465784	12000000	2564422271	255242271	2819664542	
2003	OGUN	295520	7211	1404	8615	1530393277	510131092	325000	2040849369	2061258862	2061258862	
	ONDO	209019	10433	1240	11673	4237665667		12541020	4250206687	134262604	4384469291	
2004	OGUN	105234	15785	6244	22029	2536956487	15465784	12000000	2564422271	255242271	2819664542	

Source: Computed from data obtained from fieldwork.

Table 2: Trend in student growth rate and increase in total social cost

Year	State	Total Student Enrol-ment (^ NS)	^ In Yearly Enrol-ment (%)	Growth Rate In Enrol-ment	Total Social Cost	Total Unit Cost Per Student (TUCS)	^ In (TSC)	(Tsc) (%)	Marginal Cost Per Student (Mcs)	Rmks
1996	OGUN	233607			22536814.2	96.47				
	ONDO	146422			809154728	5526.18				
1997	OGUN	248231	14624	6.26	27449917.5	110.58	4913103.32	21.80	335.96	*
	ONDO	141998	-4424	-3.02	811632213	5715.80	2477485	0.31	-560.01	***
	OSUN	260245	260245		422580888	1623.78	422580888		1623.78	****
1998	OGUN	258158	9927	4.00	526224334	2038.38	498774416	1817.03	50244.22	*
	ONDO	133416	-8582	-6.04	972567362	7289.74	160935149	19.83	-18752.64	***
	OSUN	265330	5085	1.95	3990571304	15040.03	3567990416	844.33	701669.70	*
1999	OGUN	270188	12030	4.66	1015518582	3758.56	489294248.5	92.98	40672.84	*
	ONDO	136230	2814	2.11	1100922360	8081.35	128354998	13.20	45613.01	*
	OSUN	145566	-119764	-45.14	256442271	17616.90	-1426149033		11907.99	**
2000	OGUN	284219	14031	5.19	2044118387	7192.05	1028599805	101.29	73309.09	*
	ONDO	188302	52072	38.22	4214837392	22383.39	3113915032	282.85	59800.18	*
	OSUN	140550	-5016	-3.45	2819664542	20061.65	255242271	9.95	-50885.62	****
2001	OGUN	295520	11301	3.98	2061258862	6975.02	17140475	0.84	1516.72	**
	ONDO	209019	20717	11.00	4384469290	20976.42	169631898	4.02	8188.05	**
	OSUN	105234	-35316	-25.13	2819664542	26794.24		0.00	0.00	****

Source: Computed from data obtained from fieldwork

Key

^ NS = Change In Student Enrollment

^ TSC = Change In Total Social Cost

MCs = Marginal Cost Of an Additional Student Enrolled

MCs = ^TSC / ^Ns

* = MC>TUCs

** = MC<TUCs

*** = MC= Negative or Zero

**** MC=TUCs

or 7279.2% growth Rate. ONDO State on the other hand, encountered 299% growth rate from N5526.2 in 1996 to N22, 048.9 RUCs in 2000. The data in Table 2 vividly indicate that marginal cost (MC) remained over and above the Total unit Costs in OGUN State for 1997, 1998 and 1999 and ONDO State for 1999 and 2000. In the other years, in Ondo and Osun states, the TUCs either remained higher than the MCs or the MCs was negative.

DISCUSSION

The central concern of this investigation was to examine the trend in social unit costs of secondary education in the south-west Nigeria between 1996 and 2001. The choice of this region and period was informed by the fact that universal primary education started in Nigeria in this region far back in 1955 and the period marked the end of a pro-longed military rule and the first three years of civilian rule.

The study revealed that only OGUN State experienced increased student enrolment in all the years studied. While ONDO state recorded steady decline in enrolment from 1996 to 1998, it increased thereafter to record the highest growth rate among the states in 2000 (38.22%). OSUN state on the other hand, experienced steady decline in enrolment all through the years of study except in 1998 when she had a growth rate of 2%. The introduction of school fees, levies, and dropouts and perhaps, the establishment of private educational institutions during the military and beyond could have informed the findings. In addition, the prolonged IFE/MODAKEKE crisis had its tolls on school enrolment in OSUN State.

The study showed that the states also experienced steady increase in total social cost (TSC) for the period of study. Again ONDO State recorded the lowest growth rate (0.31%) in 1997 while OSUN State recorded the highest growth

Table 3: Trend in recurrent social cost (RSC), capital social cost (CSC) and total social cost (TSC) 1996-2001

Year	State	Total Student Enrolment	Growth Rate in Recurrent Social Cost (%)	Total Recurrent Cost (TRC)	Capital Social Cost (CSC)	Csc As % of TSC	Total Social Cost (TSC)
1996	OGUN	233607		22536814.2			22536814.2
	ONDO	146422		809154728			809154728
	OSUN						
1997	OGUN	248231	10.8	24959925.52	2489992	9.07	27449917.52
	ONDO	141998	0.3	811632213			811632213
	OSUN	260245		422580888			422580888

Table 4: Computed unit costs

Year	State	(RUCs)	(RUCt)	(TUCs)	TR. :Ns	Non tr.as % of total staff	AS A % of (TSC)
1996	OGUN	96.47	3249.45	96.47	49.1	20.1	68.63
ONDO	5,526.18	129,258.63	5,526.18	23.6	10.1	98.91	
OSUN							
1997	OGUN	100.55	3,370.05	110.58	48.2	20.7	63.23
ONDO	56,618.00	1,278,434.15	56,618.00	22.6	11.5	99.89	
OSUN	1,623.78	17,895.19	1623.78	11.8	28.0	93.16	
1998	OGUN	875.38	43219.39	2038.38	49.6	22.7	42.76
ONDO	7,289.74	142,792.36	7,289.74	19.8	11.3	99.18	
	OSUN	15,040.03	175,565.46	15,040.03	11.8	27.5	99.23
1999	OGUN	3,416.88	130,113.40	3,758.56	50.8	22.9	68.16
ONDO	7,902.93	163,220.65	8,081.35	20.8	11.9	97.05	
OSUN	17,616.90	160,719.45	17,616.90	9.2	28.3	98.93	2000
OGUN	7120.85	292,321.63	7,127.97	54.7	23.4	74.92	
ONDO	22048.89	509105.16	22383.39	23.2	11.0	98.24	
OSUN	18,245.62	160,719.45	20,061.65	8.9	28.3	89.97	2001
OGUN	6,905.96	212,230.38	6,975.02	41.0	16.3	74.25	
	ONDO	20,334.07	406,179.02	20,976.42	20.0	10.6	96.65
OSUN	24,368.76	160,719.45	26,794.24	6.7	28.3	89.97	

Source: Computed from data obtained from fieldwork.

rate in (TSC) in 1998 (1817.03%), while OGUN recorded all as the highest decrease (-35.74%) in 1999.

As shown in Table 2, while OGUN State attained the highest growth rate in (TSC) in 1998 (1817.03%) Osun State followed with 844.3% growth rate in 2000, then OGUN State 101.3% in 2000 and 92.98% in 1999. All the states incurred high percentage increase in TSC because of their increased subventions and capital expenditures. For example, OSUN State experienced decrease in TSC in 1999 (-35.74%) because it did not provide for capital expenditure. In addition, the increased (TSC) could be attributed to high rate of non-teaching staff in the states as well as the new salary scale accorded all civil servants and teachers by the civilian administration. Another important finding of the study is the relationship between (RSC) and (CSC). Apart from OGUN State that spent 57.05% of its TSC on capital projects in 1998, there was no other year any state spent up to 10% of her TSC on capital projects. In 2000 and 2001, OGUN State spent only 0.1% and 1% of her TSC on capital projects respectively. This shows that on the average, no state studied spent less than 94% of its TSC on recurrent costs.

The (RUCs) and (TUCs) remained lowest in states with the highest enrolment figures, except OSUN, which consistently experienced steady decline in enrolment. This implies that indeed, unit costs and student enrolment are inversely related. This confirms the works of Psacharopoulos (1982), Psacharopoulos and Woodhall, (1997).

The teacher/student ratio was also found to have an inverse relationship with unit cost per student. The states with low unit cost were found to have high teacher/student ratios, while those with high unit costs invariably had very low teacher/student's ratios. For example, OSUN and ONDO with very low teacher/ students' ratios recorded the highest unit costs. However, OGUN state with the highest teacher/students ratio did not attain the lowest unit cost because she had a very high proportion of non-teaching staff such that teachers salaries only accounted for 65.3 % recurrent cost as against 96.4 % for the other states.

A crucial finding of this study is the fact that marginal cost (MC) of educating an additional secondary school student remained higher than the unit cost (TUCs) for most of the years studied. This is an indication that the schools

particularly in OSUN and ONDO States experienced diseconomies of scale in most years. With decrease or negative growth rate in enrolment, unit cost rise above marginal cost (TUC > MC) or marginal cost becomes negative.

To attain cost effectiveness and hence economies of scale, it is recommended that the states with very low teacher/students ratios should increase student enrolment so as to attain the minimum threshold with minimum unit cost that equates marginal cost i.e. (TUCs=MC).

The managers of the school system should ensure that new teachers and non-teachers are not recruited indiscriminately without recourse to stipulated target. In this way, more funds can be available for subventions and capital projects that may improve the quality of education

REFERENCES

- Adeyemi, J.K 1998. "Costs in Education", (pp. 56-67), in M. Nwadiani (ed.), *Education management for Sub-Saharan Africa*. Benin-City: Nigerian Society for Educational Planning (NSEP).
- Aghenta, J.A. 1984. "Towards a systems Approach to planning of secondary Education in Nigeria", (pp. 37-63.), in S. Adesina and S. Ogunsaju (eds.), *Secondary Education in Nigeria*. Ile-Ife: University of Ife Press.
- Aghenta, J.A. 1993. *Principles and practices of Educational planning: Focus on the Developing Countries*. Benin City; Nigerian Society for Educational planning (NSEP).
- Akangbou, S.D. 1987. *The Economics of Education: An Introduction*. Ibadan: Shaneson C.I. Limited
- Coombs, P.H. 1985. *The World Crises in Education: The View from the Eighties*. N.Y: Oxford University press.
- Fafunwa, A.B. 1986. "Education in Nigeria: Development of Education in Nigeria", (Pp 21 – 33), in B.O. Ukeje, L.O. Ocho; E.O. Fagbamiye (eds.), *Issues and Concerns in Educational administration: The Nigerian Case in International Perspectives*. Ibadan: Macmillan Nigeria Publishers Limited.
- Hassan, T. 1995. *Understanding Research in Education*. Ogbia, Ikeja, Lagos: Merrifield Publishers Limited.
- Olubor, R. 1999. "Social Recurrent unit cost of secondary Education in Edo State of Nigeria: Implication for population and Education", (pp. 266-276) in S.O.S. Oriafio and C.C. Nwagwu (eds.), *Population Education in Nigeria: Themes and Perspectives*. Benin City: Institute of Education, University of Benin.
- Psacharopoulos, G. 1982. *Peru: Assessing Priorities for Investment in Education and Training*. Washington, D.C./P World Bank, Education Department.
- Psacharopoulos, G. and D. M. Woodhall. 1997. *Education for Development. An Analysis of Investment Choices*. USA: Published for the Word Bank, Oxford University Press.
- Todaro, M.P. 1979. *Economics for a Developing World*. London: Longman Group Limited.