ANALYSIS OF INTERNAL EFFICIENCY OF TECHNICAL
COLLEGES IN LAGOS STATE.

A PAPER PRESENTED

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ABSTRACT

This study investigated the issue of internal efficiency of Technical Colleges in Lagos State Nigeria with a view to suggesting ways of minimising wastage on the products of the system. The study took stock of the resources available and how they affect the internal efficiency of technical colleges in Lagos State. Data were collected through the use of a questionnaire styled Technical Colleges Efficiency Analysis Questionnaire (TCEAQ). The questionnaire was administered to the Principals/Vice principals of the technical colleges. The data were analysed with the use of simple percentages and the reconstructed cohort method. The study found, among other things that the wastage rates were 2 percent and 3 percent and wastage ratio 1.00 and 1.08 respectively for the two sets of cohorts used, the performance of students was positively related to the rate of utilization of the available resources, students-Teacher ratio was calculated to be 12:1 both physical and material resources were in short supply and the available resources were perceived to be maximally utilised.

Based on the findings of the study, some recommendations were made with implications for both practice and further study.

Introduction:-

The provision for technical education by the National Policy on Education (1981) poses some challenges. The challenges are the provision of physical material, human and financial resources and the utilization of these resources to achieve the objectives of technical education for the nation. Mill (1972) says that skill acquisition involves respective performance of an operation through manual dexterity. This implies that skill activities are accomplished through interaction of a performer with some material objects. Students can only interact effectively with learning resource materials if the teachers make effective use of the resources during teaching. Curzon (1980) maintains that when resources are well selected and skillfully used, they multiply and widen the channel of communication between the teacher and the learner. According to Bajar (1991), ineffeciency in the use of resources in teaching on the other hand discourages students' practices. Okebukola and Adeniji (1987) found that frequency of use of laboratory resources showed a high positive correlation with achievement.

The Concept of Efficiency in Education:-

The concept of efficiency in education generally refers to the capacity of the educational system to turn out its graduates with minimal wastage. Inernal Efficiency in the context of this study refers to the extent of the educational systems' ability to reduce wastage resulting from repetition, drop outs and failures. Wastage in education is used to describe those uncertificated school leavers who left before

completion of their course, or those who completed the courses with some years of failure or those who completed the course but failed in the end to obtain the terminal certificate.

Quite a number of studies had been carried out on efficiency of Education in recent years.

Okedara (1981) carried out a study relating to Education wastage in Ibadan. Using 60 adult learners and 369 pupils enrolled at the Abadina Primary School I, University of Ibadan as the control group. The result of the study revealed that the internal efficiency of the Abadina Primary School used as control group was much higher than that of the experimental group.

Patwari (1981) attempted a measure of educational efficiency through a cohort analysis. He contended that outputs of educational system are certificated school leavers who have passed through a basic input of students' years. His analysis was based on the hypothetical flows of 1000 pupils through the primary level in Ibadan from 1973/74 to 1980/81 and their various promotion, repetition and drop-out rates. In his result, he concluded that maximum efficiency is never achieved in any country's educational system as a result of wastage in respect of pupils who repeat some of the grades.

Durosaro (1985) conducted a study relating resource allocation to internal efficiency of secondary education in Bendel State between 1975 and 1983. The findings in the study revealed that wastage rate on secondary education recurrent

expenditure was estimated to be 19.19 percent of the total recurrent expenditure. Out of this repetition accounted for 4.05 percent, 0.687 percent to drop-outs and 14.45 per cent to failures of students. He also discovered that total recurrent expenditure and wastage rates on secondary education in Bendel State showed significant correlation over the period of study, thus as the resource allocation increased, wastage rate decreased. Adeyemi (1989) conducted another study on resource situation and internal efficiency of technical colleges in Nigeria. He made use of twenty-four technical colleges in the sampled states. The findings showed, among other things that technical colleges were highly internally efficient and the wastage ratio was 1.04 while the wastage rate was 2.7 per-cent.

Also Adeogun (1995) conducted a similar study to evaluate the internal efficiency of Junior Secondary Education in Oyo State, between 1986 and 1990. The study revealed that the system was not internally efficient. The wastage ratio decreased from 1.16 in 1988 to 1.07 in 1990 and the wastage rate decreased from 8.7 percent in 1988 to 4.7 percent in 1990.

All the studies reviewed earlier have served as useful guide to the present study. The present study adopted the reconstructed cohort method to investigate the extent of internal efficiency of Technical Colleges in Lagos State.

Purpose of the Study:-

The objectives of the study are to analyse the resources in technical colleges in Lagos State, identify the degree of efficiency by measuring the internal efficiency, state causes of inefficiencies (if there are) and suggest ways of eliminating them.

Research Questions:-

1. What are the quantity and quality of resources allocated to technical colleges in Lagos State between 1994 - 1997?

2. What are the wastage rates and ratios in the technical colleges?

3. Are technical colleges in Lagos State internally efficient?

4. What is the relationship between resource availability and students academic performance in the technical colleges.

Hypotheses:-

The following hypotheses were developed based on the research questions:

1. There is no significant difference between the resources available in 1994 and those available in 1997 in the . technical colleges.

2. There is no significant relationship between the resources available and the educational wastages in the technical colleges in Lagos State.

Methodology:-

All the five technical colleges in Lagos State formed the population of the study. The reconstructed cohort method

and simple percentages were used to analyse the data collected.
Information relating to the study were gathered through the
use of a questionnaire styled Technical Colleges Efficiency
Analysis Questionnaire (TCEAQ). The questionnaires were
administered on the principal of each school used.

Analysis of data:-

Four questions were raised to guide the study. In answer-
ing the questions, simple percentage and the flow technique
via the reconstructed cohort method were used in analysing
the extent of adequacy of resources and internal efficiency
of technical colleges.

The analysis were done according to the research questions
as follows:-

Research Question 1:-

1. What are the quantity and quality of resources allocated
   to technical colleges in Lagos State between 1994 and
   1997?.

Table I: STOCK OF TEACHERS IN THE TECHNICAL COLLEGES

S/N	TECHNICAL COLLEGES	QUANTITY OF TEACHERS DEMANDED AND PERCENTAGE	QUANTITY OF TEACHERS SUPPLIED AND PERCENTAGE
1	Government Technical-College, Ado-soba (Badagry).	76(100%)	68(89.5)
2	Government Technical College, Ikeja.	50(100%)	50(100)
3	Government Technical College, Epe.	58(100%)	38(65.5)
4	Government Technical College, Ikorodu.	41(100%)	35(85.4)
5	Government Technical College, Ikotun.	94(100%)	90(95.6)
	TOTAL	319(100%)	281(88.1%)

Table 1 above shows that the number of teachers supplied were below the number demanded. There were 281 teachers supplied (88.1 percent) instead of the required 319.

Table 2:   STUDENT-TEACHER RATIO IN THE TECHNICAL COLLEGES

S/N	TECHNICAL COLLEGES	STUDENTS POPULATION	TEACHERS POPULATION	STUDENT-TEACHER RATIO
1.	G.T.C Ado-Soba.	777	68	11:1
2.	G.T.C. Epe	292	38	8:1
3.	G.T.C. Ikeja	559	50	11:1
4.	G.T.C. Ikorodu	551	35	16:1
5.	G.T.C. Ikotun	1042	90	12:1
	Total	3221	281	12:1

Table 2 revealed a maximum of sixteen students to a teacher and a mimum of eight students to a teacher. On the whole, an average of twelve students to a teacher was found in the five technical colleges.

Table 3:   STOCK OF FACILITIES IN THE FIVE TECHNICAL COLLEGE

ITEMS OF EQUIPMENT	COLLEGES WHERE ADEQUATETLY EQUIPPED	COLLEGES NOT ADEQUATETLY EQUIPPED
Furnitures	3	2
Lecture rooms	2	3
Laboratories	1	4
Workshops	2	3
Library	4	1
Staff rooms	4	1
Instructional Materials	0	5
Total	16	19
Percentage	45.7	54.3

Table 3 revealed an inadequate physical and material resources in the five technical colleges between 1994 and 1997. Fifty-four point three percent of the facilities were not adequate.

Table 4: NUMBER OF TEACHERS BY QUALIFICATIONS IN THE
TECHNICAL COLLEGES.

S/N	COLLEGE	MASTERS DEGREE	GRADUATE WITH TEACH-ING QUA-LIFICA-TION	GRADUATE WITHOUT TEACH-ING QUA-LIFICA-TION	HND	NCE.	OTHERS	TOTAL
1.	G.T.C. Ado-Soba	2	5	3	10	16	32	68
2.	G.T.C. Epe	1	4	2	6	11	14	38
3.	G.T.C. Ikeja	4	14	6	19	7	0	50
4.	G.T.C. Ikorodu	1	3	3	4	14	10	35
5.	G.T.C. Ikotun	4	15	13	25	23	10	90
	Total	12	41	27	64	71	66	281
	Percen-tage	4.3	14.6	9.6	22.8	25.3	23.5	100

Table 4 revealed the various categories of teachers employed in the five technical colleges in Lagos State. Since technical colleges are post junior secondary education only 64.5 percent

of the teachers that have qualifications equivalent to a degree are qualified to teach while others (35.5 percent) were not qualified.

Research Question(2):-

What are the wastage rates and ratios in the technical colleges?

To answer this question, the flow chart on figures 1 and 2 were prepared to show the reconstructed cohorts of the 1994 - 1996 and 1995 to 1997 sets. The flow chart shows the number of repeaters, and drop-out for the successive years for each cohort of students. This enables one to calculate the total number of students that flowed through the system in the 5 colleges used as well as the number that repeated each year, the number that dropped out each year and the total number that failed out of the system in the final years.

Calculation of the total inputs of the 1994/96 cohort.

Year One 1994   =   1084 student-years.

Year Two 1995   =   834 student-years.

Year Three 1996   =   705 student-years.

2,623   student-years.

Total output from the evolution

1994/95   =   693

1995/96   =   181

Total   =   874

$$\frac{\text{Input}}{\text{Output}} = \frac{2623}{874} = 3.00$$

$$\text{Wastage Ratio} = \frac{3.00}{3} = 1.00$$

The quotient of the wastage ratio shows that the system was perfectly internally efficient.

Calculation of the total input of input of the 1995/96 cohort.

Year One 1995 $=$ 1205 student-years.

Year Two 1996 $=$ 958 student-years.

Year Three 1997 $=$ 746 student-years.

Total 2,909 student-years.

Total out-put from 1995/97 evolution of cohort.

1995/96 $=$ 718

1996/97 $=$ 179

897

$$\frac{\text{Input}}{\text{Output}} = \frac{2,909}{874} = 3.24$$

$$\text{Wastage ratio} = \frac{3.24}{3} = 1.08$$

The quotient of the wastage ratio shows that the system was internally efficient.

Table 5: COMPARISON OF WASTAGE RATIOS AND RATES FOR 1996 AND 1997.

YEAR	INPUT-OUTPUT RATIO	WASTAGE RATIO	WASTAGE RATE	PERFECT WASTAGE WASTAGE RATIO
1994/96	3.00	1.00	2%	
1995/97	3.24	1.08	3%	1

Table 5 reveals that the system was internally efficient since the quotient of wastage ratio was 1.00 in 1996 and 1.08 in 1997.
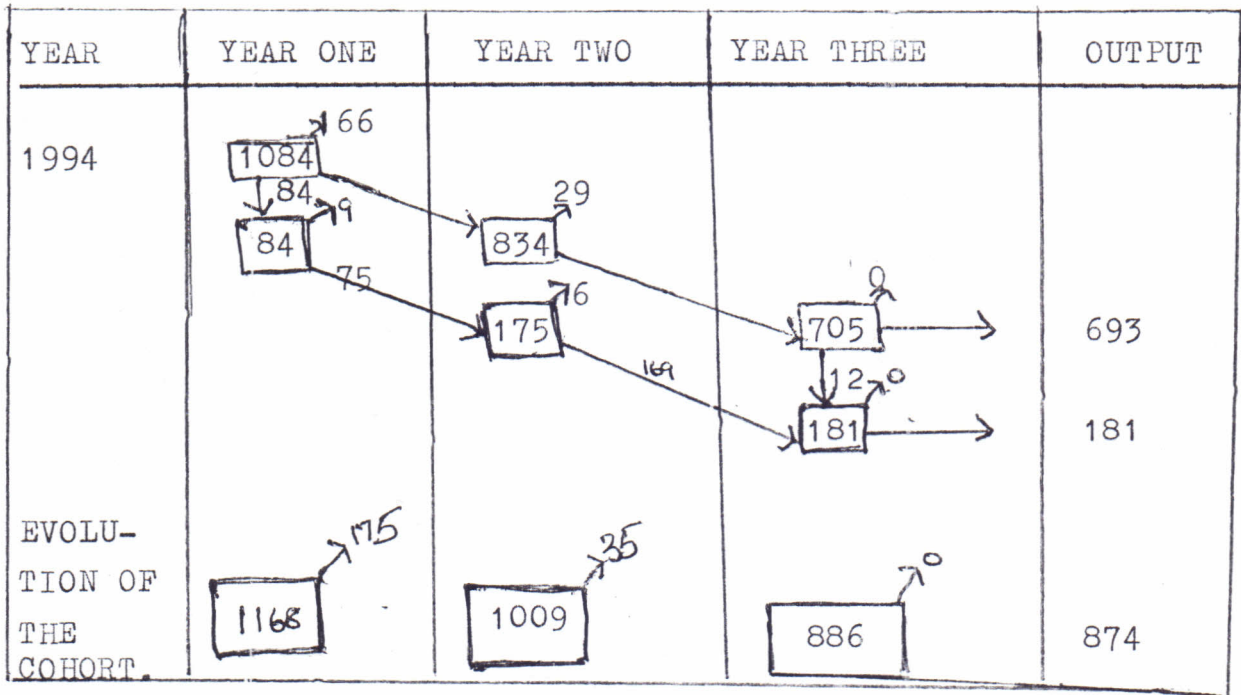
Table 6: COMPUTED EXAMINATION RESULTS OF 1996 AND 1997

Year	Total Enrolment	Total No of passes	Total No of failures	Percentage pass	Percentage fail
1996	857	845	12	98.60	1.40
1997	942	915	27	97.13	2.87
Total	1,799	1,760	39	97.9	2.1

Table 6 shows that 98.60 percent of the students who took the final examination in 1996 passed and 1.40 percent failed. Also 97.13 percent passed in 1997 while 2.87 percent failed. From the analysis, one can conclude that the system is internally efficient, although the 1996 result was better than that of 1997 since it had less failure than that of 1997.
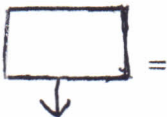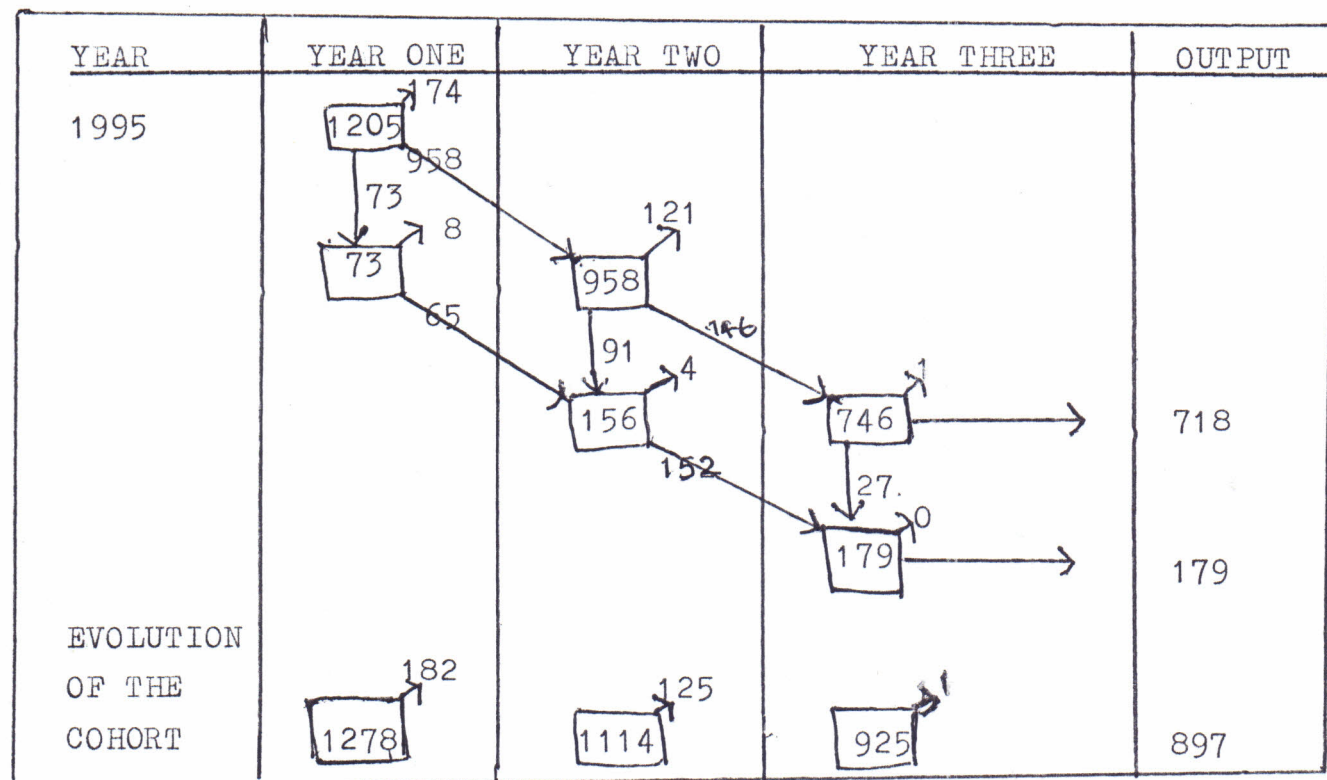
Figure I: FLOW CHART SHOWING A RECONSTRUCTED COHORT OF THE
1994/96 OUTPUT OF THE TECHNICAL COLLEGES.

YEAR	YEAR ONE	YEAR TWO	YEAR THREE	OUTPUT
1994	1084 66 84 84 9 75	834 29 175 6	705 0 181 12 0	693 181
EVOLU-TION OF THE COHORT.	1168 175	1009 35	886 0	874

KEY

 = Promo-tion

 = Repeti-tion

 = Drop-out.

Figure 2: FLOW CHART SHOWING A RECONSTRUCTED COHORT OF THE 1995/97 OUTPUT OF THE TECHNICAL COLLEGES.

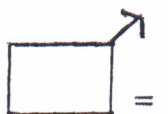| YEAR	YEAR ONE	YEAR TWO	YEAR THREE	OUTPUT
1995	1205 → 174 ↓ 73	958 → 121 ↓ 91	746 →	718
	73 → 8 ↘ 65	156 → 4 ↘ 152	179 ↑ 0	179
EVOLUTION OF THE COHORT	1278 ↗ 182	1114 ↗ 125	925	897

KEY
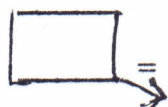
 = Promotion
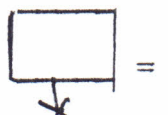
 = Repetition

 = Drop-out.

Major Findings:-

    The main findings of this study were as follows:

1. The human resources available to technical colleges were adequate why physical and material resources were in short supply.

2. Technical colleges in Lagos State were found to be internally efficient between 1994 and 1997.

3. Student/teacher ratio was found to be 12:1.

4. The wastage rates for the two sets of cohorts were found to be 2 percent in 1994/96 and 3 percent in 1995/97.

5. The resources available influenced the students academic performance and therefore the wastage ratio.

6. There was no significant difference between the resources available in 1994 and those in 1997.

Discussion of Findings:-

Despite the fact that the demand of teachers was greater than the quantity supplied, an average students-teacher ratio of 12 to 1 was obtained. This confirmed that teachers in the five technical colleges were enough to manipulate other resources for effective teaching and learning.

The analysis of the stock of physical and material resources showed that the resources were inadequate in quantity and in quality. The input-output analysis revealed 98 percent and 97 percent as successful completers and wastage rates of 2 percent and 3 percent for the two sets of cohorts. Since the wastage rates were minimal, one can conclude that students performance was significantly related to resource availability and utilization in the technical colleges in Lagos State between 1994 and 1997.

The 1.00 and 1.08 quotient of the wastage ratios
Obtained for the two sets of cohorts used for the study establi-
shed the fact that the system was perfectly internally effi-
cient. This finding was in line with what Adeyemi discovered
in 1989 when he made use of twenty-four Technical Colleges
across the country and obtained a wastage ratio of 1.04 while
the wastage rate was 2.7 percent.

Recommendations:-

For effective implementation of Technical education
curriculum, the Government should provide more physical, material
and highly qualified human resources for technical colleges.

The government should train more graduate teachers in
technical education to handle almost all the courses. Those
H.N.D without teaching qualifications should be encouraged to
undergo sandwich programme to become professionals.

Efforts should be made by the teachers to reduce or
eliminate wastages through effective teaching with enough practi-
cal work.

The condition of service of Technical Teachers should be
improved to encourage them to be committed to their teaching
functions.

Conclusion:-

It is the belief of the investigator that this study will
enlighten the public on the stock of resources available in

the technical colleges, the degree of internal efficiency and measures to eliminate wastages to the bearest minimum.

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