AN ANALYSIS OF MAINTENANCE FUNDING IN NIGERIAN FEDERAL UNIVERSITIES

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Abstract
The research examined and appraised the allocations relating to maintenance management of buildings in Nigerian Universities. It was aimed at generating and collecting data relating to maintenance needs, and funds available for the maintenance of Universities in Nigeria, thereby determining the appropriateness of the funding arrangement. The data used for the research work were collected from the Federal Universities in the six geopolitical zones in Nigeria. These data were collected by the use of 240 well structured questionnaires to university senior and experienced maintenance officers in the physical planning unit, in addition to critical examination of relevant documents from the maintenance department of the National Universities Commission, (NUC). Paired t-test, simple regression and multiple regression analyses were carried out using Microsoft excel and Minitab software packages. From the results it was found that inadequate funds relating to maintenance needs are drastically affecting the system of maintenance. It is recommended that allocations and appropriate utilization of maintenance funds to the Universities should be aggressively reviewed.

Introduction

The role of building maintenance is to retain the usefulness of a property in the public or private sector. Maintenance has been defined by Derek (1987) as work undertaken in order to keep or improve every facility that is part of a building, its service and surroundings to a currently acceptable standard and to sustain the utility and value of the facility. Maintenance work in the context of this study includes major improvements that uplift the status of a building to modern standards, such as re-roofing or rebuilding defective walls; general rehabilitation, refurbishing and so forth.

The maintenance of public buildings in Nigeria has not been accorded the needed attention as observed by Ahmed (2000). Much emphasis is placed in the public sector on the construction of new building structures while maintenance, which is supposed to start immediately the builder leaves the site is taken for granted. Execution of maintenance works are mostly left for maintenance department to handle on direct labor basis or on contract. Jobs of higher amount are frequently given out in form of maintenance contract to mostly unqualified building maintenance contractors Abiodun, (1996) observed that most of the lucrative contracts for building maintenance are awarded without due process, especially in the public sector organization in Nigeria. The end result is poorly executed maintenance jobs and in some cases maintenance is not carried out despite the fact that the contract has been awarded with funds released

Some of these problems can be reduced by carefully selecting suitable contractors for the maintenance of the public sector buildings.
The United Nations Centre for Human Settlements" (Habitat, 1991), noted that in many developing countries, poor maintenance practices arise from "lack of workable strategies, methodologies and techniques for effective utilization of available resources in a systematic and methodical manner".

In Nigeria, for instance, Zubairu (1998) opined that, lack of proper maintenance arrangement in tertiary institutions can be traced back to the rapid rate of students' enrolment in the country since independence in 1960, and the concomitant problems associated with it. Ironically, students' enrolment remains one of the major sources of revenue for the higher institutions; and the students' attraction to the institution ought to be driven by availability of

good facilities, including buildings and required laboratory and other equipment, in addition to high academic standerds. The emerging Changes in teaching strategies and funding arrangements for tertiary institutions in most developing countries of the world including Nigeria have forced the institutions to seek new and innovative ways of maximizing limited resources and increasing revenue (Buys and Nkado, 2003). This places new demands on maintenance officers and requires them to adopt more systematic and pro-active approach to their work.

The condition and quality of buildings in the tertiary institutions reflect public pride, the level of prosperity in the area, social values and behaviors and all the many influences both past and present, which combine to give the community its unique character. There can be little doubt that dilapidated academic infrastructures jeopardize the quality of life and contribute its quota to anti-social behavior among students and other members of the University community. Unfortunately these issues are rarely given proper consideration (Lee, 1988) and Oladapo, (2004).

The NUC capital allocations to the Universities are based on a strategy that grouped the Universities into "generations" such as first, second and third generations, established between 1948 and 1975 (Okebukola ,2005). The Universites are allowed to spend 40% of their annual Capital allocation for the construction of new physical facilities while the balance of 60% is to be spent on major repairs, maintenance and minor extension works. Second generations universities established 1975, are allowed to spend 70% on new projects and 30% on minor projects and maintenance (Okebukola, 2005).

The third generation Universities established between (1980 and 1988) are allowed 90% for new projects and 10% for maintenance works (Okebukola, 2005). Most Maintenance Officers (such as Directors of Works) in some of these institutions have been unable to distinguish between maintenance and rehabilitation. Often, routine maintenance works are described and treated as rehabilitation.

Despite the NUC's strategy earlier stated, Administrators of tertiary institutions in Nigeria spend an extremely small proportion of their total budget on maintenance according to Zubairu 1998 and Camillus 2004). This provides the basis for maintenance to be given a higher priority in the institutions' overall budget plan.

At present maintenance budgets are based on the previous year's spending plus adjustments for inflation. This approach could become a recipe for disaster. The continued neglect of the assets of tertiary institutions is not only storing up enormous bills for the future, but also seriously affecting the quality of teaching and learning within the institutions (Buys, 2003).

Aim and Objectives

The general aim of the study is to examine and appraise the expenditure relating to maintenance management of buildings in the Universities in Nigeria. In order to achieve this general aim, the specific objectives are as follows:

-To generate and collect data relating to maintenance needs, and funds available for the maintenance of building infrastructure in universities in Nigeria.

-To analyze data relating to maintenance needs and funding for buildings in universities in Nigeria with the aim of determining the appropriateness or otherwise of the funding arrangement.

Research Hypothesis

All the Universities selected were funded by the NUC and were located across the six geo-political zones of the country and cut across the first, second and third generation universities established by Government. The following hypotheses were tested;

1) Null Hypothesis; Ho
There is no significant difference between Capital grant allocation by the NUC and the Maintenance grant allocation.

Alternative Hypothesis; Ha

There is a significant difference between Capital grant allocation by the NUC and the Maintenance grant allocation.

2) Null Hypothesis; Ho

There is no significant difference between Capital grant allocation by the NUC and Capital grant released.

Alternative Hypothesis; Ha

There is a significant difference between Capital grant allocation and Capital grant released by the NUC.

3) Null Hypothesis; Ho

There is no significant difference between Maintenance grant allocation by the NUC and Maintenance grant released.

Alternative Hypothesis; Ha

There is a significant difference between Maintenance grant allocation by the NUC and Maintenance grant released.

Methodology

Data used for the research were obtained from the Federal universities in the six geopolitical zones in Nigeria. The choice of the geopolitical zones for data collection was informed by the fact that the institutions were assumed to be developed on similar master plan in terms of offices, lecture theatre and students' hostels and more importantly, they are all funded by the same parastatal, the NUC. In all, data from 12 Federal universities were used

The data were sourced through administration of 240 questionnaires to University senior and experienced Maintenance officers, and officers in the physical planning unit of the NUC, as well as examination of relevant documents from the maintenance department of the NUC and the annual reports, for the year under study. Several statistical tests such as paired t-tests, simple and multiple regression analyses were carried out using Microsoft Excel and Minitab software packages.

Data Presentation

Data on Allocations to the Three Generations of Universities

The detailed data sourced for the 1st, 2nd and 3rd generations universities are presented in tables1, -3 below

Table 1: Capitals, Recurrent and Maintenance Grants/ Allocations for the First Generation Universities (1995-2004)

	Capital Grant/Allocation Universities			Re-current Grant/ Allocation			Maintenance Grant/ Allocation		
Years	A1	B1	C1	A1	B1	C1	A1	B1	C1
1995	35784000	35784000	35784000	314725596	384335907	290101371	16102800	16102800	16102800
1996	34803470	34803470	34803470	368416005	356253892	343584026	14965492	14965492	14965492
1997	31032313	31032343	20546120	412387380	382472067	364582912	43817510	43817510	26534487
1998	44104670	44104500	44104500	441403982	423919514	403360512	18711000	18711000	15711000
1999	40095000	40095000	39847500	612417994	585658856	848190574	39600000	39600000	20047500
2000	47520000	47520000	12580863	2193462128	2097620469	2352182420	27965179	27965179	4660863
2001	259751700	363250800	723865559	1799251803	1760228316	1836401802	0	0	0
2002	0	0	0	2312525054	2765590416	2251051457	0	0	0
2003	0	0	0	2190040169	2630466547	2101956246	0	0	0
2004	550000000	550000000	628000000	2859347699	3260489704	2592407206	0	0	0

Where A1, B1 & C1 are 1st generations universities.

Source: field survey, 2005.

Table 2: Capital, Recurrent and Maintenance Grant Allocations for the 2nd Generation Universities (1995-2004)

	Capital Grant /Allocation Universities						Re-current Grant /Allocation						Maintenance Grant /Allocation					
Years	A2	B2	C2	D2	E2	F2	A2	B2	C2	D2	E2	F2	A2	B2	C2	D2	E2	F2
1995	37740000	37740000	37740000	3740000	37740000	37740000	135499133	115001293	160054007	182466697	81914047	81914047	13209000	13209000	13209000	13209000	13209000	13209000
1996	37049849	37049848	37049848	37049848	37049848	37049848	159785114	134619864	187358316	213594485	99727837	99727837	12226450	12226449	12226449	12226449	12226449	12226449
1997	42103146	32065132	32065132	32065132	32065132	32065132	177207632	150108509	201146777	229313771	107067213	107067213	22777603	11777203	11777203	11777203	11777203	11777203
1998	40244670	40244670	40244670	40244670	40244670	40244670	197758096	187033130	223038209	245448858	118875694	118875694	8910000	8910000	8910000	8910000	8910000	8910000
1999	35640000	37620000	85545000	25740000	32670000	32670000	283054119	379646421	485057032	502584435	292187673	292187673	19800000	17820000	17820000	17820000	17820000	17820000
2000	38610000	10560000	10560000	10560000	10560000	10560000	1013798576	1013657022	1382869334	1397837032	728368157	728368157	24750000	4125000	4125000	4125000	4125000	4125000
2001	15734450	303109881	378946735	347627488	232242409	232242409	911526083	784371846	1107746180	104130744	584975526	584975526	0	0	0	0	0	0
2002	0	0	0	0	0	0	1353376154	964868162	1299240200	1290170557	682347476	682347476	0	0	0	0	0	0
2003	0	0	0	0	0	0	1389987709	1055412089	1259177920	1275623781	664435650	664435650	0	0	0	0	0	0
2004	42500000	609726240	607726240	820430518	681874349	681874349	1620632983	1210122215	1602956162	1591570914	890847988	890847988						

Where A2- F2 are 2ND generations universities.
Source; field survey, 2005.

Table 3: Capital, Recurrent and Maintenance Grant Allocations for the 2nd Generation Universities (1995-2004)

	Capital Grant Allocation universities			Re-current Grant Allocation			Maintenance Grant Allocation		
Years	G31	G32	G33	G34	G35	G36	G37	G38	G39
1995	39960000	39960000	39960000	56389468	63556021	76906861	5994000	5994000	5994000
1996	39627518	39627518	39627518	96977309	74398319	90026738	5547852	5547852	5547852
1997	37515202	37515202	37515202	78257154	79873594	100492978	5122530	5122530	512,530
1998	39560400	39560400	39560400	87943820	88470322	111818814	8910000	8910000	8910000
1999	101335500	25938000	26433000	204652653	222632056	238105625	190080000	19008000	19008000
2000	850000	11715000	8250000	559500876	537566590	705047185	1320000	4785000	1650000
2001	212861297	194920620	200580000	458365307	425233248	557711101	0	0	0
2002	0	0	0	792365310	515902764	778621921	0	0	0
2003	0	0	0	703880609	582823176	771264890	0	0	0
2004	531083328	526083328	551726240	877791376	711090948	1059455343	0	0	0

Where G are 3RD generations universities.
Source; field survey, 2005.

Data analysis

The analysis of the data sourced is presented below.

From the graphs in figures 1-6, it can be deduced that the regression equations are as follows;

1st Generation Universities

Y=54028019-3.22e-20x

Y=82117914-9.65e-03x

2nd Generation Universities

Y=76485427-231e-02x

Y=70227567-257e-03x

3rd Generation Universities

Y=36521723-200e-02x

Y=5682787-223E-02X

Table 4: Target Population and Responses

S/no	Universities	Target Population		Responses		
		Number	% of total	Number	%of respondent	% of Target
1.	E2	20	8.33	13	7.47	5.4
2.	A1	25	10.42	19	10.92	7.9
3.	C2	20	8.33	16	9.20	**6.7**
4	F2	20	8.33	14	8.05	5.8
5	B3	15	6.25	14	8.05	5.8
6	A2	20	8.33	15	8.62	6.3
7	C1	25	10.42	17	9.77	7.1
8	A3	15	6.25	11	6.32	4.6
9	B1	25	10.42	16	9.20	6.7
10	C3	15	6.25	10	5.75	4.2
1	D2	20	8.33	14	8.05	5.8
12	B2	20	8.33	15	8.62	6.3
	Total	240	100	174	91.97	72.6

Source; field survey, 2005

Questionnaires were designed and administered to three categories of respondents namely; the maintenance officers, the staff and the students of the Universities the result of the responses is presented in Table 4.

The paired t-tests were carried out to test the hypothesis that there is no significant difference between the capital, recurrent and maintenance allocations for the universities (Table 5-7).

Table 5: Results of the Paired t-test to compare the Capital Grant and the Recurrent Grant Allocations to the Three Generation Universities (1995 – 2004)

s/no	Universities	Variable 1	Variable 2	DF	P-value	t-critical
1.	First Generation	Capital Grant	Recurrent Grant	9	0.0045	- 3.76
2.	Second Generation	Capital Grant	Recurrent Grant	12	0.011	- 3.02
3.	Third Generation	Capital Grant	Recurrent Grant	13	0.021	- 2.63

Table 6: Result of the Paired T-test to compare the Capital Grant and the Maintenance Grant Allocation to the Three Generation universities 1995 – 2004

S/no	Universities	Variable 1	Variable 2	DF	P-value	t-critical
1.	First Generation	Capital Grant	Maintenance Grant	9	0.12	1.73
2.	Second Generation	Capital Grant	Maintenance Grant	9	0.13	1.67
3.	Third generation	Capital Grant	Maintenance Grant	9	0.14	1.64

Table 7: Tesults of the Paired T-test to compare the Recurrent Grant and Maintenance Grant Allocation to the Three Generation Universities (1995 – 20040)

S/no	Universities	Variable 1	Variable 2	DF	P-value	t- critical
1.	First generation	Recurrent Grant	Maintenance Grant	9	0.0024	4.18
2.	Second Generation	Recurrent Grant	Maintenance Grant	9	0.0020	4.30
3.	Third Generation	Recurrent Grant	Maintenance Grant	9	0.0040	3.85

The P-value of 0.0045, 0.011 and 0.021 for the three Generation Universities (Table 5), show less than 5% chance that the difference between the capital grant and the recurrent grant allocation is not significant. It is therefore concluded that the null hypothesis is rejected and the alternative hypothesis which states that there is significant difference between the two variables (Capital grant and recurrent between these allocations is rejected, while the alternative hypothesis is hereby accepted at 5% level of significance.

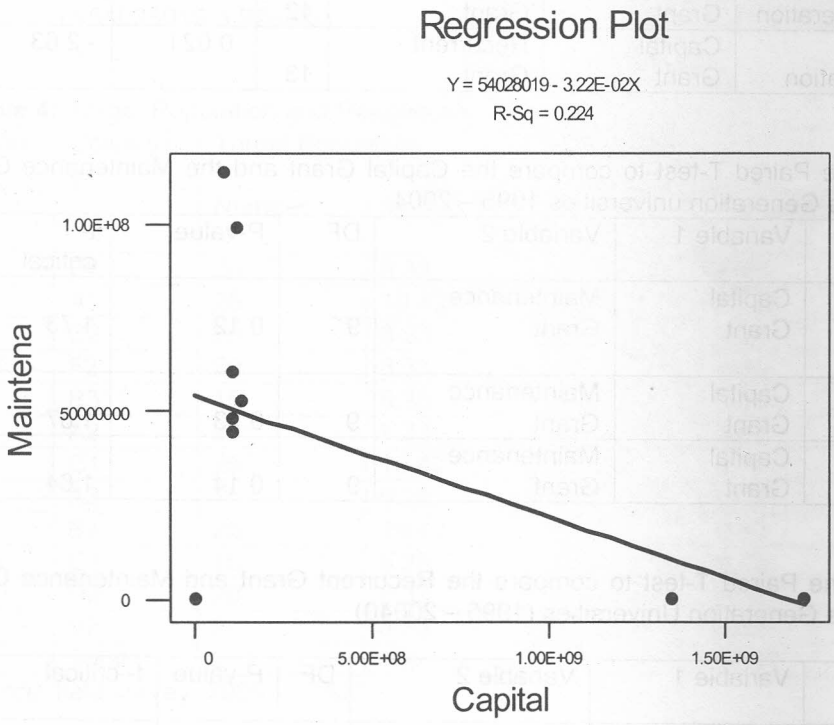
grant) is hereby accepted for the three generation Universities at 5% level.

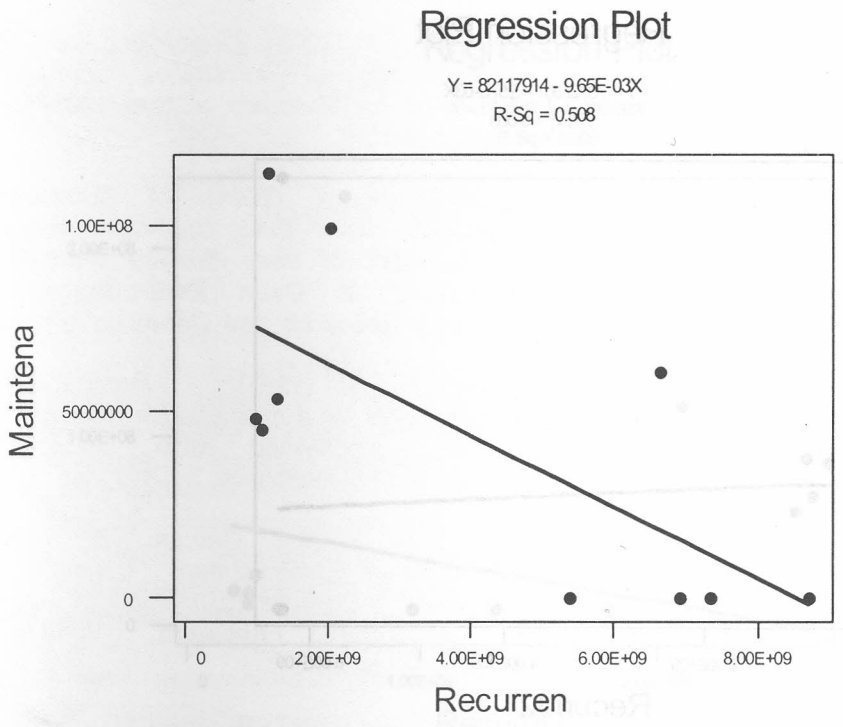
Similarly, table 6 shows p-values of 0.12, 0.13 and 0.14 which indicate less than 5% chance that the difference between the capital and maintenance grant allocations is not also significant. Hence the null hypothesis which states that there is no significance difference Table 7, shows the tests between the recurrent grant and the maintenance grant allocations by the NUC to the three generations universities. The p-values are; 0.0024, 0.0020 and 0.0040,

for the first, second and third generations. These values reveal less than 5% chance that the difference between the allocations is not significant. Therefore, it is concluded that the null hypothesis is rejected, and the alternative hypothesis is accepted which states that there is a significant difference between the recurrent grant and the maintenance grant allocations at 5% level.

1st Generation Universities

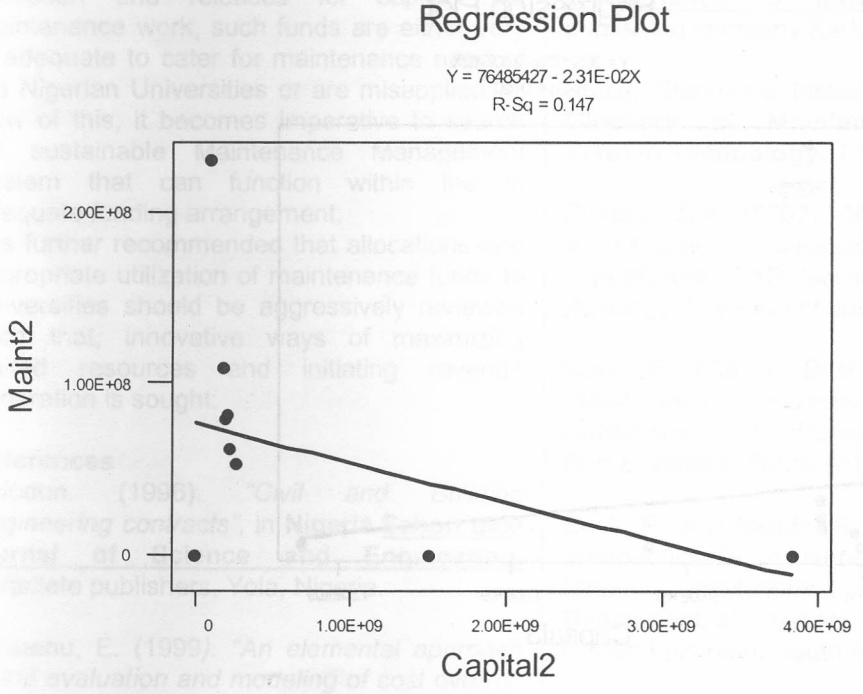
Figure 1-2: Regression Graph between Maintenance/Capital for the First Generation Universities

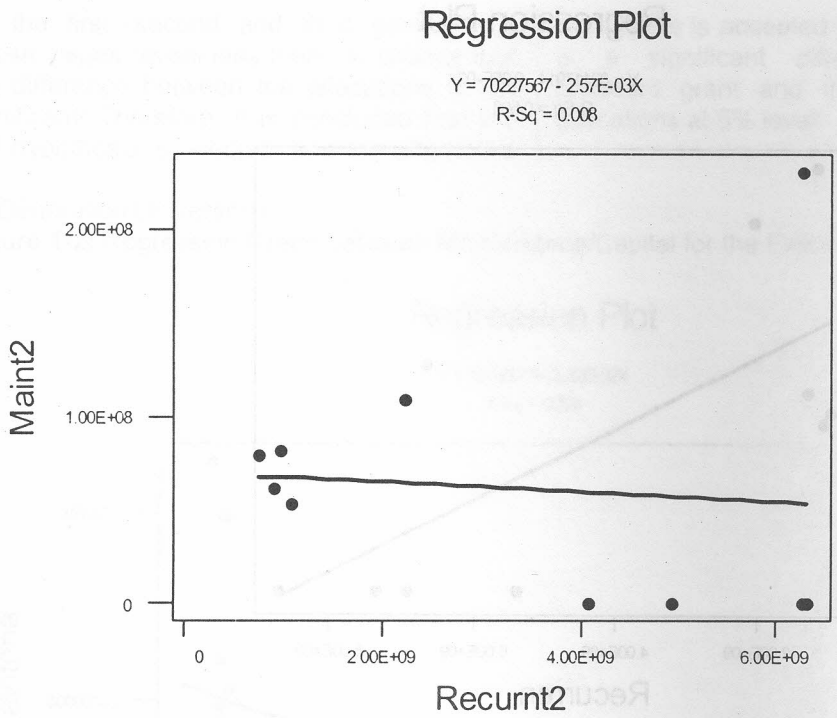




2nd Generation Universities

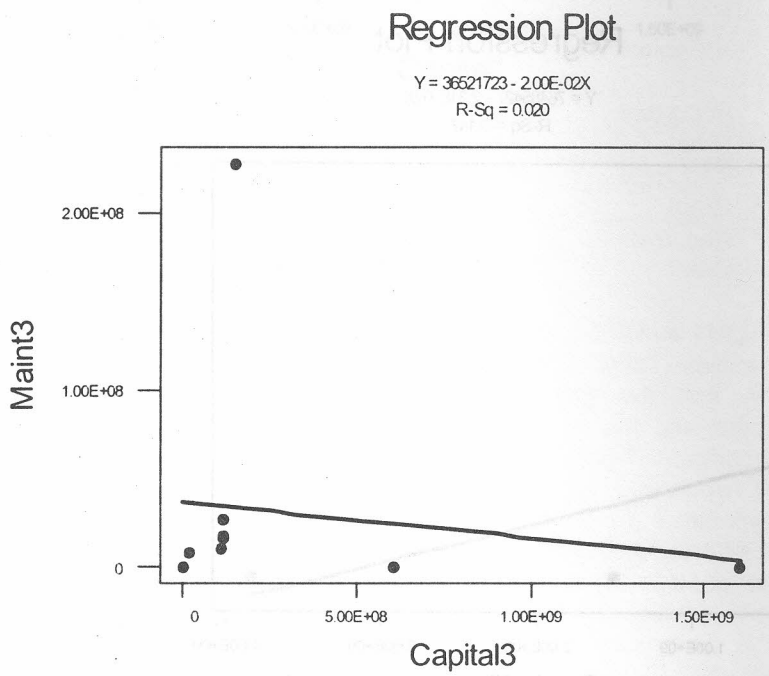
Figure 2-4: Regression Graph between Maintenance/Capital for the Second Generation Universities

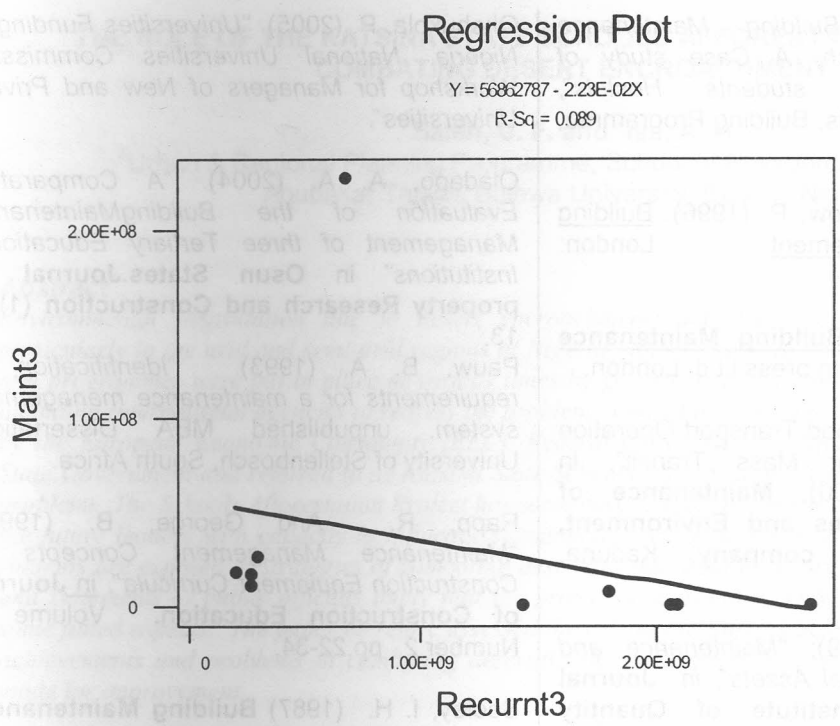




3rd Generation Universities

Figure 5-6: Regression Graph between Maintenance/Capital for the Third Generation Universities.





Conclusion and Recommendation

The foregoing analysis reveals that, whilst the National Universities Commission makes fund allocation and releases for capital and maintenance work, such funds are either very in adequate to cater for maintenance need of the Nigerian Universities or are misapplied. In view of this, it becomes imperative to search for sustainable Maintenance Management System that can function within the in adequate funding arrangement.

It is further recommended that allocations and appropriate utilization of maintenance funds to Universities should be aggressively reviewed such that, innovative ways of maximizing limited resources and initiating revenue generation is sought.

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