ATTAINMENT OF PHYSICAL FACILITIES AND ADMISSION REQUIREMENTS USING NATIONAL UNIVERSITY COMMISSION BENCHMARK MINIMUM ACADEMIC STANDARD IN FEDERAL AND STATE UNIVERSITIES IN SOUTH-EAST, NIGERIA

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Abstract
The quality and quantity of infrastructure and facilities available for teaching and research in our universities go a long way to determine the quality of university education that students need to have in order for active learning to take place. This study was designed to find out the extent of attainment of physical facilities and admission requirements in accordance to Benchmanrk Minimum Academic Standard BMAS for Industrial Technical Education in federal and state universities in South East Nigeria. Two research questions and one hypothesis guided the study. Descriptive survey research design was employed in the study. The population of the study comprised the 65 academic staff in the department of industrial technical education in federal and state universities in south East Nigeria and that also formed the sample for the study. Two instruments were used in gathering data for analysis. The instruments were a checklist and a questionnaire. The instruments were face validated by three experts from, the Department of Science Education, (Educational Measurement and Evaluation), one in Sociology of Education and one in guidance and counseling, all in the Faculty of Education, University of Nigeria, Nsukka. t-test was used to test the formulated null hypothesis at 0.05 level of significance. The result revealed that while some of the physical facilities are available in federal and state universities in South-East Nigeria, some were available but not adequate. The attainment of Admission requirements for industrial technical education by federal and state universities in South-East, Nigeria, did not differ significantly. Based on the finding, it was recommended among others that the federal and state government should make substantive budget allocations to education especially, at the university level to ensure adequate provision of physical facilities and other necessary resources.

Keywords*: Attainment, physical facilities, Admission Requirement NUC, Benchmark.*

Introduction

Education can be defined as a systematic process of gaining knowledge and skills through study and instructions. It is a vital tool in the development of any country including Nigeria. If education programme in a place does not provide employment and make recipients useful to their community, it is not worthwhile. For Nigerian education system to be worthwhile, all the stakeholders should strive to contribute, cooperate and discharge their duties diligently to ensure that Nigerian education system becomes globally competitive and locally relevant to the needs of the society (Ifedili, 2006). This situation has led the Federal Government of Nigeria to establish National Universities Commission (NUC), empowering it to lay down minimum academic standards for all programmes taught in Nigerian universities. The National Universities Commission (NUC) became a parastatal in the Federal Ministry of Education and a statutory Commission charged with the responsibility of regulating the academic, administrative and financial activities of Nigerian universities (0kojie, 2010). The commission is therefore absolutely relevant in the running of academic programmes in all the universities in the country. The commission in collaboration with the universities and their staff in 1989 developed Minimum Academic Standards (MAS) for all the programmes taught in Nigerian universities.

After more than a decade of using the MAS document as a major instrument of accreditation in Nigerian universities, the commission in 2001 initiated a process to revise the document. The curriculum review was necessitated by the fact that the frontier of knowledge in all academic discipline has been advancing with new information that was generated as a result of research. The impact of Information and Communication Technologies on teaching and learning and the competitiveness engendered by globalization were also among the reasons for the review (Okojie, 2010). Other compelling reasons included the need to update the standard and relevance of university education in the country as well as to integrate entrepreneurial, peace and conflict studies as essential new platform. This review will guarantee all graduates from Nigerian universities the knowledge of appropriate skills, competences and dispositions that will make them globally competitive and capable of contributing meaningfully to the Nigeria's socio-economic development.

Cognizant that the content- based MAS document was rather prescriptive, a decision was taken to develop outcome- based benchmark statements for all the programmes in line with the contemporary global practice. To actualize this, Okojie (2010) reported that the Commission organized for stakeholders'

statements and input which were developed for each programme in all the disciplines taught in Nigerian universities. Subsequent to this exercise, it was found out that the benchmark-style statements were too sketchy and inadequate to meaningfully guide the development of curricula and for the purpose of accreditation. Given this scenario, the Commission considered the merger of the Benchmark-style Statements and the revised MAS document into a new document called Benchmark Minimum Academic Standards (BMAS) as a unified criterion for analysis of the learning outcomes and competences expected of graduates of each academic programme without being merely prescriptive while at the same time, providing the requisite flexibility and innovativeness consistent with a milieu of increased institutional autonomy.

Benchmarking is a measurement of quality of an organization's polices, products, programmes, strategies among others and their comparison with standard measurements or similar measurement of its peers. The objective of benchmarking is to determine what and where improvement is required, analysis on how other organizations achieve their high-performance level and to use this information for improvement (Ifedili,2006). Organizations and companies sometimes use benchmarking to set new standards of excellence that all future models must live up to. BMAS is therefore, a policy document stating the minimum or maximum value established for an attribute, characteristics or parameters which serve as a comparison or guidance of which any breach may call for complete review of the situation or the redesign of the system. It is a limit value or the boundary beyond which a radically different state of affairs exists. According to Okojie (2010), BMAS is an enduring academic covenant between the universities and students that will be enrolled in Nigerian universities to study in different programmes. It is an instrument of accreditation developed by the NUC in collaboration with universities and their staff for all the programmes taught in Nigerian universities.

BMAS was produced for the following academic programmes; Administration; Management and Management Technology; Agriculture; Forestry; Fisheries and Home Economics; Arts; Basic Medical and Health Sciences; Education; Engineering and Technology; Environmental Sciences; Law; Pharmaceutical Sciences; Medicine and Dentistry; Sciences; Social Sciences and Veterinary Medicine. The programmes have the same general goal of education but differ in the minimum course content, minimum physical facilities, minimum laboratory space, library and staff requirements (NUC,

2010). However, for the purpose of this study, attention is focused on the adequacy of the physical facilities, and mode of admission into industrial technical programme.

Industrial Technical Education as the name implies is the aspect of education that is designed to prepare students for successful transition to purposeful workforce that is needed for societal development. According to Uzoagulu (2011), industrial technical education is concerned with the manipulative skills and competences needed to initiate and promote productivity in industry. In every industry, specific, unique, basic and manufacturing skills are needed. Such skills may often relate to the application of tools, equipment as well as specialized machineries. The study of these skills and their applications are referred to as Industrial Technical Education (Uzoagulu, 2011). The National Policy on Education (FRN,2013) believes that Industrial Technical Education leads to the acquisition of practical and applied skills as well as scientific knowledge. In other words, the ultimate drive and fundamental aim and emphasis of this segment of education is to develop human capital and enhance human capacity building which is imperative for a sustainable economic development. Industrial technical education is offered in senior secondary schools and also at university levels.

The provision of adequate resources and efficient utilization are factors that determine the quality of education in any country. The quality and quantity of infrastructure and facilities available for teaching and research in our universities go a long way to determine the quality of university education that students need to have in order for active learning to take place. This is why NUC policy document advocated for a furnished, standard and well-equipped university with modern class rooms, laboratories, libraries and computers. Unfortunately, the existing infrastructure and facilities in Nigerian universities are in a poor state of condition (Okebukola, 2012). Literature showed that high rate of pitfall in the university education is significantly attributed to inadequate infrastructure and facilities.

The report of presidential visitation panels which looked into the operations of all the Federal and State universities between 1999 and 2003 revealed that academic and physical facilities in all universities in Nigeria were in deplorable state with insufficient lecture theatres/halls, laboratories, libraries among others (NUC, 2010: Abdullahi, 2015). The available facilities are severely overstretched and ill maintained. Over 70% of the laboratories, equipment and library books in Nigerian universities were bought between

1960s and 1980 (Ogu, 2008) and about 15-30% of the infrastructure, equipment and books are non-functional, obsolete and dilapidated (Okebukola, 2012). The lack of functional facilities or funds to rehabilitate collapsed structures poses a great threat to the system performance and its sustainability hence, quality seems not to be guaranteed.

Mode of admission into the federal and state universities in South East, Nigeria is also one of the problems that bother this study. For a candidate to be admitted into the federal and state universities in Nigeria to study any programme, the person must have been subjected to serious academic scrutiny. Such a person is expected to have passed Senior Secondary Certificate Examination (SSCE) conducted by the West African Examination Council (WAEC) and/or National Examination Council (NECO) with at least five relevant O\level subjects with a minimum of a credit pass in each subject. More so, the person must have got the minimum Unified Tertiary Matriculation Examination (UTME/PUTME) scores as well as other requirements by the department into which the candidate is seeking admission. It becomes a point of much concern that in spite of this rigorous screening exercise many of the students still graduate with bad grades (Jeo, Kpolovie, Osonwa & Iderima, 2014). This suggests that the variations in the academic performance of the graduates of the institutions are predominantly as a result of factors involved during the admission selection process. Due to the fact that the state of physical facilities in Nigerian universities appears to be inadequate, some of the existing ones seem to be in dilapidated states. A close observation of students' performance and the number of unemployed youths roaming the streets of the nation indicates that something is wrong in the system. It becomes necessary to assess the physical facilities and mode of admission into Industrial Technical Education.

These research questions were designed to address the study's main issues:

1. To what extent is provision of physical facilities in accordance with BMAS for Industrial Technical Education in federal and state universities, in South-East, Nigeria?

2. To what extent are admission requirements in accordance with BMAS for Industrial Technical Education in federal and state universities, in South-East, Nigeria?

The following null hypothesis was tested at 0.05 level of significance:

H_{01}: There is no significant difference between the mean ratings of federal and state universities with regards to the attainment of admission requirements of Industrial Technical Education in South-East, Nigeria.

Method

Descriptive survey design was used to carry out this study. Descriptive survey design according to Nworgu (2015) aims at collecting data on, and describing them in a systematic manner, the characteristic features, or fact about a given population. The study was carried out in federal and state universities in South-East Zone of Nigeria. The population of this study comprised all the 65 academic staff (37 from federal universities and 28 from the State universities) in the Department of Industrial Technical Education. There was no sampling as the whole population of the staff in the Department of Industrial Technical Education was used because the population is small and could be conveniently managed by the researcher.

Two instruments were used in gathering data for analysis in this study. The instruments are: BMAS Industrial Technical Education Questionnaire (BITEQ) and a checklist. The checklist consists of only one cluster, and was designed to find out the state of physical facilities in the study area. The questionnaire has two sections: Section A and B. Section A sought to obtain information on the universities. Section B was designed to find out the extent of attainment of admission into the programme as contained in BMAS for Industrial Technical Education. A Four-point rating scale of Very Great Extent (VGE = 4), Great Extent (GE = 3), Low Extent (LE = 2) and Very Low Extent (VLE = 1) was used as response options to the clusters. The questionnaire was completed by the lecturers in the Department of Industrial Technical Education. The instruments were face-validated by three experts, one from the Department of Science Education, (Educational Measurement and Evaluation), one in Sociology of Education and one in guidance and counseling, all in the Faculty of Education, University of Nigeria, Nsukka. Reliability of the BITEQ was established using Cronbach Alpha method, and a coefficient of 0.80was obtained.

Based on the type of instruments involved and the small population of the study, the researcher employed the services of secretaries of the Department in each of the schools studied as the research assistants. The instrument was administered and retrieved the same day. The data collected were subjected to

descriptive statistics such as Frequencies, Mean and Standard Deviations. Frequencies were used to analyze responses from research questions 1& 2 while the responses to the research questions were converted to mean and standard deviation. t-test was used to test the formulated null hypotheses at 0.05 level of significance. The mean was interpreted using the real limit of numbers as follows: 3.50- 4.50- Very Great Extent/Strongly Agree, 2.50-3.49- Great Extent/Agree, 1.50-2.49 - Low Extent/ Disagree, 0.50-1.49 - Very Low Extent/Strongly Disagree.

Results

Table 1: Physical facilities that are available and adequate for Industrial Technical Education in federal and state universities in South-East, Nigeria

S/N	Item	Availability				Adequacy			
		Available		Not Available		Adequate		Inadequate	
		F	%	F	%	F	%	F	%
1.	Administrative office	5	100	0	0	2	40	3	60
2.	Academic staff offices	4	80	1	20	1	20	3	60
3.	Classroom for lectures	4	80	1	20	1	20	3	60
4.	Auditorium	3	60	2	40	3	60	0	0
5.	Library facilities with current books	4	80	1	20	2	40	2	40
6.	Electricity supply	4	80	1	20	0	0	4	80
7.	Water supply	2	40	3	60	1	20	1	20
8.	Adequate ICT facilities	4	80	1	20	1	20	3	60
9.	Good environment	3	60	2	40	0	0	3	60
10	Overhead projector	3	60	2	40	1	20	2	40
11	Functional chalkboard strategically fixed	4	80	1	20	2	40	2	40
12	Charts	1	20	4	80	0	0	1	20

Result in Table 1 shows the provision of physical facilities in relation to BMAS for industrial technical education in federal and state universities in South-East Nigeria. The feedback from the 5 universities sampled (100%) shows that administrative offices are available but 2 (40%) indicated they were adequate which means that the provision of physical facilities in relation to BMAS in the two universities is to a great extent while 3 (60%) showed they were inadequate to a great extent The result also showed that there was 4 (80%) available Academic staff offices in the universities to a very great extent while 1 (20) showed it was not available which means to a very low extent. However, the result also showed that 1 (20%) indicated that the Academic staff offices were adequate to a very low extent. whereas 3(60%) indicated that they were inadequate to a great extent. Also, the result showed

that there were 4 (80%) available Classrooms for lectures in the universities to a very great extent while 1 (20%) showed they were not available which is to a very low extent.

Notwithstanding, the result also showed that 1 (20%) indicated that the classrooms for lectures were adequate to a very low extent whereas 3(60%) indicated that they were inadequate to a great extent. Furthermore, the result in table 1 showed that there were 3 (60%) available Auditoriums in the universities to a great extent while 2 (40%) indicated it was not available to a low extent. However, the 3 (60%) indicated they were adequate to a great extent while 0 (0%) showed they were inadequate to a very low extent. There were also 4 (80%) available Library facilities with current books in the universities to a very great extent while 1 (20%) showed they were not available to a very low extent. Notwithstanding, 2 (40%) indicated they were adequate to a low extent while 2 (40%) showed they were inadequate also to a low extent. Electricity supply was 4 (80%) available in the universities to a very great extent while 1 (20%) showed it was not available a very low extent. Meanwhile, 0 (0%) indicated that the electricity supply was adequate to a very low extent while the 4 (80%) indicated it was inadequate to a very great extent. Water supply was 2 (40%) available in the universities to a low extent whereas 3(60%) showed it was not available to a great extent.

However, 1 (20%) indicated that the water supply was adequate to a very low extent while 1(20%) also indicated that it was inadequate to a very low extent. In addition, the result showed that there were 4 (80%) available adequate ICT facilities in the universities to a very great extent while 1 (20%) showed that they were not available to a very low extent. Meanwhile, 1 (20%) indicated that the ICT facilities were adequate to a very low extent while 3 (60%) showed that they were inadequate to a great extent. The result in table 1 also showed that there were 3 (60%) available good environments in the universities to great extent while 2(40%) showed it was not available to a low extent. Notwithstanding, 0 (0%) indicated that the good environment was adequate to a very low extent while 3 (60%) showed that it was inadequate to a great extent. Overhead projector was 3 (60%) available in the universities to a great extent while 2(40%) showed it was not available to a low extent. However, 1 (20%) indicated that Overhead projector was adequate to a very low extent while 2(40%) showed that it was inadequate to a low extent. Also, there were 3 (60%) available functional chalkboards strategically fixed in the universities to a great extent while 1(20%) showed they were not available to a very low extent. Meanwhile, 2 (40%) indicated that the functional

chalkboard strategically fixed was adequate to a low extent while 2(40%) also showed that it was inadequate to a low extent too.

Finally, the result in table 1 also showed that there was only 1 (20%) available chart in the universities to a very low extent while 4(80%) showed that charts were not available to a very great extent. Notwithstanding, the 1 (20%) indicated that the charts were inadequate to avery low extent. Based on these results, it can be deduced that while some physical facilities are available or not available in federal and state universities in South-East Nigeria, some are available and adequate to a great extent while some are available but inadequate which is to a low extent.

Table 2: Mean Ratings of admission requirements for Industrial Technical Education relative to the BMAS in federal and state universities, in South-East, Nigeria

S/N	Item Statements	Federal Universities N = 35			State Universities N = 26		
		$\overline{X}_1$	SD₁	Dec₁	$\overline{X}_2$	SD₂	DEC₂
1	5 credit passes in (SSCE) or its equivalent including Physics, Mathematics, English language and/or Technical drawing.	3.77	0.43	A	3.69	0.47	A
2	A pass at merit level in relevant diploma programme (provided the SSCE requirements are satisfied).	2.74	0.78	A	3.12	0.77	A
3	Advance level passes in 2 relevant subjects with SSCE requirements.	2.60	0.94	A	2.77	0.76	A
4	NCE with at least overall pass at merit level.	3.17	0.62	A	3.08	0.63	A
5	Any other equivalent qualification.	2.91	0.74	A	2.65	0.89	A
6	NCE with an overall merit pass or above provided the candidate has at least five credits or its equivalent including credit passes in Mathematics and English language.	3.66	0.54	A	3.58	0.50	A

7	Diploma in any area of education provided the candidate has at least five credits at O' level including English language and Mathematics.	3.03	0.71	A	3.15	0.67	A
8	Holders of NCE/Diploma certificates will spend four academic years while others will spend five to six years.	2.51	0.95	A	2.50	0.94	A
	Cluster Mean	**3.05**	**0.34**	**A**	**3.05**	**0.39**	**A**

Key: N = Number of respondents, $\overline{X}_1$= mean for federal, SD_1 = Standard Deviation for federal, DEC_1 = Decision for federal, $\overline{X}_2$ = mean for states, SD_2 = Standard Deviation for states, DEC_2 = Decision for states. A = Agree.

Results in Table 2 showed the mean and standard deviations on admission requirements for Industrial Technical Education relative to BMAS for industrial technical education in federal and state universities in South-East Nigeria. The respondents from both federal and state universities agreed to a high extent that all the items from 1 to 8, which are admission requirements for industrial technical education are in accordance with BMAS for Industrial Technical Education. This is because the mean ratings for these items by respondents from both federal and state universities are above 2.50 set as criterion mean.

Table 3: Test analysis of significant difference between the mean ratings of federal and state universities with regards to the attainment of admission requirements of BMAS for Industrial Technical Education in South-East, Nigeria

S/N	Items	Federal (N=35) $\overline{X}_1$	SD$_1$	State (N=26) $\overline{X}_2$	SD$_2$	t-cal	Df	Sig	Dec
1	5 credit passes in senior secondary school certificate (SSCE) or its equivalent including Physics, Mathematics, English language and/or Technical Drawing.	3.77	0.43	3.69	0.47	0.69	59	0.50	NS
2	A pass at merit level in relevant diploma programme (provided the SSCE requirements are satisfied).	2.74	0.78	3.12	0.77	-1.86	59	0.07	NS
3	Advance level passes in 2 relevant subjects with SSCE requirements.	2.60	0.94	2.77	0.76	-0.75	59	0.46	NS
4	NCE with at least overall pass at merit level.	3.17	0.62	3.08	0.63	0.59	59	0.56	NS
5	Any other equivalent qualification.	2.91	0.74	2.65	0.89	1.24	59	0.22	NS
6	NCE with an overall merit pass or above provided the candidate has at least five credits or its equivalent including credit passes in Mathematics and English language.	3.66	0.54	3.58	0.50	0.59	59	0.56	NS
7	Diploma in any area of education provided the candidate has at least five credits at O' level including English language and Mathematics.	3.03	0.71	3.15	0.67	-0.70	59	0.49	NS
8	Holders of NCE/Diploma certificates will spend four academic years while others will spend five to six years.	2.51	0.95	2.50	0.94	0.69	59	0.49	NS
	Cluster t	**3.05**	**0.34**	**3.05**	**0.39**	**0.21**	59	**0.98**	**NS**

Key: Number of respondents, X_1= mean for federal, SD_1 = Standard Deviation for federal, = mean for states, SD_2 = Standard Deviation for states, t-cal= t-test value, Df X_2=Degree of freedom, Sig=significance of the study, Dec=Decision Result in Table 3 showed the t-test analysis of the significant difference between the mean ratings of federal universities and state universities with regards to the attainment of admission requirements of BMAS for Industrial Technical Education in South-East, Nigeria. The result showed that there was no significant difference in all the items 1-8. This is because their significance or exact probability values are greater than the 0.05 set as the level of significance. Also, a cluster t-value of 0.21 with a degree of freedom of 59 and a significant value of 0.98 was obtained. Since the significant value of 0.98 is greater than 0.05 set as level of significance, it means that the null hypothesis which stated that there is no significant difference between the mean ratings of federal and state universities with regards to the attainment of admission requirements of BMAS for Industrial Technical Education in South-East, Nigeria is accepted. Inference drawn therefore was that the attainment of admission requirements of BMAS for Industrial Technical Education by federal and state universities in South-East of Nigeria did not differ significantly.

Discussion
The findings of the study revealed that while some physical facilities were not available in federal and state universities in south East, Nigeria, some were available and adequate while some were available but inadequate. The finding agrees with findings by Adeniyi (2015) who found that inadequate physical facilities and poor condition of most of the facilities were among the challenges facing Nigerian universities. In the same way, the finding is consistent with the findings of Ozurumba and Ebuara (2013) who reported that there was lack of infrastructural facilities in most of Nigerian universities; and also, Okebukola (2012) who observed that about 15-30 percent of infrastructures, equipment, laboratories and libraries were non-functional, obsolete and dilapidated. Furthermore, the result is in line with earlier findings by NUC (2005) which revealed that academic and physical facilities in all universities in Nigeria were in deplorable state with insufficient lecture theatre/halls, laboratories, libraries among others. In essence, there are inadequacies in the provision of physical facilities in Nigerian universities especially those in the South East region. This is not in line with the BMAS for federal and state universities in Nigeria.

However, the admission requirements for Industrial Technical Education in both federal and state universities in accordance to BMAS were high which means that the admission requirements in both federal and state universities are in accordance to BMAS. It means that admission requirements include a pass at merit level irrelevant diploma programme. Advance level passes in 2 relevant subjects with SSCE requirements and NCE with at least overall pass at merit level.

Additionally, it implies that the requirements include any other equivalent qualification like NCE with an overall merit pass or above provided the candidate has at least five credits or its equivalent including credit passes in Mathematics and English language and Diploma in any area of education provided the candidates has at least five credits at O' level including English language and Mathematics. These are geared towards ensuring high standard of education just as Oyekan (2013) asserted that benchmarking periodic review and minimum standards: Post UTME, and Exchange programme for staff and students had significant positive contribution to the quality of graduates. This may be responsible for the high adherence among federal and state universities to BMAS for Industrial Technical Education. The test of hypothesis I indicated that there was no significant difference between the mean ratings of federal and state universities with regard to the attainment of admission requirement of Industrial Technical Education in South-East, Nigeria. This indicates that the respondents maintained that the BMAS admission requirements were attained in both federal and state universities in South-East Nigeria.

Conclusion
Physical facilities are key factors in the success of university education system. The lack of functional facilities or fund to rehabilitate collapsed structures poses a great threat to the system performance and its sustainability. However, this paper found out that some of the physical facilities are available in federal and state universities in South-East Nigeria, some are available and adequate while some are available but inadequate. The admission requirements for Industrial Technical Education in both federal and state universities in south-East Nigeria are in accordance with BMAS for industrial technical education. Moreover, the attainment of admission requirements of Industrial Technical Education by federal and state universities in South-East Nigeria does not differ significantly.

Recommendations

1. It is therefore recommended that the federal and state government should make substantive budgetary allocation to education especially at university level in order to ensure adequate provision of physical facilities and other resources for the attainment of BMAS for Industrial Technical Education in universities especially in the south-East, Nigeria.

2. The NUC should provide a guide for regular monitoring and quality assurance mechanisms for effective attainment of the BMAS in university educational programs.

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