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Comparing the Budgetary Allocations to the Education Sectors of Nigeria and Some

African Countries (1999-2021) in View of UNESCO's Benchmarks

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Article Information

ABSTRACT

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Keywords

Percentage Budgetary Allocations, UNESCO Benchmarks, Education Sector, Education Financing, African Countries

The percentage budgetary allocations to the education sectors of Nigeria alongside those of some other selected African countries (which included Ghana, South Africa, Senegal, Kenya and Morocco) from 1999 to 2021 in view of the UNESCO recommended minimum benchmarks were assessed in this paper. Secondary data from the 2018 Edition of the Statistical Bulletin of the Central Bank of Nigeria and the Official Website of the Budget Office of the Federal Government of Nigeria (budgetoffice.gov.ng) were analyzed. Descriptive statistics, the Analysis of Variance (ANOVA) test, the Student's t-test for equality of two population means and Ranking were all employed in the data analyses. Results showed that for the period under study, (1999-2021), the annual percentage budgetary allocations to the education sector by the government of Nigeria were significantly lower than those of Ghana, South Africa, Senegal, Kenya and Morocco; those of Ghana were significantly higher than each of those of South Africa and Morocco, but were not significantly different from those of the governments of Senegal and Kenya; those of South Africa are not significantly different from those of Morocco, but were significantly lower than each of those of Senegal and Kenya; those of Senegal were not significantly different from those of Kenya, but were significantly higher than those of Morocco; while those of Kenya were significantly higher than those of Morocco. Furthermore, for the period, (1999-2021), the average percentage budgetary allocation to the education sector by the FGN was significantly lower than each of the UNESCO's 15%, 20% and 26% recommended benchmarks; that of Ghana was significantly higher than each of the UNESCO's 15% and 20% recommended benchmarks, but not that of 26%; that of South Africa and Senegal were significantly higher than the UNESCO's 15% benchmark, not significantly different from the 20% benchmark, but were significantly lower than the 26% benchmark; that of Kenya was significantly higher than each of the UNESCO's 15% and 20% recommended benchmarks, but is significantly lower than the 26% benchmark; while that of Morocco was significantly higher than the UNESCO's 15%, but significantly lower than each of the 20% and 26% recommended benchmarks. Finally, based on the levels of adherence to the UNESCO's recommended minimum benchmarks, Ghana was ranked first, while Kenya, Senegal, South Africa, Morocco and Nigeria were ranked second, third, fourth, fifth and a distant sixth, respectively. Thus, for the period, (1999-2021), Ghana, Kenya, Senegal, South Africa and Morocco outperformed Nigeria in terms of the percentage budgetary allocations to their respective education sectors as well as the levels of adherence to UNESCO's recommended minimum benchmarks.

INTRODUCTION

Education is recognized as a major factor of national development in all countries of the world, as it is one of the primary sources that help in achieving human capital development. According to Omotor (2017) and Odigwe and Owan (2019), for example, the immense contributions of education to any nation's status cannot be overemphasized, especially in the areas of technological development, sociopolitical stability and wealth-creation. So, as stated by Odigwe and Owan (2019), investment in education is as important as the plan for national building. Among many aspects of globalization, the most noticeable one is education funding (Tilak and Panchamukhi, 2023). Funding of education is primarily the government's responsibility. The allocation of sufficient financial resources to education is essential for achieving sustainable economic growth and development. Ifionu and Nteegah (2013) assert that the budget is a key government tool for implementing social, political and economic policies and

priorities. Budgetary allocations to the education sector are channeled through appropriate organs of government and such funds are in turn disbursed to all the levels of education.

Many international organizations that are involved in human capital development recommend that governments should allocate at least 4-6% of their Gross Domestic Products (GDPs) and/or at least 15-20% of their total public expenditures to education (see, for example, Tilak and Panchamukhi, 2023). The United Nations Educational Scientific and Cultural Organization (UNESCO), perceiving the poor funding to the education sectors of many developing countries by her respective governments, was mandated to recommend a minimum benchmark of 26% of the total annual budgets of every developing country be allocated to the education sectors (see, for example, Ekaette *et al*, 2019). All developing countries are expected to adhere to this benchmark directive, as their standards of education would be

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improved (see, for example, Callaway and Musone, 1968). Surprisingly and unfortunately, most of the developing countries, including some in Africa, are still experiencing inadequate funding to their education sectors. Notably, according to Gandhi (2020), almost half of all African countries are meeting the recommended education financing targets set by the United Nations. Gandhi (2020) also added that, while many African countries met at least one of the two education financing targets, only 46% met both targets for the period, (2012-2017). There is therefore the need to evaluate the annual percentage budgetary allocations to the education sectors of some selected African countries, and to compare them in view of the UNESCO's recommended benchmarks.

MATERIALS AND METHODS

The major data used for this study, as presented in Table 1, were obtained from two separate sources, namely, the 2018 Edition of the Statistical Bulletin of the Central Bank of Nigeria and the Official Website of the Budget Office of the Federal Government of Nigeria (budgetoffice.gov. ng). Table 1 shows the percentage budgetary allocations to the Education Sectors of some selected African countries (namely, Nigeria, Ghana, South Africa, Senegal, Kenya and Morocco) by their respective Federal Governments, from 1999 to 2021 (this range of time was considered so

as to have a clear comparison with respect to the current democratic dispensation being enjoyed in Nigeria).

A few descriptive analyses shall be employed in this study, especially the use of graphical representations to show the trends in the percentage budgetary allocations to the Education Sector in the selected countries, as well as the years under study.

The Analysis of Variance (ANOVA) test shall also be used to determine whether or not significant differences exist among the percentage budgetary allocations to the education sectors of Nigeria, Ghana, South Africa, Senegal, Kenya and Morocco by their Federal Governments and the UNESCO recommended benchmarks of 15-20% for international, and 26% for developing countries Ghana, South Africa, Senegal, Kenya and Morocco, from 1999 to 2021.

The Student's t-test for equality of two population means shall also be employed in ascertaining significant differences or otherwise between the average percentage budgetary allocations to the education sectors by the respective governments of each of Nigeria, Ghana, South Africa, Senegal, Kenya and Morocco and the perceived average of the three UNESCO's Recommended Benchmarks of 15%, 20% and 26%.

Lastly, ranking shall be employed in placing the selected African countries in terms of their levels of adherence to the UNESCO recommended benchmarks.

Table 1: The percentage budgetary allocations to the education sectors by the governments of some African countries (1999-2021)

Year	Country/Percentage Budgetary Allocation									
	Nigeria	Ghana	South Africa	Senegal	Kenya	Morocco				
1999	11.12	11.73	15.24	16.82	24.55	5.14				
2000	8.36	14.20	18.09	17.62	23.40	8.28				
2001	7.00	19.54	20.47	15.73	22.41	10.11				
2002	5.90	22.07	20.10	16.72	25.63	13.91				
2003	1.83	20.30	19.59	16.12	24.98	16.67				
2004	10.50	26.02	19.93	16.96	26.67	15.16				
2005	9.30	25.85	19.92	21.77	27.47	12.22				
2006	11.00	20.30	18.00	17.95	25.08	16.31				
2007	8.09	26.00	18.03	18.73	21.03	17.27				
2008	13.00	25.85	17.91	19.23	18.64	18.61				
2009	6.54	23.87	18.31	23.30	15.72	19.65				
2010	6.40	20.70	18.04	24.05	20.56	18.29				
2011	1.69	30.63	18.96	21.09	19.25	18.10				
2012	10.00	37.53	20.64	20.80	19.92	17.58				
2013	8.70	31.00	25.76	25.74	19.14	16.93				
2014	10.60	20.99	19.14	24.76	17.08	16.31				
2015	9.50	23.81	18.70	23.76	16.66	17.14				
2016	6.10	22.09	18.05	21.34	17.34	20.18				
2017	7.38	20.10	18.72	25.60	17.88	19.89				
2018	7.03	18.61	18.87	27.80	20.02	20.46				
2019	7.20	26.72	20.00	22.61	21.70	25.77				
2020	6.70	33.54	22.21	26.08	26.70	30.02				
2021	5.60	39.02	23.50	25.81	27.20	31.06				



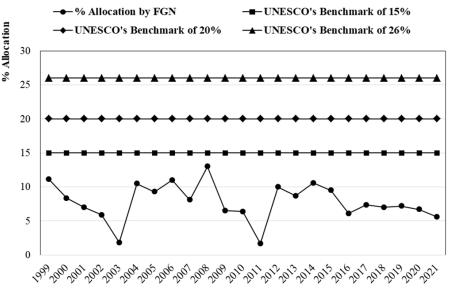
RESULTS AND DISCUSIONS

Graphical displays by way of plots have been carried out to express some of the characteristic features inherent in the data used in this study. The Two-Way ANOVA test have been used to determine whether or not significant differences existed among the annual percentage budgetary allocations to the education sectors of Nigeria, Ghana, South Africa, Senegal, Kenya and Morocco by their respective governments from 1999 to 2021, as well as the three UNESCO's recommended minimum benchmarks of 15%, 20% and 26%. Furthermore, where the null hypothesis was rejected (thus, significant difference was established), a post hoc pairwise comparison test (via the Student's t-test) was used to ascertain the actual cause of the rejection of the null hypothesis. This was subsequently followed by the ranking of each the country's performances with respect to the average percentage budgetary allocations to their respective education sectors.

These data analyses are presented below:

Assessing the Levels of Adherence by the Governments of Some Selected African Countries (1999-2021) to the UNESCO's Benchmarks

The yearly plots of the percentage budgetary allocations to the education sectors by the respective governments of some selected African countries (which include Nigeria, Ghana, South Africa, Senegal, Kenya and Morocco) from 1999 to 2021; as well as the UNESCO's recommended minimum benchmarks, are as presented in Figures 1 to 6.



Year

Figure 1: Percentage budgetary allocations to the education sector of Nigeria (1999-2021)

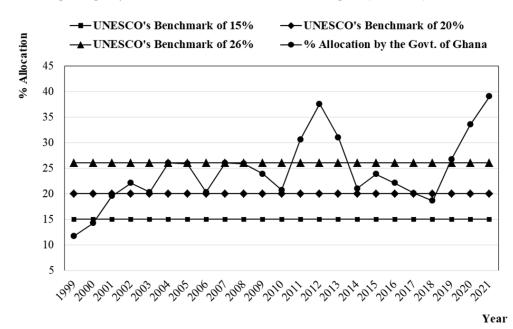


Figure 2: Percentage budgetary allocations to the education sector of Ghana (1999-2021)



It is evident from Figure 1 that all the annual percentage allocations to the education sector by the FGN from 1999 to 2021 fall below the three UNESCO's benchmarks.

Figure 2 shows that the percentage budgetary allocations to the education sector by the government of Ghana for 1999 and 2000 did not even reach the 15% benchmark,

while the allocations for 2004, 2005, 2007, 2008, 2011, 2012, 2013, 2019, 2020 and 2021 reached the 26% benchmark and even above. Also, the allocations for the other years within the period under study fall between the 15% and 26% benchmarks.

The plots in Figure 3 show that the percentage allocations

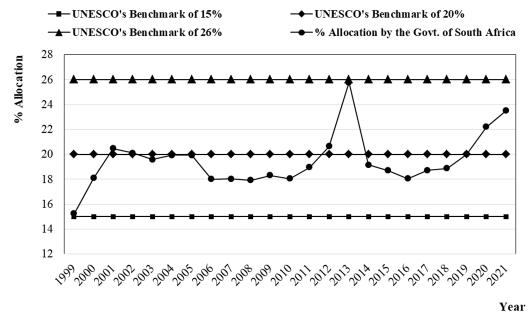


Figure 3: Percentage budgetary allocations to the education sector of South Africa (1999-2021)

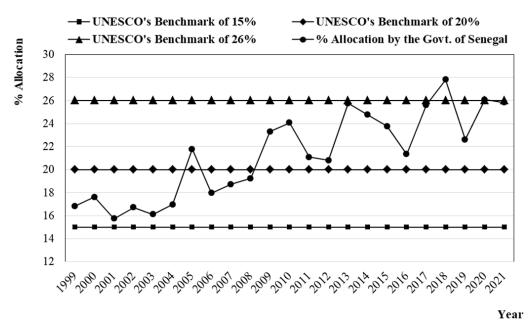


Figure 4: Percentage budgetary allocations to the education sector of Senegal (1999-2021)

to the education sector by the government of South Africa for the period under study were between the 15% and 26% UNESCO's benchmarks.

Figure 4 shows that almost all the percentage allocations to the education sector by the government of Senegal for the period under study appear to fall between the 15% and 26% benchmarks, except that of 2018 which falls above the 26% benchmark.

From Figure 5, it is evident that the annual percentage budgetary allocations to the education sector by the government of Kenya for 2004, 2005, 2020 and 2021 fall above the UNESCO's benchmark of 26%, while the percentage budgetary allocations for the rest of the years in the period under study fall between 15% and 26% benchmarks.

The plots in Figure 6 show that the percentage allocations



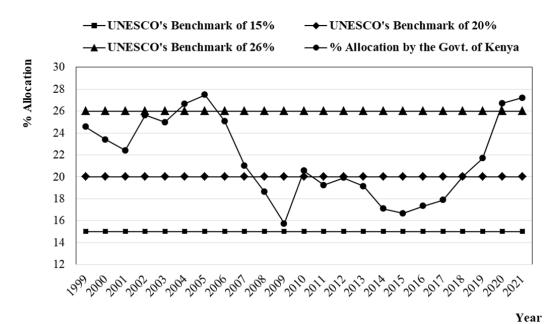


Figure 5: Percentage budgetary allocations to the education sector of Kenya (1999-2021)

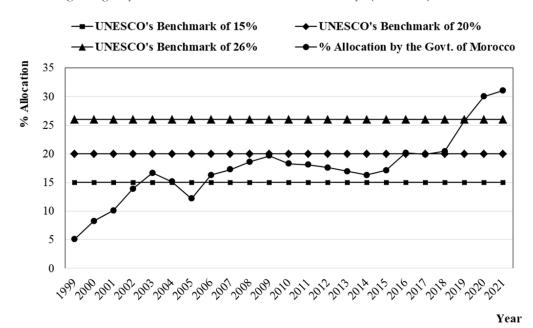


Figure 6: Percentage budgetary allocations to the education sector of Morocco (1999-2021)

to the education sector by the government of Morocco for 1999, 2000, 2001, 2002 and 2005 fall below the UNESCO's 15% benchmark; those of 2020 and 2021 fall above the UNESCO's 26% benchmark; while the percentage budgetary allocations for the rest of the years in the period under study fall between 15% and 26% benchmarks.

The summary statistics for the annual percentage budgetary allocations to the education sectors of Nigeria, Ghana, South Africa, Senegal, Kenya and Morocco by their respective governments, from 1999 to 2021, are as presented in Table 2.

Table 2: Summary statistics for the annual percentage budgetary allocations to the education sectors of the selected African countries (1999-2021)

Statistic	Nigeria	Ghana	South Africa	Senegal	Kenya	Morocco			
Mean	7.81	24.37	19.49	21.32	21.70	17.61			
Standard Error	0.572	1.390	0.446	0.781	0.780	1.241			
Median	7.38	23.81	18.96	21.34	21.03	17.27			
Standard Deviation	2.742	6.665	2.138	3.747	3.743	5.954			

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Sample Variance	7.521	44.424	4.570	14.038	14.007	35.450
Kurtosis	0.590	0.351	2.902	-1.348	-1.338	1.155
Skewness	-0.488	0.515	1.204	0.0165	0.115	0.365
Range	11.31	27.29	10.52	12.07	11.75	25.92
Minimum	1.69	11.73	15.24	15.73	15.72	5.14
Maximum	13.00	39.02	25.76	27.80	27.47	31.06
Sum	179.54	560.47	448.18	490.39	499.03	405.06
Count	23	23	23	23	23	23

With all the observations on Figures 1 to 6, as well as the summary statistics in Table 2, it becomes necessary to test for significant differences among the annual percentage budgetary allocations to the education sectors by the respective governments of the selected African countries for the period under study. This is done via the ANOVA test; and the result outputs are as presented in Table 3. The ANOVA test results presented in Table 3 show that there was significant difference in the percentage budgetary allocations to the education sectors among the years under study by the governments of the selected African countries. Also, the results show that, for the

period under study (1999-2021), there was significant difference among the percentage budgetary allocations by each of the governments of Nigeria, Ghana, South Africa, Senegal, Kenya and Morocco to their respective education sectors, as well as each of the UNESCO's 15%, 20% and 26% recommended benchmarks.

As a follow up, a post hoc pairwise comparison test was further conducted; and the summary of the respective p-Values of the pairwise comparison between any two of the selected countries in terms of differences as well as each of the UNESCO's benchmarks are as presented in Table 4.

Table 3: ANOVA Table (Two-factor without replication)

Source of Variation	SS	df	MS	F	P-value	F-critical
Years	577.980	22	26.272	2.242	0.0021*	1.603
% Allocations of Some Countries & UNESCO's Benchmarks	5390.418	8	673.802	57.505	3.69E- 45*	1.991
Error	2062.249	176	11.7173			
Total	8030.647	206				

* Significance

Table 4: Summary of the test for significant difference among the percentage budgetary allocations to the education sectors by the governments of some selected African countries (1999-2021)

Country	Ghana	South Africa	Senegal	Kenya	Morocco
Nigeria	3.1E-14*	4.6E-20*	9.0E-18*	3.3E-18*	6.4E-09*
Ghana		1.7E-03*	0.063	0.101	7.4E-04*
South Africa			0.047*	0.018*	0.162
Senegal				0.735	0.015*
Kenya					7.8E-03*
Morocco					

* Significance

The p-Values in the result outputs in Table 4 show that the percentage budgetary allocations to the education sector by the government of Nigeria for the period under study, (1999-2021), are significantly different from (lower than) those of Ghana, South Africa, Senegal, Kenya and Morocco. For the same period under study, the percentage budgetary allocations to the education sector by the government of Ghana are significantly different from (higher than) each of those of the governments of Nigeria, South Africa and Morocco, but not significantly different from those of the governments of Senegal and Kenya. Also, the percentage budgetary allocations to the education sector by the government of South Africa are not significantly different from those of Morocco, but they are significantly higher than those of the government of Nigeria and significantly lower than each of those of the governments of Ghana, Senegal and Kenya. Furthermore, the percentage budgetary allocations to the education sector by the government of Senegal are not significantly different from those of the governments of Ghana and Kenya, but they are significantly higher than those of the governments of Nigeria, South Africa and Morocco. Also, the percentage budgetary allocations to the education sector by the government of Kenya are not significantly different from those of the governments of Ghana and Senegal, but they are significantly higher than those of the governments of Nigeria, South Africa and Morocco. Lastly, the percentage budgetary allocations to the education sector by the government of Morocco are not significantly different from those of South Africa, but they are significantly higher than those of the government of Nigeria and significantly lower than each of those of the governments of Ghana, Senegal and Kenya. Furthermore, observations made from the viewing of Figures 1 to 6 necessitated the conduction of the Student's t-test (without equal variances assumed). The Student's t-test was used to ascertain if the annual percentage allocations to the education sectors of each of the selected African countries by their respective governments are significantly different (less than or greater than) or even not different from each of the UNESCO's 15%, 20% and 26% recommended benchmarks. The summary of some of the descriptive statistics and the test results outputs are as presented in Table 5.

Table 5: Some descriptive statistics and the result outputs' of the Student's t-test for significant differences of the percentage budgetary allocations to the education sectors of some selected African countries (1999-2021)

Country	Min. Value	Max. Value	Mean	Standard	UNESCO's Benchmarks		
				Deviation	15%	20%	26%
Nigeria	1.69	11.12	7.81	2.74	1.79E-16 ^{*L}	3.97E-25*L	2.62E-32*L
Ghana	11.73	39.02	24.37	6.66	1.37E-08*H	1.50E-03*H	0.12#
South Africa	15.24	25.76	19.49	2.13	2.74E-13*H	0.13#	8.56E-19 ^{*L}
Senegal	15.73	27.80	21.32	3.75	1.49E-10*H	0.05#	1.75E-07*L
Kenya	15.72	27.47	21.70	3.74	3.00E-11*H	0.02 ^{*H}	8.69E-07*L
Morocco	5.14	31.06	17.61	5.95	0.02 ^{*H}	0.03*L	1.30E-08*L

*L Significantly low difference *H Significantly high difference # No significant difference

The p-Values in the result outputs in Table 5 show that the average percentage budgetary allocation to the education sector by the government of Nigeria for the period, 1999 to 2021 (which is about 7.81%), is significantly lower than each of the UNESCO's 15%, 20% and 26% recommended benchmarks. The average percentage budgetary allocation to the education sector by the government of Ghana for the period, 1999 to 2021 (which is about 24.37%), is significantly higher than each of the UNESCO's 15% and 20% recommended benchmarks but not that of 26%. The average percentage budgetary allocation to the education sector by the government of South Africa for the period, 1999 to 2021 (which is about 19.49%), is significantly higher than the UNESCO's 15% benchmark, not significantly different from the 20% benchmark but significantly lower than the 26% benchmark. The average percentage budgetary allocation to the education sector by the government of Senegal for the period, 1999 to 2021 (which is about 21.32%), is significantly higher than the UNESCO's 15% benchmark, not significantly different from the 20% benchmark but significantly lower than the 26% benchmark. The average percentage budgetary allocation to the education sector by the government of Kenya for the period, 1999 to 2021 (which is about 21.70%), is significantly higher than each of the UNESCO's 15% and 20% recommended benchmarks but significantly lower than the 26% benchmark. The average percentage budgetary allocation to the education sector by the government of Morocco for the period, 1999 to 2021 (which is about 17.61%), is significantly higher than the UNESCO's 15% but significantly lower than each of the

20% and 26% recommended benchmarks.

Adherence Levels to the UNESCO's Benchmarks by the Governments of Each of the Selected African Countries (1999-2021)

The average percentage budgetary allocations to the education sectors by the different governments of the selected African countries from 1991 to 2021 were ranked with a view to showing their levels of adherence to the UNESCO's recommended benchmarks. In the first phase, the ranking is done as to know how the countries performed based on their average percentage budgetary allocations to their respective education sectors over the years under study. The second phase has the ranking done in order to place the levels of adherence to the UNESCO's recommended benchmarks by each of the selected African countries.

The rankings of the percentage budgetary allocations to the education sector by the government of Nigeria, as well as the selected African countries are as presented in Table 6.

The ranking in Table 6 shows that Ghana was topmost (with a mean of 24.37%) in the level of adherence to UNESCO's recommended benchmarks, while Kenya (with a mean of 21.70%) and Senegal (with a mean of 21.32%) came second and third places, respectively. Furthermore, South Africa (with a mean of 19.49%) and Morocco (with a mean of 17.61%) occupied the fourth and fifth places, respectively; while Nigeria (with a significantly low mean of 7.81% as well as having not leveled up with any of the three UNESCO's recommended benchmarks) came a distant sixth position.



Country	Ranki	ng Method 1	Ranking Method 2							
	% Budgetary Allocations		No. of Annual % Budgetary Allocations							
	Overall Rank of t		≥ 15%		≥ 20%		≥ 26%		Average	
	Mean	Overall Mean	No.	Rank	No.	Rank	No.	Rank	of Rank	
Nigeria	7.81	6	0	6	0	6	0	5.5	5.83	
Ghana	24.37	1	21	4	19	1	8	1	2.00	
South Africa	19.49	4	23	2	7	4	0	5.5	3.83	
Senegal	21.32	3	23	2	14	2.5	2	3.5	2.67	
Kenya	21.70	2	23	2	14	2.5	4	2	2.17	
Morocco	17.61	5	18	5	5	5	2	3.5	4.50	

Table 6: Approaches of the ranking of the levels of adherence to the UNESCO's benchmarks by the governments of each of the selected African countries (1999-2021)

CONCLUSION

A Two-Factor ANOVA test was carried out to test for significant difference(s) in the percentage budgetary allocations to the education sectors among the years under study by the respective governments of some selected African countries (which include Nigeria, Ghana, South Africa, Senegal, Kenya and Morocco) from 1999 to 2021, as well as the UNESCO's recommended minimum benchmarks. The results show that there was a significant difference in the percentage budgetary allocations to the education sectors over the years, as well as among the percentage budgetary allocations by each of the governments of Nigeria, Ghana, South Africa, Senegal, Kenya and Morocco to their respective education sectors and each of the UNESCO's 15%, 20% and 26% recommended benchmarks.

The percentage budgetary allocations to the education sector by the government of Nigeria for the period under study, (1999-2021), are significantly lower than those of Ghana, South Africa, Senegal, Kenya and Morocco. For the same period under study, the percentage budgetary allocations to the education sector by the government of Ghana are significantly higher than each of those of South Africa and Morocco, but not significantly different from those of the governments of Senegal and Kenya. Also, the percentage budgetary allocations to the education sector by the government of South Africa are not significantly different from those of Morocco, but are significantly lower than each of those of Senegal and Kenya. The percentage budgetary allocations to the education sector by the government of Senegal are not significantly different from those of Kenya, but are significantly higher than those of Morocco. Lastly, the percentage budgetary allocations to the education sector by the government of Kenya are significantly higher than those of Morocco.

Furthermore, for the period, (1999-2021), the average percentage budgetary allocation to the education sector by the FGN (about 7.81%) is significantly lower than each of the UNESCO's 15%, 20% and 26% recommended benchmarks; while that of Ghana (about 24.37%) is significantly higher than each of the UNESCO's 15% and 20% recommended benchmarks but not that of

26%. Also, the average percentage budgetary allocation to the education sectors by each the governments of South Africa (about 19.49%) and Senegal (about 21.32%) are significantly higher than the UNESCO's 15% benchmark, not significantly different from the 20% benchmark, but is significantly lower than the 26% benchmark. The one for Kenya (about 21.70%) is significantly higher than each of the UNESCO's 15% and 20% recommended benchmarks, but is significantly lower than the 26% benchmark; while the one for Morocco (about 17.61%) is significantly higher than the UNESCO's 15%, but significantly lower than each of the 20% and 26% recommended benchmarks.

The average percentage budgetary allocations to the education sectors by the different governments of the selected African countries for the period, (1999-2021), were ranked to show their respective levels of adherence to the UNESCO's recommended benchmarks. The process ranked Ghana (first), Kenya (second), Senegal (third), South Africa (fourth), Morocco (fifth) and Nigeria (a distant sixth) with mean annual percentage budgetary allocations of 24.37%, 21.70%, 21.32%, 19.49%, 17.61% and 7.81%, respectively.

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