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" ON TARGETING UNESCO'S BENCHMARK(S) ON BUDGETARY ALLOCATIONS TO EDUCATION SECTOR IN NIGERIA: A STATISTICAL CONCEPTUALISATION"

ON TARGETING UNESCO'S BENCHMARK(S) ON BUDGETARY ALLOCATIONS TO EDUCATION SECTOR IN NIGERIA: A STATISTICAL CONCEPTUALISATION

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ABSTRACT

The UNESCO's recommended benchmarks of 15%, 20% and 26% for annual percentage budgetary allocations to the education sector of Nigeria were targeted beyond 2023. The percentage budgetary allocations to the education sector of Nigeria by the Federal Government of Nigeria from 1960 to 2023 fell below the UNESCO's benchmarks, except in 1997. The simple linear regression analyses revealed a gradual upward linear trend; with positive and significant intercept and slope. Also, an upward linear trend was established with positive and significant intercept and slope when the Pre-Recent Democratic Regime (1960-1998) was studied. A downward linear trend, with a positive and significant intercept and a non-significant negative slope was established for the allocations during the Recent Democratic Regime (1999-2023); and thus the model was not used in the forecasts. The forecast results, obtained using the model for (1960-2023) showed that the UNESCO's benchmarks of 15%, 20%, and 26% would be attained in Nigeria in 2102, 2163, and 2236, respectively. On the other hand, using the model for (1960-1998), the benchmarks of 15%, 20%, and 26% would be attained by Nigeria in 2066, 2109, and 2161, respectively. An attempted targeting on the UNESCO's benchmarks, when the slope of the model for (1960-2023) was doubled, revealed that the benchmarks of 15%, 20%, and 26% would be attained by Nigeria in 2031, 2061, and 2098, respectively; while when the slope of the model for (1960-1998) was doubled, two UNESCO's benchmarks of 20% and 26% would be attained in Nigeria in 2034 and 2060, respectively; and that of 15% would have long been attained in 2013. In the cases the slopes were tripled, the model for (1960-2023) revealed the attainments of two benchmarks of 20% and 26% in 2027 and 2052, respectively; and that of 15% would have long been attained in 2007. Finally, tripling the slope of the model for (1960-1998) revealed that just one benchmark of 26% would be attained in 2027; and those of 15% and 20% would have long been attained in 1995 and 2009, respectively.

Keywords: Education Sector, Education financing, Percentage budgetary allocations, UNESCO's benchmarks, Targeting, Statistical conceptualization.

Mathematics Subject Classification: 91B82

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1 INTRODUCTION

Education is one of the primary sources that help in achieving human capital development. It is the channel through which industrialization is achieved and sustained, moral upbringing upheld, and the standard of living of people improved. 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. It is the hub which tends to connect all other sectors of the economy; it serves as the processing or coordinating unit of the economy, and a verifiable tool for expanding man's knowledge (see, for example, Omotor, 2017). The immense contributions of education to any nation's status cannot be overemphasized (see, for example, Omotor, 2017; Odigwe and Owan, 2019). Education improves the quality of lives and leads to broad social benefits to individual and society. The education system is undeniably the major backbone of the development of any country, as it inculcates in the individual, the ability to be an important part in nation-building. According to World Bank (1999), education raises people's productivity, creativity and promotes entrepreneurship and technological advancement, as have been demonstrated in several countries such as Malaysia, Bolivia and China.

According to 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 the funding of education (Tilak and Panchamukhi, 2023). Funding of education is primarily the responsibility of government, and the allocation of sufficient financial resources to education is essential for achieving sustainable economic growth and development. Budget is a key government tool for the implementation of social, political and economic policies and priorities (see, for example, Ifionu and Nteegah, 2013). Resource allocation to any government sector is achieved through annual budgets.

It has been recommended by many international organizations, such as the United Nations Educational Scientific and Cultural Organization (UNESCO), 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 Education 2030 Framework for Action (EFA) set two benchmarks on domestic financing for education: 4% to 6% of Gross Domestic Product (GDP) and 15% to 20% of public expenditure (UNESCO, 2015d). As the 2015 EFA Global Monitoring Report showed, poorer countries have made considerable efforts to prioritize education in their budgets but are more likely to miss spending targets because their overall budgets are small due to lack of domestic revenue (UNESCO, 2015a). Perceiving the poor funding to the education sectors of many developing countries by her respective governments, the UNESCO had recommended that a minimum benchmark of 26% of the total annual budgets of every

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developing country be allocated to her education sector (see, for example, Ekaette et al, 2019). In order to have their standards of education improved, all Developing Countries are expected to adhere to this benchmark directive (see, for example, Callaway and Musone, 1968).

Some of the developing countries (including those in Africa) are, surprisingly and unfortunately, still experiencing inadequate funding to their education sectors. Notably, almost half of all African countries are meeting both of the recommended education financing targets set by the United Nations (see, for example, Gandhi, 2020). 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).

Inadequate funding to the education sector may reflect in poor conditions of service, such as in the areas of poor salaries and allowances to teachers, irregularities of teachers' enumeration, inadequate staffing, and lack of teaching aids, rusty and cranky classroom facilities in our primary, secondary and tertiary institutions.

The Education Sector in Nigeria still faces the problem of inadequate funding with regard to the benchmark(s) advocated by UNESCO. In Nigeria, for example, these poor conditions of service have resulted to incessant industrial actions (strikes) frequently embarked upon by almost all the concerned bodies of stakeholders in the education sector (see, for example, Ojewumi and Oladimeji, 2016). These had led to the consequent frequent disruptions of the academic calendars in the country (with pupils and students kept at home more than the required periods to finish their academic studies), and this had really affected the education sector badly.

Ohaegbulem and Chijioke (2023) had showed that, for the period, (1960-2023), the average allocation made to the Education Sector of Nigeria was about 5.94%; which was about 9.06%, 14.06% and 20.06% significantly less than the three UNESCO's recommended benchmarks of 15%, 20% and 26%, respectively. The work further added that the differences between the percentage budgetary allocations to the Education Sector of Nigeria by the Federal Government, for the period, (1999-2023) and the three UNESCO's recommended benchmarks of 15%, 20%, and 26% were significantly different at 5% level of significance. Ohaegbulem and Chijioke (2023) also showed that the average percentage allocation during the Recent Democratic Regime (about 7.61%) is significantly higher (p-Value = 0.0002) than that of the Pre-Recent Democratic Regime (about 4.86%), at 5% level of significance of testing. Nevertheless, Ohaegbulem (2024) revealed that the annual percentage budgetary allocations to the Education Sector by the government of Nigeria from 1999 to 2021 were significantly lower than those of some selected African countries such as Ghana, South Africa, Senegal, Kenya, and Morocco.

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The question now, given the trend of event in Nigeria, becomes how could this ugly situation of inadequate funding to the education sector in Nigeria be sorted out for the better? There is, therefore, need to have a study that would advance tactical suggestion(s) geared towards the actualization of the attainment of UNESCO's benchmarks on the budgetary allocations to the education sector by the Nigerian government.

2 MATERIAL

The data used for this study are the percentage budgetary allocations to the Education Sector by the Federal Government of Nigeria (FGN) from 1960 to 2023, and were obtained from the 2018 Edition of the Statistical Bulletin of the Central Bank of Nigeria. The data are presented in Table 2.1.

Table 2.1: The percentage budgetary allocations to the education sector by the Federal Government of Nigeria (1960-2023)

Year	% Allocation	Year	% Allocation	Year	% Allocation	Year	% Allocation
1960	6.02	1976	8.71	1992	3.86	2008	13.00
1961	6.15	1977	3.12	1993	5.62	2009	6.54
1962	5.19	1978	11.44	1994	7.13	2010	6.40
1963	3.45	1979	3.70	1995	7.20	2011	1.69
1964	3.65	1980	4.95	1996	12.32	2012	10.00
1965	3.57	1981	6.45	1997	17.59	2013	8.70
1966	4.23	1982	8.09	1998	10.27	2014	10.60
1967	4.88	1983	4.04	1999	11.12	2015	9.50
1968	2.84	1984	4.49	2000	8.36	2016	6.10
1969	2.20	1985	3.79	2001	7.00	2017	7.38
1970	0.69	1986	2.69	2002	5.90	2018	7.03
1971	0.53	1987	1.93	2003	1.83	2019	7.20
1972	0.62	1988	2.40	2004	10.50	2020	6.70
1973	0.88	1989	3.55	2005	9.30	2021	5.60
1974	2.96	1990	2.83	2006	11.00	2022	5.40
1975	4.57	1991	1.09	2007	8.09	2023	5.30

It could be seen from Table 2.1 that from 1960 to 2021, the annual percentage budgetary allocations to the education sector by the FGN recorded its highest value (17.59%; which is only higher than the UNESCO's 15% benchmark) in 1997, followed by the second highest value (13.00%) in 2008; while the very least values that are less than 1% (which are 0.69%, 0.53%, 0.62% and 0.88) occurred between 1970 to 1973, respectively. Also, generally, between 1960 and 2023, the average annual percentage budgetary

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allocation to the education sector by the FGN was about 5.94% which is about 9.06%, 14.06% and 20.06%, respectively, less than the UNESCO's recommended minimum benchmarks of 15%, 20% and 26% of the total annual budget.

3 METHOD

The Simple Linear Regression Analysis (SLRA) shall be employed in determining the simple linear trend model for the annual percentage budgetary allocations to the education sector by the FGN for the period, (1960 – 2023). Firstly, a line chart/graph shall be used to show the annual percentage budgetary allocations to the education sector of Nigeria by the FGN from 1960 to 2023 together with the three UNESCO's recommended benchmarks of 15%, 20% and 26% of the total annual budget.

3.1 Simple Regression Analysis

According to Mehta (2023), simple regression analysis is the type of regression analysis where the regression model contains only one independent variable, X, and the dependent variable, Y. The relationship between the dependent and independent variables can either be linear or non-linear; where for the linear relationship, the dependent variable and the independent variable exhibit different forms of linear relationships. According to Gujarati (2004), the linear relationship can be interpreted in two different ways; either the regression model is linear in both the parameters and the independent variable or linearity in the parameters and not linear in the independent variable.

In this study, emphasis is on the model that has both linearity in the parameters and the independent variable, X (that is to say, both the parameters and the independent variable appear with power of 1 only). This model is given as,

$$\mathrm{Y}_i = \beta_0 + \beta_1 X_i + e_i \qquad (3.1)$$

where,

e_i is the error term, β_1 (the slope of the line) and β_0 (the intercept) are the regression parameters, which are estimated using the Ordinary Least Square (OLS) method (see, for example, Koutsoyiannis, 1977; Kutner *et al.*, 2005; Nwankwo, 2011; Nwachukwu, 2010); and are given by,

$$\hat{\beta}_1 = \frac{\mathrm{n}\sum_{i=1}^{n} X_i Y_i - \sum_{i=1}^{n} X_i \sum_{i=1}^{n} Y_i}{\mathrm{n}\sum_{i=1}^{n} X_i^2 - \left(\sum_{i=1}^{n} X_i\right)^2} \qquad (3.2)$$

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and

$$\hat{\beta}_0 = \frac{\mathrm{n}\sum_{i=1}^{n} X_i^2 Y_i - \sum_{i=1}^{n} X_i \sum_{i=1}^{n} X_i Y_i}{\mathrm{n}\sum_{i=1}^{n} X_i^2 - \left(\sum_{i=1}^{n} X_i\right)^2} = \bar{Y} - \hat{\beta}_1 \bar{X} \qquad (3.3)$$

Such that $\bar{Y}$ and $\bar{X}$ are, respectively, the arithmetic means of the dependent variable, Y, and the independent variable, X; and n is the number of data points.

Thus, the estimated regression model becomes,

$$\hat{Y} = \hat{\beta}_0 + \hat{\beta}_1 X \qquad (3.4)$$

With the simple linear regression trend model established, predictions can now be made for some years beyond the last year in the data.

4 ANALYSES

A graphical representations of the percentage budgetary allocations to the education sector by the FGN for the period, (1960–2023) superimposed with the UNESCO's recommended minimum benchmarks of 15%, 20% and 26% of the total annual budgets are shown in Figure 4.1.

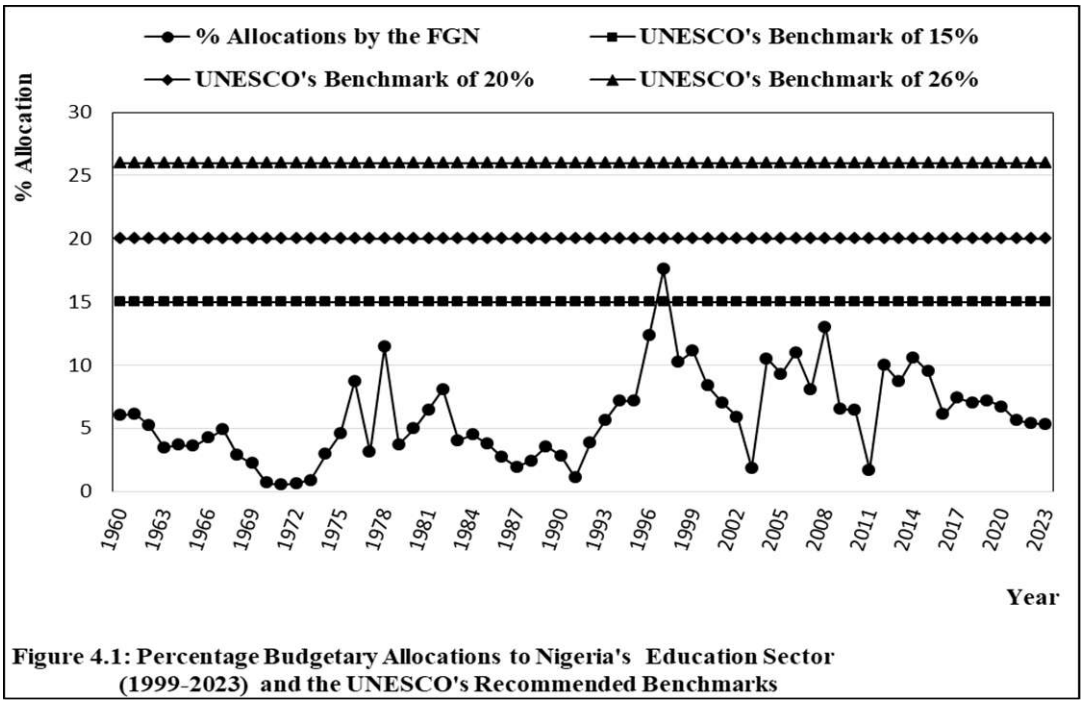

Figure 4.1: Percentage Budgetary Allocations to Nigeria's Education Sector (1999-2023) and the UNESCO's Recommended Benchmarks

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As shown by the plots in Figure 4.1, the percentage budgetary allocations to the education sector of Nigeria by the FGN for the period, (1960-2023), fall below the three UNESCO's recommended benchmarks of 15%, 20% and 26%, except in the year 1997 when the percentage budgetary allocation was about 17.59%. Also, the graphical display in Figure 4.1 suggests a gradual upward trend movement.

4.1 The SLR Model for the Percentage Budgetary Allocations for the Period, 1960-2023

In carrying out the Simple Linear Regression Analysis (SLRA) on the percentage budgetary allocations to the education sector of Nigeria by the FGN for the period, (1960-2023), the annual percentage budgetary allocations from 1960 to 2023 are designated by the dependent variable, Y; while the years are represented by the independent variable, X. Nevertheless, since the data are typically historical data, the years are further subjected to coding, such that the years (now coded to t) change from 1960-2023 to 1-64. By this arrangement, the independent variable, X, will automatically be replaced with t in the regression equations earlier presented, as in (3.1), (3.2), (3.3), and (3.4).

Conducting the SLRA with the aid of Microsoft Excel, the results outputs presented in Tables 4.1 to 4.3 are arrived at.

Table 4.1: The Regression Statistics

Multiple R	0.4398
R Square	0.1934
Adjusted R Square	0.1804
Standard Error	3.1462
Observations	64

Table 4.2: The ANOVA Test

Source of Variation	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	1	147.1385	147.1385	14.8647	0.0003
Residual	62	613.7066	9.8985		
Total	63	760.8451			

Table 4.3: The Regression Coefficients

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	3.2688	0.7959	4.1073	0.0001	1.6779	4.8597
Coded Years (t)	0.0821	0.0213	3.8555	0.0003	0.0395	0.1246

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The results of the SLRA in Table 4.3 showed that the linear relationship between the percentage budgetary allocations to the education sector of Nigeria by the FGN for the period, (1960-2023), and the coded years, t, is given by,

$$\hat{Y} = 3.2688 + 0.08208t \quad (4.1)$$

Also, the intercept and the independent variable, t, are both significant, having p-Values of 0.0001 and 0.0003, respectively. Furthermore, the slope of the model is positive (0.08208) indicative of a gradual upward linear trend for the distribution of the data during the period, (1960-2023).

From Table 4.2, the computed F-statistic of 14.8647 (a p-Value equivalent of about 0.0003) led to the conclusion that the model is of good-fit to the data on the percentage budgetary allocations to the education sector of Nigeria by the FGN for the period, (1960-2023). Furthermore, the R-square value of 0.1934 showed that only about 19.34% of the total variation in the dependent variable, Y (the annual percentage budgetary allocations from 1960 to 2023), is being accounted for by the variations in the independent variable, X (the years (coded to t)); while about 80.66% is left unaccounted for perhaps by some other variables not included in the modeling.

The implication from the value of the R-squared and the p-Value of the independent variable, coded year (t), is that time (the years) had not much significant contribution to the dependent variable, Y (the annual percentage budgetary allocations to the education sector of Nigeria by the FGN for the period, (1960-2023). This implies that some other variable(s), not captured in the regression analysis, could have been significantly responsible for the variation in the dependent variable, Y (the annual percentage budgetary allocations to the education sector of Nigeria by the FGN for the period, (1960-2023).

4.2 The SLR Model for the Percentage Budgetary Allocations for the Period, 1960-1998

The Simple Linear Regression Analysis was also carried out on the percentage budgetary allocations to the education sector of Nigeria by the FGN for the period, (1960-1998) – considered in this study, just as Ohaegbulem and Chijioke (2023), as the Pre-Recent Democratic Regime (PRDR). The essence is to assess what the trend was during that era (which was predominantly governed by the military); even as Ohaegbulem and Chijioke (2023) showed that the average percentage allocation during the Recent Democratic Regime (about 7.61%) is significantly higher (p-Value = 0.0002) than that of the Pre-Recent Democratic Regime (about 4.86%), at 5% level of significance of testing.

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Firstly, a graphical presentation of the annual percentage budgetary allocations to the Education Sector of Nigeria by the FGN during the Pre-Recent Democratic Regime (1960-1998) is shown in Figure 4.2. The graphical display in Figure 4.2 suggests a gradual upward trend movement.

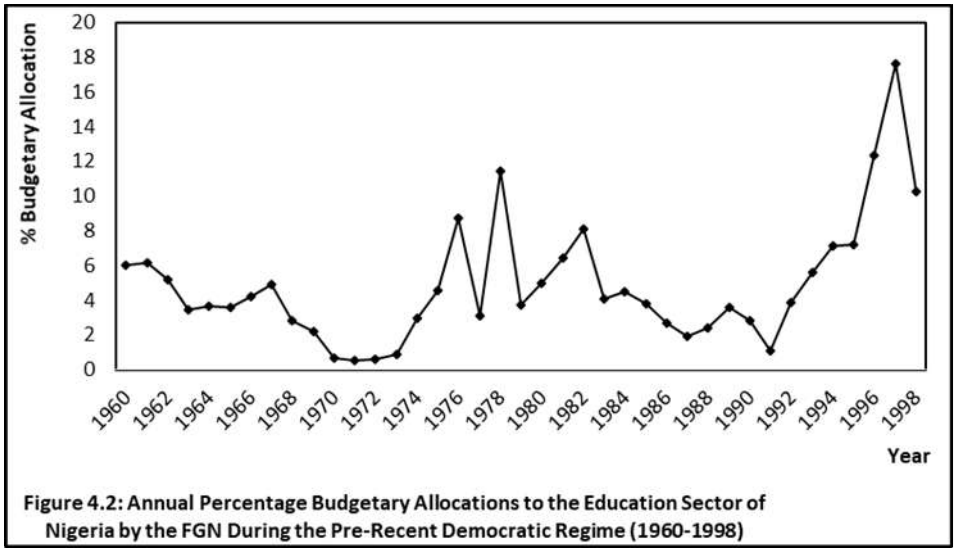

Figure 4.2: Annual Percentage Budgetary Allocations to the Education Sector of Nigeria by the FGN During the Pre-Recent Democratic Regime (1960-1998)

In this Simple Linear Regression Analysis carried out on the percentage budgetary allocations to the Education Sector of Nigeria by the FGN during the Pre-Recent Democratic Regime, the period of years, 1960-1998, is now coded to t, 1-39. Now, with the aid of Microsoft Excel, the results outputs presented in Tables 4.4 to 4.6 are arrived at.

Table 4.4: The Regression Statistics

Multiple R	0.3771
R Square	0.1422
Adjusted R Square	0.1190
Standard Error	3.2989
Observations	39

Table 4.5: The ANOVA Test

Source of Variation	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	1	66.7560	66.7560	6.1340	0.0180
Residual	37	402.6709	10.8830		
Total	38	469.4269			

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Table 4.6: The Regression Coefficients

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	2.5389	1.0772	2.3570	0.0238	0.3564	4.7214
Coded Years (t)	0.1162	0.0469	2.4767	0.0180	0.0211	0.2113

The results of the SLRA in Table 4.6 showed that the linear relationship between the percentage budgetary allocations to the education sector of Nigeria by the FGN during the Pre-Recent Democratic Regime (1960-1998), and the coded years, t, is given by,

$$\hat{Y} = 2.5389 + 0.116247t \quad (4.2)$$

Also, the intercept and the independent variable, t, are both significant, having p-Values of 0.0238 and 0.0180, respectively. Furthermore, the slope of the model is positive (0.116247) indicative of an upward linear trend for the distribution of the data during the Pre-Recent Democratic Regime (1960-1998).

From Table 4.5, the computed F-statistic of 6.1340 (a p-Value equivalent of about 0.0180) led to the conclusion that the model is of good-fit to the data on the percentage budgetary allocations to the education sector of Nigeria by the FGN during the Pre-Recent Democratic Regime (1960-1998). Furthermore, from Table 4.4, the R-square value of 0.1422 showed that only about 14.22% of the total variation in the dependent variable, Y (the annual percentage budgetary allocations from 1960 to 1998), is being accounted for by the variations in the independent variable, X (the years (coded to t)); while about 85.78% is left unaccounted for perhaps by some other variables not included in the modeling.

Finally, the value of the R-squared and the p-Value of the independent variable, coded year (t), show that time (the years) had not much but significant contribution to the dependent variable, Y (the annual percentage budgetary allocations to the education sector of Nigeria by the FGN during the Pre-Recent Democratic Regime (1960-1998). This implies that some other variable(s), not captured in the regression analysis, could have been significantly responsible for the variation in the dependent variable, Y (the annual percentage budgetary allocations to the education sector of Nigeria by the FGN during the Pre-Recent Democratic Regime (1960-1998).

4.3 The SLR Model for the Percentage Budgetary Allocations for the Period, 1999-2023

The Simple Linear Regression Analysis was further carried out on the percentage budgetary allocations to the education sector of Nigeria by the FGN for the period, (1999-2023) – considered in this study, just as Ohaegbulem and Chijioke, 2023, as the Recent Democratic Regime (RDR) – for the same reason stated before Section 4.2.

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Firstly, as is usually the case, a graphical presentation of the annual percentage budgetary allocations to the Education Sector of Nigeria by the FGN in the Recent Democratic Regime (1999-2023) is shown in Figure 4.3. The graphical display in Figure 4.3 suggests a gradual downward trend movement.

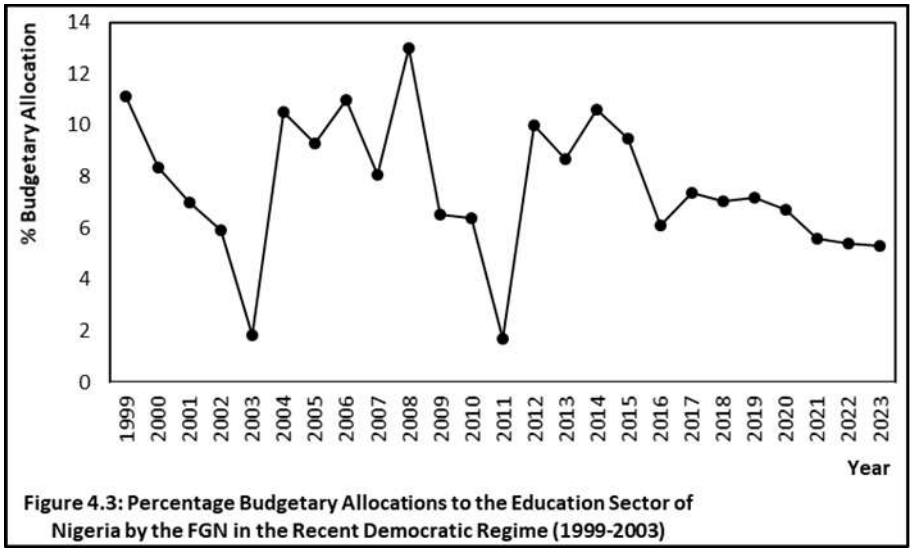

Figure 4.3: Percentage Budgetary Allocations to the Education Sector of Nigeria by the FGN in the Recent Democratic Regime (1999-2003)

In this Simple Linear Regression Analysis carried out on the percentage budgetary allocations to the Education Sector of Nigeria by the FGN during the Recent Democratic Regime, the period of years, 1999-2023, is now coded to t, 1-25. Now, with the aid of Microsoft Excel, the results outputs presented in Tables 4.7 to 4.9 are arrived at.

Table 4.7: The Regression Statistics

Multiple R	0.2509
R Square	0.0629
Adjusted R Square	0.0222
Standard Error	2.6821
Observations	25

Table 4.8: The ANOVA Test

Source of Variation	*df*	*SS*	*MS*	*F*	*Significance F*
Regression	1	11.1120	11.1120	1.5447	0.2264
Residual	23	165.4517	7.1936		
Total	24	176.5637			

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Table 4.9: The Regression Coefficients

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	8.8115	1.1059	7.9681	4.59E-08	6.5239	11.0991
Coded Years (t)	-0.0925	0.0744	-1.2429	0.2264	-0.2463	0.0614

The results of the SLRA in Table 4.9 showed that the linear relationship between the percentage budgetary allocations to the education sector of Nigeria by the FGN during the Recent Democratic Regime (1999-2023), and the coded years, t, is given by,

$$\hat{Y} = 8.8115 - 0.09245t \qquad (4.3)$$

Also, the intercept is significant (having p-Value of 4.59E-08); while the independent variable, t, is not significant (having p-Value of 0.2264). Furthermore, the slope of the model is negative (-0.09245) indicative of a downward linear trend for the distribution of the data during the Recent Democratic Regime (1999-2023).

From Table 4.8, the computed F-statistic of 1.5447 (a p-Value equivalent of about 0.2264) led to the conclusion that the model is not of good-fit to the data on the percentage budgetary allocations to the education sector of Nigeria by the FGN during the Recent Democratic Regime (1999-2023). Furthermore, from Table 4.7, the R-square value of 0.0629 showed that only about 6.29% of the total variation in the dependent variable, Y (the annual percentage budgetary allocations from 1999-2023), is being accounted for by the variations in the independent variable, X (the years (coded to t)); while about a whopping 93.71% is left unaccounted for perhaps by some other variables not included in the modeling.

Finally, the value of the R-squared and the p-Value of the independent variable, coded year (t), show that time (the years) had very little or no significant contribution to the dependent variable, Y (the annual percentage budgetary allocations to the education sector of Nigeria by the FGN during the Recent Democratic Regime (1999-2023). This implies that some other variable(s), not captured in the regression analysis, could be significantly responsible for the variation in the dependent variable, Y (the annual percentage budgetary allocations to the education sector of Nigeria by the FGN during the Recent Democratic Regime (1999-2023).

4.4 Forecasting the Percentage Budgetary Allocations to the Education Sector of Nigeria Beyond 2023

The percentage budgetary allocations to the education sector of Nigeria beyond the year, 2023 (from t=65, to say, t=281 (that is, from the year, 2024, to the year, 2240)) are hereby forecasted with the simple linear regression model established for the percentage

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budgetary allocations to the education sector of Nigeria by the FGN for the period, (1960-2023). Only (4.1) and (4.2) are used for the forecasts, as (4.3) exhibited a negative slope; indicating a downward linear trend movement. This implies that the forecast of the annual percentage budgetary allocations to the education sector of Nigeria by the FGN beyond 2023 would eventually start yielding negative values.

4.2.1 Forecasting with Model (4.1)

The established simple linear regression model in (4.1) is used to forecast the values of the percentage budgetary allocations to the education sector of Nigeria from t=65 to t=281 (that is, from the year, 2024, to the year, 2240). The forecast results are presented in Table 4.10 (see Appendix).

The results show that, going by the linear trend exhibited in the distribution of the annual percentage budgetary allocations to the education sector of Nigeria by the FGN during the entire period under study (1960-2023), the three UNESCO's recommended benchmarks of 15%, 20%, and 26% would be expected to be attained in Nigeria in the years, 2102, 2163, and 2236, respectively.

4.2.2 Forecasting with Model (4.2)

Using the established simple linear regression model in (4.2) to forecast the values of the percentage budgetary allocations to the education sector of Nigeria from the year, 2024, to the year, 2240, yielded the forecast results presented in Table 4.11 (see Appendix).

The results show that, going by the linear trend exhibited in the distribution of the annual percentage budgetary allocations to the education sector of Nigeria by the FGN during the Pre-Recent Democratic Regime (1960-1998), the three UNESCO's recommended benchmarks of 15%, 20%, and 26% would be expected to be attained in Nigeria in the years, 2066, 2109, and 2161, respectively.

4.2.3 Targeting the UNESCO's Benchmarks on Budgetary Allocations to Education Sector in Nigeria

It is quite obvious, from the results obtained in Sub-sections 4.2.1 and 4.2.2, that the eventual attainments of the three UNESCO's recommended benchmarks of 15%, 20%, and 26% of the annual percentage budgetary allocations to the education sector of Nigeria by the FGN would happen in such very distant years to come. This even extends into centuries. This development is even more worrisome as it is in the know that the Federal Governments of some African countries, like Ghana, South Africa, Senegal, Kenya, and Morocco have done very well in ensuring that their countries attained these UNESCO's recommended

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benchmarks of 15%, 20%, and 26% of the annual percentage budgetary allocations to the education sector (see, for example, Ohaegbulem, 2024). It is also even worse to come to know, as revealed by Ohaegbulem (2024), that the annual percentage budgetary allocations to the Education Sector by the government of Nigeria from 1999 to 2021 were significantly lower than those of some selected African countries such as Ghana, South Africa, Senegal, Kenya, and Morocco.

In this study, the targeting of the UNESCO's recommended benchmarks of 15%, 20%, and 26% of the annual percentage budgetary allocations to the education sector as it bothers Nigeria's situation, is done by a simple statistical adjustment conception that will ensure quick attainments of the benchmarks. The conceptualization is on the slope in the established simple linear regression models, (4.1) and (4.2).

Recall that a simple expression of the slope for a simple linear regression model for historical data is given as,

$$\text{Slope} = \frac{\text{Change in the dependent variable, } Y}{\text{Change in the independent variable, } t} = \frac{\Delta Y}{\Delta t} \qquad (4.4)$$

Now, when the change in the independent variable is unity (that is, $\Delta t = 1$), the slope (4.4) becomes,

$$\text{Slope} = \Delta Y = Y_i - Y_{(i-1)} \;\; ; i = 2,\ 3,\ \cdots,\ n. \qquad (4.5)$$

The expression in (4.5) shows that in the cases of the forecasts done using (4.1) and (4.2), the differences between the percentage budgetary allocations for any given year and the year preceding it is just the value of the slope for the established simple linear regression model for the distribution. In these two cases, this annual difference – which remains the value of the slope – hovers around one percent (1%) increment. This 1% increment is very abysmally poor indeed; and is consequential to the very long number of years for the eventual attainment of the UNESCO's Benchmarks on the annual percentage budgetary allocations to the education sector.

In order to target the three UNESCO's recommended benchmarks of 15%, 20%, and 26% of the annual percentage budgetary allocations to the education sector – with a view to attaining the benchmarks as quickly as ever possible, this study made just two moves. The slopes in the two established models, (4.1) and (4.2) were doubled at the first instance, and then tripled at the second instance. That is, for the slopes doubled;

$$\hat{Y} = 3.2688 + (2 \times 0.08208)t = 3.2688 + 0.16416t \qquad (4.6)$$

and

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$$\hat{Y} = 2.5389 + (2 \times 0.116247)t = 2.5389 + 0.232494t \quad (4.7)$$

And for the slopes tripled;

$$\hat{Y} = 3.2688 + (3 \times 0.08208)t = 3.2688 + 0.24624t \quad (4.8)$$

and

$$\hat{Y} = 2.5389 + (3 \times 0.116247)t = 2.5389 + 0.348741t \quad (4.9)$$

With the adjustments presented in (4.6) to (4.9), it implies that, for the case where the slopes were doubled, the forecast value with the adjusted model is given by,

$$Y_{(adjusted)} = Y_{(old\ forecast)} + (Slope)t \quad (4.10)$$

And for the case where the slopes were tripled, the forecast value with the adjusted model is given by,

$$Y_{(adjusted)} = Y_{(old\ forecast)} + (2Slope)t \quad (4.11)$$

Equations (4.10) and (4.11) would ensure substantial increments in the target values for the annual percentage budgetary allocations to the education sector. Thus, promising quick attainments of the UNESCO's benchmarks.

The forecasts suggestively done with respect to the targeting of the UNESCO's benchmarks of 15%, 20%, and 26%, as the case may be, using (4.6) to (4.9) are presented in Tables 4.12 to 4.15, respectively (see Appendix). Furthermore, forecasts were also done in retrospect with respect to Model (4.2) with its slope doubled, and Models (4.1) and (4.2) with their respective slopes tripled (see Appendix) – with a view to capturing when some of the UNESCO's benchmarks were to be attained.

Table 4.12 suggests that should the Federal Government of Nigeria (FGN) buys the idea to use (4.6), the three UNESCO's recommended benchmarks of 15%, 20%, and 26% would be expected to be attained in Nigeria in the years, 2031, 2061, and 2098, respectively.

Table 4.13 suggests that should the FGN buys the idea to use (4.7), two UNESCO's recommended benchmarks of 20% and 26% would be expected to be attained in Nigeria in the years, 2034 and 2060, respectively; while Table 4.16 suggests that if the FGN had used (4.7), the UNESCO's benchmark of 15% would have long been attained in the year, 2013.

Table 4.14 suggests that should the FGN buys the idea to use (4.8), two UNESCO's recommended benchmarks of 20% and 26% would be expected to be attained in Nigeria in

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the years, 2027 and 2052, respectively; while Table 4.16 suggests that if the FGN had used (4.8), the UNESCO's benchmark of 15% would have long been attained in the year, 2007.

Table 4.15 suggests that should the FGN buys the idea to use (4.9), just one UNESCO's recommended benchmark of 26% would be expected to be attained in Nigeria in the year, 2027; while Table 4.16 suggests that if the FGN had used (4.9), two UNESCO's benchmarks of 15% and 20% would have long been attained in the years, 1995 and 2009, respectively.

5 RESULTS AND DISCUSIONS

Figure 4.1, which suggested an averagely gradual upward trend movement, showed that the percentage budgetary allocations to the education sector of Nigeria by the Federal Government of Nigeria (FGN) for the period, (1960-2023), fall below the three UNESCO's recommended benchmarks of 15%, 20% and 26%, except in the year 1997 when the percentage budgetary allocation was about 17.59%. The results of the Simple Linear Regression Analysis (SLRA), presented in Table 4.3, showed that the linear relationship between the annual percentage budgetary allocations to the education sector of Nigeria by the FGN for the period, (1960-2023), and the coded years, t, indicated a gradual upward linear trend; with positive intercept (3.2688) and slope (0.08208), which are both significant at 5% level (having p-Values of 0.0001 and 0.0003, respectively). Table 4.2 showed the computed F-statistic of 14.8647 (a p-Value equivalent of about 0.0003) which led to the conclusion that the model is of good-fit. The R-square value of 0.1934 showed that only about 19.34% of the total variation in the annual percentage budgetary allocations from 1960 to 2023 was being accounted for by the variations in the years; while about 80.66% was left unaccounted for perhaps by some other variables not included in the modeling. Furthermore, from the value of the R-squared and the p-Value of the independent variable, it was obvious that time (the years) had not much significant contributions to the annual percentage budgetary allocations to the education sector of Nigeria by the FGN for the period, (1960-2023).

The data were also segmented into two – the Pre-Recent Democratic Regime (1960-1998) and the Recent Democratic Regime (1999-2023) – with the essence to assess what the trend was during two separate eras. For the case of the PRDR, the graphical display in Figure 4.2 suggested a gradual upward trend movement. The results of the SLRA, presented in Table 4.6, showed that the linear relationship between the annual percentage budgetary allocations to the education sector of Nigeria by the FGN during the PRDR and the coded years, t, indicated an upward linear trend; with positive intercept (2.5389) and slope (0.116247), which are both significant at 5% level (having p-Values of 0.0238 and 0.0180,

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respectively). Table 4.5 showed the computed F-statistic of 6.1340 (a p-Value equivalent of about 0.0180) which led to the conclusion that the model is of good-fit. The R-square value of 0.1422 showed that only about 14.22% of the total variation in the annual percentage budgetary allocations from 1960 to 1998 was being accounted for by the variations in the years; while about 85.78% was left unaccounted for perhaps by some other variables not included in the modeling. Furthermore, from the value of the R-squared and the p-Value of the independent variable, it was quite clear that time (the years) had not much significant contribution to the annual percentage budgetary allocations to the education sector of Nigeria by the FGN during the Pre-Recent Democratic Regime (1960-1998).

In the case of the RDR (1999-2023), the graphical display in Figure 4.3 suggested a gradual downward trend movement. The results of the SLRA, presented in Table 4.9, showed that the linear relationship between the annual percentage budgetary allocations to the education sector of Nigeria by the FGN during the RDR, and the coded years, t, indicated a downward linear trend; with a positive intercept (8.8115) which is significant at 5% level – having p-Value of 4.59E-08, and a negative slope (-0.09245), which is not significant at 5% level – having p-Value of 0.2264. Table 4.8 showed the computed F-statistic of 1.5447 (a p-Value equivalent of about 0.2264) which led to the conclusion that the model is not of good-fit. The R-square value of 0.0629 showed that only about 6.29% of the total variation in the annual percentage budgetary allocations from 1999-2023 was being accounted for by the variations in the years; while about a whopping 93.71% was left unaccounted for perhaps by some other variables not included in the modeling. Finally, from the value of the R-squared and the p-Value of the independent variable, it was clear that time (the years) had very little or no significant contribution to the annual percentage budgetary allocations to the education sector of Nigeria by the FGN during the Recent Democratic Regime (1999-2023).

Three SLR models were established for the three facets of the period under this study, (1960-2023), (1960-1998), and (1999-2023) – Models (4.1), (4.2), and (4.3), respectively – obtained as $\hat{Y} = 3.2688 + 0.08208t$, $\hat{Y} = 2.5389 + 0.116247t$, and $\hat{Y} = 8.8115 - 0.09245t$, respectively. The annual percentage budgetary allocations to the education sector of Nigeria beyond the year, 2023, precisely, from t=65 to t=281 (that is, from the year, 2024, to the year, 2240) were consequently forecasted with Models (4.1) and (4.2) only. This is so, as (4.3) exhibited a negative slope – indicating a downward linear trend movement; which implied that the forecasts of the annual percentage budgetary allocations to the education sector of Nigeria by the FGN beyond 2023 would eventually start yielding negative values. The forecast results, obtained using Model (4.1) and presented in Table 4.10 (see Appendix), showed that the three UNESCO's recommended benchmarks of 15%,

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20%, and 26% would be expected to be attained in Nigeria in the years, 2102, 2163, and 2236, respectively. On the other hand, going by Model (4.2), forecast results presented in Table 4.11 showed that the three UNESCO's recommended benchmarks of 15%, 20%, and 26% would be expected to be attained in Nigeria in the years, 2066, 2109, and 2161, respectively.

From the forecasts results so obtained revealed that the eventual attainments of the three UNESCO's recommended benchmarks of 15%, 20%, and 26% of the annual percentage budgetary allocations to the education sector of Nigeria by the FGN would not possibly happen in the nearest future, and probably extends into centuries. The forecasts results obtained using (4.1) and (4.2) showed that the differences between the percentage budgetary allocations for any given year and the year preceding it were just the values of the respective slopes – which in these two cases, hovered around one percent (1%) increment. This 1% increment is very abysmally poor indeed; and was consequential to the very long number of years for the eventual attainment of the UNESCO's Benchmarks on the annual percentage budgetary allocations to the education sector.

An attempt carried out to target the UNESCO's recommended benchmarks, as it bothered Nigeria's situation, was done with a simple statistical adjustment conceptualization on the slopes of (4.1) and (4.2) – which would ensure quick attainments of the benchmarks. The targeting was done at the first instance, by doubling the slopes of Models (4.1) and (4.2) to yield $\hat{Y} = 3.2688 + 0.16416t$ and $\hat{Y} = 2.5389 + 0.232494t$, respectively; and at the second instance, by tripling the slopes of Models (4.1) and (4.2) to yield $\hat{Y} = 3.2688 + 0.24624t$ and $\hat{Y} = 2.5389 + 0.348741t$, respectively.

The forecasts suggestively done with respect to the targeting of the UNESCO's benchmarks of 15%, 20%, and 26% are presented in Tables 4.12 to 4.16 (see Appendix). Table 4.12 showed that with the slope of Model (4.1) doubled, the three UNESCO's recommended benchmarks of 15%, 20%, and 26% would be attained in Nigeria in the years, 2031, 2061, and 2098, respectively. Similarly, Table 4.13 suggested that with the slope of Model (4.2) doubled, two UNESCO's recommended benchmarks of 20% and 26% would be attained in Nigeria in the years, 2034 and 2060, respectively; and Table 4.16 showed that with the slope of Model (4.2) doubled, the UNESCO's benchmark of 15% would have long been attained in the year, 2013. Furthermore, Table 4.14 showed that with the slope of Model (4.1) tripled, two UNESCO's recommended benchmarks of 20% and 26% would be attained in Nigeria in the years, 2027 and 2052, respectively; and Table 4.16 showed that with the slope of Model (4.1) tripled in retrospect, the UNESCO's benchmark of 15% would have long been attained in the year, 2007. Finally, Table 4.15 showed that with the slope of

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Model (4.2) tripled, just one UNESCO's recommended benchmark of 26% would be attained in Nigeria in the year, 2027; and Table 4.16 showed that with the slope of Model (4.2) was tripled in retrospect, two UNESCO's benchmarks of 15% and 20% would have long been attained in the years, 1995 and 2009, respectively.

6 CONCLUSION

The percentage budgetary allocations to the education sector of Nigeria by the Federal Government of Nigeria from 1960 to 2023 fell below the UNESCO's benchmarks, except in 1997. The simple linear regression analyses were conducted at three different stages. The first revealed a gradual upward linear trend; with positive and significant intercept and slope. Also, an upward linear trend was established with positive and significant intercept and slope when the Pre-Recent Democratic Regime (1960-1998) was studied. A downward linear trend, with a positive and significant intercept and a non-significant negative slope was established for the allocations during the Recent Democratic Regime (1999-2023); and thus the model was not used in the forecasts. The forecast results, obtained using the model for (1960-2023) showed that the UNESCO's benchmarks of 15%, 20%, and 26% would be attained in Nigeria in 2102, 2163, and 2236, respectively. On the other hand, using the model for (1960-1998), the benchmarks of 15%, 20%, and 26% would be attained by Nigeria in 2066, 2109, and 2161, respectively.

An attempted targeting on the UNESCO's benchmarks, when the slope of the model for (1960-2023) was doubled, revealed that the benchmarks of 15%, 20%, and 26% would be attained by Nigeria in 2031, 2061, and 2098, respectively; while when the slope of the model for (1960-1998) was doubled, two UNESCO's benchmarks of 20% and 26% would be attained in Nigeria in 2034 and 2060, respectively; and that of 15% would have long been attained in 2013. In the cases the slopes were tripled, the model for (1960-2023) revealed the attainments of two benchmarks of 20% and 26% in 2027 and 2052, respectively; and that of 15% would have long been attained in 2007. Finally, tripling the slope of the model for (1960-1998) revealed that just one benchmark of 26% would be attained in 2027; and those of 15% and 20% would have long been attained in 1995 and 2009, respectively.

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APPENDIX

Table 4.10: The Forecasted Percentage Budgetary Allocations to the Education Sector by the FGN (1960-2023) Using Model (4.1)

Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation
2024	65	8.6	2079	120	13.1	2134	175	17.6	2189	230	22.1
2025	66	8.69	2080	121	13.2	2135	176	17.7	2190	231	22.2
2026	67	8.77	2081	122	13.3	2136	177	17.8	2191	232	22.3
2027	68	8.85	2082	123	13.4	2137	178	17.9	2192	233	22.4
2028	69	8.93	2083	124	13.4	2138	179	18	2193	234	22.5
2029	70	9.01	2084	125	13.5	2139	180	18	2194	235	22.6
2030	71	9.1	2085	126	13.6	2140	181	18.1	2195	236	22.6
2031	72	9.18	2086	127	13.7	2141	182	18.2	2196	237	22.7
2032	73	9.26	2087	128	13.8	2142	183	18.3	2197	238	22.8
2033	74	9.34	2088	129	13.9	2143	184	18.4	2198	239	22.9
2034	75	9.42	2089	130	13.9	2144	185	18.5	2199	240	23
2035	76	9.51	2090	131	14	2145	186	18.5	2200	241	23.1
2036	77	9.59	2091	132	14.1	2146	187	18.6	2201	242	23.1
2037	78	9.67	2092	133	14.2	2147	188	18.7	2202	243	23.2
2038	79	9.75	2093	134	14.3	2148	189	18.8	2203	244	23.3
2039	80	9.84	2094	135	14.3	2149	190	18.9	2204	245	23.4
2040	81	9.92	2095	136	14.4	2150	191	18.9	2205	246	23.5
2041	82	10	2096	137	14.5	2151	192	19	2206	247	23.5
2042	83	10.1	2097	138	14.6	2152	193	19.1	2207	248	23.6
2043	84	10.2	2098	139	14.7	2153	194	19.2	2208	249	23.7
2044	85	10.2	2099	140	14.8	2154	195	19.3	2209	250	23.8
2045	86	10.3	2100	141	14.8	2155	196	19.4	2210	251	23.9
2046	87	10.4	2101	142	14.9	2156	197	19.4	2211	252	24
2047	88	10.5	**2102**	**143**	**15.0**	2157	198	19.5	2212	253	24
2048	89	10.6	2103	144	15.1	2158	199	19.6	2213	254	24.1
2049	90	10.7	2104	145	15.2	2159	200	19.7	2214	255	24.2
2050	91	10.7	2105	146	15.3	2160	201	19.8	2215	256	24.3
2051	92	10.8	2106	147	15.3	2161	202	19.8	2216	257	24.4
2052	93	10.9	2107	148	15.4	2162	203	19.9	2217	258	24.4
2053	94	11	2108	149	15.5	**2163**	**204**	**20.0**	2218	259	24.5
2054	95	11.1	2109	150	15.6	2164	205	20.1	2219	260	24.6
2055	96	11.1	2110	151	15.7	2165	206	20.2	2220	261	24.7
2056	97	11.2	2111	152	15.7	2166	207	20.3	2221	262	24.8
2057	98	11.3	2112	153	15.8	2167	208	20.3	2222	263	24.9
2058	99	11.4	2113	154	15.9	2168	209	20.4	2223	264	24.9
2059	100	11.5	2114	155	16	2169	210	20.5	2224	265	25
2060	101	11.6	2115	156	16.1	2170	211	20.6	2225	266	25.1
2061	102	11.6	2116	157	16.2	2171	212	20.7	2226	267	25.2
2062	103	11.7	2117	158	16.2	2172	213	20.8	2227	268	25.3
2063	104	11.8	2118	159	16.3	2173	214	20.8	2228	269	25.3
2064	105	11.9	2119	160	16.4	2174	215	20.9	2229	270	25.4
2065	106	12	2120	161	16.5	2175	216	21	2230	271	25.5
2066	107	12.1	2121	162	16.6	2176	217	21.1	2231	272	25.6
2067	108	12.1	2122	163	16.6	2177	218	21.2	2232	273	25.7
2068	109	12.2	2123	164	16.7	2178	219	21.2	2233	274	25.8
2069	110	12.3	2124	165	16.8	2179	220	21.3	2234	275	25.8
2070	111	12.4	2125	166	16.9	2180	221	21.4	2235	276	25.9
2071	112	12.5	2126	167	17	2181	222	21.5	**2236**	**277**	**26.0**
2072	113	12.5	2127	168	17.1	2182	223	21.6	2237	278	26.1

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2073	114	12.6	2128	169	17.1	2183	224	21.7	2238	279	26.2
2074	115	12.7	2129	170	17.2	2184	225	21.7	2239	280	26.3
2075	116	12.8	2130	171	17.3	2185	226	21.8	2240	281	26.3
2076	117	12.9	2131	172	17.4	2186	227	21.9			
2077	118	13	2132	173	17.5	2187	228	22			
2078	119	13	2133	174	17.6	2188	229	22.1			

Table 4.11: The Forecasted Percentage Budgetary Allocations to the Education Sector by the FGN (1960-2023) Using Model (4.2)

Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation
2024	65	10.09	2079	120	16.49	2134	175	22.88	2189	230	29.28
2025	66	10.21	2080	121	16.6	2135	176	23	2190	231	29.39
2026	67	10.33	2081	122	16.72	2136	177	23.11	2191	232	29.51
2027	68	10.44	2082	123	16.84	2137	178	23.23	2192	233	29.62
2028	69	10.56	2083	124	16.95	2138	179	23.35	2193	234	29.74
2029	70	10.68	2084	125	17.07	2139	180	23.46	2194	235	29.86
2030	71	10.79	2085	126	17.19	2140	181	23.58	2195	236	29.97
2031	72	10.91	2086	127	17.3	2141	182	23.7	2196	237	30.09
2032	73	11.02	2087	128	17.42	2142	183	23.81	2197	238	30.21
2033	74	11.14	2088	129	17.53	2143	184	23.93	2198	239	30.32
2034	75	11.26	2089	130	17.65	2144	185	24.04	2199	240	30.44
2035	76	11.37	2090	131	17.77	2145	186	24.16	2200	241	30.55
2036	77	11.49	2091	132	17.88	2146	187	24.28	2201	242	30.67
2037	78	11.61	2092	133	18	2147	188	24.39	2202	243	30.79
2038	79	11.72	2093	134	18.12	2148	189	24.51	2203	244	30.9
2039	80	11.84	2094	135	18.23	2149	190	24.63	2204	245	31.02
2040	81	11.95	2095	136	18.35	2150	191	24.74	2205	246	31.14
2041	82	12.07	2096	137	18.46	2151	192	24.86	2206	247	31.25
2042	83	12.19	2097	138	18.58	2152	193	24.97	2207	248	31.37
2043	84	12.3	2098	139	18.7	2153	194	25.09	2208	249	31.48
2044	85	12.42	2099	140	18.81	2154	195	25.21	2209	250	31.6
2045	86	12.54	2100	141	18.93	2155	196	25.32	2210	251	31.72
2046	87	12.65	2101	142	19.05	2156	197	25.44	2211	252	31.83
2047	88	12.77	2102	143	19.16	2157	198	25.56	2212	253	31.95
2048	89	12.88	2103	144	19.28	2158	199	25.67	2213	254	32.07
2049	90	13	2104	145	19.39	2159	200	25.79	2214	255	32.18
2050	91	13.12	2105	146	19.51	2160	201	25.9	2215	256	32.3
2051	92	13.23	2106	147	19.63	**2161**	**202**	**26.02**	2216	257	32.41
2052	93	13.35	2107	148	19.74	2162	203	26.14	2217	258	32.53
2053	94	13.47	2108	149	19.86	2163	204	26.25	2218	259	32.65
2054	95	13.58	**2109**	**150**	**19.98**	2164	205	26.37	2219	260	32.76
2055	96	13.7	2110	151	20.09	2165	206	26.49	2220	261	32.88
2056	97	13.81	2111	152	20.21	2166	207	26.6	2221	262	33
2057	98	13.93	2112	153	20.32	2167	208	26.72	2222	263	33.11
2058	99	14.05	2113	154	20.44	2168	209	26.83	2223	264	33.23
2059	100	14.16	2114	155	20.56	2169	210	26.95	2224	265	33.34
2060	101	14.28	2115	156	20.67	2170	211	27.07	2225	266	33.46
2061	102	14.4	2116	157	20.79	2171	212	27.18	2226	267	33.58
2062	103	14.51	2117	158	20.91	2172	213	27.3	2227	268	33.69
2063	104	14.63	2118	159	21.02	2173	214	27.42	2228	269	33.81
2064	105	14.74	2119	160	21.14	2174	215	27.53	2229	270	33.93
2065	106	14.86	2120	161	21.25	2175	216	27.65	2230	271	34.04
2066	**107**	**14.98**	2121	162	21.37	2176	217	27.76	2231	272	34.16
2067	108	15.09	2122	163	21.49	2177	218	27.88	2232	273	34.27
2068	109	15.21	2123	164	21.6	2178	219	28	2233	274	34.39
2069	110	15.33	2124	165	21.72	2179	220	28.11	2234	275	34.51

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2070	111	15.44	2125	166	21.84	2180	221	28.23	2235	276	34.62
2071	112	15.56	2126	167	21.95	2181	222	28.35	2236	277	34.74
2072	113	15.67	2127	168	22.07	2182	223	28.46	2237	278	34.86
2073	114	15.79	2128	169	22.18	2183	224	28.58	2238	279	34.97
2074	115	15.91	2129	170	22.3	2184	225	28.69	2239	280	35.09
2075	116	16.02	2130	171	22.42	2185	226	28.81	2240	281	35.2
2076	117	16.14	2131	172	22.53	2186	227	28.93			
2077	118	16.26	2132	173	22.65	2187	228	29.04			
2078	119	16.37	2133	174	22.77	2188	229	29.16			

Table 4.12: The Forecasted Percentage Budgetary Allocations to the Education Sector by the FGN (1960-2023) Using Model (4.1) with the Slope Doubled

Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation
2024	65	13.94	2079	120	22.97	2134	175	32	2189	230	41.03
2025	66	14.1	2080	121	23.13	2135	176	32.16	2190	231	41.19
2026	67	14.27	2081	122	23.3	2136	177	32.33	2191	232	41.35
2027	68	14.43	2082	123	23.46	2137	178	32.49	2192	233	41.52
2028	69	14.6	2083	124	23.62	2138	179	32.65	2193	234	41.68
2029	70	14.76	2084	125	23.79	2139	180	32.82	2194	235	41.85
2030	71	14.92	2085	126	23.95	2140	181	32.98	2195	236	42.01
2031	**72**	**15.09**	2086	127	24.12	2141	182	33.15	2196	237	42.17
2032	73	15.25	2087	128	24.28	2142	183	33.31	2197	238	42.34
2033	74	15.42	2088	129	24.45	2143	184	33.47	2198	239	42.5
2034	75	15.58	2089	130	24.61	2144	185	33.64	2199	240	42.67
2035	76	15.74	2090	131	24.77	2145	186	33.8	2200	241	42.83
2036	77	15.91	2091	132	24.94	2146	187	33.97	2201	242	43
2037	78	16.07	2092	133	25.1	2147	188	34.13	2202	243	43.16
2038	79	16.24	2093	134	25.27	2148	189	34.3	2203	244	43.32
2039	80	16.4	2094	135	25.43	2149	190	34.46	2204	245	43.49
2040	81	16.57	2095	136	25.59	2150	191	34.62	2205	246	43.65
2041	82	16.73	2096	137	25.76	2151	192	34.79	2206	247	43.82
2042	83	16.89	2097	138	25.92	2152	193	34.95	2207	248	43.98
2043	84	17.06	**2098**	**139**	**26.09**	2153	194	35.12	2208	249	44.14
2044	85	17.22	2099	140	26.25	2154	195	35.28	2209	250	44.31
2045	86	17.39	2100	141	26.42	2155	196	35.44	2210	251	44.47
2046	87	17.55	2101	142	26.58	2156	197	35.61	2211	252	44.64
2047	88	17.71	2102	143	26.74	2157	198	35.77	2212	253	44.8
2048	89	17.88	2103	144	26.91	2158	199	35.94	2213	254	44.97
2049	90	18.04	2104	145	27.07	2159	200	36.1	2214	255	45.13
2050	91	18.21	2105	146	27.24	2160	201	36.26	2215	256	45.29
2051	92	18.37	2106	147	27.4	2161	202	36.43	2216	257	45.46
2052	93	18.54	2107	148	27.56	2162	203	36.59	2217	258	45.62
2053	94	18.7	2108	149	27.73	2163	204	36.76	2218	259	45.79
2054	95	18.86	2109	150	27.89	2164	205	36.92	2219	260	45.95
2055	96	19.03	2110	151	28.06	2165	206	37.09	2220	261	46.11
2056	97	19.19	2111	152	28.22	2166	207	37.25	2221	262	46.28
2057	98	19.36	2112	153	28.39	2167	208	37.41	2222	263	46.44
2058	99	19.52	2113	154	28.55	2168	209	37.58	2223	264	46.61
2059	100	19.68	2114	155	28.71	2169	210	37.74	2224	265	46.77
2060	101	19.85	2115	156	28.88	2170	211	37.91	2225	266	46.94
2061	**102**	**20.01**	2116	157	29.04	2171	212	38.07	2226	267	47.1

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2062	103	20.18	2117	158	29.21	2172	213	38.23	2227	268	47.26
2063	104	20.34	2118	159	29.37	2173	214	38.4	2228	269	47.43
2064	105	20.51	2119	160	29.53	2174	215	38.56	2229	270	47.59
2065	106	20.67	2120	161	29.7	2175	216	38.73	2230	271	47.76
2066	107	20.83	2121	162	29.86	2176	217	38.89	2231	272	47.92
2067	108	21	2122	163	30.03	2177	218	39.06	2232	273	48.08
2068	109	21.16	2123	164	30.19	2178	219	39.22	2233	274	48.25
2069	110	21.33	2124	165	30.36	2179	220	39.38	2234	275	48.41
2070	111	21.49	2125	166	30.52	2180	221	39.55	2235	276	48.58
2071	112	21.65	2126	167	30.68	2181	222	39.71	2236	277	48.74
2072	113	21.82	2127	168	30.85	2182	223	39.88	2237	278	48.91
2073	114	21.98	2128	169	31.01	2183	224	40.04	2238	279	49.07
2074	115	22.15	2129	170	31.18	2184	225	40.2	2239	280	49.23
2075	116	22.31	2130	171	31.34	2185	226	40.37	2240	281	49.4
2076	117	22.48	2131	172	31.5	2186	227	40.53			
2077	118	22.64	2132	173	31.67	2187	228	40.7			
2078	119	22.8	2133	174	31.83	2188	229	40.86			

Table 4.13: The Forecasted Percentage Budgetary Allocations to the Education Sector by the FGN (1960-2023) Using Model (4.2) with the Slope Doubled

Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation
2024	65	17.65	2079	120	30.44	2134	175	43.23	2189	230	56.01
2025	66	17.88	2080	121	30.67	2135	176	43.46	2190	231	56.25
2026	67	18.12	2081	122	30.9	2136	177	43.69	2191	232	56.48
2027	68	18.35	2082	123	31.14	2137	178	43.92	2192	233	56.71
2028	69	18.58	2083	124	31.37	2138	179	44.16	2193	234	56.94
2029	70	18.81	2084	125	31.6	2139	180	44.39	2194	235	57.17
2030	71	19.05	2085	126	31.83	2140	181	44.62	2195	236	57.41
2031	72	19.28	2086	127	32.07	2141	182	44.85	2196	237	57.64
2032	73	19.51	2087	128	32.3	2142	183	45.09	2197	238	57.87
2033	74	19.74	2088	129	32.53	2143	184	45.32	2198	239	58.1
2034	**75**	**19.98**	2089	130	32.76	2144	185	45.55	2199	240	58.34
2035	76	20.21	2090	131	33	2145	186	45.78	2200	241	58.57
2036	77	20.44	2091	132	33.23	2146	187	46.02	2201	242	58.8
2037	78	20.67	2092	133	33.46	2147	188	46.25	2202	243	59.03
2038	79	20.91	2093	134	33.69	2148	189	46.48	2203	244	59.27
2039	80	21.14	2094	135	33.93	2149	190	46.71	2204	245	59.5
2040	81	21.37	2095	136	34.16	2150	191	46.95	2205	246	59.73
2041	82	21.6	2096	137	34.39	2151	192	47.18	2206	247	59.96
2042	83	21.84	2097	138	34.62	2152	193	47.41	2207	248	60.2
2043	84	22.07	2098	139	34.86	2153	194	47.64	2208	249	60.43
2044	85	22.3	2099	140	35.09	2154	195	47.88	2209	250	60.66
2045	86	22.53	2100	141	35.32	2155	196	48.11	2210	251	60.89
2046	87	22.77	2101	142	35.55	2156	197	48.34	2211	252	61.13
2047	88	23	2102	143	35.79	2157	198	48.57	2212	253	61.36
2048	89	23.23	2103	144	36.02	2158	199	48.81	2213	254	61.59
2049	90	23.46	2104	145	36.25	2159	200	49.04	2214	255	61.82
2050	91	23.7	2105	146	36.48	2160	201	49.27	2215	256	62.06
2051	92	23.93	2106	147	36.72	2161	202	49.5	2216	257	62.29
2052	93	24.16	2107	148	36.95	2162	203	49.74	2217	258	62.52
2053	94	24.39	2108	149	37.18	2163	204	49.97	2218	259	62.75
2054	95	24.63	2109	150	37.41	2164	205	50.2	2219	260	62.99

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2055	96	24.86	2110	151	37.65	2165	206	50.43	2220	261	63.22
2056	97	25.09	2111	152	37.88	2166	207	50.67	2221	262	63.45
2057	98	25.32	2112	153	38.11	2167	208	50.9	2222	263	63.68
2058	99	25.56	2113	154	38.34	2168	209	51.13	2223	264	63.92
2059	100	25.79	2114	155	38.58	2169	210	51.36	2224	265	64.15
2060	**101**	**26.02**	2115	156	38.81	2170	211	51.6	2225	266	64.38
2061	102	26.25	2116	157	39.04	2171	212	51.83	2226	267	64.61
2062	103	26.49	2117	158	39.27	2172	213	52.06	2227	268	64.85
2063	104	26.72	2118	159	39.51	2173	214	52.29	2228	269	65.08
2064	105	26.95	2119	160	39.74	2174	215	52.53	2229	270	65.31
2065	106	27.18	2120	161	39.97	2175	216	52.76	2230	271	65.54
2066	107	27.42	2121	162	40.2	2176	217	52.99	2231	272	65.78
2067	108	27.65	2122	163	40.44	2177	218	53.22	2232	273	66.01
2068	109	27.88	2123	164	40.67	2178	219	53.46	2233	274	66.24
2069	110	28.11	2124	165	40.9	2179	220	53.69	2234	275	66.47
2070	111	28.35	2125	166	41.13	2180	221	53.92	2235	276	66.71
2071	112	28.58	2126	167	41.37	2181	222	54.15	2236	277	66.94
2072	113	28.81	2127	168	41.6	2182	223	54.39	2237	278	67.17
2073	114	29.04	2128	169	41.83	2183	224	54.62	2238	279	67.4
2074	115	29.28	2129	170	42.06	2184	225	54.85	2239	280	67.64
2075	116	29.51	2130	171	42.3	2185	226	55.08	2240	281	67.87
2076	117	29.74	2131	172	42.53	2186	227	55.32			
2077	118	29.97	2132	173	42.76	2187	228	55.55			
2078	119	30.21	2133	174	42.99	2188	229	55.78			

Table 4.14: The Forecasted Percentage Budgetary Allocations to the Education Sector by the FGN (1960-2023) Using Model (4.1) with the Slope Tripled

Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation
2024	65	19.27	2079	120	32.82	2134	175	46.36	2189	230	59.9
2025	66	19.52	2080	121	33.06	2135	176	46.61	2190	231	60.15
2026	67	19.77	2081	122	33.31	2136	177	46.85	2191	232	60.4
2027	**68**	**20.01**	2082	123	33.56	2137	178	47.1	2192	233	60.64
2028	69	20.26	2083	124	33.8	2138	179	47.35	2193	234	60.89
2029	70	20.51	2084	125	34.05	2139	180	47.59	2194	235	61.14
2030	71	20.75	2085	126	34.3	2140	181	47.84	2195	236	61.38
2031	72	21	2086	127	34.54	2141	182	48.08	2196	237	61.63
2032	73	21.24	2087	128	34.79	2142	183	48.33	2197	238	61.87
2033	74	21.49	2088	129	35.03	2143	184	48.58	2198	239	62.12
2034	75	21.74	2089	130	35.28	2144	185	48.82	2199	240	62.37
2035	76	21.98	2090	131	35.53	2145	186	49.07	2200	241	62.61
2036	77	22.23	2091	132	35.77	2146	187	49.32	2201	242	62.86
2037	78	22.48	2092	133	36.02	2147	188	49.56	2202	243	63.11
2038	79	22.72	2093	134	36.26	2148	189	49.81	2203	244	63.35
2039	80	22.97	2094	135	36.51	2149	190	50.05	2204	245	63.6
2040	81	23.21	2095	136	36.76	2150	191	50.3	2205	246	63.84
2041	82	23.46	2096	137	37	2151	192	50.55	2206	247	64.09
2042	83	23.71	2097	138	37.25	2152	193	50.79	2207	248	64.34
2043	84	23.95	2098	139	37.5	2153	194	51.04	2208	249	64.58
2044	85	24.2	2099	140	37.74	2154	195	51.29	2209	250	64.83
2045	86	24.45	2100	141	37.99	2155	196	51.53	2210	251	65.08

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" ON TARGETING UNESCO'S BENCHMARK(S) ON BUDGETARY ALLOCATIONS TO EDUCATION SECTOR IN NIGERIA: A STATISTICAL CONCEPTUALISATION"

2046	87	24.69	2101	142	38.23	2156	197	51.78	2211	252	65.32
2047	88	24.94	2102	143	38.48	2157	198	52.02	2212	253	65.57
2048	89	25.18	2103	144	38.73	2158	199	52.27	2213	254	65.81
2049	90	25.43	2104	145	38.97	2159	200	52.52	2214	255	66.06
2050	91	25.68	2105	146	39.22	2160	201	52.76	2215	256	66.31
2051	92	25.92	2106	147	39.47	2161	202	53.01	2216	257	66.55
2052	**93**	**26.17**	2107	148	39.71	2162	203	53.26	2217	258	66.8
2053	94	26.42	2108	149	39.96	2163	204	53.5	2218	259	67.04
2054	95	26.66	2109	150	40.2	2164	205	53.75	2219	260	67.29
2055	96	26.91	2110	151	40.45	2165	206	53.99	2220	261	67.54
2056	97	27.15	2111	152	40.7	2166	207	54.24	2221	262	67.78
2057	98	27.4	2112	153	40.94	2167	208	54.49	2222	263	68.03
2058	99	27.65	2113	154	41.19	2168	209	54.73	2223	264	68.28
2059	100	27.89	2114	155	41.44	2169	210	54.98	2224	265	68.52
2060	101	28.14	2115	156	41.68	2170	211	55.23	2225	266	68.77
2061	102	28.39	2116	157	41.93	2171	212	55.47	2226	267	69.01
2062	103	28.63	2117	158	42.17	2172	213	55.72	2227	268	69.26
2063	104	28.88	2118	159	42.42	2173	214	55.96	2228	269	69.51
2064	105	29.12	2119	160	42.67	2174	215	56.21	2229	270	69.75
2065	106	29.37	2120	161	42.91	2175	216	56.46	2230	271	70
2066	107	29.62	2121	162	43.16	2176	217	56.7	2231	272	70.25
2067	108	29.86	2122	163	43.41	2177	218	56.95	2232	273	70.49
2068	109	30.11	2123	164	43.65	2178	219	57.2	2233	274	70.74
2069	110	30.36	2124	165	43.9	2179	220	57.44	2234	275	70.98
2070	111	30.6	2125	166	44.14	2180	221	57.69	2235	276	71.23
2071	112	30.85	2126	167	44.39	2181	222	57.93	2236	277	71.48
2072	113	31.09	2127	168	44.64	2182	223	58.18	2237	278	71.72
2073	114	31.34	2128	169	44.88	2183	224	58.43	2238	279	71.97
2074	115	31.59	2129	170	45.13	2184	225	58.67	2239	280	72.22
2075	116	31.83	2130	171	45.38	2185	226	58.92	2240	281	72.46
2076	117	32.08	2131	172	45.62	2186	227	59.17			
2077	118	32.33	2132	173	45.87	2187	228	59.41			
2078	119	32.57	2133	174	46.11	2188	229	59.66			

Table 4.15: The Forecasted Percentage Budgetary Allocations to the Education Sector by the FGN (1960-2023) Using Model (4.2) with the Slope Tripled

Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation
2024	65	25.21	2079	120	44.39	2134	175	63.57	2189	230	82.75
2025	66	25.56	2080	121	44.74	2135	176	63.92	2190	231	83.1
2026	67	25.9	2081	122	45.09	2136	177	64.27	2191	232	83.45
2027	**68**	**26.25**	2082	123	45.43	2137	178	64.61	2192	233	83.8
2028	69	26.6	2083	124	45.78	2138	179	64.96	2193	234	84.14
2029	70	26.95	2084	125	46.13	2139	180	65.31	2194	235	84.49
2030	71	27.3	2085	126	46.48	2140	181	65.66	2195	236	84.84
2031	72	27.65	2086	127	46.83	2141	182	66.01	2196	237	85.19
2032	73	28	2087	128	47.18	2142	183	66.36	2197	238	85.54
2033	74	28.35	2088	129	47.53	2143	184	66.71	2198	239	85.89
2034	75	28.69	2089	130	47.88	2144	185	67.06	2199	240	86.24
2035	76	29.04	2090	131	48.22	2145	186	67.4	2200	241	86.59
2036	77	29.39	2091	132	48.57	2146	187	67.75	2201	242	86.93

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2037	78	29.74	2092	133	48.92	2147	188	68.1	2202	243	87.28
2038	79	30.09	2093	134	49.27	2148	189	68.45	2203	244	87.63
2039	80	30.44	2094	135	49.62	2149	190	68.8	2204	245	87.98
2040	81	30.79	2095	136	49.97	2150	191	69.15	2205	246	88.33
2041	82	31.14	2096	137	50.32	2151	192	69.5	2206	247	88.68
2042	83	31.48	2097	138	50.67	2152	193	69.85	2207	248	89.03
2043	84	31.83	2098	139	51.01	2153	194	70.19	2208	249	89.38
2044	85	32.18	2099	140	51.36	2154	195	70.54	2209	250	89.72
2045	86	32.53	2100	141	51.71	2155	196	70.89	2210	251	90.07
2046	87	32.88	2101	142	52.06	2156	197	71.24	2211	252	90.42
2047	88	33.23	2102	143	52.41	2157	198	71.59	2212	253	90.77
2048	89	33.58	2103	144	52.76	2158	199	71.94	2213	254	91.12
2049	90	33.93	2104	145	53.11	2159	200	72.29	2214	255	91.47
2050	91	34.27	2105	146	53.46	2160	201	72.64	2215	256	91.82
2051	92	34.62	2106	147	53.8	2161	202	72.98	2216	257	92.17
2052	93	34.97	2107	148	54.15	2162	203	73.33	2217	258	92.51
2053	94	35.32	2108	149	54.5	2163	204	73.68	2218	259	92.86
2054	95	35.67	2109	150	54.85	2164	205	74.03	2219	260	93.21
2055	96	36.02	2110	151	55.2	2165	206	74.38	2220	261	93.56
2056	97	36.37	2111	152	55.55	2166	207	74.73	2221	262	93.91
2057	98	36.72	2112	153	55.9	2167	208	75.08	2222	263	94.26
2058	99	37.06	2113	154	56.25	2168	209	75.43	2223	264	94.61
2059	100	37.41	2114	155	56.59	2169	210	75.77	2224	265	94.96
2060	101	37.76	2115	156	56.94	2170	211	76.12	2225	266	95.3
2061	102	38.11	2116	157	57.29	2171	212	76.47	2226	267	95.65
2062	103	38.46	2117	158	57.64	2172	213	76.82	2227	268	96
2063	104	38.81	2118	159	57.99	2173	214	77.17	2228	269	96.35
2064	105	39.16	2119	160	58.34	2174	215	77.52	2229	270	96.7
2065	106	39.51	2120	161	58.69	2175	216	77.87	2230	271	97.05
2066	107	39.85	2121	162	59.03	2176	217	78.22	2231	272	97.4
2067	108	40.2	2122	163	59.38	2177	218	78.56	2232	273	97.75
2068	109	40.55	2123	164	59.73	2178	219	78.91	2233	274	98.09
2069	110	40.9	2124	165	60.08	2179	220	79.26	2234	275	98.44
2070	111	41.25	2125	166	60.43	2180	221	79.61	2235	276	98.79
2071	112	41.6	2126	167	60.78	2181	222	79.96	2236	277	99.14
2072	113	41.95	2127	168	61.13	2182	223	80.31	2237	278	99.49
2073	114	42.3	2128	169	61.48	2183	224	80.66	2238	279	99.84
2074	115	42.64	2129	170	61.82	2184	225	81.01	2239	280	100.2
2075	116	42.99	2130	171	62.17	2185	226	81.35	2240	281	100.5
2076	117	43.34	2131	172	62.52	2186	227	81.7			
2077	118	43.69	2132	173	62.87	2187	228	82.05			
2078	119	44.04	2133	174	63.22	2188	229	82.4			

Table 4.16: The Forecasted Percentage Budgetary Allocations to the Education Sector by the FGN (1960-2023) Using Model (4.2) with its Slope Doubled, and Using Models (4.1) and (4.2) with their Slopes Tripled

Using Model (4.2) with its Slope Doubled			Using Model (4.1) with its Slope Tripled			Using Model (4.2) with its Slope Tripled		
Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation	Year	Coded Year (t)	Forecasted % Allocation
1990	31	9.75	1990	31	10.9	1990	31	13.35

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1991	32	9.98	1991	32	11.15	1991	32	13.7
1992	33	10.2	1992	33	11.39	1992	33	14.05
1993	34	10.4	1993	34	11.64	1993	34	14.4
1994	35	10.7	1994	35	11.89	1994	35	14.74
1995	36	10.9	1995	36	12.13	**1995**	**36**	**15.09**
1996	37	11.1	1996	37	12.38	1996	37	15.44
1997	38	11.4	1997	38	12.63	1997	38	15.79
1998	39	11.6	1998	39	12.87	1998	39	16.14
1999	40	11.8	1999	40	13.12	1999	40	16.49
2000	41	12.1	2000	41	13.36	2000	41	16.84
2001	42	12.3	2001	42	13.61	2001	42	17.19
2002	43	12.5	2002	43	13.86	2002	43	17.53
2003	44	12.8	2003	44	14.1	2003	44	17.88
2004	45	13	2004	45	14.35	2004	45	18.23
2005	46	13.2	2005	46	14.6	2005	46	18.58
2006	47	13.5	2006	47	14.84	2006	47	18.93
2007	48	13.7	**2007**	**48**	**15.09**	2007	48	19.28
2008	49	13.9	2008	49	15.33	2008	49	19.63
2009	50	14.2	2009	50	15.58	**2009**	**50**	**19.98**
2010	51	14.4	2010	51	15.83	2010	51	20.32
2011	52	14.6	2011	52	16.07	2011	52	20.67
2012	53	14.9	2012	53	16.32	2012	53	21.02
2013	**54**	**15.1**	2013	54	16.57	2013	54	21.37
2014	55	15.3	2014	55	16.81	2014	55	21.72
2015	56	15.6	2015	56	17.06	2015	56	22.07
2016	57	15.8	2016	57	17.3	2016	57	22.42
2017	58	16	2017	58	17.55	2017	58	22.77
2018	59	16.3	2018	59	17.8	2018	59	23.11
2019	60	16.5	2019	60	18.04	2019	60	23.46
2020	61	16.7	2020	61	18.29	2020	61	23.81
2021	62	17	2021	62	18.54	2021	62	24.16
2022	63	17.2	2022	63	18.78	2022	63	24.51
2023	64	17.4	2023	64	19.03	2023	64	24.86