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The Inflation Rate and the Prices of Building Materials in Benin City

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Abstract
This study aimed to investigate the relationship between the inflation rate and the price of building materials in Benin City to aid in mitigating the adverse effects of the inflation rate on the construction industry. The trend in the variables from 2017 to 2023 was investigated, and their relationship was assessed and determined using Spearman's correlation and Regression analysis. Data on the inflation rate was collated from the Central Bank of Nigeria, while prices of the selected building materials were obtained from market surveys. Findings revealed that the inflation rate had the highest value in 2023, and the prices of the chosen building materials had an upward trend from 2017 to 2023. The yearly change in the variables revealed that a percentage increase in the inflation rate produced the highest increase of 3.34% in the price of 1.5mm single-coil cable and the lowest increase of 0.93% in the price of Granite. Correlation analysis indicated that the prices of the building materials had a direct relationship and an inverse relationship with the inflation rate. Regression analysis showed that for every unit increase in the inflation rate, the price of Granite would experience the highest increase by ₦5693. In contrast, the price of Sandcrete block would experience the lowest increase by ₦10. It was recommended that the Government provide an enabling environment that will promote the local production of building materials to reduce dependency on imports and the effect of inflation rate fluctuations.

Keywords: Building Material Prices, Inflation Rate, Spearman Correlation, Percentage Deviation, Construction Industry

1. Introduction

The economic stability of any region is closely tied to its inflation rate, which has profound implications across various sectors. In Benin City, Nigeria, the construction industry is susceptible to shifts in inflation, especially regarding the prices of essential building materials. These materials, including cement, steel, timber, and roofing sheets, are fundamental to residential and commercial construction projects. Building materials are the backbone of the construction industry, providing the necessary components for creating durable and safe structures. Building materials represent about 60% of the project cost [2]. A significant problem that is affecting the construction industry is Inflation. It is causing an increase in the prices of materials, machinery, and other inputs for construction projects [6]. In Benin City, the prices of building materials have been subject to considerable fluctuations, reflecting broader economic trends and impacting the affordability and feasibility of construction projects. In recent years, significant volatility in the prices of these materials has been influenced by local and global economic factors.

The study aimed to explore the correlation between the shifts in the inflation rate and the price of building materials in Benin City to aid in mitigating the adverse effects of the inflation rate on the construction industry. Thus, the study set out to examine the yearly changes in the prices of building materials due to the inflation rate and to determine the relationship between the inflation rate and the prices of building materials in Benin City. Understanding this relationship is crucial for stakeholders to make informed decisions and develop strategies to mitigate the adverse effects of inflation on the construction sector.

By examining the interplay between inflation rate shifts and building material prices in Benin City, this study aims to contribute valuable insights into the fields of economics and construction management. The findings could inform policy decisions and help stabilize the construction market, ultimately supporting sustainable development in the region. This will lead to actualizing the Sustainable development goals (SDG) 8 (Decent work and economic growth), SDG 9 (Industry, Innovation and infrastructure), and SDG 11(Sustainable cities and communities) through the promotion of planning, which will aid economic growth, containment of pressure from inflation which will promote industry, innovation and infrastructure, promoting the efficient use of resources and contributing to resilient communities.

Section one of this study presents an introduction, rationale and outline of the study. Section two presents the methodology used, section three covers results and discussion, section four covers the conclusion, and section five covers the recommendations.

2. Materials and Methods

This study has eighteen (18) variables: The Inflation rate (the independent variable) and the prices of the selected building materials, collectively forming the dependent variables. The method utilized was split into steps. The data was collated from the Central Bank of Nigeria database and market surveys. The gathered data was assessed to determine if it was linear or not. This is significant because the behaviour of the data will determine the appropriate correlation test to be used [5]. The data compiled was analyzed by computing each variable's Percentage deviation (PD). This will aid in observing the decrease or the increase in the trend of the variables. Once the behaviour of the data is known and the percentage deviation of the variable is obtained, the proper correlation test can be selected to define the relationship between the independent and dependent variables. The relationship between the variables was estimated using regression analysis. Statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 29 and Minitab Version 17.

The collection of data was as follows

1. The inflation rate: The data for the Inflation rate (the independent variable) from 2017 to 2023 was sourced from the Central Bank of Nigeria and presented in Fig 1.
2. The price of the building materials: The prices of the building materials, which were the dependent variable, were obtained from a market survey. These are presented in Table 1.

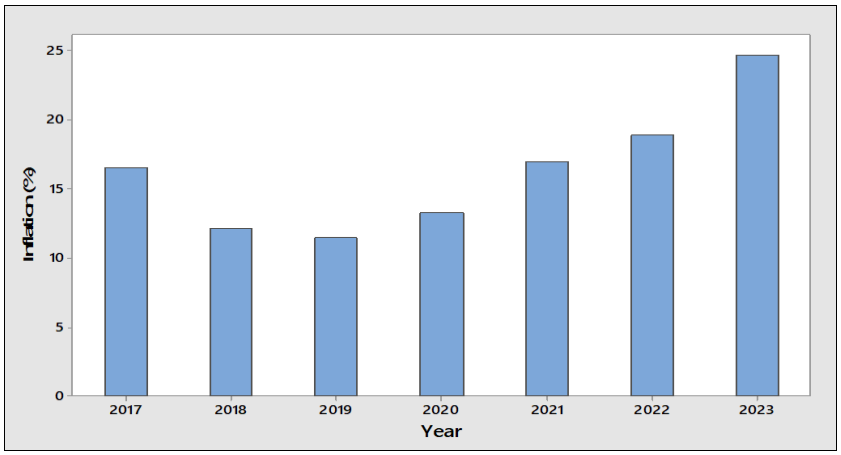

Fig 1: Inflation rates from 2017 to 2023[8]

Table 1: The data collated on the variable for the study

S. No	Description	Unit	2017	2018	2019	2020	2021	2022	2023
1	Aluminium roof sheet	m^2	1100	1200	1600	1800	2100	5500	6350
2	Cement	50kg	2500	2900	3200	3600	3800	5200	8500
3	Laterite	20 tonnes	35,000	38,000	40,000	50,000	60,000	70,000	80,000
4	Granite	20 tonnes	140,000	145,000	150,000	170,000	180,000	195,000	225,000
5	Sandcrete block (0.45m x 0.225m x 0.15m)	Per unit	180	200	230	250	280	300	350
6	Tiles (0.3m x 0.3m)	m^2	1500	2500	3000	3500	4800	4800	5000
7	Tiles (0.6m x 0.6m)	m^2	2500	3000	4000	4500	5800	6000	6500
8	Aluminium Window Casement (1.2m x 1.2m)	Per unit	28,000	32,000	35,000	40,000	42,000	60000	80000
9	Aluminium Window Casement (0.6m x 0.6m)	Per unit	16,000	18,500	20,000	22,000	25,000	40000	50000
10	1.5mm single coil	Coil	3,800	5,500	7,500	9,000	11,500	13500	18000
11	2.5mm single coil	Coil	7,500	11,800	13,500	15,000	17,800	21500	28000
12	4mm single coil	Coil	15,000	17,500	20,000	22,500	25,000	32000	39800
13	10mm single coil	Coil	40,000	42,000	45,800	50,000	58,000	85000	105000
14	20mm PVC pipe	Bundle	5,500	6,000	6,800	8,500	10,000	15000	16500
15	25mm PVC pipe	Bundle	8,000	9,500	12,000	13,500	15,500	16000	17500
16	Twyford W/C complete set	Per unit	25,000	29,500	35,000	38,000	42,000	47000	52000
17	Wash hand basin	Per unit	6,500	8,500	10,000	13,500	15,000	17000	19500
18	Inflation	%	16.50	12.10	11.40	13.25	16.95	18.85	24.66

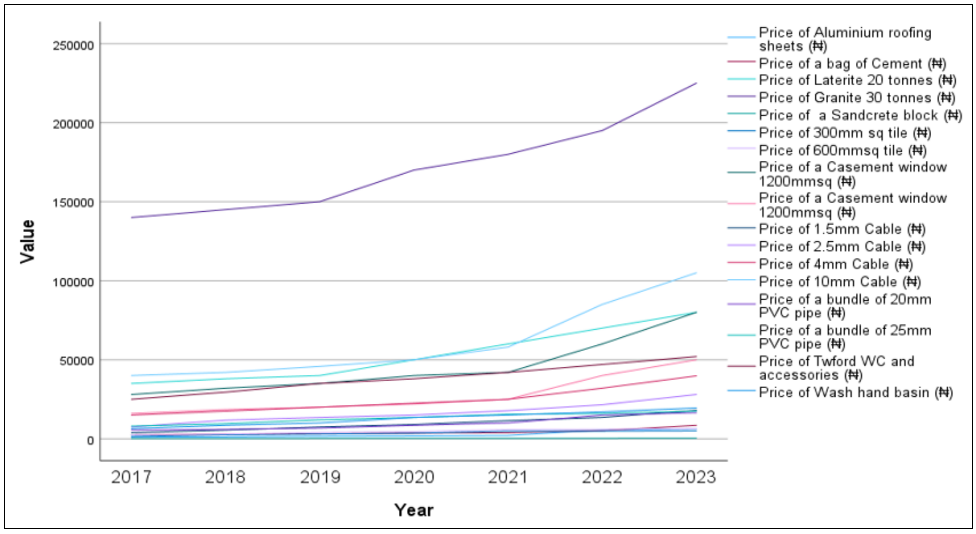

Fig 2: The prices of Selected Building materials in Benin City from 2017 to 2023

2.1 Assessment of the Variables

The assessment of the data in Fig 1 and Table 1 was carried out to determine if the data has linear or nonlinear behaviour—this guides the choice of the proper correlation analysis. Scatter plots were plotted with the data in Table 1. These are shown in Figures 3-19. From the figures, the Inflation rate is on the *x-axis*, while the prices of the Roof sheet, Cement, Laterite, Granite, Sandcrete block, 300mm^2 tiles, 600mm^2 tiles, 1200mm^2 Casement window, 600mm^2 Casement window, 1.5mm single coil, 2.5mm single coil, 4mm single coil, 10mm single coil, 20mm PVC pipe, 25mm PVC pipe, Twyford WC complete set and wash hand basin were represented on the *y*-axes respectively. All the data associated with the dependent variables (the price of the building materials) was observed to have a nonlinear relationship with the inflation rate. Hence, Spearman's correlation test will be used to examine the relationship between the independent variable (Inflation rate) and the dependent variables (the prices of the building materials).

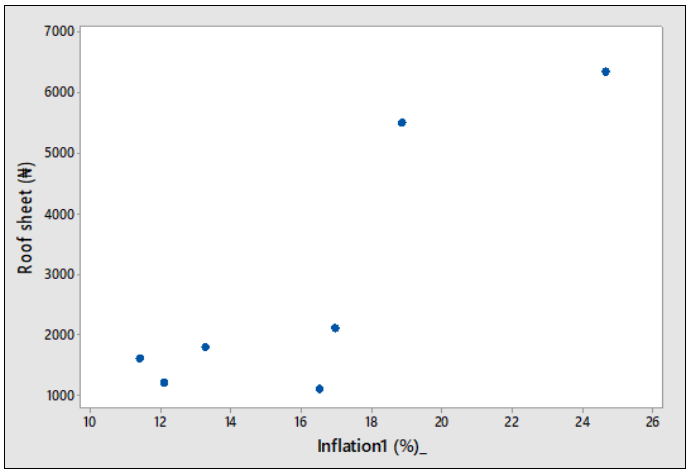

Fig 3: Scatter plot of the Price of Aluminium roofing sheets and the inflation rate

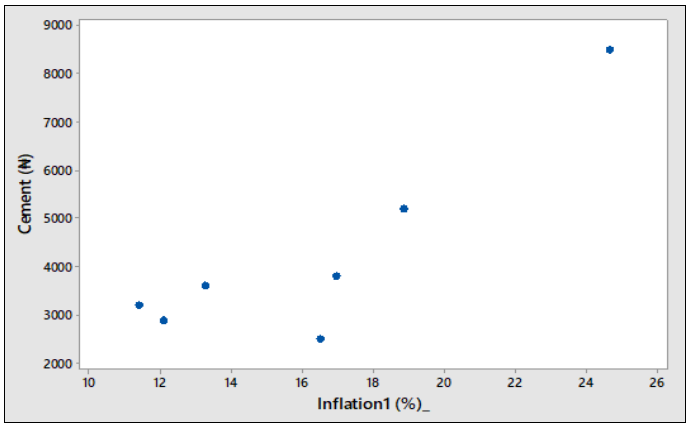

Fig 4: Scatter plot of the price of Cement and the inflation rate

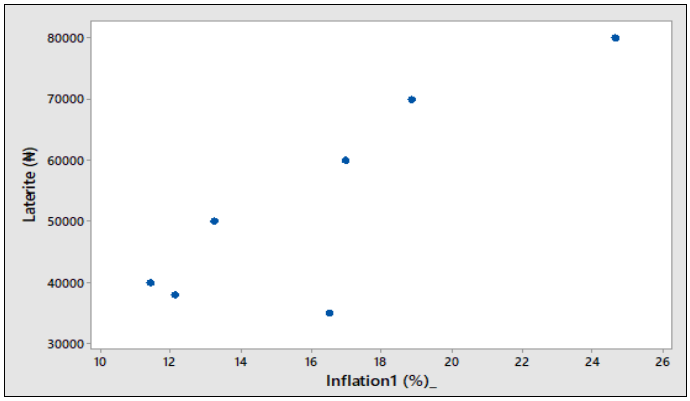

Fig 5: Scatter plot of the price of Laterite and the inflation rate

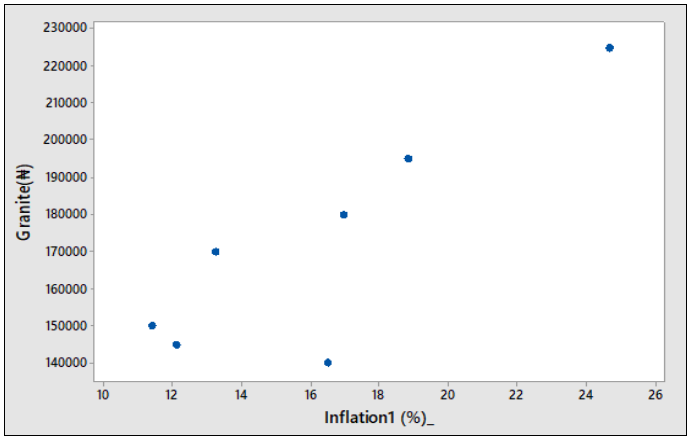

Fig 6: Scatter plot of the price of Granite and the inflation rate

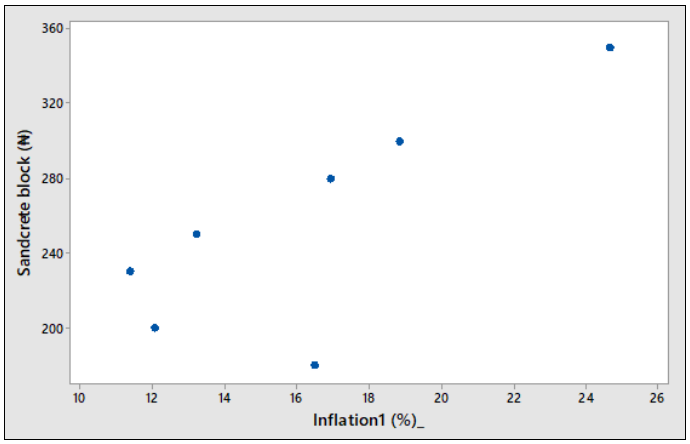

Fig 7: Scatter plot of the price of Sandcrete block and the inflation rate

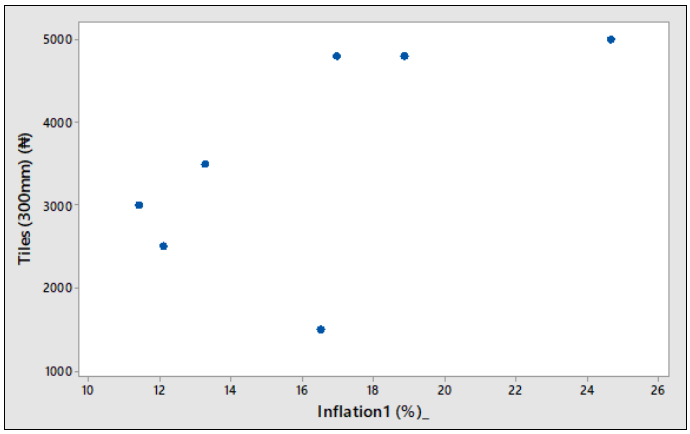

Fig 8: Scatter plot of the price of 300mm^2 tiles and the inflation rate

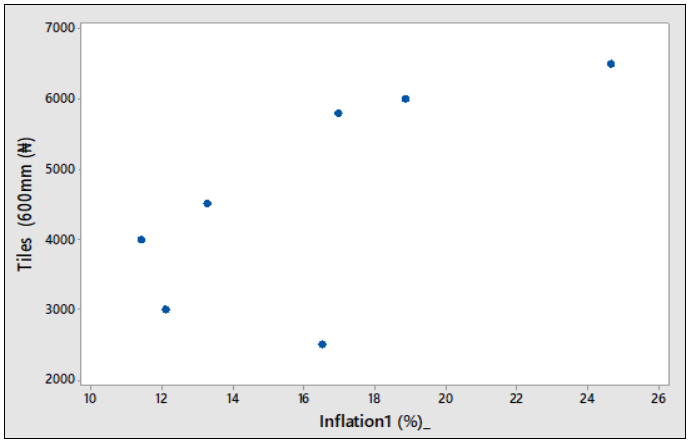

Fig 9: Scatter plot of the price of 600mm^2 tiles and the inflation rate

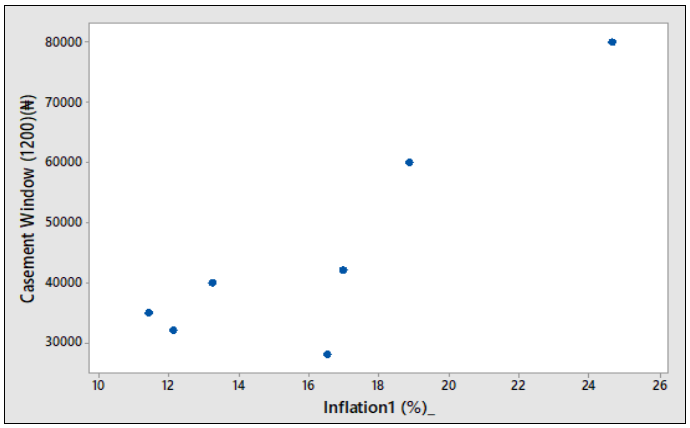

Fig 10: Scatter plot of the price of 1200mm^2 Casement window and the inflation rate

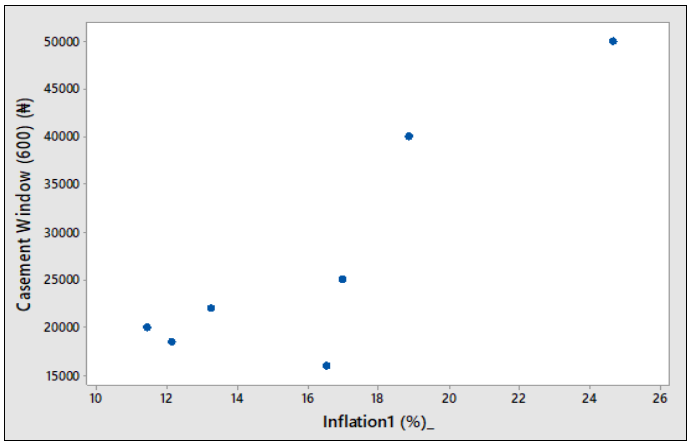

Fig 11: Scatter plot of the price of 600mm^2 Casement window and the inflation rate

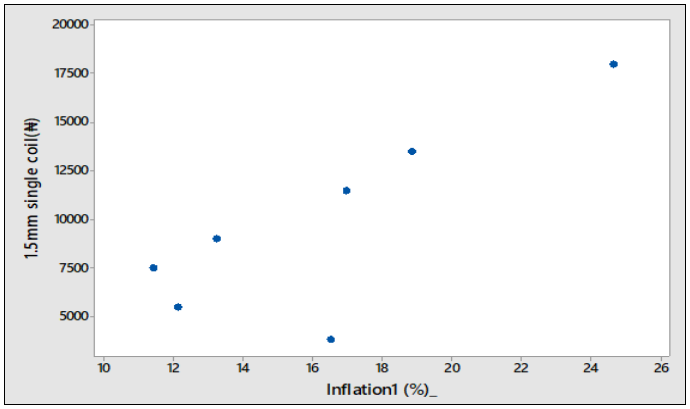

Fig 12: Scatter plot of the price of 1.5mm cable and the inflation rate

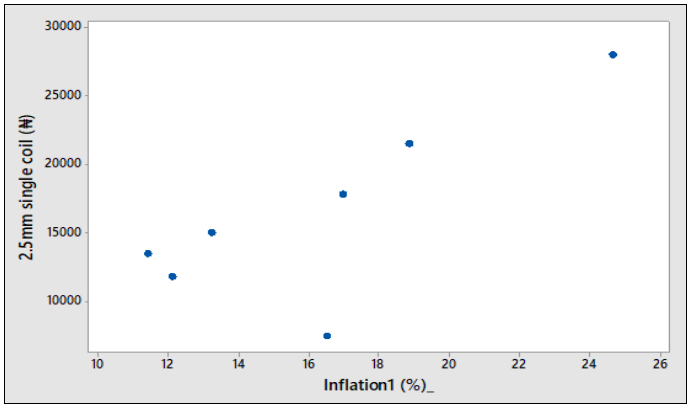

Fig 13: Scatter plot of the price of 2.5mm cable and the inflation rate

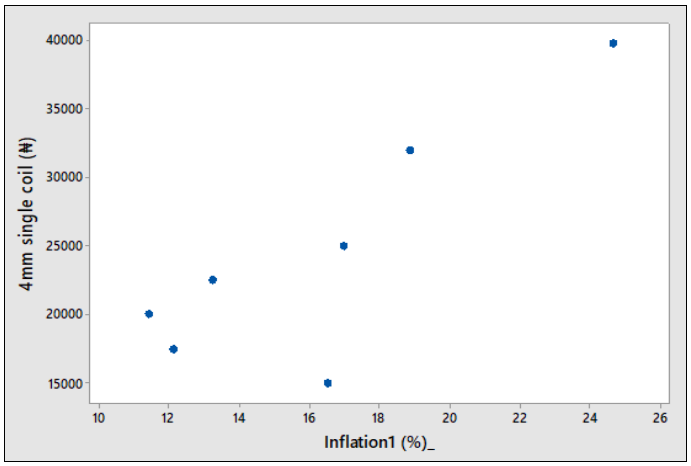

Fig 14: Scatter plot of the price of 4mm cable and the inflation rate

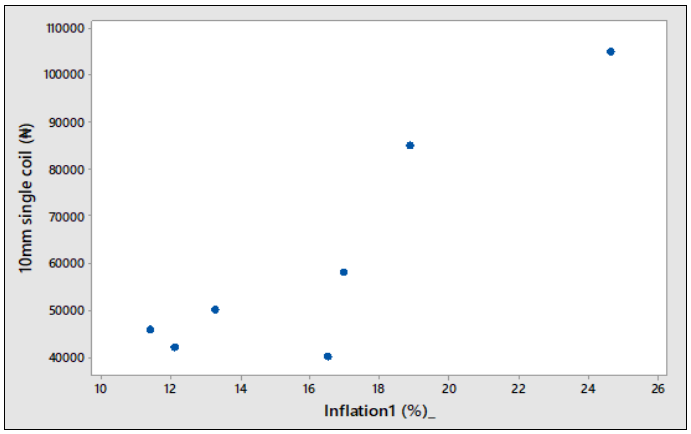

Fig 15: Scatter plot of the price of 10mm cable and the inflation rate

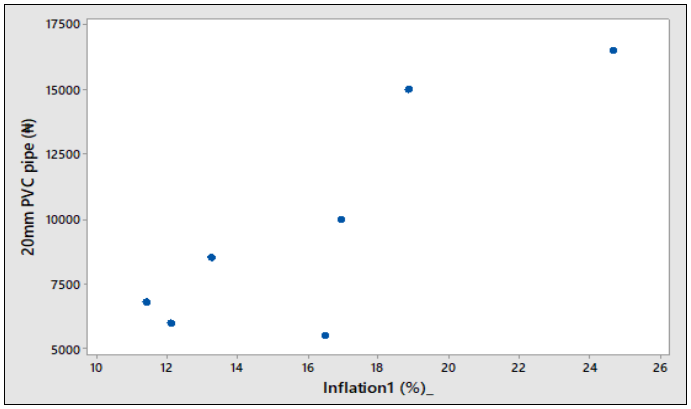

Fig 16: Scatter plot of the price of 20mm PVC pipe and the inflation rate

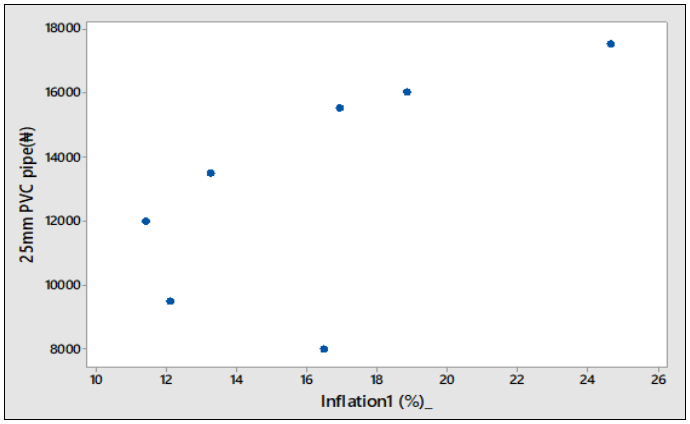

Fig 17: Scatter plot of the price of 25mm PVC pipe and the inflation rate

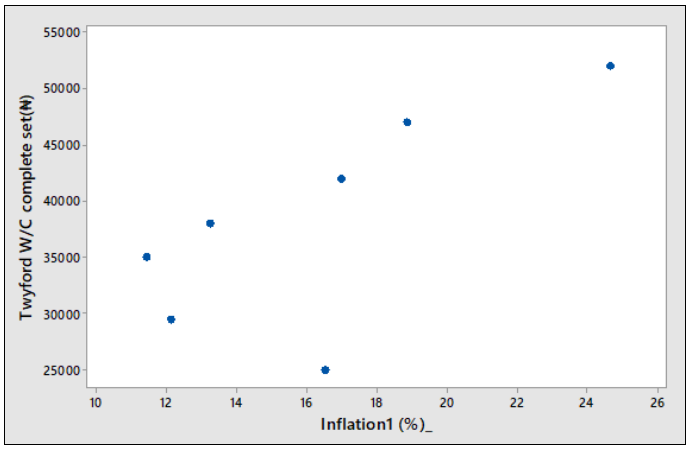

Fig 18: Scatter plot of the price of Twyford WC and the inflation rate

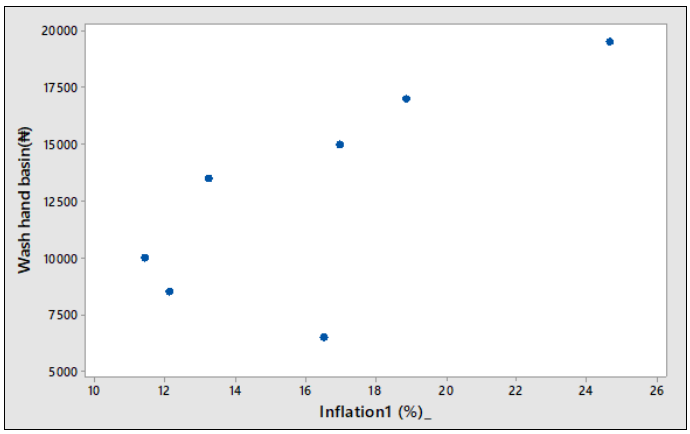

Fig 19: Scatter plot of the price of Wash hand basin and the inflation rate

2.2 Analysis of the Percentage deviation

The percentage deviation (PD) is computed by subtracting the value of a variable for the current year from the value of that variable from the previous year, dividing by the previous year and multiplying by 100. This is depicted in equation (1)

$$\text{Percentage deviation (PD)} = \frac{\text{(Current year - Previous year)}}{\text{Previous year}} \text{ X } 100 \quad (1)$$

The percentage deviation is computed for each variable. Its value can be positive or negative. A positive value indicates an increase in the variable's value from the previous year. Furthermore, a negative value indicates a decrease in the variable's value from the previous year. These values will aid in observing the annual change in the independent and dependent variables. Using equation (1), the percentage deviation of each variable was computed using the values from Table 1 and presented in Table 2.

Table 2: The percentage deviation (PD) of the variables

S.No	Description of the variable	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	Average
1	Roof sheet (Aluminium longspan 0.45mm)	9.09	33.33	12.50	16.67	161.90	15.45	41.49
2	Cement	16.00	10.34	12.50	5.56	36.84	63.46	24.12
3	Laterite	8.57	5.26	25.00	20.00	16.67	14.29	14.96
4	Granite	3.57	3.45	13.33	5.88	8.33	15.38	8.33
5	Sandcrete block (450mm x 225mm x 150mm)	11.11	15.00	8.70	12.00	7.14	16.67	11.77
6	Tiles(300mm x 300mm)	66.67	20.00	16.67	37.14	0.00	4.17	24.11
7	Tiles(600mm x 600mm)	20.00	33.33	12.50	28.89	3.45	8.33	17.75
8	Aluminium Window Casement (1200mm x 1200mm)	14.29	9.38	14.29	5.00	42.86	33.33	19.86
9	Aluminium Window Casement (600mm x 600mm)	15.63	8.11	10.00	13.64	60.00	25.00	22.06
10	1.5mm single-coil cable	44.74	36.36	20.00	27.78	17.39	33.33	29.93
11	2.5mm single-coil cable	57.33	14.41	11.11	18.67	20.79	30.23	25.42
12	4mm single cable	16.67	14.29	12.50	11.11	28.00	24.38	17.82
13	10mm single-coil cable	5.00	9.05	9.17	16.00	46.55	23.53	18.22
14	20mm PVC Electrical pipe	9.09	13.33	25.00	17.65	50.00	10.00	20.85
15	25mm PVC Electrical pipe	18.75	26.32	12.50	14.81	3.23	9.38	14.16
16	Twyford W/C complete set	18.00	18.64	8.57	10.53	11.90	10.64	13.05
17	Wash hand basin	30.77	17.65	35.00	11.11	13.33	14.71	20.43
18	Inflation	-26.71	-5.78	16.23	27.98	11.17	30.84	8.96

2.3 Spearman Correlation test

Spearman Correlation was used to determine the existence of a simple linear relationship between the independent and dependent variables [1]. It has a statistical coefficient (ρ) ranging from -1 to +1. Using the values, a value of +1 connotes an entirely positive correlation, from +0.70 – +0.99 means a strong positive association, from +0.50 to +0.69 means an average positive correlation, from +0.01 to +0.49 means a weak positive correlation and a value of 0 means the absence of any relationship [9]. Meanwhile, the sign also classifies the relationship [5]. The relationship is direct if the correlation coefficient is positive, while the relationship is inverse if the correlation coefficient is negative.

The Spearman correlation coefficient was computed for the relationship between the inflation rate and the prices of the various building materials, and the findings were presented in Table 3.

Table 3: Spearman Correlation Coefficients

S. No	Dependent variable(s)	Spearman Correlation Coefficient (ρ)	Type of the relationship with the Inflation rate	Strength of the relationship with the inflation rate
1	Price of Aluminium roof sheet	+0.086	Direct relationship	Weak correlation
2	Price of Cement	+0.143	Direct relationship	Weak correlation
3	Price of Laterite	+0.543	Direct relationship	Average correlation
4	Price of Granite	+0.771	Direct relationship	Strong association
5	Price of Sandcrete block	+0.371	Direct relationship	Weak correlation
6	Price of tiles (300mm X 300mmm)	-0.429	Inverse relationship	Weak correlation
7	Price of tiles (600mm X 600mm)	-0.314	Inverse relationship	Weak correlation
8	Price of Casement window (1200 mm X 1200mm)	+0.058	Direct relationship	Weak correlation
9	Price of Casement window (600mm X 600mm)	+0.200	Direct relationship	Weak correlation
10	Price of 1.5mm single-coil	-0.429	Inverse relationship	Weak correlation
11	Price of 2.5mm single-coil	-0.143	Inverse relationship	Weak correlation
12	The price of a 4mm single-coil	-0.143	Inverse relationship	Weak correlation
13	Price of 10mm single-coil	+0.657	Direct relationship	Average correlation
14	Price of 20mm PVC	+0.200	Direct relationship	Weak correlation
15	Price of 25mm PVC	-0.543	Inverse relationship	Average correlation
16	Price of Twyford WC set	-0.714	Inverse relationship	Strong association
17	Price of Wash hand basin	-0.429	Inverse relationship	Weak correlation

2.4 Regression Analysis

Regression analysis is "a statistical method for analyzing a relationship between two or more variables in such a manner that one of the variables can be predicted or explained by the information on the other variables" [3]. Regression analysis will help to assess the relationship between the variables and aid in making predictions. A simple linear regression equation is depicted in equation (2).

$$Y = a + bX \quad (2)$$

Where

Y - Explanatory or independent variable,

a - the intercept (value of y when $x = 0$),

b - the slope of the line,

X - the outcome or dependent variable.

Table 4: Results for Regressions analysis

S. No	Dependent variable	Parameter	Unstandardized Beta Coefficient (B)	Regression Equation
1	Roof sheet (Aluminium longspan 0.45mm)	Intercept	-3725	= - 3725 + 402.1 Inflation
		Inflation rate	402.1	
2	Cement	Intercept	-2122	= 2122 + 391.9 Inflation
		Inflation rate	391.9	
3	Laterite	Intercept	1709	= 1709 + 3175 Inflation
		Inflation rate	3175	
4	Granite	Intercept	79672	= 79672 + 5693 Inflation
		Inflation rate	5693	
5	Sandcrete block (450mm x 225mm x 225mm)	Intercept	93.2	= 93.20 + 10.00 Inflation
		Inflation rate	10	
6	Tiles (300mm x 300mm)	Intercept	666	= 666 + 179.8 Inflation
		Inflation rate	179.8	
7	Tiles (600mm x 600mm)	Intercept	830	= 830 + 233.0 Inflation
		Inflation rate	233	
8	Aluminium Window Casement (1200mm x 1200mm)	Intercept	-11174	= - 11174 + 3476 Inflation
		Inflation rate	3474	
9	Aluminium Window Casement (600mm x 600mm)	Intercept	-11682	= - 11682 + 2403 Inflation
		Inflation rate	2403	
10	1.5mm single coil	Intercept	-4104	= - 4104 + 857.8 Inflation
		Inflation rate	857.8	
11	2.5mm single coil	Intercept	-2221	= - 2221 + 1149 Inflation
		Inflation rate	1149	
12	4mm single coil	Intercept	-1248	= - 1248 + 1588 Inflation
		Inflation rate	1588	
13	10mm single coil	Intercept	-16746	= - 16746 + 4776 Inflation
		Inflation rate	4776	
14	20mm PVC pipe	Intercept	-3346	= - 3346 + 806.7 Inflation
		Inflation rate	806.7	
15	25mm PVC pipe	Intercept	5009	= 5009 + 500.7 Inflation
		Inflation rate	500.7	
16	Twyford W/C complete set	Intercept	14154	= 14154 + 1490 Inflation
		Inflation rate	1490	
17	Wash hand basin	Intercept	591	= 591 + 755.2 Inflation
		Inflation rate	755.2	

3. Results and Discussion

3.1 Assessment of the Variables

It can be observed from Fig 1 that there was a fluctuation in the inflation rate, with a downward trend occurring midway between 2017 and 2023. The highest inflation rate value was in 2023. However, from Fig 2, the prices of the various building materials were upward, with the highest prices in 2023.

The scatter plots presented each dependent variable against the inflation rate. The scatter plots show that each variable displayed a nonlinear behaviour with the inflation rate. This nonlinear behaviour was correctly tested using Spearman's correlation coefficient.

3.2 The percentage deviation of the variables

The annual percentage deviation (PD) was determined for each variable from 2017 to 2023. The positive and negative signs of the PD mean that the variable's value has increased and decreased, respectively, from the prior year. The highest PD for the inflation rate was an increase of 30.84% in 2022-2023. For the prices of building materials, the highest positive PD was recorded for the Aluminium roofing sheet, with an increase of 161.90% in 2021- 2022. This was followed by 300mm^2 Ceramic tiles with an increase of 66.67% in 2017-2018, Cement with an increase of 63.46% in 2022 -2023, 600mm Casement window with an increase of 60% in 2021-2022, 2.5mm single-coil cable with an increase of 57.33% in 2017-2018, 20mmPVC pipe with an increase of 50% in 2021-2022, 10mm single-coil cable with an increase of 46.55% in 2021-2022, 1.5mm cable with an increase of 44.74% in 2017 -2018, 1200mm Casement window with an increase of 42.86% in 2021-2022, 600mm^2 Ceramic tiles with an increase of 33.33% in 2018-2019, Wash hand basin with an increase of 30.77% in 2017-2018, 4mm single-coil cable with an increase of 28% in 2021-2022, 25mm PVC pipe with an increase of 26.32% in 2018-2019, Laterite with an increase of 60% in 2019-2020, a set of Twyford WC with an increase of 18.64% in 2018-2019, Sandcrete block with an increase of 16.67% in 2022-2023, Granite with an increase of 15.38% in 2022-2023, 25mm PVC pipe with an increase of 26.32% in 2018-2019, and Laterite with an increase of 60% in 2019-2020.

In 2017-2018, the PD of the inflation rate was -26.71%, representing a decrease in the inflation rate. The PD of the prices for the building materials were Aluminium roofing sheet was +9.09%, Sandcrete block was +11.11%, 300mm^2 tiles was +66.67%, 600mm^2 tiles was +20%, 1.5mm single-coil cable was +44.47% a, 2.5mm single-coil cable +57.33%, 25mm PVC pipe was +18.75%, Twyford WC set was +18%, Cement was +16%, Laterite was +8.57%, Granite was +3.57%, 1200mm^2 casement window was +14.29%, 600mm^2 casement window was +15.63%, 10mm single-coil cable was +5%, 20mm PVC pipe was +9.09%, and Wash hand basin was +30.77%. These PD values represent an increase in the prices of the building materials.

In 2022 -2023, the PD of the inflation rate was 30.84, representing an increase in the inflation rate. For the PD of the prices of the building materials for 2022 -2023, the

Aluminium roofing sheet was +15.45%, Sandcrete block was +16.67%, Laterite was +14.29%, Sandcrete block was +16.67%, 1200mm^2 casement window was+33.33%, 600mm^2 casement window was +25%, 4mm single-coil cable was +24.38%, 10mm single-coil cable was +23.53%, Twyford WC set was +10.64%, Cement was +63.46%, Granite was +15.38%, 300mm^2 tiles was +4.17%, 600mm^2 tiles was +8.33%, 1.5mm single-coil cable was +33.33%, 2.5mm single-coil cable was +30.23%, 25mm PVC pipe was +9.38%, and Wash hand basin was +14.71%. These PD values represent an increase in the prices of the building materials.

From Table 2, when the average PD value for inflation deviated to 8.96%, the average PD values for Aluminium roofing sheet, Cement, Laterite, Granite, Sandcrete block, 300mm^2 Ceramic tiles, 600mm^2 Ceramic tiles, 1200mm Casement window, 600mm Casement window, 1.5mm single-coil cable,2.5mm single-coil cable, 4mm single-coil cable, 10mm single-coil cable, 20mmPVC pipe, 25mm PVC pipe, 25mm PVC pipe, a set of Twyford WC, and the Wash hand basin had risen to 41.49%, 24.12%, 14.96%, 8.33%, 11.77%, 24.11%, 17.75%, 19.86%, 22.065, 29.93%, 25.42%, 17.82%, 18.22%, 20.85%, 14.16%, 13.05%, and 20.43% respectively.

Further analysis shows that a 1% increase in the inflation rate will lead to an increase in the prices of Aluminium roofing sheets, Cement, Laterite, Granite, Sandcrete block, 300mm^2 Ceramic tiles, 600mm^2 Ceramic tiles, 1200mm Casement window, 600mm Casement window, 1.5mm single-coil cable,2.5mm single-coil cable, 4mm single-coil cable, 10mm single-coil cable, 20mmPVC pipe, 25mm PVC pipe, a set of Twyford WC, and the Wash hand basin had by 4.63%, 2.70%, 1.67%, 0.93%, 1.31%, 2.69%, 1.98%,2.22%, 2.46%, 3.34%, 2.84%, 1.99%, 2.03%, 2.33%, 1.58%, 1.46%, and 2.28% respectively.

3.3 Correlation analysis

The Spearman correlation coefficients of the dependent variables and their relationship with the inflation rate (Independent variable) are presented in Table 3. A simple linear correlation means there is a relationship between two variables, which implies when one variable changes, it will lead to a change in the other variable, either by an increase or a decrease [1]. Hence, their relationship will be positive when the two variables increase and decrease. However, when one variable increases with a decrease in the other variable, the relationship between them will be negative.

The building material with the highest correlation coefficient value with the inflation rate was Granite with ρ = +0.771, while the 1200mm^2 casement window had the lowest correlation coefficient with ρ = +0.058.

The Spearman coefficient between the inflation rate and 300mm^2 Ceramic tiles, 600mm^2 Ceramic tiles, 1.5mm single-coil cable,2.5mm single-coil cable, 4mm single-coil cable, 25mm PVC pipe, 25mm PVC pipe, a set of Twyford WC, and the Wash hand basin are -0.429, -0.314, -0.429, -0.143, -0.413, -0.543, -0.714, and -0.429 respectively as shown in Table 3. This indicates an inverse relationship between these building materials and the inflation rate. Thus, an increase in the inflation rate leads to a decrease in the value of the prices of these building materials. However, the inverse relationship between the Twyford WC set and the inflation rate is strong; between 25mm PVC pipe, the inflation rate is average and weak for the other materials, respectively.

The Spearman coefficient between the inflation rate and Aluminium roofing sheets, Cement, Laterite, Granite, Sandcrete block, 1200mm Casement window, 600mm Casement window, 10mm single-coil cable, 20mmPVC pipe, a set of Twyford WC, and the Wash hand basin are +0.086, +0.143, +0.543, +0.771, +0.371, +0.058, +0.200, +0.657, and +0.200 respectively as shown in Table 3. This indicates a direct relationship between these building materials and the inflation rate. This implies that an increase in the value of the inflation rate leads to a rise in the prices of these building materials. However, the direct relationship between Granite and the inflation rate is strong; between 10mm single-coil cable and Laterite, the inflation rate is average and weak for the other materials, respectively.

3.4 Regression analysis

The regression line equation explains the prediction of the variables. Using equation (2), a unit increase in x (the independent variable) will result in a change in y (the dependent variable). The value of the change in x due to the unit change in y is restricted to the value of "b", which is the slope of the line. The results of the regression analysis are presented in Table 4.

The regression line equation for the price of Aluminium roofing sheets was = - 3725 + 402.1 Inflation, the price of Cement was = - 2122 + 391.9 Inflation, the price of Laterite (₦) = 1709 + 3175 Inflation, the price of Granite was = 79672 + 5693 Inflation, the price of Sandcrete block was = 93.20 + 10.00 Inflation, the price of 300mm^2 Ceramic tiles was = 666 + 179.8 Inflation, the price of 600mm^2 Ceramic tiles was = 830 + 233.0 Inflation, the price of 1200mm Casement window was = - 11174 + 3476 Inflation, the price of 600mm Casement window was = - 11682 + 2403 Inflation, the price of 1.5mm single-coil cable was = - 4104 + 857.8 Inflation, the price of 2.5mm single-coil cable was = - 2221 + 1149 Inflation, 4mm single-coil cable was = - 1248 + 1588 Inflation, the price of 10mm single-coil cable was = - 16746 + 4776 Inflation, the price of 20mmPVC pipe was = - 3346 + 806.7 Inflation, the price of 25mm PVC pipe was = 5009 + 500.7 Inflation, the price of a set of Twyford WC was = 14154 + 1490 Inflation, and the price of Wash hand basin was = 591 + 755.2inflation. The regression models indicated a positive linear relationship between the variables; hence, as the inflation rate increased, the prices of the roofing sheets increased.

Thus, for every unit increase in the inflation rate, the price of Aluminium roofing sheets would increase by ₦402.1, the price of Cement would increase by ₦391.9k, the price of Laterite would increase by ₦3175, the price of Granite would increase by ₦5693, the price of Sandcrete block would increase by ₦10, the price of 300mm^2 tiles would increase by ₦179.8, the price of 600mm^2 tiles would increase by ₦233, the price of 1200mm Casement window would increase by ₦3476, the price of 600mm Casement window would increase by ₦2403, the price of 1.5mm single-coil cable would increase by ₦857.8, the price of 2.5mm single-coil cable would increase by ₦1149, 4mm single-coil cable would increase by ₦1588, the price of 10mm single-coil cable would increase by ₦4776, the price of 20mmPVC pipe would increase by ₦806.7, the price of 25mm PVC pipe would increase by ₦500.7k, the price of a set of Twyford WC would increase by ₦1490, and the price of Wash hand basin would increase by ₦755.2k

respectively.

4. Conclusion

This study aimed to investigate the relationship between the inflation rate and the price of building materials in Benin City to aid in mitigating the adverse effects of the inflation rate on the construction industry. The trend in the inflation rate value and the prices of the building materials from 2017 to 2023 was investigated, and the relationship between the inflation rate and the prices of the building materials was assessed and determined using Spearman's correlation and Regression analysis. Data on the inflation rate was collated from the Central Bank of Nigeria, while prices of the selected building materials were obtained from market surveys. Findings revealed that the inflation rate had the highest value in 2023, and the prices of the chosen building materials had an upward trend from 2017 to 2023. An examination of the yearly change in the variables revealed that a percentage increase in the inflation rate produced the highest growth of 3.34% in the price of 1.5mm single-coil cable and the lowest increase of 0.93% in the price of Granite. Correlation analysis indicated that the price of some building materials had a direct relationship with the inflation rate, while prices of the other building materials had an inverse relationship with the inflation rate.

Regression analysis indicated that for every unit increase in the inflation rate, the price of Granite would experience the highest increase by ₦5693, while the price of Sandcrete block would experience the lowest increase by ₦10.00.

5. Recommendations

From the findings, it was recommended that

1. Policymakers should develop policies that consider the operating environment and support the production of building materials to help the construction industry manage inflation-related challenges.
2. Construction businesses should adopt construction management practices that reduce waste and promote the efficient use of building materials.
3. The government should provide an environment that promotes the local production of building materials to reduce dependency on imports and the effect of inflation rate fluctuations.

6. References

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