

Sustainable development goals under threat: the impact of inflation on construction projects

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Abstract

Purpose – Despite advancements in construction digitalisation and alternative building technologies, cost overrun is still a challenge in the construction industry. The inflation rate is increasing, especially in developing countries, and is critical in cost overrun matters. It can deviate construction built-up rate components. This may thwart improving construction-related Sustainable Development Goals (SDGs). Studies concerning the impact of the inflation rate on construction-related SDGs are scarce in developing countries, including Nigeria. The study investigated the impact of inflation on Nigeria's construction projects and their outcome on SDGs and suggested possible ways to improve achievement of construction-related SDGs and their targets.

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Design/methodology/approach – The researchers employed a qualitative research design. This is because of the study's unexplored dimension. The researchers engaged 35 participants across major cities in Nigeria via semi-structured virtual and face-to-face interviews. The research utilised a thematic method for collated data and accomplished saturation.

Findings – Findings reveal that the impact of inflation on construction projects, if not checked, could hinder achieving construction-related SDGs in Nigeria. This is because of the past three years of hyperinflation that cut across major construction components. It shows that the upward inflation rate threatens achieving construction-related SDGs and proffered measures to mitigate inflation and, by extension, enhance achieving construction-related SDGs. This includes a downward review of the Monetary Policy Rate, control of exchange rate volatility and addressing insecurity to restore FDIs and FPIs confidence.

Originality/value – Besides suggesting possible solutions to mitigate hyperinflation on construction components to improve achieving construction-related SDGs, findings will stipulate government policymakers put measures in place through favourable fiscal and monetary policy implementation and encourage moving from a consumption to a production nation.

Keywords Construction cost overrun, Construction-related, Hyperinflation, Nigeria, Fiscal policy, Sustainable development goals

Paper type Research paper

1. Introduction

The construction industry, through project execution, plays an active role in developing society and improving the achievement of Sustainable Development Goals (SDGs), especially in developing countries. The deadline for the 17 SDGs and their targets at the United Nations SDGs Summit in New York in September 2015 is fast approaching (United Nations, 2022a; Ebekoziem *et al.*, 2024). Cost is one of the main constraints in construction projects. Nevertheless, cost overrun is challenging (Abdullah *et al.*, 2018; Tayeh *et al.*, 2018, 2019). Mashwama *et al.* (2016) and Khodeir and El Ghandour (2019) opined that construction project cost varies within the 21–55% range from the estimated budget before the project commences. Many factors are responsible for cost overruns in construction projects. Musarat *et al.* (2020) affirmed that cost overrun can be caused by changes in project resources (money, manpower, material and machinery) prices. CIDB (2017) identified cement, glass, sand, bricks/blocks, plywood, ready-mixed concrete and steel reinforcement as the major high-demand construction materials. They underscored that construction materials, on average, cost 74% of the total project budget. Diugwu *et al.* (2017), Haslinda *et al.* (2018) and Musarat *et al.* (2020) opined that the inflation rate is a critical contributing factor to construction cost overrun and affects all the components. Inflation is “a rise in the price level of a good or service or market basket of goods and/or services” (Prichett *et al.*, 2011). Amadeo (2020) described the inflation rate as the percentage decrease or increase in services or goods price at a specific time. In Nigeria, the annual inflation rate climbed from 21.34% in December 2022 to a 28-year high of 29.9% in January 2024, including construction project resources (National Bureau of Statistics, 2024a, b). It may affect construction-related SDGs.

The construction industry is vital to achieving major SDGs from the 17 Goals. The 17 SDGs comprise 169 targets and 230 indicators (United Nations, 2022b; Ebekoziem *et al.*, 2023). The construction industry's activities contribute to achieving major SDGs (Ebekoziem *et al.*, 2021a, b). They identified Goals 6, 7, 9, 11 and 15 as main construction-related SDGs. Goal 6 is about access to clean water and sanitation, Goal 7 is about access to affordable and clean energy, and Goal 9 is about building resilient and sustainable infrastructure. Others are Goals 11 and 15. Goal 11 is about creating sustainable cities and communities and Goal 15 is about promoting sustainable use of the ecosystem and mitigating desertification (United Nations, 2022b). This is the research focus. Ebekoziem *et al.* (2021a, 2021b) avowed that Goals 1, 2, 3 and 8 are indirect outcomes that may emerge from the negative consequences of the inability to achieve Goals 6, 7, 9, 11 and 15. In most developing countries, including Nigeria, achieving construction-related SDGs and their targets in less than a decade may require assistance. This is because of the threats from the increasing inflation rate on construction

resources. Thus, this research underscores the investigation of the increasing behaviour of the construction resources (construction projects) and its aftermath on construction-related SDGs. Musarat *et al.* (2020) emphasised that the inflation rate's impact is high in deviating from the construction project budget. The inflation rate is increasing, especially in developing countries, and is critical in cost overrun matters. It can deviate from construction-related SDGs built-up rate components. This may thwart achieve construction-related SDGs.

This study focuses on how inflation may influence construction projects and investigates whether the inflation outcome will affect the achievement of construction-related SDGs. Scholars like Akanni *et al.* (2014), Oghenekevwe *et al.* (2014), Amusan *et al.* (2018), Musarat *et al.* (2020, 2021) and Egwim *et al.* (2023) have worked on the impact of inflation on construction but none regarding if this threat would influence achieving construction-related SDGs in developing countries. Akanni *et al.* (2014) found the Nigeria Naira exchange rate, power and fuel supply cost, and changes in public policies and legislation to be the most significant issues enhancing the rising cost of building materials. Oghenekevwe *et al.* (2014) examined the relationship between inflation and material prices in the Nigerian construction industry and found a positive significant relationship. Musarat *et al.* (2020) investigated the impact of inflation on construction materials prices and found that inflation is negatively impacting projects. Thus, attention should be given to the inflation rate during project budget development. Musarat *et al.* (2021) reviewed articles on how the inflation rate can impact construction project budgets and discovered that the inflation rate is ignored in many projects. Studies concerning the impact of the inflation rate on construction-related SDGs are scarce in developing countries, including Nigeria. Therefore, there is a need to investigate the impact of inflation on Nigeria's construction projects and their outcome on SDGs and suggest ways to improve the achievement of construction-related SDGs and their targets. The study's objectives are:

- (1) To investigate the impact of inflation on Nigeria's projects and their aftermath to construction-related SDGs.
- (2) To suggest ways to mitigate the impact of inflation on projects and, by extension, achieve construction-related SDGs and their targets.

2. Literature review

2.1 Overview of the impact of inflation on construction projects

The construction sector is a critical economic growth and development source for developing and developed countries. Tayeh *et al.* (2019a, b) and Alaloul *et al.* (2019, 2020) opined that the sector is relevant because of its immense size and contribution to other industries. Doyle (2019) reported that the sector created over 7,505,000 direct jobs in July 2019 and projected a rise of 864,700 new employees by 2026. This is an approximate 12% growth rate. This contribution is also reflected in the GDP. In Malaysia, it contributes 4.5% (Prop, 2019), Indonesia 9.77% (Statista, 2023), United States 3.9% (Statista, 2024), United Kingdom 6% (Rhodes, 2019) and Nigeria's construction sector contributed 9.5% to the GDP in the 4th quarter of 2022 (National Bureau of Statistics, 2024a, b). Musarat *et al.* (2021) asserted that the sector makes a major contribution. This demonstrates its role in the growth of nations' economies, and construction project budget should be well scrutinised.

In Ghana, there is an increasing concern among construction stakeholders because of factors, including inflation, influencing construction projects from the start to completion (Famiyeh *et al.*, 2017; Damoah *et al.*, 2020; Ansah *et al.*, 2021; Akunyumu *et al.*, 2023). Similarly, Kaliba *et al.* (2009) identified inflation as one of the root causes of cost and time overruns in Zambia Road construction projects. Ansah *et al.* (2021) discovered that the increasing inflation rate is the major cause of construction project abandonment or failure in

Ghana. An increasing inflation rate causes price and wage changes and enhances construction contract disputes on projects. [Damoah et al. \(2020\)](#) emphasised the impact of inflation on construction projects, such as project abandonment, leading to international donors and external financial organisations, such as World Bank, imposing strict sanctions and regulation on the government. These sanctions and regulations may influence the outcome of construction-related SDGs if not checked. In South Africa, inflation was identified as a major factor that put pressure on the overall construction project cost ([Alabi and Fapohunda, 2021](#)). Fluctuation in construction materials is influenced by inflation rates.

[Table I](#) shows Nigeria's inflation rate trend from 2000 to 2024. [Viewpoint \(2024\)](#) reported that the National Bureau of Statistics (NBS) reveals that Nigeria's inflation rate increased from 21.82% (January 2023) to 29.90% (January 2024). This trend suggestively affected the cost of construction materials and, if not checked, may hinder achieving construction-related SDGs. The increasing fluctuating inflation rates may hinder activities in the construction sector. Thus, understanding the economic phenomenon and how it affects the industry has become crucial for stakeholders, including investors (domestic and foreign). This is germane because most construction materials like cement, aggregates (granite and sand), paints, tiles, timber, sanitary ware, plumbing and electrical materials, reinforcement and roofing sheets have increased in price above 70% ([Viewpoint, 2024](#)). Preliminary investigation and findings from the researchers regarding increasing construction materials prices for the past six months corroborate [Viewpoints \(2024\)](#). For example, preliminary findings reveal that 50 kg of Dangote Cement that was sold for within the range of NGN4,500 (USD1/NGN1500) to NGN5,500 in July 2023 is being sold for NGN12,500 to NGN14,500 in February 2024. [Ayeyemi and Osadebamwen \(2024\)](#) reported that road construction materials are not

Year	Inflation rate (%)
2024	29.90% (January) and 31.70% (February)
2023	27.30
2022	18.85
2021	16.95
2020	13.25
2019	11.40
2018	12.10
2017	16.50
2016	15.70
2015	9.01
2014	8.05
2013	8.50
2012	12.22
2011	10.83
2010	13.74
2009	12.54
2008	11.58
2007	5.39
2006	8.23
2005	17.86
2004	15.00
2003	14.03
2002	12.88
2001	18.87
2000	6.93

Table 1.
Nigeria's inflation rate
2000 to 2024

Source(s): Authors' work

exempted. Also, it affirmed that the prices per 20 tons in August 2023 was NGN854,375 and increased to NGN2,008,330 in March 2024. This is worrisome and needs urgent attention.

However, the construction project budget is influenced by several factors. One major factor is the inflation rate (Musarat *et al.*, 2020, 2021; Viewpoint, 2024). They affirmed that the inflation rate can influence the components of construction resources. This includes construction materials, plant and labour costs. It is one major reason construction costs are volatile and can create volatility in economic growth if not mitigated. Continuous rises in the inflation rate are becoming a major issue for the industry and may enhance costs and time overruns. Viewpoint (2024) opined that inflation is a complex phenomenon influenced by various factors. Construction cost overrun is an issue in the industry, especially in developing countries. Diugwu *et al.* (2017) and Altaf *et al.* (2019) found a significant relationship between inflation and cost overrun in public and private construction projects. Oghenekevwe *et al.* (2014), Akanni *et al.* (2014) and Goyal (2017) asserted that inflation is the major cause of cost overrun distress that affects major construction resource components (money/loan, man, materials, machine). In Ireland, the impact of inflation on the sector was identified as a key risk for 2019 (Times, 2019). In Nigeria, Oghenekevwe *et al.* (2014), Akanni *et al.* (2014) and Amusan *et al.* (2018) are among the researchers who examine the impact of inflation on the sector. Amusan *et al.* (2018) found that inflation is a top critical factor causing construction cost overrun in Nigeria. This needs to be mitigated. Edzarenski (2019) corroborated Amusan *et al.* (2018). Edzarenski (2019) emphasised that it is not peculiar to Nigeria. This is because inflation deviates from the prices of construction resource components. The outcome would cause construction cost overrun, especially in developing countries with weak fiscal and monetary policies. Thanh (2015) and Diugwu *et al.* (2017) found that the inflation rate raises construction costs, but the rise lowers GDP. This implies that the inflation rate influences GDP. Also, Al-Hazim *et al.* (2017), Goyal (2017) and Johnson and Babu (2018) found that construction cost overrun negatively impacts the industry and, by extension, economic growth across other sectors. It implies a connection between the inflation rate, the construction industry and economic growth. Flyvbjerg (2014) discovered that 9 out of 10 international mega-construction projects encounter cost and time overruns because of several factors. This includes inflation (especially in developing countries), poor labour productivity and inadequate skills, inadequate resources, unstable project cash flow, unskilled contractor personnel/methods, change orders, delays in honouring contractor's payment and poor site planning and management.

2.2 Construction-related sustainable development goals

Before the 2030 Agenda for Sustainable Development, previous Goals like Agenda 21 and the Millennium Development Goals 2000–2015 were executed (United Nations, 2022a). The 17 SDGs, comprised of 169 targets and 230 indicators, is an Agenda to plan action for the planet, people and prosperity (United Nations, 2022b). It is supported by the New Urban Agenda and African Union's Agenda 2063. The 2030 Agenda is all-inclusive (Valencia *et al.*, 2019). This sub-section focuses on construction-related Goals. This includes sustainable water and sanitation management (Goal 6), affordable and sustainable modern energy (Goal 7), construction of sustainable infrastructure (Goal 9), (inclusive cities and human settlements (Goal 11) and sustainable ecosystems (Goal 15) (Ebekozien *et al.*, 2021a, b). Ebekozien *et al.* (2021a, 2021b) identified other SDGs that the performance of the identified construction-related SDGs could influence. This includes eliminating poverty (Goal 1), ending hunger (Goal 2), improving healthy lives (Goal 3) and promoting sustainable economic growth (Goal 8). In most developing countries, including Nigeria, extra commitment may be required to improve achieving construction-related SDGs. However, the study emphasises whether the inflation threat on construction projects can negatively impact construction-related SDGs, which is yet to be determined.

Goals 6 and 9 focus on sustainable water and sanitation management and constructing sustainable infrastructure on or before 2030. Goal 6 targets include access to safe and

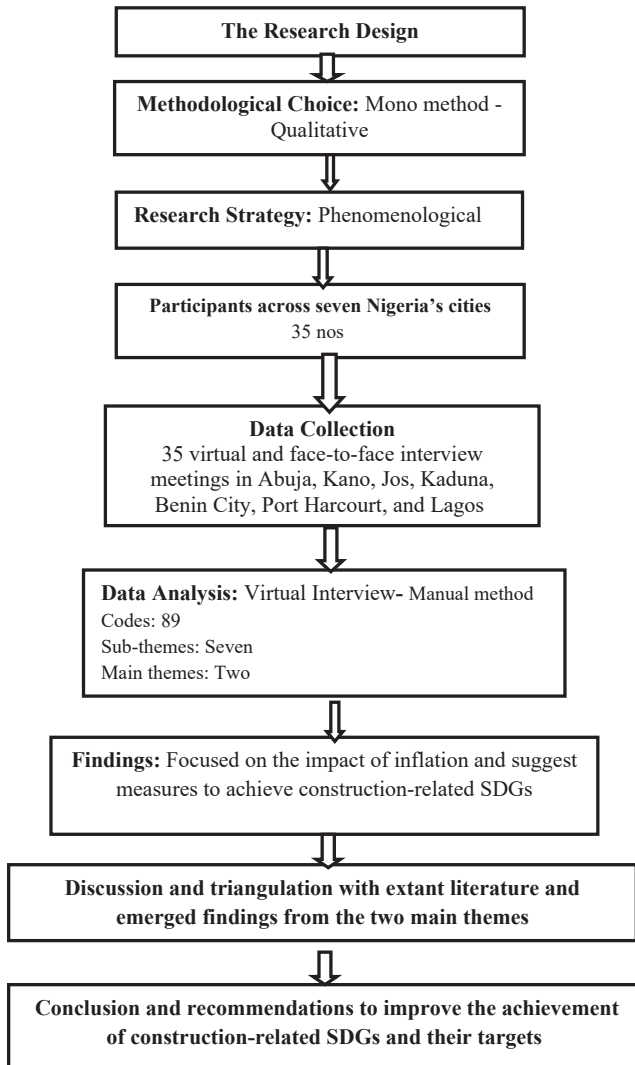
affordable water, satisfactory and unbiased sanitation and hygiene for all and support to local communities in improving sanitation and water management (Sustainable Development Goal Indicators, 2016). Ngarava (2021) found that the inflation rate does not affect only water provision but also food and energy. Also, Musarat *et al.* (2020) affirmed that construction materials, including water provision materials are negatively affected. The outcomes hinder the slow delivery of construction projects, including boreholes, water treatment plants and external piping networks. The threat of inflation to SDG 6 may need urgent attention to improve the achievement of SDG 6 on or before 2030. The Goal 9 targets, include providing sustainable and resilient infrastructure focusing on developing countries and upgrading infrastructure and retrofitting businesses (Sustainable Development Goal Indicators, 2016). Uddin and Rahman (2023) affirmed that inflation hinders economic growth and encourages unethical practices. Infrastructure provision and expansion are feasible in a growing economy.

Goals 11 and 15 focus on making cities and human settlements inclusive, resilient, safe and sustainable, ecosystems that promote conservation, restoration and reforestation on or before 2030. Among the Goal 11 targets include adequate and affordable housing for the less privileged, sustainable and affordable transport network, including improved road safety, inclusive sustainable urbanisation, and mitigating the adverse environmental impact of cities (Sustainable Development Goal Indicators, 2016). Despite the Nigerian Government's various policies and programmes in the past and present to make shelter accessible and affordable, low-income groups find it difficult to have shelters over their heads (Ebekozen *et al.*, 2024b). Achieving Goal 11 may be compounded by the increasing inflation rates. Goal 15 targets include combating desertification, preserving hill ecosystems, integrating biodiversity values into local and national planning and mobilising finance to sustain forest management. The current hyperinflation may hinder majority of these targets. Bateman *et al.* (2011) found that economic challenges can deplete ecological assets and may compromise restoration. This is of concern with the rising inflation rates, especially in Nigeria. In December 2023, the inflation rate increased from 27.33% (October 2023) to 28.92% (National Bureau of Statistics, 2023). Inflation is a hindrance to productivity and development. Construction activities, including construction-related SDGs may not be exempted.

From the literature regarding the impact of inflation on construction-related SDGs, this study argues that negative or positive consequences may influence SDGs like Goal 1 (eliminate poverty), Goal 2 (end hunger), Goal 3 (improve healthy lives) and Goal 8 (promote sustainable economic growth). SDG Sustainable Development Goal Indicators (2016) and Ebekozen *et al.* (2021a, 2021b) affirmed that improving achieving construction-related SDGs as identified will create more employment. This implies that employment will eradicate poverty (SDG 1), mitigate hunger (SDG 2), improve the living conditions of the people (SDG 3) and better economic growth because of regular income (SDG 8).

3. Research method

The study utilised a qualitative research design, as presented in Figure 1. The research employed a phenomenological viewpoint. Paley (2016) avowed that phenomenology derived the "meaning" of the issue by involving stakeholders through questioning. The study employed a purposeful sampling technique. This type of technique targets interviewees who are considered informed (Jaafar *et al.*, 2021; Ibrahim *et al.*, 2022). Thirty-five participants were engaged across major cities in Nigeria via semi-structured virtual and face-to-face interviews. The study accomplished saturation. Mixed qualitative data collection method (oral and virtual) was necessary because of the high cost of transportation and accommodation associated with data collection. This implies that inflation has cut across all sectors, including the hospitality and transport sectors. The cities include Federal Capital Territory (Abuja), Kano, Jos, Kaduna, Benin City, Port Harcourt and Lagos. This aligns with Ebekozen *et al.* (2022). They avowed that Lagos and Kano have the largest population in the southern and northern cities, respectively. The interview took an average of three-quarter



Source(s): Authors' work

Figure 1.
The research design

hours. The participants' identities, though hidden as presented in Table 2, were knowledgeable concerning construction-related SDGs and inflation. For details of the participants and the representation, refer to Table 2. Table 2 clearly represents the major stakeholders across the cities covered. For example, Participants P22 to P35 have over 17 years of work experience in SDGs-related matters in Nigeria, while P30 manages an NGO focusing on Goals 1 and 2. Regarding ethical matters, the interviewees were informed about the research goal and were obliged to participate per the ethics rule. The semi-structured questions were queried regarding the impact of inflation and measures to mitigate the impact on projects and, by extension, achieve construction-related SDGs and their targets in Nigeria,

Table 2.
Interviewees'
description

Participant/Rank	City/Code							Total
	A FCT	B Kano	C Jos	D Kaduna	E Benin city	F Port harcourt	G Lagos	
Construction consultants	P1	P2	P3	P4	P5	P6	P7	7
Construction contractors	P8	P9	P10	P11	P12	P13	P14	7
Government agencies related to SDGs	P15	P16	P17	P18	P19	P20	P21	7
Financial experts	P22	P23	P24	P25	P26	P27	P28	7
Lawmakers	P29 and P30							2
NGOs monitoring SDGs	P31 and P32							2
Expert in SDGs (Academicians)	P33, P34, and P35							3
Total number of participants								35

Source(s): Authors' work

as presented in [Appendix](#). The researchers conducted a pilot study in Lagos with six participants. It is a quality evaluation approach to establish the question's validation. The study utilised a thematic method for data collation. The interviewees' responses were analysed in an anonymous form.

The researchers identified texts concerning the analysed data via a thematic system. The research utilised an open coding system for the data transcript. Themeing, *invivo*, emotion and narrative coding approaches were employed. This aligns with [Corbin and Strauss \(2015\)](#). They identified various coding techniques that could be utilised. Eighty-nine codes were created and re-clustered based on frequency, occurrence and reference. Seven sub-themes were created from the 89 codes and re-clustered to two themes. In line with [Tajeddini and Mueller \(2009\)](#), the research lessened uncertainties about the results' validity through data triangulation. [Figure 1](#) shows the data triangulation during main results discussion. This was achieved across data sources (primary and secondary data). Where there were results of divergence and convergence, the researchers reported accordingly. The next section was based on 35 interviewees' perspectives.

4. Findings

This section presents results and discussion and is divided into two sub-themes as follows:

4.1 Theme one: impact of inflation on construction-related SDGs

Construction projects are capital intensive, and any strict error, such as inaccurate budgeting and resource planning in the inflation era, as experienced in many developing countries, may result in disasters. This is the situation of many Nigerian projects (P4, P8, P11 and P29). It implies that the outcome could stall construction projects, including housing, hospitals, roads and educational facilities. This is threatened if not checked. Findings reveal that the inflation rate is a critical factor influencing project cost and time overrun, and construction-related SDGs are inclusive (majority). Findings identified eleven impacts of inflation on construction-related SDGs, as presented in [Table 3](#). Some impacts are interrelated, like construction project abandonment, substandard construction projects and increased collapsed construction projects. Findings reveal that corruption, cost overrun and high cost of construction resources are the major negative impacts of inflation on projects, inclusive construction-related SDGs. Participant P34 says, "... a rise in the inflation rate is linked with many counterproductive economic outcomes like rise in materials cost and higher wages, leading to cost overrun and construction projects abandonment ...". Many

Table 3.
Perceived impact of
inflation on
construction-
related SDGs

S/No	Impact
1	Construction projects abandonment (P7, P14, P22, P29 and P35)
2	Cost and time overrun (majority)
3	Substandard construction projects (P6, P13, P28, P33 and P34)
4	Increased collapsed construction projects (P1, P4, P12, P25 and P30)
5	Deviate the project budget (majority)
6	Local currency devaluation (majority)
7	High cost of construction resources components (majority)
8	Lowers GDP but raises construction costs (majority)
9	Increased unethical practices (majority)
10	Infrastructure development pitfalls (P2, P5, P18, P25 and P33)
11	Construction project litigation and avoidable claims (P3, P5, P9, P19 and P33)

Source(s): Authors' work

construction contractors have become financially distressed because of the uncontrollable surge in materials prices (majority). Also, the high cost of construction resource components, leading to low patronage and encouraging substandard construction projects, has increased the collapse of construction projects in the country. One negative impact is the distress of many construction-related manufacturing companies, and some already shut down (P2, P12, P25 and P34). One root cause is the floating local currency (Naira), which leads to volatility in the exchange. Major local manufacturers import materials and spare parts, and import tariff is indexed in US dollars (P1, P4, P12, P33 and P33). The currency float, fuel subsidy removal and insecurity have not assisted construction-related SDGs and the entire economy. Government interventions are required regarding the happenings in the construction industry, including construction-related SDGs. It is an effective barometer for measuring the direction of economic growth within the economy. This led the study to the next theme.

4.2 Theme two: measures to achieving construction-related SDGs

This theme suggests measures to improve achieving construction-related SDGs in Nigeria. Findings show that multi-mechanisms are required to achieve the goal because of the industry's significance to other sectors of the economy. For example, the positive influence of improving construction-related would influence SDGs like Goals 1, 2, 3 and 8. This is part of the study's motivation and emphasis that integrated multi-measures through stakeholders are required. The emerging measures are presented in Table 4. Among the nine measures, a

S/No	Measures
1	Downward review of the Monetary Policy Rate (MPR) (majority)
2	Address insecurity (kidnapping, banditry, boko-haram, etc.) to restore FDIs and FPIs confidence (majority)
3	Address exchange rate volatility (P2, P24, P28 and P30)
4	Inflation rate consideration is given to the construction project budget (P3, P19, P28, P29 and P31)
5	Move from a consumption to a production nation (majority)
6	Favourable fiscal and monetary policy to encourage production (P7, P11, P17, P24 and P33)
7	Consultation with international financial organisations (P6, P19, P25, P29 and P34)
8	Embrace innovation in construction project delivery and management (P3, P13, P20, P24 and P32)
9	Embrace collaborative integrated technological models (majority)

Source(s): Authors' work

Table 4.
Measures to achieving
construction-
related SDGs

downward review of the Monetary Policy Rate, addressing insecurity (kidnapping, banditry, boko-haram, etc.) to restore FDIs and FPIs' confidence, moving from a consumption to a production nation and embracing collaborative, integrated technological models were frequently identified as measures to improve achieving construction-related SDGs. Regarding a downward review of the MPR and addressing insecurity (kidnapping, banditry, boko-haram, etc.) to restore FDIs and FPIs confidence, Participant P34 says, "... *Downward MPR is a critical tool to increase productivity in a fragile economy like Nigeria. Recently, the country's apex bank, via the Monetary Policy Committee, increased the MPR to 22.5%. Tightening liquidity in the banking sector is counterproductive and may lead to hyperinflation, including construction-related components like materials, labour, plants, and interest rate on loans. Participant P29 says, "..... policymakers should ensure inflation rates are controlled within global standards to balance the economy. This is one measure to improve achieving construction-related SDGs and other indirect SDGs via mitigating construction cost overrun by focusing on the inflation rate behaviour and keep it steady ..."*

The Nigerian Governments at all levels need to improve in addressing the issue of insecurity to boost investors' confidence (majority). If not revised, the outcome may hinder construction, increase abandoned projects and worsen the economic situation. Participant P32 says, "... *Insecurity is one of the root causes of Nigeria's inflation. It has hampered FDIs and FPIs inflow. Hindrances in FDIs and FPIs are counterproductive and cut across all sectors, including the construction sector ...*" Findings agree that when the government drastically addresses the issue of security, there will be an increase in crude oil production, food and overall increase in production, including restoring FDIs and FPIs inflow confidence to various sectors, including the construction industry (majority). Also, consultation and engagement of international financial lenders like the World Bank and the International Monetary Fund should be embraced by policymakers for a smooth flow of fiscal policy implementation (P1, P14, P29, P31 and P34). Participant P14 says, "... *these international financial organisations should not be taken for granted. One short newsletter from them can change the narrative of global investors toward a country. We need to work closely with them to influence and encourage foreign investors to come to our land ...*" Also, early and collaborative integrated technological models of project delivery with eco-innovation can mitigate the negative impact of hyperinflation on the project, especially regarding time overrun (P3, P11, P18, P27 and P32). Time overrun has cost implications if not checked. Also, innovative models can improve productivity by checking corruption and substandard mechanisms. Regarding inflation rate consideration given to the construction project budget as a possible measure, Participants P5, P7, P10, P14 and P22 express their concerns that many Quantity Surveyors (QS) might lose their consultancy engagement. This is because of the hyperinflation of 50 kg of cement per bag from NGN5,000 in May 2023 (exchange rate was US\$1/NGN750) to NGN14,000 in February 2024 (exchange rate was US\$1/NGN1,500). It cut across other major construction materials. This is a tough time for bitumen-related construction projects like road construction. It is a major component used in asphalt production (P3, P23 and P26). Participant P31 says, "... *Inflation rate consideration is a good measure in project budget preparation, ought not to be over 5%-10%, but that is not the situation currently. It's made the cost manager (QS) look a 'guess professional'.. ...*" In Nigeria, the inflation rate was considered but had no effect because it was abnormal and not anticipated by the construction economists (QS). Participant P23 says, "... *The challenge facing the industry is not peculiar but cut across major sectors because we should agree to put fiscal policy in place to encourage us to move from a consumption to a production nation. Many investors are leaving the country. How do you expect to earn foreign currency to strengthen the naira when you are majorly consuming?*" The Nigerian Government should declare a state of emergency regarding security and food. This would go a long way to mitigate

hyperinflation (P2, P7, P11, P15, P22 and P28). The rate of insecurity is no longer funny (majority).

5. Discussion of findings

The impact of inflation on construction-related SDGs, including infrastructure such as housing, hospitals, roads and educational facilities, is threatened if not checked. Results align with [Famiyeh *et al.* \(2017\)](#), [Amusan *et al.* \(2018\)](#), [Edzarenski \(2019\)](#), [Musarat *et al.* \(2020\)](#), [Chiwuzie and Dabara \(2021\)](#), [Uddin and Rahman \(2023\)](#) and [Egwim *et al.* \(2023\)](#). [Amusan *et al.* \(2018\)](#), [Edzarenski \(2019\)](#) and [Musarat *et al.* \(2020\)](#) found that inflation is a top critical factor causing construction cost overrun. Regarding cost overrun and high cost of construction resources components, findings agree with [Chiwuzie and Dabara \(2021\)](#). They found that housing construction costs increased, and inflation rates in 2016 and 2017 were 12.4 and 11.8%, respectively. The high cost could be credited high Nigeria's CPI inflation rates. [Famiyeh *et al.* \(2017\)](#) argued that unregulated inflation can enhance poor economic conditions. This may threaten construction-related SDGs. [Mukuka *et al.* \(2015\)](#) and [Alabi and Fapohunda \(2021\)](#) opined inflation rates influence fluctuation in construction materials. [Uddin and Rahman \(2023\)](#) emphasised that inflation encourages corruption and political instability if not mitigated. Besides inflation deviating prices of construction resources components, some persons may look for other unethical means to meet their daily needs. [Egwim *et al.* \(2023\)](#) discovered that inadequate attention to inflation could lead to construction costs overrun. Regarding local currency devaluation and lower GDP but raising construction costs, findings slightly agree with [Akanni *et al.* \(2014\)](#), [Thanh \(2015\)](#) and [Diugwu *et al.* \(2017\)](#). [Akanni *et al.* \(2014\)](#) identified the Nigeria Naira exchange rate as the most significant factor responsible for the rising cost of building materials. It shows a relationship between inflation and local currency (Naira). [Thanh \(2015\)](#) and [Diugwu *et al.* \(2017\)](#) found that the inflation rate raises construction costs, but the rise lowers GDP. This implies that the inflation rate influences local currency and GDP. This goes behind the construction sector and is a critical threat to local currency (majority). Findings agree [Ologunagbe \(2024\)](#) who affirmed that Nigerian Breweries Plc, largest brewer in the country, recorded NGN106.3 billion (NGN1,500/USD1) loss after-tax in 2023. This implies that hyperinflation has a relationship with local currency devaluation. Findings reveal that the inflation is fast increasing and has taken 1.80% increase from 29.90% in January to 31.70% in February 2024. The findings are collaborated [Samuel-Ugwuezi \(2024\)](#), a reporter with Arise News in Nigeria. Other likely causes are foreign exchange scarcity, surging energy costs and removing fuel subsidies amid cash scarcity. [Adeosun *et al.* \(2023\)](#) affirmed that oil prices could serve as input along with labour and capital. This implies that their fluctuations are red flags for inflation and negative economic conditions. This includes an increase in crimes ([Viewpoint, 2024](#)) because of existing economic dissatisfaction and the search for an alternative. Also, the high cost of construction resources components, leading to low patronage and encouraging substandard construction projects, have increased the collapsed construction projects in the country. A quick check reveals that 335 Nigerian manufacturing companies, construction inclusive, became distressed, and 767 were shut down in 2023, as [Onwuamaeze \(2024\)](#) reported in a statement issued by the Manufacturers Association of Nigeria. If no drastic action is taken, it may ruin the confidence the Nigerian Government is striving to build among foreign and domestic investors.

A quick check with the newsprint corroborates the study's findings regarding a downward review of the MPR and addressing insecurity (kidnapping, banditry, Boko-haram, etc.) to restore FDIs and FPIs' confidence. [Ehigiator \(2024\)](#) reported that Mr Peter Obi (Presential candidate of the Labour Party in the 2023 election) is concerned with the recent increase of the Cash Reserve Ratio (CRR) and MPR to 45 and 22.5%, respectively. This shows

a connection between the inflation rate, the construction industry and economic growth. Also, the findings agree with [Al-Hazim et al. \(2017\)](#), [Goyal \(2017\)](#) and [Johnson and Babu \(2018\)](#). They found that construction cost overrun negatively impacts the industry and, by extension, economic growth across other sectors. Also, inconsistencies in inflation and exchange rates, like 50 kg of cement per bag from NGN5,000 in May 2023 (exchange rate was US\$1/NGN750) to NGN14,000 in February 2024 (exchange rate was US\$1/NGN1,500), results align with [Akanni et al. \(2014\)](#), [Oghenekevwe et al. \(2014\)](#) and [Ayeyemi and Osadebamwen \(2024\)](#). They found that inflation rates in Nigeria have been far from stable. After a decade, the trend has not changed. [Ayeyemi and Osadebamwen \(2024\)](#) reported that road construction materials prices per 20 tons in August 2023 were NGN854,375 and increased to NGN2,008,330 in March 2024. This inflation increase is over 150% in seven months. This is a tough time for bitumen-related construction projects like road construction. Findings slightly disagree with [Musarat et al. \(2021\)](#), who found that the inflation rate is ignored in many projects. In Nigeria, the inflation rate was considered but had no effect because it was abnormal and not anticipated by the construction economists (QS).

6. Study's implications

6.1 The theory implication

This research explored the impact of inflation on Nigeria's construction projects and their outcome to SDGs and suggested ways to improve achieving construction-related SDGs and their targets. Findings show the industry is key to Nigeria's economy because it provides income and contributes to the GDP ([Viewpoint, 2024](#)). However, the increasing fluctuating inflation rates, if not mitigated, would threaten achieving construction-related SDGs. Achieving construction-related SDGs is germane because of their link to enhancing other SDGs like Goals 1, 2, 3 and 8. This implies that proffering measures to improve achieving construction-related SDGs will reinforce many SDG accomplishments in Nigeria. This is because of the SDGs inter-relationship. The perceived major impact of inflation on construction-related SDGs is based on frequently identified cost and time overrun, deviating the project budget, local currency devaluation, high cost of construction resources components, lower GDP but raises construction costs and increased unethical practices. As part of the theoretical contributions, items/dimensions could be further developed for these constructs and validated in future studies.

6.2 The practice implication

Concerning the practical aspect, the findings offer stakeholders, especially construction practitioners and SDG experts, the opportunity to engage in multiple ways to help mitigate inflation impact on construction-related SDGs. This is critical because of the role of the industry and its relationship with other sectors of the economy. Besides the measures that are tailored toward improving construction-related SDGs and others linked with them, like Goals 1, 2, 3 and 8, the findings will stir up economic policymakers to critically review on the Cobra Effect of fiscal and monetary policy before implementation. If this had been considered, the MPR would have been reviewed downward to improve productivity and encourage investors (domestic and foreign). It implies that hyperinflation would have occurred and is under control. This study argued and suggested a downward review of the MPR to encourage manufacturers to access finance at affordable interest and increase productivity. The outcomes will bring down the hyperinflation gradually. This is germane and can be achieved. Scholars, construction practitioners, policymakers and SDG experts might benefit from the findings and suggestions to improve achieving construction-related SDGs and other Goals 1, 2, 3 and 8 connected with them. Some other developing countries

could face a similar hyperinflation, and findings from this study could be modified and adopted.

7. Limitations and areas for further research

The study adopted a qualitative research design and covered seven main urban locations with 35 interviewees. The impact of the limitations was mitigated with a robust review of academic literature, which ensured that the coverage had a good representation of the geopolitical zones. Regarding further research, the methodology could be employed in other developing countries with similar inflation threats on construction-related SDGs. Future studies could develop and validate items/dimensions for new constructs, such as deviating the project budget, local currency devaluation, high cost of construction resources components, and lowering GDP but raising construction costs. Also, the coverage and the research design approach could be slightly changed to validate the study's findings. More cities and a mixed method could be considered.

8. Conclusion and recommendations

Inflation is a leading component that has a major negative impact on all sectors, including the construction sector, especially in developing countries. The need to assess the impact of inflation and its aftermath on construction-related SDGs became pertinent because the deadline is fast approaching. This study investigated the impact of inflation on Nigeria's construction projects and their outcome on SDGs and suggested ways to improve the achievement of construction-related SDGs and their targets. Findings reveal a threat from the impact of inflation on construction projects and its negative aftermath, and they proffered ways to enhance the achievement of construction-related SDGs by mitigating the continuously increasing inflation rate in Nigeria. Hence, the perceived impacts of inflation on construction-related SDGs were identified. This includes lowering GDP but raising construction costs, cost and time overruns, litigation and avoidable claims, project abandonment, unethical practices, substandard construction projects, local currency devaluation, increased collapsed construction projects, and deviation from the project budget. Achieving Goals 6, 7, 9, 11 and 15 and their targets are pertinent to thriving others like Goals 1, 2, 3 and 8 linked with construction-related SDGs in Nigeria. Therefore, the research offered measures for achieving construction-related SDGs and their targets as follows:

- (1) First, a multi-mechanism approach is required to mitigate the impact of inflation on construction-related SDGs. This is because of the industry's pertinent role and the 2030 Agenda to the economy, especially in developing countries like Nigeria. Hence, the government's role is germane in controlling and monitoring fiscal and monetary policy. A fair lower MPR would attract domestic and international investors and improve domestic production against consumption. Inflation can be well managed through production instead of higher MPR, collapsing manufacturing sectors and increasing inflation rates. This mindset should change by encouraging FDIs and FPIs so that the local currency can improve in value and compete with global currencies. Policies to encourage local construction manufacturers should be embraced, including checking the exchange rate volatility.
- (2) Second, the issue of insecurity is no news in Nigeria. This includes rampant kidnapping (rich and poor made to pay ransom), banditry, boko-haram, etc. One of the root causes is hunger. The inability of farmers to access their farmlands due to insecurity and the increasingly high cost of foodstuff have pushed many

into unethical activities to survive. The government has a role to play here. Insecurity issues should be tackled head-on, and security should be provided strategically to mitigate any attack on the farmers and citizens. This would improve international investors' confidence in investing via FDI and FPIs. Besides improving to achieve construction-related SDGs, other Goals like 1, 2, 3 and 8 will improve. This is why this study argues that the industry is special and the bedrock of the economy.

- (3) The industry recognises the damage that could be caused by the rise in inflation rate on construction-related SDGs if not checked. Thus, early collaboration (contractors and clients), integration, innovation and technological advancements cannot be over-emphasised in mitigating the impact of inflation on construction-related SDGs. The ability to identify innovative project delivery models and implement them will improve productivity. Although the industry faces resistance to change and a conventional mindset, this can be overcome through effective change management strategies and campaigns to promote the benefits of technological innovation in mitigating inflation on projects, including construction-related SDGs projects.
- (4) To mitigate construction cost overrun issues in Nigeria, an all-inclusive technique should be developed to formulate the project budget at the commencement by considering all variables that could influence hyperinflation, including the presidential election year and international financial organisations position on existing fiscal and monetary policy. This is because Nigeria's inflation rate is far from stable.

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Appendix

Semi-structured interview questions

Dear Participant, Request for Interview

Despite advancements in construction digitalisation and alternative building technologies, cost overrun is still a challenge in the construction industry. The inflation rate is increasing, especially in developing countries, and is critical in cost overrun matters. It can deviate construction built-up rate components. This may thwart improving construction-related Sustainable Development Goals (SDGs). Studies concerning the impact of the inflation rate on construction-related SDGs are scarce in developing countries, including Nigeria. The study investigates the impact of inflation on Nigeria's construction projects and their outcome on SDGs. It suggests ways to improve achievement of construction-related SDGs and their targets. Therefore, this research is titled *Sustainable Development Goals Under Threat: The Impact of Inflation on Construction Projects*. Specifically, this research is proposed to be achieved through the following objectives:

- (1) To investigate the impact of inflation on Nigeria's projects and their aftermath to construction-related SDGs.
- (2) To suggest ways to mitigate the impact of inflation on projects and, by extension, achieve construction-related SDGs and their targets.

Please note that the interview questions will be within the stated objectives. Also, your responses will be collated and analysed with the other participants' responses. The researchers will handle your responses with the greatest confidentiality.

Hence, your valuable time and other inputs in answering the questions and contributions will be highly cherished. *Note that the researchers will share findings from this study with the participants who indicate interest after the virtual face-to-face interview via email address to be supplied by them.*

Regards.
Yours faithfully,
(Research Co-ordinator)

Basic Questions for the Participants

- (1) For record purposes, what is the name of your firm?
- (2) What service does the organisation render?
- (3) What is your position in this firm, and how long have you been working?
- (4) Are you knowledgeable about inflation and construction-related SDGs?
- (5) Based on your perception, do you think inflation can impact Nigeria's construction projects?
- (6) If yes to Question 5, can you identify them?
- (7) If not, why do you think so?
- (8) Can these impacts affect construction-related SDGs?
- (9) If yes to Question 8, can you give practical examples?
- (10) What role can stakeholders play in mitigating the impact of inflation on projects and, by extension, achieving construction-related SDGs and their targets?

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