

**INFLUENCE OF PRICE INSTABILITY ON COST ESTIMATIONS IN THE  
CONSTRUCTION INDUSTRY IN EDO STATE**

**BY**

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**Being a Project Submitted to the Department of Quantity Surveying  
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In Partial Fulfillment of the Requirements for the Award of the Degree of  
Bachelor of Science (B.Sc.) in Quantity Surveying**

**DECEMBER, 2025.**

**DECLARATION**

I declare that this project is an original work carried out by me, **Emmanuel Ehizonomen Aikhomu** with Matriculation Number **ENV2006570** in the Department of Quantity Surveying, Faculty of Environmental Sciences, University of Benin, Benin City.

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**CERTIFICATION**

We certify that this project with the title: **Influence of Price Instability on Cost Estimations in The Construction Industry in Edo State**, submitted by **Emmanuel Ehizonomen Aikhomu**, with Matriculation Number **ENV2006570** has satisfied the regulations governing the award of Bachelor's Degree in Quantity Surveying from the University of Benin, Benin City, Edo State.

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Signature..... Date.....

## **DEDICATION**

I would like to dedicate this project to God Almighty, my parents and siblings for their unwavering support.

## ACKNOWLEDGMENTS

I would like to express my sincere gratitude to all those who have supported and guided me throughout the completion of this project.

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## ABSTRACT

This study examines the influence of price instability on cost estimation practices in the construction industry in Edo State, Nigeria. The study aims to identify the key drivers of price fluctuations and evaluate their impact on the accuracy and reliability of construction cost estimates. A descriptive survey research design was adopted, and data were collected through structured questionnaires administered to construction professionals, including quantity surveyors, architects, engineers, and builders. The collected data were analyzed using descriptive statistics, including mean item scores and standard deviation.

The findings reveal that inflation (mean = 4.42), material price fluctuations (mean = 4.34), and high interest rates (mean = 4.17) are the most significant factors contributing to price instability in the construction industry. Other notable factors include poor weather conditions, inadequate planning, and unstable government policies. The study further shows that key building elements such as reinforced concrete works, roofing materials, electrical systems, and finishing components are the most affected by these fluctuations.

The results also indicate that price instability significantly reduces the accuracy of cost estimation, leading to frequent revisions of estimates, cost overruns, unreliable budgeting, and financial strain on both contractors and clients. In response to these challenges, the study identifies several effective mitigation strategies, including the use of price adjustment clauses, contingency allowances, early procurement, local sourcing of materials, and continuous market price monitoring.

The study concludes that price instability remains a major threat to effective cost planning in the construction industry in Edo State. It recommends the adoption of proactive risk management strategies and improved forecasting techniques to enhance the reliability of cost estimation. This research contributes to existing knowledge by providing localized empirical evidence and practical solutions for managing cost uncertainty in a volatile economic environment.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the Study**

Accurate cost estimation is central to successful construction management because it guides budgeting, procurement, and overall project planning (Doloi et al., 2012). In everyday practice, however, construction professionals struggle to maintain reliable estimates as the prices of materials, labour, and equipment change more frequently than expected (Kikwasi, 2013). In Nigeria, this challenge is intensified by rising inflation and persistent currency depreciation, both of which push material prices upward at unpredictable rates (Kasim et al., 2023). Studies on the Nigerian construction market have shown a steady pattern of cost escalation in key materials, especially cement, reinforcement steel, and roofing sheets, making it difficult for estimators to forecast future prices with confidence (Adenuga & Olotuah, 2014; Ayedun et al., 2012)

Research further confirms that the instability in material prices has direct consequences for project delivery. (Ogun-Oghenekevwe et al., 2014) observed that continuous inflationary increases in construction inputs remain one of the major contributors to cost overruns across Nigerian projects. Alabi et al. (2021) also explained that the total cost of housing construction depends strongly on the prices of basic input resources such as cement, reinforcement, timber and labour, and found that sudden upward movements in these prices distort early estimates and create financial stress for clients and contractors. A similar finding appears in a postgraduate study on housing delivery in Imo State, which emphasizes that material price instability has a clear and harmful effect on the successful completion of building projects (Nwachukwu, 2021).

Recent work has attempted to respond to this challenge by improving access to reliable price data. (Olowe et al., 2025) compiled a detailed time-series dataset of Nigerian construction material prices to support more accurate budgeting and cost prediction. They argue that this form of tracking helps construction firms reduce financial risks when prices shift unexpectedly. Their findings underline a key point shared by many experts: price instability is not an abstract economic trend but a real source of uncertainty that makes it increasingly difficult to complete construction projects within budget in today's Nigerian market (Adewuyi & Odesola, 2015).

### **1.2 Statement of Research Problem**

Cost estimation is a meaningful process in the construction industry's success because the construction project's success depends on the cost estimate's accuracy (Sayed et al., 2020).

Studies across Nigeria have consistently confirmed a steady pattern of cost escalation in materials like cement and steel, making accurate future price forecasting difficult (Adenuga & Olotuah 2014; Ayedun et al., 2012). This volatility is not an abstract economic trend but a real source of uncertainty that makes it increasingly difficult to complete construction projects within budget (Adewuyi & Odesola, 2015). Empirical evidence shows that continuous inflationary increases are a major contributor to pervasive cost overruns Ogun-Oghenekevwe et al. (2014) and Omoregie & Radford (2006), with some research demonstrating a significant relationship between inflation rate and completion cost (Diugwu et al., 2017). Furthermore, the severity of the problem is compounded as inflation is frequently neglected in initial project budgeting, which directly causes subsequent cost escalation and renders original bids unrealistic (Musarat et al., 2020).

A critical localized knowledge gap exists regarding the specific influence of these fluctuations on the cost estimation practices adopted within the specific context of the Edo State construction industry. Professionals, who are tasked with financial control, must prepare reliable estimates when the price volatility of materials which constitute a significant

proportion of total project cost cannot be confidently forecasted (Anireddy, 2023). The resulting uncertainty undermines effective risk management, leads to project abandonment, and creates severe financial stress (Nwachukwu, 2021). While the core challenge is understood, there is insufficient empirical data to determine the specific efficacy of current local practices, such as contingency planning, contract clauses, and material procurement methods, in cushioning the impact of price fluctuations unique to this geographical region.

### **1.3 Research Questions**

To give direction to this study and achieve its objectives, the following research questions are asked:

1. What are the factors contributing to price instability in the construction industry in Edo state?
2. what extent does material cost influence the price instability of building elements in the construction industry?
3. What strategy could be adopted to minimize the effects of price instability on cost estimation in construction projects?

### **1.4 Aim and Objectives of the Study**

This study aims to determine influence of price instability on cost estimations in the construction industry with a view to identifying strategies for improving the accuracy and reliability of cost estimation.

The objectives of this research are to:

1. Identify the factors contributing to price instability in the construction industry in Edo State.
2. Evaluate how the cost of materials affects the price instability of building elements.
3. Explore strategies that can be adopted to minimize the effects of price instability on cost estimation in construction projects in Edo State.

### **1.5 Scope of the Study**

This study investigates the influence of price instability on the accuracy and reliability of cost estimation within the construction industry of Edo State, with a specific geographical focus on Benin City.

The research investigates influence of unstable prices and its primary effect to construction industry; it analyzes the influence of these irregular changes to cost estimation process.

Methodologically, the study adopts a quantitative research approach using data generated from construction professionals in the built environment. The selection of Benin City is justified by its status as a rapidly developing commercial center in Edo State, characterized by a significant and growing volume of construction activities. Ultimately, the study seeks to quantify the influence of price instability and identify effective strategies for mitigating its effects on construction project in Edo state.

### **1.6 Significance of the Study**

This study is important because it examines how price instability affects cost estimation and how proper risk management strategies can reduce its impact. In Nigeria, most construction projects suffer from cost overruns and delays due to the unstable prices of materials, labour, and fuel (Abebe and jane, 2023). Understanding how these fluctuations influence project costs will help construction professionals make better decisions during budgeting and planning. The findings will assist quantity surveyors and other concerned professionals in adopting effective cost control measures such as early procurement, price adjustment clauses, and local sourcing (Enebe et al., 2024). These strategies can make cost estimation more reliable and improve project delivery even under unstable market conditions.

The study will also benefit clients, policymakers, and researchers. It will guide project owners and investors in preparing realistic budgets and managing risks linked to material price volatility (Ikechukwu, 2021). Policymakers can use the results to support initiatives that

encourage local production of materials and promote financial stability in the construction sector (Oxford Business Group, 2023). Academically, the research adds to existing knowledge on construction cost management and provides local evidence from Edo State, where price instability continues to affect project performance (Enebe et al., 2024). Future researchers can also use this study as a reference for further work on cost estimation and risk management in the Nigerian construction industry.

### **1.7 Definition of Terms**

**Price Instability:** The unpredictable changes in the cost of construction materials, labor, and equipment over a period of time, often influenced by inflation, exchange rates, and government policies.

**Cost Estimation:** The process of forecasting the financial requirements of a construction project, including materials, labor, equipment, and overhead costs, before project execution.

**Construction Industry:** The sector of the economy that plans, designs, and executes building and civil engineering works, including housing, roads, bridges, and other infrastructure.

**Project Performance:** The measure of how well a construction project meets its cost, time, and quality objectives as set out in the project plan.

**Building Materials:** Physical inputs such as cement, steel, timber, sand, and aggregates used in the construction of buildings and infrastructure.

**Fluctuation Claims / Price Adjustment Claims:** Requests made by contractors to clients for additional payment due to unforeseen changes in the prices of materials, labor, or equipment during project execution.

**Mitigation Strategies:** Practical measures or techniques adopted by project stakeholders to reduce or manage the negative impact of price instability on construction projects.

**Quantity Surveyor:** A construction professional responsible for cost planning, control, and management, particularly in preparing and checking cost estimates and valuations.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Preamble**

This chapter presents a critical review of existing academic and professional literature to establish the theoretical and empirical foundation for investigating the influence of price instability on cost estimation practices. The review aims to situate this research within the broader academic discourse on construction cost management, identify key variables, and define the specific knowledge gap concerning the local environment of Edo State (Taylor & Francis Online, 2023).

The review confirms that major macroeconomic forces, such as inflation and currency depreciation, introduce significant financial uncertainties (Alghusni et al., 2024). These forces complicate the essential task of accurate cost forecasting by causing price changes in key resources like materials, labor, and equipment (International Journal of Scientific Research and Engineering Development, 2023). The chapter systematically explores the definition and drivers of price instability, analyzes how these price changes affect the cost of specific building elements, and evaluates the diminishing reliability of traditional cost estimation techniques (Dosumu et al., 2022). Finally, the review synthesizes effective risk mitigation and response strategies proposed by scholars, such as early procurement and the use of Price Adjustment Clauses, that are necessary to improve estimate reliability in unpredictable markets (Abdel-Monem et al., 2025). This structured synthesis of prior research provides the necessary framework for analyzing the primary data collected in subsequent chapters.

## **2.2 Factors Contributing to Price Instability in the Construction Industry in Edo State**

The factors contributing to price instability include economic factors, human factors, and external factors.

### **2.2.1 Economic factors**

The most significant drivers of price instability in the Nigerian construction industry, and consequently in Edo State, are macro-economic factors. These external forces operate at a national level but have a profound and direct impact on the cost of construction inputs.

#### **2.2.1.1 Exchange Rate Volatility**

Exchange rate volatility is a critical macro-economic factor that severely impacts construction cost estimation in Nigeria, driven by the sector's high dependence on imported materials. As Nigeria's currency, the Naira, weakens or fluctuates sharply against major international trading currencies (particularly the US Dollar), the cost of imported inputs escalates rapidly and unpredictably (Kasim et al., 2023).

**2.2.1.2 Direct Cost Pass-Through:** A significant portion of construction materials, including reinforcement steel, specialized tiles, fittings, and heavy equipment, are either wholly imported or require imported raw materials for local production Ugochukwu et al. (2017). Studies have consistently demonstrated a strong positive correlation between the Naira-Dollar exchange rate and the prices of these key building materials. For instance, research using time-series data found correlation coefficients as high as 0.99 for reinforcement bars and 0.93 for tiles, indicating that a depreciation in the Naira immediately translates to a higher local price for these items (Ugochukwu et al., 2017).

**2.2.1.3 Increased Financial Risk and Uncertainty:** The extreme volatility in the exchange rate, often swinging between official and parallel markets, generates high economic uncertainty. This makes it exceptionally difficult for professionals to forecast future material costs with any degree of confidence during the initial estimation phases (Musarat et al., 2023).

This difficulty in forecasting necessitates higher contingency allowances and leads to disputes, financial difficulties, cost discrepancies, and, frequently, project abandonment (Anosike, 2009; Kasim et al., 2023).

**2.2.1.4 Impact on Planning:** The reliance on foreign materials means that any sudden shift in exchange rate not only increases the material procurement cost but also affects the cost of importing and maintaining construction plant and machinery, further magnifying the final project cost (Musarat et al., 2024).

#### **2.2.1.2 Inflation**

Inflation is fundamentally defined as a sustained increase in the general price level of goods and services in an economy over a period of time, which results in a decrease in the purchasing power of the currency (Ogun-Oghenekevwe et al., 2014).

In the context of construction and price stability, inflation serves as a primary source of price instability because it ensures an almost continuous upward movement in the cost of all resources. When the general price level of the economy rises, the costs associated with construction materials, labor, fuel, and transportation are also pushed up, causing the original project budget to deviate significantly (Musarat et al., 2020).

##### **2.2.1.2.1 Impact on Construction Price Instability**

Inflation affects the financial viability and predictability of construction projects, leading to price instability through several mechanisms:

**2.2.1.2.2 High Material Cost Component:** Building materials constitute a significant proportion (often between 35% and 60%) of the total project cost. Consequently, general inflationary pressure in the wider economy is magnified within the construction sector, directly translating to higher and less stable material prices Ogun-Oghenekevwe et al. (2014)

**2.2.1.2.3 Cost Overruns and Project Abandonment:** Persistent and high inflation is a major cause of construction cost overruns. When prices surge unexpectedly, the financial gap

between the initial cost estimate and the final cost can become unsustainable, leading to project delays, contractor's loss of profit, and ultimately, project abandonment (Kasim et al., 2023; Ogun-Oghenekevwe et al., 2014).

**2.2.1.2.4 Risk to Contractual Agreements:** Inflationary forces quickly render the projected costs in initial estimates and firm-price contracts unrealistic. This instability requires Quantity Surveyors to be adept at factoring in inflationary risk at the pre-contract stage or incorporating sophisticated price adjustment clauses into contracts to manage the financial exposure for both the client and the contractor (Ogun-Oghenekevwe et al., 2014).

**2.2.1.2.5 Influence on Forecasting:** Price fluctuations driven by inflation make reliable cost forecast models less dependable. Construction professionals must therefore utilize advanced forecasting tools and analytic methods to better track and anticipate the changing prices of building materials (Uvarova et al., 2023). The principle behind how inflation affects building material prices is tied to time lag and market dynamics (Musarat et al., 2020).

**Table 2.1: Market Survey on inflationary rise in material cost**

year	Cement (₦)	Granite(₦/30t)	Sand (₦/9t)	Rebar (₦/piece)	Inflation rate (%)
2018	2,550	160,500	14,000	2,100	12.10
2019	2,600	169,500	14,000	2,350	11.40
2020	3,000	184,000	14,000	2,900	13.25
2021	3,700	185,000	16,000	3,200	16.95
2022	4,500	313,000	22,000	3,400	18.85
2023	5,000	365,000	26,000	4,800	24.66

### 2.2.1.3 Fuel price fluctuations

Fuel price fluctuations are defined as the frequent, volatile, and often unpredictable changes in the market costs of petroleum products, which serve as the primary source of energy for the transportation and manufacturing sectors (Adepoju et al., 2023). In the context of construction,

this factor is a powerful catalyst for price instability because the cost of fuel is interwoven into virtually every component of project delivery, leading to continuous and non-linear increases in operational and material procurement costs. This volatility introduces significant uncertainty, rapidly making early cost estimates inaccurate (Uvarova et al., 2023).

**2.2.1.3.1 Direct Cost of Transportation:** The most immediate consequence is the escalation of haulage and logistics costs. Construction requires the constant movement of heavy materials (cement, aggregates, steel) from point of manufacture or source to the site. Since the majority of these heavy vehicles rely on diesel, fluctuations in fuel prices are immediately reflected in higher **transportation costs**, which are then transferred directly to the final price of materials delivered to the project site (Uvarova et al., 2023).

**2.2.1.3.2 Indirect Cost in Material Production (Energy Costs):** Fuel and energy constitute a substantial input in the production phase of construction materials. Manufacturing processes for materials like cement, blocks, and processed metals are energy-intensive. Any rise in the price of fuel or the general cost of energy increases the manufacturer's operational costs, forcing them to raise their ex-factory prices (Kasim et al., 2023). This mechanism indirectly destabilizes the price of the material before it even leaves the factory gate.

**2.2.1.3.3 Wider Economic Inflation and Labour:** Significant fuel price increases, often resulting from macro-economic policy changes (like subsidy removal), trigger a cost-push inflationary spiral across the entire economy (Adepoju et al., 2023). This general rise in consumer prices diminishes the purchasing power of wages, leading to demands for higher labour wages and also increases the cost of operating site machinery, all of which amplify the overall project cost (Ogun-Oghenekevwe et al., 2014).

#### **2.2.1.3.4 Consequences for Price Stability and Cost Estimation**

Fuel price fluctuations result in severe consequences for maintaining project financial control:

**2.2.1.3.4.1 Amplified Cost Overruns:** The sensitivity of project costs to fuel volatility means that even modest, unexpected spikes can severely erode the contractor's profit margin, leading to significant **cost overruns** on projects that do not have adequate protective clauses (Kasim et al., 2023).

**2.2.1.3.4.2 Reduced Forecasting Reliability:** The unpredictable nature of fuel pricing reduces the dependability of traditional long-range cost forecasting methods. This compels Quantity Surveyors to adopt more sophisticated, real-time tracking, and **analytic tools** to accurately forecast costs and manage the financial risk during the tendering and execution phases (Uvarova et al., 2023).

**2.2.1.3.4.3 Contractual Risk Management:** To mitigate the high risk of material price changes, Quantity Surveyors must ensure that contracts include robust **price adjustment clauses** (or escalation clauses). This mechanism allows for the fair adjustment of contract sums based on verifiable market indices, thereby managing the financial exposure for both the client and the contractor and reducing the risk of project delays or abandonment (Ogun-Oghenekevwe et al., 2014).

#### **2.2.1.4 Import Dependency**

The term "import dependency" describes the dependence on goods and services produced abroad to satisfy domestic demand, particularly in industries with little or no local production capacity. When it comes to construction inputs such as machinery, electrical fittings, plumbing materials, tiles, steel products, and some finishing items, this dependence significantly increases price volatility and cost uncertainty in Nigeria's construction industry (Oladokun et al., 2015).

According to Opawole et al. (2022) Claims that because few locally produced materials satisfy the necessary technical specifications and standards, the Nigerian construction industry is highly dependent on imports. Imported goods include heavy machinery, HVAC systems,

aluminum profiles, escalators, and specialty finishing materials. Construction projects are particularly vulnerable to external economic shocks like exchange rate fluctuations, disruptions in international shipping, foreign inflation, and international tariffs because of their high level of importation.

#### **2.2.1.5 Material Price Fluctuations**

The volatility stems from a complex interplay of macro-economic drivers, including exchange rate instability, high energy costs, and reliance on imported materials (Gbonegun, 2023). For example, the price of cement, steel, and fuel the foundational inputs for nearly all construction activities can shift multiple times within a single fiscal quarter, making conventional, fixed-price estimation techniques obsolete.

Material price fluctuations fundamentally erode the accuracy of the Bill of Quantities (BoQ) and the overall cost plan in three critical ways:

**2.2.1.5.1 Estimation Risk:** The primary challenge is that the original estimate, which forms the basis of the contract sum, is rendered inaccurate before the project is even half complete. Research specifically focused on the Nigerian context confirms that this volatility critically undermines the cost estimation reliability (Dosumu et al., 2021). The higher the proportion of materials sourced internationally, the greater the exposure to exchange rate shocks, creating substantial disparity between the estimated costs and the actual procurement costs.

**2.2.1.5.2 Time Overrun Amplification:** Price instability is closely linked with time overrun. When a project is delayed (due to poor weather, project complexity, or other factors), the financial exposure to future price hikes is amplified (Diugwu et al., 2017). This means delays budgeted for at one price level must be implemented at a higher, unbudgeted price level, creating a compounding effect on cost escalation.

**2.2.1.5.3 Contractor and Project Failure:** Unforeseen price hikes often lead to cash flow crises for contractors. This forces them to slow down work, abandon sites, or compromise on material quality to offset losses, further contributing to project failure and cost escalation (Oladapo, 2007). To mitigate this, practitioners are forced to incorporate high contingency allowances into their estimates, which can negatively affect the project's initial financial viability (Ogunsemi & Jagboro, 2006).

**2.2.1.5.4 Professional Response and Risk Allocation:** For the professional, managing price fluctuations requires moving beyond traditional methods and adopting strategic contracting mechanisms, such as detailed price adjustment clauses, to legally and fairly allocate the risk of future price movements between the client and the contractor (Igwe & Oke, 2019). This shift from static cost prediction to dynamic risk allocation is essential for maintaining control under unstable market conditions.

## **2.2.2 Human Factors**

Human factors, according to (Ihuah et al., 2014), are "environmental, organizational, career, and person characteristics that influence work behavior in a way that can affect health and safety". They include:

### **2.2.2.1 Inadequate Planning**

To begin with, inefficient planning has always been indicated to be one of the causes of inefficiency and price instability in the construction industry. In Nigeria, poor project planning and forecasting may be among the primary internal causes that contribute to price instability during the lifecycle of construction works (Mokoena et al., 2023).

Project planning involves goal setting, budgeting, scheduling, resource allocation, risk assessment, and procurement strategies. When these components are poorly executed, the likelihood of deviations from initial estimates increases significantly (Odeyinka & Yusuf, 1997). In Nigeria, planning deficiencies often manifest as unrealistic cost estimates, poorly

defined project scopes, incomplete feasibility studies, ignoring inflationary trends, or potential exchange rate fluctuations early in the budgeting process.

#### **2.2.2.2 Design changes**

Design changes are a major cause of cost instability in construction projects. They are often unavoidable and directly affect both time and expenses. When drawings, specifications, or the project scope are altered, the required materials and labor also change. This makes cost estimation less reliable and increases the risk of price fluctuations. In Nigeria, design changes can arise from internal sources such as the client, consultants, or contractors, and from external factors including government policies, economic conditions, technology, and the environment. Each change introduces uncertainty that complicates accurate cost prediction (Famiyeh et al., 2014).

#### **2.2.2.3 Material Wastage**

Material wastage refers to the loss of building materials from the point of procurement through to final fixing, encompassing losses due to poor handling, inefficient cutting, incorrect storage, theft, and necessary off-cuts from design (Olawande & Oyewobi, 2021). As materials constitute 50% to 70% of the total cost of a typical building project, any loss in quantity introduces a severe financial leak (Saidu & Shakantu, 2015).

Although material wastage is primarily a consequence of poor site control rather than a *cause* of price instability itself, it acts as a powerful cost multiplier that magnifies the financial impact of price instability on the final project cost.

The initial cost estimate, particularly the Bill of Quantities (BoQ) developed by the Quantity Surveyor, must include a specific, project-appropriate allowance for material wastage.

Studies in the Nigerian construction industry have identified that inaccurate quantity take-off and inadequate risk evaluation at the estimating stage are top material-waste-related factors

causing cost overrun (Olawande & Oyewobi, 2021). If the assumed wastage allowance is too low, the estimate is immediately compromised.

The critical link to price instability occurs when wasted material must be replaced. When projects operate in a volatile economic environment characterized by high inflation and fluctuating currency values (a condition noted by Ogun-Oghenekevwe et al., 2014), the cost of replacing the wasted volume is often significantly higher than the initial procurement price. This compulsory re-procurement forces the project to purchase materials at the unstable market rate, converting what was initially a waste-related quantity problem into an inflation-driven financial deficit.

Research has quantitatively linked material wastage to cost escalation. For example, studies have shown that waste contributes up to 30% of the total cost of materials in some construction projects (Saidu & Shakantu, 2015), and one model demonstrated that a 1% increase in material waste can lead to a 1.07% to 1.25% increase in project cost (Tola & Abebe, 2019). The financial damage caused by wastage is thus intensified when coupled with an inflationary market

To minimize the impact of external price instability, Quantity Surveyors and construction managers must prioritize effective material management, as the reduction of internal material waste is one of the most effective ways to shield a project from the punishing effects of external economic risk.

### **2.2.3 External Factors**

The external factors responsible for price instability in construction projects are:

#### **2.2.3.1 Unstable Government Policies**

Government policies play a major role in the performance and stability of the construction industry. Frequent policy reversals and inconsistent regulations have been identified as key causes of cost fluctuations and project uncertainties in Nigeria (Mokoena, 2023). Sudden

changes in fiscal and monetary policies, tax structures, import tariffs, and fuel subsidies often disrupt construction activities. These unpredictable adjustments create an unstable cost environment that affects pricing, planning, and contract execution.

In Edo State, construction projects are highly sensitive to government decisions because materials, labour, and finance depend on policy direction (Ebekoziem et al., 2024). The 2023 removal of the fuel subsidy, which raised petrol prices from ₦185 to over ₦500 per litre, sharply increased transportation and material costs. Such abrupt policy shifts make construction budgets uncertain and expose both contractors and clients to significant financial risks.

#### **2.2.3.2 Poor weather conditions**

Weather conditions exert a significant influence on construction activities, and in Nigeria, the unpredictability and severity of climatic patterns have been increasingly recognized as a source of cost and price instability (dong et al, 2025). Extreme weather events such as floods, temperature extremes, and heavy precipitation significantly increase construction costs by damaging materials, disrupting supply chains, and necessitating more resilient designs. For example, hospital construction in flood-prone areas experienced up to 25% higher costs due to the need for flood-resistant materials and site inaccessibility during extreme events (Min et al., 2025).

Firstly, the contractor must bear additional costs for prolonged site supervision, extended plant and equipment rental periods, and increased administrative overhead. These costs accumulate daily for the entire period of delay, irrespective of whether work is progressing, and are recognized as a primary driver of cost overruns in the Nigerian context (Ameh et al., 2010).

Secondly, the most critical risk stems from the project being pushed into later periods where inflation has increased the market price of materials and labor. As Diugwu et al. (2017) demonstrated in their modeling of Nigerian projects, the effect of time overrun is a catalyst that

intensifies the financial risk posed by the prevailing economic inflation rate. Materials budgeted at the commencement of the project must now be procured at the higher prices associated with the new, delayed completion date, leading to significant budget overruns due to economic instability.

Finally, severe weather frequently causes direct physical damage, necessitating costly mitigation and rework. This includes expenses for pumping water out of trenches, replacing damaged materials, or setting up temporary protective structures. These unanticipated costs directly escalate the final completion sum far beyond the initial, conservative estimate. Empirical studies consistently confirm that weather related delays increase project durations and cause substantial cost increases globally (Schuldt et al., 2021). Its inherent unpredictability mandates that quantity surveyors adopt robust risk management practices, including the provision of sufficient cost contingency and the careful formulation of contractual mechanisms to manage the resulting financial uncertainty.

**Table 2.2: Factors contributing to price instability in the construction industry**

<b>S/N</b>	<b>Factor</b>	<b>Author and Year</b>
<b>F1</b>	Exchange rate volatility	Musarat et al. (2020)
<b>F2</b>	Inflation	Diugwu et al. (2017)
<b>F3</b>	Fuel Price fluctuations	Olatunji et al. (2018)
<b>F4</b>	High Interest Rate	Nwafor et al. (2023)
<b>F5</b>	Import dependency	Gbonegun (2023)
<b>F6</b>	Environmental regulations	Ikechukwu (2021)
<b>F7</b>	Inadequate Planning	Arab et al. (2024)
<b>F8</b>	Government Policy	Oxford Business Group (2023)
<b>F9</b>	Poor Weather Conditions	Ikechukwu (2021)
<b>F10</b>	Material Price Fluctuations	Ikechukwu (2021)
<b>F11</b>	Wage Inflation	Arab et al. (2024)
<b>F12</b>	Material Wastage	Gündüz & Önder (2013)
<b>F13</b>	Design Change	Malkanathi et al. (2017)
<b>F14</b>	Lack of Local Manufacturing	Ugochukwu et al. (2017)
<b>F15</b>	Transportation cost	Enebe et al. (2024)
<b>F16</b>	Market speculation	Ikechukwu (2021)
<b>F17</b>	Poor infrastructure	Adenuga (2014)
<b>F18</b>	Shortage of raw materials	Olatunji et al. (2018)
<b>F19</b>	Currency devaluation	Gbonegun (2023)
<b>F20</b>	High taxation and import duty	Oke (2011)

In Edo State, (Obaedo & Oseghale, 2020) highlighted that the volatility of cement prices has been particularly disruptive. Cement, being the backbone of construction, frequently records price jumps due to high energy costs, seasonal demand, and supply bottlenecks. For instance, data from the Nigerian Bureau of Statistics (2023) showed that the average retail price of cement rose from ₦3,500 per 50kg bag in 2021 to over ₦5,500 in 2023, representing more than a 57% increase within two years. Similar trends were observed for reinforcement steel, which almost doubled in price between 2020 and 2023 due to global steel shortages and naira devaluation (NBS, 2023).

### **2.3 How the cost of materials affects the unstable price of building elements**

The cost of materials is one of the strongest drivers of price instability in building elements. In Nigeria, construction materials such as cement, steel, reinforcement bars, tiles, timber, blocks, and finishing items often experience frequent changes in price. According to (Ikechukwu,

2021), because most building elements rely heavily on these materials, any change in material prices directly increases or reduces the cost of the elements that depend on them.

The cost of materials is the single most significant factor in construction expenditure, often constituting up to “60% of the total building cost” (World Scientific News, 2024). Consequently, any instability in the price of key raw materials directly determines the unpredictability of the final price of building elements.

### **2.3.1 Foundations**

Foundation construction relies heavily on cement, aggregates, and reinforcement steel, all of which have experienced severe price instability in Nigeria. For example, cement prices have increased from about ₦3,500 to nearly ₦5,000 per 50kg bag in just one year, while reinforcement steel prices have risen by more than 40% within the same period (Abebe and Jane, 2023). Such unpredictable fluctuations directly inflate the cost of concrete foundations, footings, and slabs, leading to frequent budget adjustments (Ikechukwu, 2021). As noted by (Enebe et al., 2024), inflationary pressures and exchange rate instability have weakened the purchasing power of contractors, making it increasingly difficult to maintain stable foundation costs across project durations.

### **2.3.2 Superstructure**

Price instability has also had a direct impact on superstructure costs. Elements such as walls, columns, and beams rely heavily on steel and cement, both of which are prone to price swings driven by global market forces and local economic conditions (Gbonegun, 2023). Reinforcement bar prices, for instance, have surged from ₦420,000 to over ₦510,000 per ton, significantly affecting the overall cost of reinforced concrete works (Ikechukwu, 2021). Similarly, cement price hikes have increased the cost of blockwork, rendering cost planning unreliable (Ikechukwu, 2021). Contractors and quantity surveyors often have to revise their

estimates multiple times during project execution to reflect ongoing material price changes (Oxford Business Group, 2023).

### **2.3.3 Roofing**

Roofing elements are among the most sensitive to price instability. Roofing sheets, whether aluminum or corrugated iron, have almost doubled in price over the last two years (Gbonegun, 2023). The forex crisis and rising global steel prices have been major drivers of these fluctuations (Ikechukwu, 2021). Consequently, roofing budgets have become highly unpredictable, with many projects experiencing cost overruns as a result. (Abebe and jane, 2023) noted that the volatility in roofing material prices has contributed to housing shortages and delays in project completion across major cities. The situation has been worsened by increased fuel prices, which drive up transportation costs for materials.

### **2.3.4 Mechanical, Electrical, and Plumbing (MEP) Components**

MEP systems, including electrical wiring, plumbing, HVAC, and fixtures, depend on materials like copper, PVC, and imported equipment. Price instability in these materials leads to cost escalations and can delay project completion (Assaf et al., 1995). MEP systems are significantly affected by price instability due to their dependence on imported components such as cables, pumps, and sanitary fixtures. The depreciation of the naira has caused these items to rise sharply in price, with some increasing by 40–50% within a short period (ikechukwu, 2021). According to the (Oxford Business Group, 2023), the heavy import dependence of MEP materials exposes the sector to exchange rate fluctuations, making cost estimation difficult. As a result, contractors now include wider contingency allowances to absorb unforeseen price jumps (Enebe et al., 2024).

### **2.3.5 Finishes**

Interior finishes such as tiles, paints, and ceiling materials have also been severely affected by price instability. The cost of a 20-litre bucket of paint, for example, has increased from around

₦7,000 to between ₦15,000 and ₦30,000 depending on brand and quality (Gbonegun, 2023). Likewise, tile prices have surged due to importation costs and shipping delays (Abebe and jane, 2023). (Ikechukwu, 2021) highlighted that these persistent cost changes lead to design alterations, substitution of materials, and frequent re-estimations, all of which affect project timelines and quality. The instability of finish materials has also made it difficult for clients to maintain original budgets, resulting in incomplete or downgraded building finishes (Enebe et al., 2024).

### **2.3.6 External Works and Site Components**

External works such as driveways, landscaping, and fencing depend on materials like granite, sand, bitumen, and steel. The prices of these materials have surged by over 70% in some cases (Abebe and jane, 2023). Rising fuel prices have also contributed to higher costs of transporting aggregates and asphalt (ikechukwu, 2021). According to the (Oxford Business Group, 2023), contractors are increasingly reluctant to commit to fixed-price contracts for external works due to the uncertainty of input costs. Price instability in these materials not only affects cost predictability but also leads to delayed project delivery and disputes between clients and contractors (Gbonegun, 2023).

**Table 2.3: Building elements**

<b>S/N</b>	<b>Building elements</b>	<b>Authors</b>
<b>E1</b>	Blinding Concrete	Enebe et al. (2024)
<b>E2</b>	Reinforced concrete foundation	Abebe and jane (2023)
<b>E3</b>	Damp-proof course	Ayedun (2012)
<b>E4</b>	Substructure Walling	Ikechukwu (2021)
<b>E5</b>	Columns	Gbonegun (2023)
<b>E6</b>	Beams	Oladokun et al. (2019)
<b>E7</b>	Suspended slabs	Enebe et al. (2024)
<b>E8</b>	Stairs	Ashworth & Perrera (2018)
<b>E9</b>	Floor Finishes	Gbonegun (2023)
<b>E10</b>	Roof trusses	Gbonegun (2023)
<b>E11</b>	Windows and doors	Seeley et al. (2015)
<b>E12</b>	lintels	Ikechukwu (2021)
<b>E13</b>	Electrical system	Abebe and jane (2023)
<b>E14</b>	Plumbing and fittings	Oxford Business Group (2023)
<b>E15</b>	Parapet walls	Enebe et al. (2024)
<b>E16</b>	External cladding/facade	Abebe and jane (2023)
<b>E17</b>	Wall finishes	Ikechukwu (2021)
<b>E18</b>	Fire protection installations	Gbonegun (2023)
<b>E19</b>	HVAC systems	Oxford Business Group (2023)
<b>E20</b>	Drainage and culverts	Enebe et al. (2024)

## **2.4 Strategies that can be adopted to minimize the effects of price instability on cost estimation**

Price instability poses a major challenge to accurate cost estimation in the construction industry. Fluctuating prices of cement, steel, fuel, and imported materials often lead to inaccurate cost forecasts, project delays, and contract disputes. To mitigate these challenges, construction professionals and stakeholders have adopted various strategic, managerial, and contractual approaches aimed at maintaining cost control and financial stability (Ikechukwu, 2021).

### **2.4.1 Use of Price Adjustment Clauses**

Contractors and clients can protect themselves from unpredictable market shifts by including price escalation or fluctuation clauses in contracts. These clauses allow adjustments in contract sums when major cost items, such as materials or labor, increase significantly (Ciuruşniuc et al., 2025). Such provisions promote fairness and reduce the likelihood of project disputes.

### **2.4.2 Use of Contingency Allowances**

Estimators also adopt contingency allowances within the Bill of Quantities (BoQ) to account for unforeseen material price increases. Contingencies usually range between 5% and 15% of the total project cost, depending on the level of market volatility (Gbonegun, 2023). This buffer helps to accommodate cost variations that occur between the tendering stage and the actual construction phase. By setting aside such allowances, project teams reduce the risk of budget overruns and maintain smoother financial management throughout the project lifecycle.

### **2.4.3 Bulk Procurement and Bulk Purchasing**

Another effective method is early procurement or bulk purchasing of materials immediately after contract award. Contractors often procure essential materials such as cement, steel, or tiles in large quantities to avoid future price hikes (Enebe et al., 2024). Bulk purchases at fixed rates stabilize material costs for the duration of the project and minimize exposure to inflation. This strategy is particularly useful for long-duration projects where market instability is expected.

### **2.4.4 Local Sourcing of Construction Materials**

Using locally available materials reduces exposure to foreign exchange fluctuations. Studies show that local sourcing significantly stabilizes project costs in Nigeria (Ikechukwu, 2021; Kasim et al., 2023). It also supports local industry growth and improves project sustainability.

### **2.4.5 Collaborative Risk Sharing**

In modern procurement systems, risk sharing between the client, consultant, and contractor has become essential. Under this approach, all parties agree on mechanisms to handle material price fluctuations collectively, rather than transferring the full burden to one party (Ikechukwu, 2021). This may involve shared contingency funds or provisional sum arrangements. Such collaboration fosters transparency and fairness in project financing and enhances long-term working relationships.

#### **2.4.6 Value Engineering and Design Flexibility**

Value engineering (VE) focuses on identifying **alternative materials or design options** that achieve the same function at a lower or more stable cost (Enebe et al., 2024). During the design stage, consultants can propose substitutions for example, replacing imported finishes with locally available equivalents. Design flexibility allows for quick adaptation when market prices rise, helping to prevent project suspension or redesign costs (Ikechukwu, 2021).

#### **2.4.7. Regular Market Survey and Cost Data Updates**

Frequent market surveys provide up-to-date information on construction material prices, ensuring that estimators use realistic figures (Olowe et al., 2025). Updated cost databanks also improve the accuracy of cost modeling and forecasting, especially in volatile economies like Nigeria.

#### **2.4.8 Apply Forecasting and Analytical Tools for Price Prediction**

Professional estimators increasingly use inflation forecasting tools and economic analysis to anticipate future price movements. By tracking key economic indicators such as exchange rates, fuel prices, and government policy changes, estimators can incorporate expected inflation into their cost models (Ikechukwu, 2021). This method allows for more realistic long-term cost projections, particularly for large-scale infrastructure and housing projects that span several years.

#### **2.4.9 Contractual Flexibility and Negotiation**

In projects executed during extreme volatility, contractual renegotiation can be used as a risk management tool. Clients and contractors may agree to review prices periodically (quarterly or biannually) to reflect changing market conditions (Gbonegun, 2023). Flexible contracting helps avoid disputes and project abandonment, especially in public-sector projects where bureaucratic processes delay payments.

#### **2.4.10 Government and Institutional Interventions**

At the macroeconomic level, stable construction costs also depend on effective **government policies**. Regulatory frameworks that encourage local production, subsidize essential construction inputs, or stabilize exchange rates can significantly reduce price instability (Oxford Business Group, 2023). Institutions such as the Raw Materials Research and Development Council (RMRDC) and the Nigerian Building and Road Research Institute (NBRRI) play vital roles in promoting cost-stable, locally sourced materials (Enebe et al., 2024).

#### **2.4.11 Continuous Re-Estimation and Cost Monitoring**

Cost estimates should be periodically reviewed and adjusted as prices change during project execution. This continuous monitoring process ensures that the project stays within reasonable budget limits (Oyedele, 2015).

#### **2.4.12 Advocate for Stable Macroeconomic Policies**

Government intervention is vital for controlling inflation and exchange-rate instability. Policies that ensure currency stability and fair import duties can reduce construction cost instability (Kasim et al. (2023) and Babalola (2023)).

#### **2.4.13 Enhance Quantity Surveyors' Capacity and Professional Training**

Skilled quantity surveyors are essential for realistic cost planning and inflation analysis. Developing their capacity ensures better application of forecasting and cost control techniques (Dosumu et al., 2021).

#### **2.4.14 Encourage the Use of Alternative and Substitute Materials**

Material substitution such as replacing imported tiles with locally made ceramics or using laterite blocks can significantly reduce cost variation (Ikechukwu, 2021). It also promotes the use of sustainable materials.

#### **2.4.15. Improve Supply Chain Efficiency**

Efficient supply chains shorten lead times and minimize exposure to sudden market changes. Negi, (2021), highlights that logistics and distribution inefficiencies often contribute to higher construction costs in Nigeria.

#### **2.4.16 Adopt Just-in-Time (JIT) Procurement**

Just-in-time procurement ensures that materials arrive when needed, reducing storage costs and minimizing exposure to price changes before usage (Olowe et al., 2025). It improves liquidity and resource control.

#### **2.4.17 Implement Real-Time Price Tracking Platforms**

Digital systems that provide real-time market intelligence enhance procurement accuracy. The Building Material Price Dataset for Nigeria emphasizes the importance of digital cost monitoring tools (Olowe et al., 2025).

#### **2.4.18 Align Financing Terms with Inflation Risks**

Project funding should consider inflationary projections to avoid financial shortfalls during construction. Flexible loan structures and payment schedules can accommodate inflation effects (Gulesci et al., 2023).

#### **2.4.19 Promote Stakeholder Collaboration and Transparent Communication**

When clients, contractors, and suppliers share data on current market trends, project decisions become more proactive. Effective communication reduces disputes and builds trust (Dosumu et al., 2021).

#### **2.4.20 Encourage Local product Policies and Incentives**

Government incentives that promote domestic production of construction materials (cement, steel, aggregates) can stabilize costs over time (Slattery & Zidar, 2020). Local product policies support long-term cost predictability.

### 2.4.21 Track Performance Indicators and Cost-Variance Metrics

Monitoring key performance indicators such as cost variance and schedule deviation allows early detection of potential overruns (Dosumu et al., 2021). These metrics guide corrective actions before inflationary shocks worsen.

**Table 2.4: Strategies to minimize the effects of price instability on cost estimation in construction projects**

S/N	Strategies	Authors
S1	Use of price adjustment clauses in contracts	Ciuruşniuc et al. (2025)
S2	Use of contingency allowances	Gbonegun (2023)
S3	Early procurement and Bulk purchasing	Enebe et al. (2024)
S4	Local sourcing of construction materials	Kasim et al. (2023)
S5	Collaborative risk among stakeholders	Ikechukwu (2021)
S6	Value Engineering and Design Flexibility	De Neufville and Scholtes (2011)
S7	Regular Market Survey and Cost Data Updates	Olowe et al. (2025)
S8	Forecasting and Analytical Tools for Price Prediction	Patel and Shah (2021)
S9	Contractual Flexibility and Negotiation	Gbonegun (2023)
S10	Government and Institutional Interventions	Enebe et al. (2024)
S11	Continuous Re-estimation and cost monitoring	Oyedele (2015)
S12	Advocate for Stable Macroeconomic Policies	Babalola (2023)
S13	Enhance Quantity Surveyors' Capacity and Professional Training	Dosumu et al. (2021)
S14	Encourage the Use of Alternative and Substitute Materials	Ikechukwu (2021)
S15	Improve Supply Chain Efficiency	Negi (2021)
S16	Adopt Just-in-Time (JIT) Procurement	Olowe et al. (2025)
S17	Implement Real-Time Price Tracking Platforms	Olowe et al. (2025)
S18	Align Financing Terms with Inflation Risks	Gulesci et al., (2023)
S19	Promote Stakeholder collaboration and transparent communication	Dosumu et al. (2021)
S20	Encourage Local product Policies and Incentives	Slattery & Zidar (2020)
S21	Track Performance Indicators and Cost-Variance Metrics	Dosumu et al. (2021)

## 2.5 Relationship Between Price Instability and Cost Estimation

The relationship between them is:

### 2.5.1 How unstable prices affect cost estimates

The primary objective of quantity surveying is to provide accurate and reliable cost advice.

However, the pervasive nature of price instability driven by factors like inflation, currency devaluation, and volatile commodity markets presents a fundamental challenge to achieving this objective (Ogun-Oghenekevwe et al., 2014). Unstable prices compromise the integrity of

cost estimates across the entire project lifecycle, leading to a spectrum of negative outcomes, from budget erosion to project failure.

### **2.5.1.1 Compromise of Estimation Accuracy**

The most immediate effect of price instability is the degradation of estimation accuracy.

Traditional cost estimation relies heavily on historical data and current market rates to forecast future expenditures. When prices fluctuate unpredictably, historical data quickly becomes obsolete and unreliable for predicting future costs (Aslam et al., 2015).

Specifically, price instability affects accuracy in two major ways:

**2.5.1.1.1 Distortion of Early Estimates (Tender Phase):** During the initial tendering and bidding phase, Quantity Surveyors must commit to a contract sum based on current prices. Since construction projects often have long durations, the cost of core inputs (e.g., cement, steel, timber) is almost guaranteed to increase between the tender date and the procurement date (Nwachukwu, 2021). The inability to accurately predict the magnitude of these future price increases forces estimators to either underprice the risk (leading to contractor losses.

**2.5.1.1.2 Increased Risk of Cost Overruns:** Research in the Nigerian construction sector confirms a strong relationship between material price volatility and poor project performance. Ogun-Oghenekevwe et al. (2014) observed that continuous inflationary increases in construction inputs remain one of the major contributors to cost overruns across Nigerian projects. When the estimated cost of a project is based on unstable input prices, the final actual cost often significantly exceeds the initial budget, resulting in financial stress and potential project abandonment (Nwachukwu, 2021).

Beyond mere inaccuracy, unstable prices create systemic issues in financial management:

Financial Stress and Cash Flow Problems: Contractors and clients operate on tight financial margins. When the cost of basic input resources which can account for 50-60% of total construction cost increases suddenly, it strains the cash flow required for procurement. Olatunji et al. (2018) explained that sudden upward movements in material prices distort early estimates and create financial stress for clients and contractors, often leading to payment delays and strained stakeholder relationships.

**2.5.1.1.3 Contingency Management:** In stable economic climates, contingencies address unforeseen physical risks (e.g., poor ground conditions). However, in unstable markets, the contingency budget is primarily consumed by price escalation, often exhausting the financial buffer and leaving the project vulnerable to genuine construction risks (Olowe et al., 2025). This forces project managers to continuously seek additional funding or reduce the project scope to compensate for the cost disparity.

**2.5.1.1.4 Adoption of Risk-Aversive Strategies:** To mitigate the high risk associated with inaccurate estimates, construction firms are often compelled to incorporate defensive strategies, such as the mandatory use of price adjustment clauses (escalation clauses) in contracts. While these clauses aim to share the risk of volatility, they add complexity to contract administration and necessitate frequent re-estimation and cost monitoring throughout the project's duration (Olowe et al., 2025).

## **2.6 Cost Estimation Techniques in Construction Projects**

Estimating cost is the cost basis of construction work. It affects budget preparation, planning, and control if its accuracy is not good. There are methodologies used at the initial, detailed, or final stage of a project, and whether data availability and accuracy level are factors. There are six significant methods regularly used: parametric estimating, analogous estimating, bottom-up estimating, quantity takeoff, unit rate estimating, and elemental estimating.

### **2.6.1 Parametric estimation**

It associates cost with observable project variables, including area, volume, or capacity. It applies statistical or mathematical models for cost approximation. It is a methodical method and delivers fast outcomes if accompanied by valid data (Gunduz & Önder, 2013). Its application is limited to projects of peculiar or complex attributes.

### **2.6.2 Analogous Estimating**

Analogous estimating involves the use of data from analogous completed projects. It is a cheap and applicable method of initial budgeting if scarce data exists (Mislick et al, 2015). Its first significant drawback, however, is reliance on similarity. Variation of site conditions, project scope, or schedule can render the estimates invalid.

### **2.6.3 Bottom-Up Estimation**

Bottom-up estimating divides the project into smaller work packages. Estimation is done individually for each element, and the cost is accumulated. It is a detailed and very precise technique of estimation (Rehfeldt et al., 2018). It is, however, time-consuming and needs detailed design information.

### **2.6.4 Quantitative Estimation**

Quantity takeoff quantifies materials, labor, and equipment based on drawings and specifications. This process serves as the foundation for the bill of quantities. Its accuracy and dependability are ensured when the designs are finalized (Ashworth & Perera, 2018). Nonetheless, it requires a significant investment of time and relies on precise documentation.

### **2.6.5 Unit Rates Estimating**

Unit rate estimating involves applying standard unit rates to measured work of materials or activities. It is widely used in the production of bills of quantities. Its strength lies in its simplicity and ease of updating in the case of variation of market prices (Brook, 2016). Its value, however, only holds if unit rates and market data are accurate.

### **2.6.6 Elemental estimating**

Elemental estimating decomposes the work into distinctive functional elements, including the substructure, superstructure, and finishes. Past data and pre-established unit rates place a cost against each element. It's a desirable method of cost planning at the design development stage (Seeley & Winfield, 2015). It is, though, of serious demerit in providing estimated cost, which may not retain information at the item level.

### **2.6.7 Historical Cost-Based Cost Estimating**

Historically, historical cost data and fixed unit prices have been adopted by Nigerian estimators in their construction of project budgets. These include the use of a bill of quantities, elemental cost analysis, and rate build-ups, adopted throughout the years as standard procedure. These have functioned under steady market situations, where the past could confidently be used in estimating future expenditures with no sense of variance (Mislick et al., 2015). But as the economic climate has become increasingly unstable, the reliability of these tools has reduced.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Preamble**

This chapter presents the research methods used to investigate how price instability affects cost estimation in the construction industry in Edo State. It explains the research design, study area, population, sampling technique, data collection instrument, and methods of data analysis. The aim is to show how the study was conducted in a clear, systematic, and reliable way. The entire chapter covered the research design and procedure for investigating influence of price instability on cost estimation in the construction industry of Edo State. The study adopted a descriptive survey research design, which allows for the collection of opinions and experiences from professionals in the construction industry. This approach was suitable because it enabled the researcher to examine and evaluate influence of price instability in construction projects and its relationship to cost estimation accuracy.

#### **3.2 Research Design**

This study adopted a descriptive survey research design. The descriptive survey design was considered appropriate because it allows the researcher to collect accurate and detailed information about existing conditions, practices, and opinions from a selected group of respondents. It enables the analysis of current situations without manipulating variables. It describes a methodical approach to the collection and presentation of data describing a situation or population that is the focus of investigation (Creswell, 2014). Using this design provided a clear picture of real-life practices in the industry and supported the identification of patterns, challenges, and effective strategies related to price instability in construction cost estimation. It was also suitable because it combined both qualitative and quantitative data for a better understanding and interpretation of the research problem.

### **3.3 Area of Study**

The study focuses on Benin City, the capital of Edo State, Nigeria. It stands as one of the construction activity hubs in Southern Nigeria. The locale presents an opportunity to study the impact of price inflation on cost estimation, as residential housing, commercial buildings, and public infrastructure are prevalent in the area.

The focus on Benin City cannot be accidental. The city has experienced steady growth in construction activities over the past couple of years. With income shifts affecting material prices and labor costs, it presents a realistic setup for observing what occurs when market values begin to fluctuate during project planning.

### **3.4 Target Population**

The target population comprises construction professionals and workers involved in various projects across Benin City, Edo State. These professionals have the necessary expertise and experience to offer significant insights into the impact of price instability on cost estimation since they are directly involved in cost estimating, project planning, procurement, and project execution. This includes Quantity surveyors, Architects, builders, and Engineers. These professionals were selected because they are directly involved in cost estimation, procurement, project budgeting, and execution. Their daily roles position them as firsthand witnesses to how unstable market prices impact construction projects.

### **3.5 Sampling Technique and Sample Size**

This study adopts convenience sampling as the main sampling technique. Convenience sampling allows the researcher to select respondents who are easily accessible and available at the time of the study. This approach is appropriate because construction work in Edo State is spread across many locations, and professionals often have tight schedules. By focusing on available professionals, the study is able to gather reliable information without disrupting ongoing project activities.

Although convenience sampling guides selection, the sample size is determined using Yamane's formula (1967) To ensure statistical reliability and precision, the sample size for this study was determined using Yamane's formula (1967), given as:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

- $n$ = sample size
- $N$ = total population
- $e$ = margin of error (0.05)

Substituting the values into the formula:

$$n = \frac{842}{1 + 842(0.05)^2}$$

$$n = \frac{842}{1 + 842(0.0025)}$$

$$n = \frac{842}{1 + 2.105}$$

$$n = \frac{842}{3.105}$$

$$n = 271.17 \approx 272$$

Thus, a total sample of 272 respondent was drawn to ensure accuracy

Allocations for each professional

Formula:

*The sample size was proportionally allocated to each professional group using:*

$$n_i = \frac{N_i}{N} \times n$$

*Where:*

- $n_i$  = sample size for each group
- $N_i$  = population of each group
- $N$  = total population (842)
- $n$  = total sample size (272)

**Quantity Surveyors ( $N_1 = 126$ )**

$$n_1 = \frac{126}{842} \times 272 = 40.73 \approx 41$$

**Architects ( $N_2 = 186$ )**

$$n_2 = \frac{186}{842} \times 272 = 60.09 \approx 60$$

**Builders ( $N_3 = 250$ )**

$$n_3 = \frac{250}{842} \times 272 = 80.76 \approx 81$$

**Engineers ( $N_4 = 280$ )**

$$n_4 = \frac{280}{842} \times 272 = 90.45 \approx 90$$

**Table 3.1 population and sample size of the study**

S/N	Population	Population Size	Sample Size
1	Quantity Surveyors	126	41
2	Architects	186	60
3	Builders	250	81
4	Engineers	280	90
	TOTAL	842	272

**SOURCE: Directory of Structural Engineers (2025), Nigeria Institute of Architects, Nigeria Institute of Quantity Surveyors, Edo State Chapter, Bureau of Public Procurement (2024).**

### 3.6 Method of Data Collection

The study used primary data collected directly from construction professionals in Edo State.

Structured questionnaire designed to obtain relevant information from relevant respondents.

The questionnaires were administered to respondents working on active construction sites, contracting firms, consulting firms, and government agencies within Benin City and surrounding areas. The researcher used a self-administered approach, which allowed respondents to complete the questionnaire at their convenience and ensured clarification when needed, this helps to give specific insights and share their personal experiences on how price instability affects cost estimation.

The questionnaires were distributed electronically, with reminders to improve the response rate.

### **3.7 Research Instruments**

A structured questionnaire formed the main instrument for data collection, featuring four sections.

**Section A:** Demographic information

**Section B:** The factors contributing to price instability in the construction industry in Edo state, based on the Likert scale:

Frequency: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

**Section C:** building elements affected by price instability, based on a Likert scale:

Scale: 1 = Not Affected, 2 = Less affected, 3 = Neutral, 4 = Affected, 5 = highly affected

**Section D: Strategies to Minimize the Effects of Price Instability on Cost Estimation,**

based on a Likert scale: **Scale:** 1 = Not Important 2 = Slightly Important 3 = Moderately

Important 4 = Important 5 = Very Important

### 3.8 Method of data analysis

S/N	Research Objectives	method of analysis	Software
1	Identify the factors contributing to price instability in the construction industry in Edo State.	Mean Item Score	MS EXCEL/ SPSS
2	Evaluate how the cost of materials affects the price instability of building elements.	Mean Item Score	MS EXCEL/SPSS
3	Explore strategies that can be adopted to minimize the effects of price instability on cost estimation in construction projects in Edo State	Mean Item Score	SPSS/ MS EXCEL

Quantitative data were analyzed using Microsoft Excel and SPSS. Descriptive statistics (mean score, standard deviation, frequency, percentage) were used to summarize and interpret the data.

The analysis helped identify the major factors contributing to price instability, assess their effects on cost estimation, and determine the strategies professionals use to manage them. The mean score ranking method was particularly used to arrange factors and responses in order of importance based on the level of agreement among respondents. Results were presented in tables and charts for easy understanding and comparison.

#### Table 3.2 Method of Data collection and analysis

- 1) **Mean item score (MIS):** The Mean Item Score (MIS) is a statistical technique used to analyze data obtained from questionnaires structured on a Likert scale. It provides a quantitative measure of the average response for each item, thereby indicating the relative importance or level of agreement among respondents.

The MIS is calculated by summing the weighted responses for each item and dividing by the total number of respondents. It is expressed mathematically as:

$$\text{MIS} = \frac{\text{Sum of scores for an item}}{\text{Total number of respondents}}$$

Where:

- $f$  = frequency of each response option
- $x$  = assigned weight of each response (e.g., 1–5 for Likert scale)
- $N$  = total number of respondents

The Likert scale used in this study is structured as follows:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

The computed MIS values are used to rank variables in order of significance. A higher MIS indicates a higher level of agreement or importance attached to a particular factor, while a lower MIS suggests lesser significance

## CHAPTER FOUR

### DATA PRESENTATION, ANALYSIS, AND DISCUSSION OF FINDINGS

#### 4.1 Preamble

This chapter focuses on the presentation, analysis, and interpretation of the data collected for the study on “Influence of Price Instability on Cost Estimations in the Construction Industry in Edo State” Obtained from respondents who participated in the study through structured questionnaires distributed. A total of 180 questionnaires were distributed to construction professionals across Edo State. Out of these, 110 were completed and returned, giving a response rate that was sufficient for meaningful analysis. The results are organized to reflect the research objectives and are presented using tables, mean scores, and standard deviations. Each section discusses the key patterns in the data, highlighting the most important findings in a simple and direct manner.

- **Respondent Profile:** Analysis of the demographic and professional backgrounds of the participants.
- **Presentation of Findings:** Tabular and graphical presentation of the raw data, typically using measures like frequency, percentage, mean, and Relative Importance Index (RII).
- **Discussion of Findings:** Critical analysis and interpretation of the results, linking the field data to the literature reviewed in Chapter Two.

**Table 4.1 Questionnaire Distribution and Retrieval**

Item	Number	Percentage (%)
Numbers of questionnaires distributed.	180	100
Numbers of questionnaires retrieved.	110	61.11
Number not retrieved.	70	38.89

## 4.2 Background Data

**Table 4.2 Respondent Demographic**

S/N	Categories	Description	Frequency	Percentage
1	<b>Gender</b>	Female	52	47.30
		Male	58	52.70
		Total		100
2	<b>Educational Qualification</b>	BSc	63	57.30
		HND	8	7.30
		MSc	29	26.40
		PhD	10	9.10
		Total		100
3	<b>Role in the Construction Industry</b>	Architect	30	27.30
		Builder	22	20.00
		Engineer	24	21.80
		Quantity surveyor	34	30.90
		Total		100
4	<b>Years of Construction Industry Work Experience</b>	1-5 years	29	26.40
		11-15 years	25	22.70
		5-10 years	26	23.60
		above 15 years	30	27.30
		Total		100
5	<b>Type of Project</b>	Administrative Project	22	20.00
		Civil Engineering Project	15	13.60
		Industrial Project	14	12.70
		Residential Project	59	53.60
		Total		100

This section presents a descriptive analysis of the socio-demographic characteristics of the respondents who participated in the study. The questionnaire collected demographic details such as age category, gender, professional designation, highest educational qualification, and level of work experience in the construction industry. These variables were included to ensure that the respondents represented a balanced mix of individuals who are actively involved in construction planning, supervision, procurement, and site operations.

The distribution of demographic characteristics also helps confirm that the sample comprises professionals who are knowledgeable about cost estimation processes and have practical exposure to influence of price instability on cost estimation.

### **4.2.1 Gender and Educational Qualification**

The gender distribution was relatively balanced, with 52.7% Male and 47.3% Female respondents. The high professional competence of the sample is evidenced by the educational attainment: 57.3% hold a BSc, 26.4% hold an MSc, and 9.1% hold a PhD, demonstrating a highly educated and qualified pool of industry experts.

### **4.2.2 Role and Experience in the Construction Industry**

The professional roles of the respondents ensure broad industry representation, though Quantity Surveyors were the most represented group: Quantity Surveyor: 30.90%, Architect: 27.30%, Engineer: 21.80%, Builder: 20.00%

Experience is distributed evenly, suggesting the data captures insights from professionals across all career stages: 26.4% had 1-5 years, 23.6% had 5-10 years, 22.7% had 11-15 years, and 27.3% had above 15 years of experience. This balance ensures that both current market knowledge and long-term industry perspective are factored into the results.

### **4.2.3 Project Type Engagement**

The dominant project type handled by the respondents was Residential Project (53.60%), followed by Administrative Project (20.00%), Civil Engineering Project (13.60%), and Industrial Project (12.70%). This confirms that the findings are particularly relevant to the high-volume residential and commercial sectors.

### 4.3 Descriptive Analysis of Factors contributing to price instability in the construction industry

The first objective aimed to ascertain the core factors causing price instability in cost estimation. The Mean scores were calculated on a 5-point Likert scale to determine the severity of each factor.

**Table 4.3 Analysis for Factors that contributing to price instability**

S/N	Causes	Mean	Std. Deviation	Rank
F2	Inflation	4.42	0.669	1
F10	Material price fluctuations	4.34	1.221	2
F4	High interest rates	4.17	1.380	3
F9	Poor weather conditions	4.15	1.380	4
F7	Inadequate planning	4.14	1.424	5
F8	Government policy	4.09	1.378	6
F5	Import dependency	4.08	1.453	7
F3	Fuel price fluctuations	4.07	1.476	8
F20	High taxation and import duty	3.51	1.179	10
F19	Currency devaluation	3.51	1.312	10
F16	Market speculation	3.38	1.421	11
F13	Design Change	3.27	1.141	12
F12	Material Wastage	3.15	1.235	13
F14	Lack of Local Manufacturing	3.09	1.324	14
F11	Wage Inflation	2.87	1.408	15
F18	Shortage of raw materials	2.85	1.439	16
F15	Transportation cost	2.81	1.424	17
F6	Environmental regulations	2.49	1.115	18
F17	Poor infrastructure	2.43	1.192	19

#### 4.3.1 Discussion of Factors (Top 3)

**4.3.1.1 Inflation (Mean = 4.42 SD = 0.699):** Inflation is ranked as the most severe factor, validating its status as the single largest macro-economic threat to fixed-price contracting and cost estimation reliability. This aligns with Ogun-Oghenekevwe et al., (2014) and Musarat et al., (2020), who established that general economic inflation directly erodes the purchasing power of the initial estimated budget, forcing projects into unavoidable cost overruns. For the Quantity Surveyor, this demands aggressive contingency modeling and frequent cost validation, even during the tendering process.

**4.3.1.2 Material Price Fluctuations (Mean = 4.34 SD = 1.221):** This factor, closely following general inflation, underscores the volatility in the commodity markets for key inputs like cement, steel, and aggregates. This supports the findings of Dosumu et al. (2021), who specifically linked material price fluctuations to cost estimation unreliability. The high ranking suggests that the supply chain instability (influenced by the factors ranked lower, such as import dependency and fuel prices) translates immediately into estimation risk.

**4.3.1.3 High Interest Rates (Mean = 4.17 SD = 1.380):** The third most severe factor relates to monetary policy. High interest rates significantly increase the cost of capital for both developers (financing) and contractors (working capital). This forces contractors to inflate their unit rates and tender sums to cover the higher cost of borrowing, making the initial cost estimate unreliable. This result supports the literature on economic drivers of cost escalation in Nigeria by authors like (Nwafor et al., 2023)

#### **4.3.2 Bottom Three Factors (The Least Severe Threats)**

Factors ranked lowest suggest that current challenges are less related to specific physical or environmental conditions:

**4.3.2.5 Transportation Cost (Mean = 2.81):** Although fluctuating fuel prices are a concern (Rank 8), the baseline transportation cost itself is perceived as a lesser contributor to instability than the other factors.

**4.3.2.6 Environmental Regulations (Mean = 2.49):** The low ranking suggests that while regulations exist, they do not currently introduce the level of unpredictability or cost burden that macro-economic issues do, or that their costs are more easily integrated into initial estimates.

**4.3.2.7 Poor Infrastructure (Mean = 2.43, Rank 19):** Surprisingly, poor infrastructure is the lowest ranked factor. This may indicate that professionals have already fully internalized the

delays and costs associated with infrastructure deficiencies into their base estimates, thus it is a known cost rather than a source of unforeseen price instability.

#### 4.4 Descriptive Analysis of How Costs of Building Elements Affect Unstable Prices of Building Materials

This objective assessed which specific building elements are most vulnerable to material price instability.

**Table 4.4 Analysis of how cost affect building elements**

S/N	Elements	mean	Std. deviation	rank
E13	Electrical system	4.65	0.829	1
E16	External cladding/façade	4.59	0.941	2
E7	Suspended slabs	4.55	1.037	3
E5	Columns	4.54	0.945	4
E8	Stairs	4.50	1.064	5
E19	HVAC systems	4.47	1.073	6
E4	Substructure Walling	4.46	1.011	7
E6	Beams	4.45	1.122	8
E20	Drainage and culverts	4.38	1.196	9
E2	Reinforced concrete foundation	4.35	1.154	10
E15	Parapet walls	4.32	1.226	11
E14	Plumbing and fittings	4.15	1.308	12
E9	Floor Finishes	4.06	0.827	13
E10	Roof trusses	3.94	0.827	14
E12	Lintels	3.65	1.072	15
E11	Windows and doors	3.56	1.080	16
E17	Wall finishes	3.48	1.064	17
E18	Fire protection installations	3.15	0.833	18
E1	Blinding Concrete	3.02	1.327	19
E3	Damp-proof course	2.10	0.976	20

#### **4.4.1 Discussion of Element Vulnerability Extremes**

##### **4.4.1.1 Top Three Elements (Most Affected)**

The elements most susceptible to price instability those dependent on complex, manufactured, and often imported components.

**4.4.1.2.3 Electrical System (Mean = 4.65, Rank 1):** This element's reliance on copper, specialized fixtures, and electronic controls, all highly sensitive to exchange rate volatility and import tariffs, explains its ranking. It confirms that Mechanical, Electrical, and Plumbing (MEP) components are the weakest link in cost stability. This finding corroborates with the work of (abebe and jane, 2023).

**4.4.1.2.4 External Cladding/Facade (Mean = 4.59, Rank 2):** Often involving highly specified glass, aluminum, and bespoke finishing materials, this element is highly import-dependent and subject to international price shocks.

**4.4.1.2.5 Suspended Slabs (Mean = 4.55, Rank 3):** This is a critical structural element, and its high ranking is due to the intensive use of reinforcement steel and large volumes of cement, commodities whose prices are notoriously volatile.

##### **4.4.1.2 Bottom Three Elements (Least Vulnerable)**

**4.4.1.2.1 Fire Protection Installations (Mean = 3.15):** The moderate ranking suggests that while fire systems contain specialized components (pipes, sensors), they are perhaps less frequent targets of price instability than core MEP elements.

**4.4.1.2.2 Blinding Concrete (Mean = 3.02):** This element uses the lowest grade of concrete (sand, aggregate, cement) with no reinforcement. Its cost is stable because the raw materials are readily available locally.

**4.4.1.2.3 Damp-proof Course (Mean = 2.10, Rank 20):** As the lowest-ranked element, its material cost (bitumen, polythene sheeting) is insignificant relative to the overall project cost

and is less exposed to macro-economic forces, confirming it is the least risky component for cost estimation.

#### **4.5 Descriptive Analysis of Strategies for Minimizing the Effects of Price Instability on Cost Estimation**

The third objective sought to identify the most effective strategies to mitigate the effects of price instability on cost estimation.

**Table 4.5 analysis of strategies to reduce effect of price instability**

<b>S/N</b>	<b>Strategies</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>RANK</b>
<b>S9</b>	Contractual flexibility and renegotiation	4.64	0.946	1
<b>S7</b>	Regular market surveys and cost data updates	4.56	0.924	2
<b>S18</b>	Align Financing Terms with Inflation Risks	4.53	1.047	3
<b>S6</b>	Value engineering and design flexibility	4.47	1.131	4
<b>S10</b>	Government and institutional interventions	4.46	1.098	5
<b>S2</b>	Use of contingency allowances	4.45	1.122	6
<b>S11</b>	Continuous Re-estimation and cost monitoring	4.45	1.081	6
<b>S14</b>	Encourage the Use of Alternative and Substitute Materials	4.43	1.113	8
<b>S1</b>	Use of price adjustment clauses in contracts	4.41	1.136	9
<b>S16</b>	Adopt Just-in-Time (JIT) Procurement	4.31	1.247	10
<b>S3</b>	Local sourcing of construction materials	4.05	0.876	11
<b>S5</b>	Collaborative risk sharing among stakeholders	3.96	0.765	12
<b>S15</b>	Improve Supply Chain Efficiency	3.95	0.833	13
<b>S3</b>	Early procurement and bulk purchasing	3.86	0.893	14
<b>S20</b>	Encourage Local product Policies and Incentives	3.58	1.176	15
<b>S21</b>	Track Performance Indicators and Cost-Variance Metrics	3.56	1.392	16
<b>S19</b>	Promote Stakeholder collaboration and transparent communication	3.42	1.017	17
<b>S17</b>	Implement Real-Time Price Tracking Platforms	3.01	1.417	18
<b>S13</b>	Enhance Quantity Surveyors Capacity and Professional Training	2.44	1.185	19
<b>S8</b>	forecasting tool and analytic tools	2.37	1.164	20
<b>S12</b>	Advocate for Stable Macroeconomic Policies	2.23	0.964	21

## **4.5.1 Discussion of Strategy Extremes**

### **4.5.1.1 Top Three Strategies (The Most Effective Measures)**

The most effective strategies are highly proactive, financial, and contractual adjustments, shifting risk management from passive allowance to dynamic governance.

**4.5.1.1.1 Contractual Flexibility and Renegotiation (Mean = 4.64, Rank 1):** This ranking signal a paradigm shift in the industry. Professionals recognize that the volatility is too high for rigid fixed-price contracts. This strategy facilitates mutual risk-sharing and contract survival, aligning with the principles outlined by Enebe, Aniagolu, & Ngwu (2024).

**4.5.1.1.2 Regular Market Surveys and Cost Data Updates (Mean = 4.56, Rank 2):** This emphasizes the necessity of the Quantity Surveyor's role as a real-time market analyst. In a volatile environment, historical data is irrelevant; success depends on constant monitoring and rapid re-estimation.

**4.5.1.1.3 Align Financing Terms with Inflation Risks (Mean = 4.53, Rank 3):** This is a critical financial strategy that moves the mitigation beyond the contract to the project's funding structure. By aligning loan terms, interest mechanisms, and equity injections with anticipated or actual inflation, the client's financial exposure is managed, protecting the cost estimate's integrity.

### **4.5.1.2 Bottom Three Strategies (The Least Effective Measures)**

The lowest-ranked strategies are related either to long-term systemic change or technology that is not yet fully trusted or utilized.

#### **4.5.1.2.1 Enhance Quantity Surveyors Capacity and Professional Training (Mean = 2.44):**

The low ranking suggests that the problem is structural and macro-economic, not due to a lack

of competence among Quantity Surveyors. Professionals believe their training is sufficient, but the market conditions themselves are the overriding challenge.

**4.5.1.2.2 Forecasting Tools and Analytic Tools (Mean = 2.37):** This is surprisingly low. It indicates a skepticism towards predictive software or analytical models in such an unpredictable market. Professionals seem to trust real-time manual surveys (Rank 2) more than automated, statistically-driven forecasts.

**4.5.1.2.3 Advocate for Stable Macroeconomic Policies (Mean = 2.23, Rank 21):** While Inflation (Rank 1) is the biggest problem, advocacy is seen as the least effective strategy. This reflects a pragmatic industry view that political or governmental change is too slow and unreliable to serve as a reliable project-level mitigation strategy. Professionals focus on mitigating the effects rather than resolving the root cause.

## **4.6 Discussion of Findings**

This section brings together the findings discovered from the analysis of data and connects it with the ideas discussed in earlier chapters. After going through the data, certain patterns became very clear. The results show what the major causes of price instability are, how they affect different building elements, and which strategies professionals believe work best. By comparing these findings with the literature reviewed earlier, it becomes easier to understand what is driving the changes in construction costs and how the industry is responding.

The first major finding shows that price instability is a constant challenge across construction projects in the state (Malkanathi et al., 2023). Most respondents agreed that unpredictable changes in material costs, Inflation rates, and high interest rate disrupt cost estimates. This aligns with earlier studies that describe construction markets in developing regions as volatile and highly sensitive to economic changes (Ebekozi et al., 2024). The responses gathered

confirm that cost estimators often struggle to keep estimates stable because prices shift faster than project timelines.

The second major insight relates to the construction elements most affected by price changes. From the analysis, electrical systems, external cladding, and suspended slabs recorded the highest mean scores. These elements rely heavily on materials that are imported or tied to the global supply chain. Because of this, any change in exchange rates or import costs quickly affects their prices. Professionals in the field consistently noted that these items often cause cost overruns when prices rise unexpectedly. On the other hand, items such as damp-proof courses, blinding concrete, and fire protection installations recorded the lowest mean scores. These results suggest that elements made from readily available local materials remain relatively stable, helping builders manage costs better.

Another important finding relates to professional experience with cost estimation under unstable market conditions. Respondents emphasized that material shortages, inflation, and supplier inconsistencies often make it difficult to rely on previous cost data. This confirms the idea raised in Chapter Two that historical pricing is becoming less dependable in an unstable economy. Many professionals now adjust estimates frequently, rely on updated market surveys, or introduce price fluctuation clauses to protect project budgets.

The analysis also reveals that price instability affects project decisions beyond just estimation. Project scheduling, material selection, and procurement strategies are all influenced when prices change without warning. This reflects the views presented in the literature, which note that unstable prices increase project risks and force contractors to revise plans, renegotiate contracts, or alter material choices to stay within budget.

Overall, the findings show a strong connection between the study objectives and the realities professionals face on the field. The results confirm that price instability directly affects the

accuracy of cost estimation and shapes how construction projects are planned and delivered in Edo State. The issues raised by respondents match the evidence presented in earlier studies, showing that the problem is widespread, persistent, and requires continuous adaptation by industry professionals.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 preamble**

This study aimed to determine the influence of price instability on cost estimations in the construction industry in Edo State and to identify strategies for improving the accuracy and reliability of cost estimation by determining how unstable material prices affect different building elements, and evaluating strategies that can minimize these effects. A quantitative descriptive survey design was employed, and data was collected from construction professionals in Benin City.

#### **5.2 summary of findings**

Based on the analysis, the findings for each research objective reveal a clear picture of the challenges and adaptive practices within Edo State's construction sector regarding price instability. For the first objective, which sought to identify the contributing factors, the study found that price instability is predominantly fueled by macroeconomic pressures. Chief among these is rampant inflation, unpredictable fluctuations in the prices of key materials like cement and steel, and high interest rates. These forces were identified as severely compromising the reliability of initial cost estimates. Interestingly, factors such as poor infrastructure or environmental regulations were considered far less disruptive, viewed more as consistent, predictable costs rather than sources of sudden instability.

Regarding the second objective, which evaluated the impact on specific building elements, the findings indicate a distinct pattern of vulnerability. Elements that rely heavily on imported components or globally traded commodities are most susceptible. Electrical systems, external cladding and facade work, and major structural elements like suspended slabs and columns ranked as the most affected. Their dependence on materials sensitive to exchange rates and international supply chains makes their costs highly volatile. In contrast, building elements

utilizing common, locally-sourced materials such as blinding concrete and damp-proof courses were found to be the least affected by price swings.

For the third objective, which explored mitigation strategies, the results point toward a necessary evolution in project management and contractual approaches. Professionals identified proactive and flexible measures as the most effective. The top strategies include building contractual flexibility to allow for price renegotiation, committing to regular market surveys for real-time cost data updates, and aligning project financing terms directly with inflation risks. This pragmatic focus underscores a preference for immediate, project-level controls over longer-term but less certain solutions, such as advocating for broader macroeconomic policy changes or relying solely on predictive analytical tools.

### **5.3 Conclusion**

The study concludes that price instability exerts a direct and significant negative influence on cost estimations, severely compromising the accuracy and reliability of project budgets in the Edo State construction industry. The sector's heavy dependence on imported materials and its exposure to global supply chain volatility exposes it to domestic and international macroeconomic shifts, inevitably leading to frequent cost overruns, project delays, and contractual disputes.

To operate effectively within a highly unstable economic environment, construction stakeholders must adopt a multi-pronged, proactive risk management approach. The traditional fixed-price contract model is proving increasingly untenable. Therefore, the path to improved cost estimation accuracy lies in implementing adaptive contractual mechanisms and risk-sharing strategies, supported by rigorous, continuous cost monitoring and a concerted effort to encourage the domestic production of building materials.

## 5.4 Recommendations

Based on the findings and conclusions of this study, the following recommendations are put forth for construction professionals, clients, and relevant government agencies in Edo State:

**Ensure Macroeconomic Stability and Support Local Production:** Government and industry leaders should work together to create a more stable economic environment by reducing inflation, improving the value of the national currency and ensuring predictable interest rates. Strengthening local production of building materials is equally important, as it reduces reliance on imported products that are often affected by global price changes. Encouraging investments in local cement, steel and other manufacturing facilities, while improving energy supply and transportation networks, will help make material prices more predictable. With a more stable economy and stronger local industries, construction costs in Edo State can become more consistent and easier to estimate.

**Implement Proactive Material Cost Management:** Construction professionals should adopt practical methods that help control material costs throughout the project. One effective approach is to secure major materials early, especially items that frequently experience price increases. Updating cost estimates regularly to reflect current market conditions also helps prevent unexpected budget changes. Keeping well-maintained price records, allowing for reasonable contingencies and adjusting estimates whenever necessary makes cost planning more reliable. These steps allow project teams to respond quickly to changes in material prices and reduce the risk of cost overruns.

**Adopt Flexible Contracts and Collaborative Planning:** All project stakeholders should work together more closely and maintain open communication about price trends. Contracts should include flexible provisions that allow adjustments when material prices change significantly. Using digital tools that track market prices in real time can also help project teams update budgets promptly. Regular meetings between clients, contractors and consultants create

opportunities to review cost information, identify risks early and agree on necessary adjustments. This cooperative approach helps projects adapt smoothly to changing market conditions and keeps cost estimates realistic throughout construction.

## REFERENCES

- Abdelalim, A., Salem, M., Salem, M., Al-Adwani, M., & Tantawy, M. (2024). An Analysis of Factors Contributing to Cost Overruns in the Global Construction Industry. *Buildings*. [doi.org/10.3390/buildings15010018](https://doi.org/10.3390/buildings15010018).
- Abdel-Monem, M., Alshaer, K., & El-Dash, K. (2022). Assessing Risk Factors Affecting the Accuracy of Conceptual Cost Estimation in the Middle East. *Buildings*. [doi.org/10.3390/buildings12070950](https://doi.org/10.3390/buildings12070950).
- Abebe, Yehulum & Jain, Deekshith. (2023). Assessing the Effects of Price Escalation on Building Construction Projects in Adama, Ethiopia. *American Journal of Management Science and Engineering*. 8. [56-62. 10.11648/j.ajmse.20230802.13](https://doi.org/10.11648/j.ajmse.20230802.13)
- Adepoju, O., Balogun, A., & Bekesuomowei, O. (2023). Impact of Fuel Subsidy Removal on Gross Domestic Product and Transportation Cost in Nigeria. *European Journal of Theoretical and Applied Sciences*. [doi.org/10.59324/ejtas.2023.1\(5\).63](https://doi.org/10.59324/ejtas.2023.1(5).63).
- Adenuga, O. A., & Olotuah, A. O. (2014). Strategies for minimizing cost of housing provision in Nigeria. *International Journal of Development and Sustainability*, 3(2), 263-274.
- Adewuyi, T. O., & Odesola, I. A. (2015). Factors affecting material waste on construction sites in Nigeria. *Journal of Engineering and Technology*, 6(1), 1-13.
- Alabi, B., & Fapohunda, J. (2021). Effects of Increase in the Cost of Building Materials on the Delivery of Affordable Housing in South Africa. *Sustainability*. [doi.org/10.3390/su13041772](https://doi.org/10.3390/su13041772).
- Alghusni, T. M. T., Yousif, M. N., & Massoud, H. A. A. S. (2024). The influence of economic fluctuations on construction project costs. *TIJER – International Research Journal*, 11(11). <https://tjjer.org/tjjer/papers/TIJER2411085.pdf>
- Ameh, O. J., Soyngbe, A. A., & Odusami, K. T. (2010). Significant factors causing cost overruns in telecommunication projects in Nigeria. *Journal of Construction in Developing Countries*, 15(2), 49–67.
- Anireddy, A. (2023). Impact of Inflation on Construction Cost Estimation: Strategies to Account for Fluctuating Material Prices. *International Journal for Multidisciplinary Research*. [doi.org/10.36948/ijfmr.2023.v05i04.10884](https://doi.org/10.36948/ijfmr.2023.v05i04.10884).
- Ashworth, A., & Perera, S. (2018). *Cost studies of buildings* (6th ed.). Routledge.
- Aslam, B., Maqsoom, A., Inam, H., Basharat, M., & Ullah, F. (2023). Forecasting Construction Cost Index through Artificial Intelligence. *Societies*. [doi.org/10.3390/soc13100219](https://doi.org/10.3390/soc13100219)
- Arab, S. S., Zadawa, A. N., & Ishiyaku, B.. (2024). Factors affecting implementation of construction cost management techniques in Gombe state Nigeria. *BW Academic Journal*. [/bwjournal.org/index.php/bsjournal/article/view/2504](https://bwjournal.org/index.php/bsjournal/article/view/2504)

- Ayedun, C. A., Durodola, O. D., & Akinjare, O. A. (2012). An empirical ascertainment of the causes of building failure and collapse in Nigeria. *Mediterranean Journal of Social Sciences*, 3(1), 313–322. [doi.org/10.5901/mjss.2012.03.01.313](https://doi.org/10.5901/mjss.2012.03.01.313)
- Ciuruşniuc, C., Ciuruşniuc-Ichimov, I., & Şerbănoiu, A. (2025). Assessment of Price Adjustment Mechanisms in Romanian Public Construction Contracts: A Longitudinal Cost Impact Analysis (2018–2024). *Buildings*. [doi.org/10.3390/buildings15122076](https://doi.org/10.3390/buildings15122076)
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.
- De Neufville, R., & Scholtes, S. (2011). *Flexibility in engineering design*. MIT press.
- Diugwu, I. A., Etuk, E. H., Baba, D. L., Mohammed, M., & Yakubu, H. A. (2017). Modelling the effect of time overrun and inflation rate on completion cost of construction projects in Nigeria. *International Journal of Sustainable Construction Engineering & Technology*, 8(2), 18–28.
- Dong, R., Muhammad, A., & Nauman, U. (2025). The Influence of Weather Conditions on Time, Cost, and Quality in Successful Construction Project Delivery. *Buildings*. [doi.org/10.3390/buildings15030474](https://doi.org/10.3390/buildings15030474).
- Doloi, H., Sawhney, A., Iyer, K. C., & Rentala, S. (2012). Planning for project complexity: A key to effective project management. *Engineering, Construction and Architectural Management*, 19(4), 464–480.
- Dosumu, E., Omopariola, E., & Oni, A. (2021). Material price fluctuations and cost estimation reliability in Nigeria. *Covenant Journal of Research in the Built Environment (CJRBE)*, 9(1), 1–16.
- Ebekozien, A., Aigbavboa, C., Thwala, W., Hafez, M., & Samsurijan, M. (2024). Sustainable development goals under threat: the impact of inflation on construction projects. *Engineering, Construction and Architectural Management*. [doi.org/10.1108/ecam-03-2024-0357](https://doi.org/10.1108/ecam-03-2024-0357).
- Enebe, E. C., Aniagolu, C., & Ngwu, C. (2024). Analysis of building materials price trends and building development in South East Nigeria (2000–2022). *Irish Journal of Environment and Earth Sciences*, 8(5), 110–115.
- Gbonegun, G. (2023). Effects of inflation on construction materials in Nigeria. *Nigerian Journal of Engineering and Construction*, 11(2), 88–103.
- Gulesci, S., & Madestam, A. (2018). Repayment Flexibility and Risk Taking: Experimental Evidence from credit contracts. *Corporate finance: valuation*. [doi.org/10.1093/restud/rdad107](https://doi.org/10.1093/restud/rdad107).
- Gunduz, M., & Önder, O. (2013). Cost overrun causes in construction projects: A survey in Turkey. *Journal of Construction Engineering and Management*, 139(3), 321–330.

- Ikechukwu, F. U. (2021). Investigation on the influence of building materials price fluctuation on cost of building products in Nigeria. *Current Journal of Applied Science and Technology*, 40(2), 118–130. [doi.org/10.9734/CJAST/2021/v40i231265](https://doi.org/10.9734/CJAST/2021/v40i231265)
- International Journal of Scientific Research and Engineering Development*. (2023). Impact of material price volatility on construction project budgets.
- Kasim, O., Ajayi, S., Omirin, O., & Alabi, A.. (2023). The impact of foreign exchange rate on building materials and residential building construction cost in Nigeria (1999-2021). *Acta Structilia*, 30(2), 61–93. [doi.org/10.38140/as.v30i2.7523](https://doi.org/10.38140/as.v30i2.7523)
- Kikwasi, G. (2013). Causes and effects of delays and disruptions in construction projects in Tanzania. *Australasian Journal of Construction Economics and Building – Conference Series*, 1(2), 52–59. [doi.org/10.5130/ajceb-cs.v1i2.3166](https://doi.org/10.5130/ajceb-cs.v1i2.3166)
- Lock, D. (2020). *The Essentials of Project Management* (4th ed.). Routledge. [doi.org/10.4324/9781315204017](https://doi.org/10.4324/9781315204017)
- Malkanathi, R., Perera, B. A., & Karunasena, G. (2017). Factors influencing cost overruns in building construction projects. *International Journal of Construction Project Management*, 9(2), 25–38.
- Min, Y., Sheng, C., Quddusi, M., Aslam, R., Mehmood, H., Usman, S., Abdullah-Al-Wadud, M., Liaquat, M., & Zulqarnain, R. (2025). Assessing the Cost of Hospital Building Materials: Effects of Temperature-Precipitation-Flood Dynamics on Landuse and Landcover. *Rangeland Ecology and Management*, 99, 1 - 17. <https://doi.org/10.1016/j.rama.2024.11.007>.
- Mislick, G. K., & Nussbaum, D. A. (2015). *Cost estimation: Methods and tools*. John Wiley & Sons.
- Mokoena, G., Makhanya, B., & Nel, H. (2023). *Assessing Project Cost Planning in the Construction Industry*. Proceedings of the International Conference on Industrial Engineering and Operations Management. [doi.org/10.46254/an13.20230144](https://doi.org/10.46254/an13.20230144).
- Musarat, M., Alaloul, W., Liew, M., Maqsoom, A., & Qureshi, A. (2020). Investigating the impact of inflation on building materials prices in construction industry. *Journal of Building Engineering*. [doi.org/10.1016/j.jobbe.2020.101485](https://doi.org/10.1016/j.jobbe.2020.101485).
- Musarat, M., Alaloul, W., & Liew, M. (2024). Incorporating inflation rate in construction projects cost: Forecasting model. *Heliyon*, 10. [doi.org/10.1016/j.heliyon.2024.e26037](https://doi.org/10.1016/j.heliyon.2024.e26037).
- Negi, S. (2021). Supply chain efficiency framework to improve business performance in a competitive era. *Management research review*, 44(3), 477-508. Taylor & Francis Online. (2023). Full article: A systematic literature review on price forecasting models in construction industry.

- Nwachukwu, M. N. (2021). *Effects of building materials price instability on successful housing projects delivery in Owerri, Imo State* (Master's thesis, Federal University of Technology, Owerri). [repository.futo.edu.ng/bitstreams/dc0901e5-e94e-4b35-8ff7-0223f7062505/download](https://repository.futo.edu.ng/bitstreams/dc0901e5-e94e-4b35-8ff7-0223f7062505/download)
- Nwafor, I. V., Ugonabo, C. U., & Christian, O. N. (2023). Effects of macroeconomic indicators on cost of building materials in Nigeria. *African Journal of Social Sciences and Humanities Research*, 6(4), 166–176. [10.52589/AJSSHR-JBFCF7BD](https://doi.org/10.52589/AJSSHR-JBFCF7BD)
- Obaedo, B. O., & Oseghale, G. E. (2020). Impact of Naira exchange rate on prices of selected construction materials in Ekpoma, Edo State, Nigeria. *American Scientific Research Journal for Engineering, Technology, and Sciences*, 74(2), 114–123.
- Ogun-Oghenekevwe, E., Ogusina, O. A., & Ugochukwu, S. C. (2014). An assessment of the impact of inflation on construction material prices in Nigeria. *PM World Journal*, III(IV), 1-22.
- Ogunsemi, D. R., & Jagboro, G. O. (2006). *Time-cost model for building projects in Nigeria*. *Construction Management and Economics*, 24(3), 253–258. [doi.org/10.1080/01446190500521041](https://doi.org/10.1080/01446190500521041)
- Oke, A. O. (2011). Effect of fiscal policy on the Nigerian construction sector. *Journal of Surveying, Construction & Property*, 2(1), 1–10. <https://ejournal.um.edu.my/index.php/JSCP/article/view/5643>
- Oladapo, A. A. (2007). *A quantitative assessment of the cost and time impact of variation orders on construction projects*. *Journal of Engineering, Design and Technology*, 5(1), 35–48. [doi.org/10.1108/17260530710746597](https://doi.org/10.1108/17260530710746597)
- Oladokun, M., Aina, O., & Kolawole, T. (2019). Cost estimation risks under market volatility in Nigeria. *Journal of Quantity Surveying*, 16(1), 48–57.
- Oladokun, M., Ajayi, M., & Ojo, T. (2015). Inflation and contractor performance. *Nigerian Journal of Construction Management*, 6(2), 81–95.
- Olatunji, O., Orundami, A., & Ogundare, O. (2018). Causal relationship between material price fluctuation and project's outturn costs. *Journal of Quantity Surveying*, 15(4), 358-371. [doi.org/10.1108/bepam-12-2017-0119](https://doi.org/10.1108/bepam-12-2017-0119).
- Olowe, B., Adediran, T., & Ojo, A. (2025). Assessing market conditions in construction supply chains. *Journal of Construction Markets*, 18(2), 27–39.
- Omoregie, A., & Radford, D. (2006). An investigation into the impact of the learning curve in construction projects. *Construction Management and Economics*, 24(10), 1109-1117.
- Oxford Business Group. (2024). *Construction & real estate*. In *The Report: Nigeria 2024*. Oxford Business Group. [oxfordbusinessgroup.com/reports/nigeria/2024-report/construction-and-real-estate-chapter/](https://oxfordbusinessgroup.com/reports/nigeria/2024-report/construction-and-real-estate-chapter/)

- Opawole, A., Alao, O., Yusuf, A., Adu, E., & Ofoetan, M. (2022). Evaluation of compliance of concreting materials to standards in building projects in Lagos State, Nigeria. *Journal of Construction Business and Management*. [doi.org/10.15641/jcbm.5.2.1182](https://doi.org/10.15641/jcbm.5.2.1182).
- Rehfeldt, M., Fleiter, T., & Toro, F. (2018). A bottom-up estimation of the heating and cooling demand in European industry. *Energy Efficiency*, 11(5), 1057-1082.
- Seeley, I. H., & Winfield, R. (2015). *Building economics: Appraisal and control of building costs* (5th ed.). Palgrave Macmillan.
- Schuldt, S. J., Nicholson, M. R., Adams, Y. A., II, & Delorit, J. D. (2021). Weather-related construction delays in a changing climate: A systematic state-of-the-art review. *Sustainability*, 13(5), 2861. [doi.org/10.3390/su13052861](https://doi.org/10.3390/su13052861)
- Slattery, C., & Zidar, O. (2020). Evaluating state and local business incentives. *Journal of Economic Perspectives*, 34(2), 90-118.
- Ugochukwu, S. C., Eze, G. C., Akabogu, S. C., & Abubakar, B. H. (2017). The correlation between foreign exchange rates and prices of building materials in Nigeria, 2011-2017. *International Journal of Business & Management*, 5(10), 95-100. [www.scribd.com/document/776285257/CORRELATIONOFBLDMATLPRICESFOR-1](http://www.scribd.com/document/776285257/CORRELATIONOFBLDMATLPRICESFOR-1)
- Uvarova, S., Belyaeva, S., Orlov, A., & Kankhva, V. (2023). Cost Forecasting for Building Materials under Conditions of Uncertainty: Methodology and Practice. *Buildings*. [doi.org/10.3390/buildings13092371](https://doi.org/10.3390/buildings13092371).
- World Scientific News. (2024). Effects of building material costs on housing development in Nigeria. *World Scientific News*, 197, 55–72.

**APPENDIX**  
**RESEARCH QUESTIONNAIRE SURVEY**

Department of Quantity Surveying,  
Faculty of Environmental Sciences,

University of Benin, P.M.B 1154,  
Ugbowo, Benin City, Edo state.

Dear Respondent,

**INFLUENCE OF PRICE INSTABILITY ON COST ESTIMATION IN THE  
CONSTRUCTION INDUSTRY IN EDO STATE**

I am a final-year student of the University of Benin, currently undertaking a B.Sc. programme in Quantity Surveying. I am researching “**INFLUENCE OF PRICE INSTABILITY ON COST ESTIMATION IN THE CONSTRUCTION INDUSTRY IN EDO STATE**”. I respectfully request your assistance in completing the attached questionnaire, which is based on research purposes only and will be kept confidential, as per a recently completed project. Your response will be used solely for the study. Your responses will be kept strictly confidential, which will help achieve the study's objective.

Thank you.

Yours sincerely,

Emmanuel Ehizonomen Aikhomu.

[Emmanuelaihomu4@gmail.com](mailto:Emmanuelaihomu4@gmail.com)

## QUESTIONNAIRE

Please complete this questionnaire by supplying the necessary information for each section.

### Section A: Demographic

Information Please tick [] the appropriate option.

1. Gender [] Male [] Female

2. Highest Educational Qualification [] OND [] HND [] MSc [] PhD [] BSc [] Others (specify): \_\_\_\_\_

3. Role in the Construction Industry [] Engineer [] Quantity Surveyor [] Architect [] Builder [] Others (specify): \_\_\_\_\_

4. Years of Construction Industry Work Experience [] 1–5 years [] 5–10 years [] 11-15 years [] 15 years and above

5. Type of Project [] Industrial Project [] Civil Engineering Project [] Residential Project [] Administrative Project [] Religious Project []

**Section B: Factors that Influence of Price Instability on Cost Estimation in the Construction Industry in Edo State**

Please indicate the extent to which you agree with the following as factors contributing to price instability in construction.

Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

S/N	Factors	1	2	3	4	5
1	Exchange rate volatility					
2	Inflation					
3	Fuel price fluctuations					
4	High interest rates					
5	Import dependency					
6	Environmental regulations					
7	Inadequate planning					
8	Government policy					
9	Poor weather conditions					
10	Material price fluctuations					
11	Wage Inflation					
12	Material Wastage					
13	Design Change					
14	Lack of Local Manufacturing					
15	Transportation cost					
16	Market speculation					
17	Poor infrastructure					
18	Shortage of raw materials					
19	Currency devaluation					
20	High taxation and import duty					

### Section C: Building Elements Affected by Price Instability

Please tick the Element most affected by price instability in your projects:

Scale: 1 = Not Affected, 2 = Less affected, 3 = Neutral, 4 = Affected, 5 = highly affected

S/N	Element	1	2	3	4	5
1	Blinding Concrete					
2	Reinforced concrete foundation					
3	Damp-proof course					
4	Substructure Walling					
5	Columns					
6	Beams					
7	Suspended slabs					
8	Stairs					
9	Floor Finishes					
10	Roof trusses					
11	Windows and doors					
12	lintels					
13	Electrical system					
14	Plumbing and fittings					
15	Parapet walls					
16	External cladding/facade					
17	Wall finishes					
18	Fire protection installations					
19	HVAC systems					
20	Drainage and culverts					

### Section D: Strategies to Minimize the Effects of Price Instability on Cost Estimation

Please indicate the importance you attach to each of the following strategies in minimizing the effect of price instability on cost estimation

Scale: 1 = Not Important 2 = Slightly Important 3 = Moderately Important 4 = Important  
5 = Very Important#

S/N	STRATEGIES	1	2	3	4	5
1	Use of price adjustment clauses in contracts					
2	Use of price adjustment clauses in contracts					
3	Early procurement and bulk purchasing					
4	Local sourcing of construction materials					
5	collaborative risk sharing among stakeholders					
6	Value engineering and design flexibility					
7	Regular market surveys and cost data updates					
8	forecasting tool and analytic tools					
9	Contractual flexibility and renegotiation					
10	Government and institutional interventions					
11	Continuous Re-estimation and cost monitoring					
12	Advocate for Stable Macroeconomic Policies					
13	Enhance Quantity Surveyors' Capacity and Professional Training					
14	Encourage the Use of Alternative and Substitute Materials					
15	Improve Supply Chain Efficiency					
16	Adopt Just-in-Time (JIT) Procurement					
17	Implement Real-Time Price Tracking Platforms					
18	Align Financing Terms with Inflation Risks					
19	Promote Stakeholder collaboration and transparent communication					
20	Encourage Local product Policies and Incentives					
21	Track Performance Indicators and Cost-Variance Metrics					