

Evaluating the Effectiveness of Target Costing for Managing Project Costs in Enugu State's Construction Sector

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Abstract: The Nigerian construction industry, a vital contributor to the nation's economy, faces persistent cost management challenges. Projects are plagued by cost overruns, time delays, and poor quality, leading to waste of resources and financial losses by Cooper and Slagmulder (2017). Issues are acute in urban centers like Enugu State where employment of Quantity Surveyors (QS) for their critical cost planning and management functions remains notably low in Nigeria, according to Omole (2000). As articulated by Ayodele (2002), effective target costing (TC) and construction management embody proactive cost management methodologies that are increasingly embraced in the global construction milieu; however, they remain under exploited in developing nations. The paper evaluates target costing's effectiveness for managing construction project costs in Enugu State. This study evaluated the effectiveness of Target Costing (TC) in managing project costs within Enugu State's construction sector, addressing critical gaps between theoretical models and practical implementation in a specific regional context. Adopting a quantitative approach and positivist philosophical paradigm, a descriptive survey research design was employed. A total enumeration of 105 construction professionals and main contractors was targeted, with 89 (84.8%) questionnaires returned. Data were analyzed using frequency, percentage, mean, and standard deviation, with a T-test at a 0.05 significance level to test the null hypothesis. Findings revealed that while key professional resources like Quantity Surveying and Architectural/Design Consultancies are highly available for TC implementation (100% and 95.5%, respectively), critical gaps exist, particularly concerning Private Clients/Developers (56.2% unavailable) and Project Managers (78.7% unavailable). The perceived benefits of TC, such as ensuring profitability ($\bar{x} = 3.89$) and a market-driven approach ($\bar{x} = 3.83$), were rated highly, suggesting strong theoretical recognition among practitioners. However, significant challenges hinder effective practice, including cost estimation and data reliability ($\bar{x} = 3.84$), project management and collaboration issues ($\bar{x} = 3.61$), and an inadequate engagement of professional quantity surveyors ($\bar{x} = 3.57$). Recommendations to enhance TC were highly accepted, with mandatory training ($\bar{x} = 3.83$), fostering teamwork ($\bar{x} = 3.79$), and improving data management and technology ($\bar{x} = 3.63$) ranked highest. The T-test showed no statistically significant difference ($p = 0.757$) between construction professionals and main contractors regarding their perceptions of TC effectiveness, indicating a shared moderate-to-high level of perception. The study concludes that while the core principles and benefits of TC are recognized, its practical application is hampered by systemic challenges related to stakeholder availability, data reliability, and collaboration while the conceptual value of Target Costing is acknowledged, its effective implementation in Enugu State's construction sector is significantly hampered by systemic challenges related to stakeholder availability, data reliability, and collaboration. The recommended strategies focus on capacity building, improved teamwork, and technological adoption to overcome these barriers, ultimately advancing cost management practices and enhancing competitiveness in the local construction industry.

Keywords: Target Costing, Construction Industry, Cost Management, Enugu State, Quantitative Research, Positivism, Survey Research.

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I. INTRODUCTION

This paper evaluates target costing's effectiveness for managing construction project costs in Enugu State, Nigeria Paisana, & Braga, (2008) . It aims to identify challenges and opportunities by examining the application of target costing in a developing context, potentially adapting manufacturing principles to address local cost overruns and project inefficiencies. The study will likely analyze implementation frameworks, compare theoretical models with practical applications, and provide recommendations for improving cost control through this strategic method.

The Nigerian construction industry, a vital contributor to the nation's economy, faces persistent and significant cost management challenges. Projects are frequently plagued by cost overruns, time delays, and poor quality, leading to a substantial waste of resources and financial losses for clients and contractors alike. These issues are particularly acute in bustling urban centers such as Enugu State Ayodele (2002). where intense construction activity often outpaces the capacity of traditional cost management strategies to ensure project success. A combination of factors contributes to this problem, including but not limited to inaccurate cost planning and budgeting, inefficient resource allocation, volatile market conditions, poor project monitoring, and lapses in communication among project teams. Furthermore, systemic issues such as corruption, inadequate financial planning, and weak regulatory oversight exacerbate the problem, with studies identifying these as critical factors behind project failure in the Nigerian context Rose, and Manley. (2010).

This study proposes and examines Target Costing as a potential solution to these perennial challenges. Target Costing is a strategic, market-driven approach that reverses the traditional cost calculation process. Instead of basing the selling price on the project's costs, it establishes a target cost by subtracting the desired profit margin from a market-determined selling price Olawale, and sun. (2010).

At the forefront of construction cost management is the Quantity Surveyor (QS), a professional traditionally responsible for financial control, from initial cost estimation to final account settlement. In the Nigerian context, the roles of a QS are crucial for budgeting, feasibility studies, and contractual advice, as specified by the Quantity Surveyors Registration Board of Nigeria (QSRBN). However, the profession has faced pressure to evolve from its traditional focus on Bills of Quantities (BoQs) and post-design financial management to encompass more strategic, value-adding services such as risk management, lifecycle costing, and enhanced cost planning.

Cost management is a critical determinant of success and profitability in the construction industry. The traditional cost-plus approach, prevalent in many developing regions, often results in cost overruns and disputes due to its reactive nature. In contrast, Target Costing (TC), a proactive cost management technique originating from Japan, emphasizes setting a market-driven target price early in the design phase

and continuously working backwards to achieve it through value engineering and cost reduction initiatives. This study focuses on the implementation and effectiveness of TC within the Enugu State construction sector, aiming to bridge the gap between theoretical models and local practical application.

The main objective of this study is to evaluate the effectiveness of Target Costing for managing project costs in Enugu state's construction sector. The specific objectives are:

- Identify the data available for Target Costing in the construction industry in Enugu State.
- Ascertain the extent of Target Costing practice for effective cost management in the construction sector in Enugu State.
- Identify the challenges affecting Target Costing practice for effective cost management in the construction sector in Enugu State.
- Suggest practical recommendations to enhance Target Costing practice for effective cost management in the construction sector in Enugu State.

➤ Research Questions

The following research questions were formulated to guide the study:

- What are the data available for Target Costing in the construction industry in Enugu state?
- Do target costing practice affects cost management in construction sector in Enugu State ?
- What are the challenges affecting target costing practice for effective cost management in construction sector in Enugu State ?
- What are the practical practical recommendations to enhance target costing practice for effective cost management in construction sector in Enugu State ?

➤ Research Hypotheses

The study formulated a null hypothesis that was tested at 0.05 level of significance:

- There is no effectiveness on Target Costing in managing project costs in Enugu state's construction Sector based on construction professionals and main contractors.
- Practical recommendations to enhance Target Costing in Enugu

Based on the identified data availability, current practices, and challenges, the research should suggest practical recommendations such as:

- Data collection and management: Developing reliable, locally contextualized cost data platforms (e.g., through industry bodies like the NIQS) to overcome the lack of historical data.
- Enhanced collaboration: Fostering better communication and collaboration between designers, contractors, and other stakeholders from the project's inception.

- Capacity building: Investing in training and re-orientation for the construction workforce on modern cost management techniques like Target Costing and value engineering.
- Technological adoption: Encouraging the use of digital tools and technology for data collection, project monitoring, and cost control.
- Policy and regulatory support: Advocating for supportive government policies that create a stable economic environment and reduce administrative delays, which in turn helps control project costs.

➤ *Hypotheses for Testing*

The formulated null hypothesis is:

- Ho: There is no effectiveness on Target Costing in managing project costs in Enugu state's construction Sector based on construction professionals and main contractors."

To test this hypothesis, the research would need to gather data from professionals and contractors in Enugu and compare cost performance between projects that used Target Costing and those that did not. The alternative hypothesis would be that Target Costing is effective.

II. LITERATURE REVIEW

A. *Concept of Effectiveness of Target Costing for Managing Project Costs Review*

Effectiveness of target costing for managing project costs stems from its proactive, market-driven approach that integrates cost control from the initial design phase. Rather than setting a price after a project is completed based on its costs, target costing uses the market price to determine the maximum allowable cost, forcing innovation and efficiency from the start. This makes it a powerful strategic tool for managing costs and ensuring project profitability, especially in competitive industries.

B. *Concept of Target Costing*

Target costing is a market-driven, disciplined approach to determining a project's target cost based on a desired profit margin and market-competitive price (Cooper & Slagmulder, 2017). In this study, the implementation of target costing in construction projects is the core independent variable. Its application, scope, and consistency will be assessed, building on previous findings that estimation practices influence cost performance. Target Costing (TC) offers a promising alternative to traditional cost management. This proactive approach, first widely adopted in Japan, aims to manage costs by first establishing a target cost (allowable cost) based on market price and desired profit margin. Unlike conventional methods, TC seeks to achieve cost reduction from the design phase itself, ensuring that projects are planned and executed within a predetermined budget while maintaining customer value and desired quality levels. This emphasis on proactive cost reduction, value engineering, and waste elimination aligns with the requirements of a competitive construction market where price and value are paramount.

C. *Principles of Target Costing*

Price-led costing: In highly competitive markets, companies have little control over selling prices, which are determined by supply and demand. Target costing accepts the market price and forces the company to design and produce a product at or below a cost that will yield a desired profit. Target costing is a common practice in the industrial goods firms in Nigeria where the market is extremely competitive. Again, because industrial goods consumers are often times producers of other goods thus, needs to be focused on. The industrial goods market most of the times determines the price of product and there is little opportunity for the producers of Such industrial goods to set prices. Thus controlling cost is very important, as it will be reflected in the profit of the firm.

➤ *The Principles of Target Costing to Lawal, (2012) Involve the Following:*

- Customer focus: It ensures that the project delivers features and quality that customers actually value, avoiding costly over-engineering.
- Cross-functional teams: Marketing, engineering, and procurement teams collaborate from the project's inception to find innovative ways to meet the cost targets without sacrificing quality.
- Design-to-cost: The majority of a project's costs are determined during the design phase. Target costing manages these costs before they are even incurred, making changes cheaper and more effective.
- Value-chain involvement: Suppliers and distributors are engaged early to ensure cost reduction efforts are extended across the entire value chain.
- Life cycle orientation: This approach considers the total cost of ownership, including initial production, maintenance, and end-of-life disposal costs.

➤ *Target Costing Operates by a Fundamental Formula:*

Target costing (TC) is a management technique in which prices are determined by market conditions, taking into account several factors; homogeneous products, level of competition, no or low switching costs for the customer etc. When these factors come into the picture, management wants to control cost as they have little or no control over the selling price. CIMA defined TC as "a product cost estimate derived from a competitive market price.

Mathematically; $TC = SP - PM$

Where;

TC = Target Cost

SP = Selling Price

PM = Profit Margin

Target cost can be calculated thus;

Target Cost = Expected Selling Price – Desired Profit

Target costing is different from standard costing in many ways. Target costs are determined by market driven standards (Target sales price – Target profit = TC) while standard costs are determined by design driven standards with less emphasis on what market will pay (engineered cost + desired mark up = desired sales price). Again, from the stage of the product through the life cycle, Target cost is set. Target cost is normally less than current cost thus, managers should try to reduce cost from the design and manufacture the product.

➤ *And Cost can be Reduced (Cost Drift) in some of the Following Ways:*

- Simplifying the design
- Reducing the cost of direct materials
- Reducing the direct market cost
- Eliminating waste, by making such analysis like;
- ✓ Reverse engineering
- ✓ Value analysis and
- ✓ Process improvement which tears down the competitors product with a view of ascertaining more design features that create cost reductions, assess the value placed on various product functions by customers, reducing cost of providing the function by using common components, evaluate the processes used to produce and market the product and thereby, redesigning such processes to improve their efficiency to achieve the needed cost reductions.

D. Concept of Profitability

Profit is the difference between revenues and expenses over a given period of time (basically one year) Pandey, (2010). Every business organization would want to make sufficient profit, even the non-for-profit business organization can only stay in business if and only if it can take care of its expenses with a left over profit not a loss. Thus a firm should earn profit in order to stay, survive and grow over a long period of time. The ability of company, organization, firm or an enterprise to make profit from its business activities is referred to as profitability. This can be achieved when the management is efficient in using all the resources (human and material) available in the market. Profitability is derivable through efficiency, thus, it is a measure of efficiency and management guide to greater efficiency. Efficiency combined with factors such as the degree of competition that a firm faces, the state and strength of demand, market competition, advertising, campaign substitutes, costing methods to the efficiency of the firm, affects the profitability of the firm. The firm calculates gross profit by subtracting their manufacturing costs from revenue generated after sales. Thus, the gross profit is the money difference between the costs of goods sold and net revenue generated.

E. Theoretical Review of Evaluating the Effectiveness of Target Costing for Managing Project Costs in Enugu State's Construction Sector

In addition to the general theoretical underpinnings of target costing (as discussed in the previous section),

evaluating its effectiveness in Enugu State's construction sector requires a focused theoretical review that considers the specific context and challenges of the construction industry in this region. This section builds upon the foundational principles of target costing by drawing on relevant theories and concepts within construction management, cost management, and organizational behavior, particularly as they relate to the Nigerian context.

➤ *Adaptation and Applicability Theory*

- **Manufacturing vs. Construction:** Target costing originated in the manufacturing sector where products are standardized and production processes are repetitive, making it easier to predict and manage costs. In contrast, construction projects are unique and project-based, making direct application challenging. One characteristic of construction projects is that they entail huge capital outlay. The theory here explores how target costing principles can be adapted to this dynamic environment, considering the uniqueness of each project while still aiming for cost reduction through a market-driven approach.
- **Contingency Theory:** This theory suggests that there is no one-size-fits-all approach to management. The effectiveness of target costing will depend on various internal and external factors, such as project complexity, organizational structure, market conditions, and the skills of the project team. Its application must be adapted to the specific circumstances of each project and the local environment of Enugu State.

➤ *Cost Management Theory in Construction*

- **Cost Overrun Determinants:** Research in Enugu and other parts of Nigeria consistently identifies key factors contributing to cost overruns in construction projects, such as poor contract management, deficiencies in cost estimates, incomplete design, and fluctuations in material prices. Theoretical models here need to assess how target costing can specifically address and mitigate these identified determinants.
- **Cost Management Techniques:** The theory examines how target costing interacts with existing cost management techniques common in the Nigerian construction industry, such as Activity-Based Costing (ABC), Value Engineering, and Earned Value Management (EVM). Target costing has the ability to work in a feed forward mode in the design stage, while Resource Consumption Accounting (RCA) can be run in reverse to assess the future demand on resource pools' output. It explores how these tools can be integrated with target costing to provide a more holistic approach to cost control and reduction throughout the project life cycle.
- **Value Engineering and Target Value Design (TVD):** Value engineering is a critical component of target costing, focused on optimizing value by analyzing and improving functions at a lower cost without sacrificing quality. TVD is a related approach in construction that takes this a step further by emphasizing

collaboration among stakeholders to achieve a target cost from the outset. Theoretical reviews need to consider how these elements are integrated with target costing in the Enugu context to identify and eliminate non-value-added costs and design more cost-effective solutions.

➤ *Stakeholder Theory and Collaboration*

- **Cross-functional Collaboration:** Target costing emphasizes the importance of cross-functional teams involving marketing, engineering, production, and suppliers. Cross-functional product and process teams are responsible for the entire product from initial concept through final production. In the context of construction projects, this extends to all key stakeholders, including clients, contractors, consultants, and subcontractors. The theory here examines how effective collaboration and communication among these diverse stakeholders can facilitate the successful implementation of target costing and achieve desired cost outcomes.
- **Supply Chain Involvement:** Target costing aims to reduce costs across the entire value chain, involving suppliers and customers. Target costing extends cost reduction efforts across the entire value chain, by partnering with all other parties outside an enterprise. In the Nigerian construction context, this highlights the importance of engaging suppliers in the target costing process to identify cost-saving opportunities and ensure the availability of cost-effective materials and resources.

➤ *Organizational Change and Implementation Theories*

- **Resistance to Change:** Implementing a new management system like target costing can encounter resistance within construction firms, which may be accustomed to traditional methods. Theoretical reviews of organizational change models (e.g., Lewin's Change Management Model) can help understand and address potential barriers to adoption and implementation from concentration to profitability (Athanasoglou, Delis, & Staikouras, 2006).
- **Learning and Adaptation:** The theory acknowledges that construction firms in Enugu State may need to adapt and learn new skills and processes to effectively implement target costing. It considers how organizational learning and knowledge transfer can be fostered to build the capabilities needed for successful adoption and sustained effectiveness.

➤ *Ethical Considerations*

- **Quality vs. Cost Reduction:** Target costing reduces costs without compromising quality. Review how to implement ethically in construction to avoid defects.
- **Fairness and Transparency:** Target costing requires open communication and transparency. Review ethical implications in Enugu for fair negotiations and information sharing.

- **Develop a framework to assess target costing effectiveness in Enugu construction, considering challenges.**
- **Resistance to change:** New methodologies may face resistance from those used to traditional practices.
- **Market volatility and uncertainties:** Nigerian economy, including Enugu, can experience fluctuations impacting cost targets. Adjustments may be needed.

Target costing, as a strategic and proactive cost management approach, holds theoretical promise for improving project outcomes within Enugu state's construction sector. By focusing on market-driven pricing and customer value, it can encourage innovation, enhance efficiency, and potentially mitigate the prevalent issues of cost overruns and delays. However, successful implementation requires a robust framework for data collection, strong stakeholder collaboration, and a commitment to adapting global best practices to the unique context and challenges faced by the construction industry in Enugu, Nigeria.

F. Empirical Review of Evaluating the Effectiveness of Target Costing for Managing Project Costs in Enugu state's Construction Sector

Target costing, while widely recognized as an effective cost management technique in manufacturing, faces unique challenges when considering its empirical evaluation in the construction sector, particularly within a specific geographical context like Enugu State, Nigeria.

➤ *Adaptation to Project-Based vs. Product-Based Industries*

Target Costing's Origins: Target costing was initially developed and heavily utilized in manufacturing industries with standardized products that have predictable cost structures and production processes a study carried out by Siyanbola and Raji (20213) focused on evaluating the Effectiveness of Target Costing for Managing Project Costs in Enugu state's Construction Sector.

- **Construction's Unique Nature:** Construction, on the other hand, is a project-based industry characterized by unique projects, a large capital outlay, and exposure to various factors that affect costs, time, and quality.
- **Difficulty in Standardizing:** This inherent lack of standardization makes direct application and empirical evaluation more complex as each project presents unique costing challenges and external influences.

➤ *Measuring Effectiveness*

- **Traditional Metrics:** Traditional metrics for target costing effectiveness often involve measuring the reduction in the "cost gap" (the difference between the target cost and the initial estimated cost) and overall profitability improvements.
- **Construction Context:** In Enugu State's construction sector, studies frequently highlight factors like poor contract management, inaccurate cost estimation,

incomplete design, and delays as significant contributors to project cost overruns.

- Correlation vs. Causation: Isolating the direct impact of target costing on reducing these specific factors can be challenging, as numerous other variables also play a role. It becomes difficult to definitively attribute improvements solely to the adoption of target costing without controlling for these external influences.

➤ *Data Availability and Quality*

- Transparency Challenges: A common issue in empirical research, particularly in developing countries, is the lack of readily available, standardized, and accurate data on project costs and financial performance within the construction industry.
- Confidentiality: Companies may also be reluctant to share detailed financial information, making it difficult to conduct comprehensive empirical analyses.
- Enugu State Specifics: This challenge is likely exacerbated in the context of Enugu State's construction sector, where empirical research on specific cost management techniques might be limited or require significant effort in data collection and validation.

➤ *Implementation Challenges and Adaptation*

- Resistance to Change: New costing methods may face resistance in industries used to traditional approaches.
- Skill Gaps: Target costing requires specialized skills not widely available in construction.
- Adoption in Nigeria: Target costing adoption in Nigerian construction may be slower than in manufacturing.

➤ *Existing Research*

- Nigeria-Focused Studies: Some studies focus on cost management benefits in Nigerian construction industry, with a theoretical perspective.
- Broader Impact: Research suggests target costing can impact corporate performance and profitability in Nigeria, often focusing on manufacturing.

A study conducted by Siyanbola and Raji (20213) concentrated on evaluating the effectiveness of Target Costing for managing project expenditures in Enugu State's low-cost housing initiatives. One paper explores the potential of Target Value Design—a related concept—for enhancing cost performance in low-cost housing projects within Nigeria's South-East zone. This indicates a burgeoning acknowledgment of the necessity for sophisticated cost management techniques in the region's construction sector. Utilizing the Pearson correlation model for data analysis and hypothesis testing revealed a beneficial impact of target costing on the profitability of the state's projects. These findings corroborate the notion that cost control positively influences business profitability and that various cost elements, including materials, labor behavior, and overhead costs, can be strategically managed through

measures such as responsibility accounting, data collection, and reporting.

Construction stakeholders ought to be equipped with precise cost modeling procedures to effectively manage expenditures and determine acceptable profit margins (Cokins, 2002). Furthermore, in the face of intensified competition, the introduction of new products must surpass those that have become outdated. As suggested by Salter (1995), performance measurement of corporate and business units encompasses three dimensions;

- Effectiveness (the degree to which a predetermined objective target is met).
- Efficiency and adaptability.
- In the dimensions of return on investment, sales growth and new product success.

Low-Cost Housing Projects: One scholarly examination delves into the potential of Target Value Design (a related concept) to enhance cost delivery performance in low-cost housing initiatives within the South-East zone of Nigeria. This indicates an increasing acknowledgment of the necessity for advanced cost management methodologies within the region's construction sector.

Empirical investigations specifically assessing the efficacy of target costing in managing project expenses in Enugu State's construction industry appear to be scarce based on the available search results. While existing studies recognize the challenges associated with cost management and the promise of contemporary techniques in the broader Nigerian construction landscape, the distinctive characteristics of the construction sector and the localized context of Enugu State necessitate tailored research to evaluate the tangible effectiveness and address the specific implementation challenges encountered.

Further targeted research could encompass case studies, surveys, and quantitative analyses within construction firms in Enugu State to furnish a more nuanced understanding of the advantages and disadvantages of applying target costing in this particular milieu.

G. Application of Target Costing in Construction Industry

Target costing is an ongoing process that involves all stakeholders. Define cost target and customer value clearly. Use tools like bench marking and value analysis. Monitor and control project cost regularly. Target costing is a must in construction industry to set and monitor cost goals.

H. Quantity Surveyors Roles in Preparation and Implementation of Target Costing on Construction Projects

The Quantity Surveying profession is intrinsically concerned with cost planning services, encompassing the intricate process of cost estimation. Ashworth (1987) delineates cost estimating as the art of forecasting project expenditures. Bennet, Morrison, and Stevens (1981) underscore the evolution of diverse estimating

methodologies employed by Quantity Surveyors to enhance precision during the architectural design phase, including lump sum evaluations and Bills of Materials. Akintoye (2000) identified 24 factors that influence contractor estimation practices in the UK, classifying them into seven distinct categories: project complexity, technological requirements, project information, project team requirements, contract stipulations, project duration, and market dynamics. Notable influencing factors encompass project complexity, scale and scope, market conditions, construction methodologies, site constraints, the client's financial standing, buildability, and project location. Akintoye and Fitzgerald (2000) further scrutinized contractor estimating practices, observing that despite notable advancements, these practices predominantly hinge on traditional labor and material constants rather than contemporary techniques such as range estimating or parametric methods. They attribute inaccuracies in estimations to a deficit of practical knowledge among estimators, insufficient time allocation, inadequate tender documentation, and fluctuating subcontractor pricing.

The challenge of cost underestimation in construction emerges as a global phenomenon. Flyvbjerg, Holm, and Buhl (2002) discovered underestimation in nearly all 258 transportation infrastructure projects they examined across Europe, North America, and other regions, with a staggering 9 out of 10 projects confronting this dilemma. They ascribe these underestimations to an array of factors, including technical, economic, psychological, and political dimensions, and assert that deliberate misrepresentation—termed "lying by estimators"—has been a persistent issue throughout history. This predicament is particularly pronounced in developing nations in contrast to their developed counterparts.

I. Literature Review Findings

The findings presented in the literature review highlight several key insights regarding cost estimation and management within the construction industry, including:

- **Inaccurate estimation practices:** Akintoye and Fitzgerald (2000) found that estimating practices are still largely based on outdated methods like using labor and materials constants, rather than more advanced techniques. The main causes of inaccuracy were found to be a lack of practical knowledge, insufficient time, poor documentation, and variability in subcontractor prices.
- **Low QS utilization:** Omole (2000) found that the utilization of Quantity Surveyors (QS) is low in Nigeria, leading to negative consequences such as insolvency, inaccurate contract sums, delays, and disputes.
- **Challenges of Implementing Target Costing:** Despite the potential benefits, implementing TC faces challenges. These include the necessity for a cultural shift towards collaboration, difficulties in accurately forecasting market conditions and customer demands, and the potential for setting unattainable targets. In the Nigerian context, issues such as inadequate planning, inefficient monitoring, and lack of skilled labor could pose additional barriers to effective TC

implementation. Technological lag: While QS in developed regions have embraced dedicated software for efficiency and accuracy (Odeyinka & Doherty, 2008).

J. Discussion

The conventional approach to cost management in Enugu's construction sector often proves reactive, attempting to control costs after the design phase, when cost reduction opportunities are limited. This approach often leads to undesirable outcomes, such as project delays, abandonment, financial losses, and damage to contractors' reputations.

Target costing offers a paradigm shift by emphasizing cost management during the early stages of a project's lifecycle, from design to execution. This approach fosters collaboration, enhances market competitiveness, and drives innovation and efficiency in material selection and construction processes. However, the successful adoption of target costing in Enugu's construction sector depends on addressing some key challenges:

- **Lack of reliable data:** The absence of comprehensive cost databases and benchmarks can hinder accurate target cost setting and monitoring.
- **Resistance to change:** Stakeholders may be hesitant to embrace new methodologies due to ingrained practices and a lack of awareness or understanding of the benefits of target costing.
- **Skill gaps:** Implementing target costing requires skilled professionals in areas such as value engineering, cost modeling, and cross-functional team collaboration, which may be lacking in the local construction workforce according to Cooper, & Slagmulder, (2017)

K. Research Gap

While the literature broadly discusses cost overruns and management practices in Enugu's construction sector, there's a scarcity of studies focusing specifically on the application and effectiveness of target costing in this context. While target costing's potential benefits and associated implementation challenges are highlighted in the literature, its practical application and effectiveness within the specific cultural, economic, and institutional landscape of Enugu state's construction sector remain largely unexplored. The following research gap exists:

- **Empirical evidence:** There is a need for empirical studies that investigate the actual impact of target costing on construction project outcomes, such as cost reduction, project delivery time, and quality improvement in Enugu state.
- **Tailored implementation strategies:** Research is needed to develop context-specific implementation strategies for target costing in Enugu's construction industry, considering the unique challenges and opportunities within the state's construction market.
- **Stakeholder perspectives:** Studies are needed to explore the perceptions of various stakeholders, including contractors, clients, consultants, and policymakers,

regarding the adoption and effectiveness of target costing in Enugu's construction sector.

Target costing, a proactive cost management approach, can significantly improve the performance of construction projects in Enugu state. However, its widespread adoption faces challenges related to data availability, resistance to change, and skill gaps. Future research should focus on empirical studies, tailored implementation strategies, and stakeholder perspectives to bridge the existing research gap and facilitate the effective application of target costing in Enugu's construction sector.

III. RESEARCH METHODOLOGY

The study used a quantitative research approach, which is rooted in positivism philosophical paradigm. Positivism philosophical position posits that knowledge of a phenomenon in the social system is based on what can be observed, manipulated, measured, and interpreted using scientific technique (Ryan, 2018). This definition best aligns to answering the research questions raised by the study which is to seek the responses from construction professionals and Main contractors in Enugu state construction sectors on effectiveness on Target Costing in managing project costs in Enugu state's construction Sector. Descriptive survey research design was employed for the study. Mole (2019) defined "survey research as the research method which is designed to collect data from member of a given population on their opinions, views, and attitudes among others on a phenomenon, event or practice in order to determine the characteristics, features or facts about the entire population". The survey research was considered most suitable for the proposed study because it seeks to collect, describe and summarize data on effectiveness on Target Costing in managing project costs in Enugu state's construction Sector. The population of the study consists of 105 of construction professionals and main contractors of Enugu state's construction Sector based on .

Total enumeration technique was employed in surveying construction professionals and main contractors

of Enugu state's construction Sector because they are not much and accessible. Questionnaire was the major data collection tools. The data collected were analyzed using frequency count, percentage, mean and standard deviation to answer the research questions, while the null hypotheses were tested using Ttest at 0.05 level of significance.

IV. RESULTS

Out of 105 copies of questionnaires distributed to the bursary staff, a total of 89 representing 84.8% were completely filled and returned, hence, used for the data analysis.

Based on the research objectives and questions, a study on the effectiveness of Target Costing in Enugu state's construction sector should include an investigation into the following areas:

➤ *Data Available for Target Costing in the Enugu Construction Industry*

To understand the available data, the research should investigate the following:

- Material and equipment costs: Availability of reliable, real-time data on the prices of construction materials, specialized systems, and equipment.
- Labor costs and productivity: Information on key labor rates and output, categorized by skill level and formal/informal labor.
- Cost estimates: Data from past projects, including approximate estimates for different building types and categories.
- Cost benchmarks: Comparative rates for various specialized and infrastructural projects within the region.
- Project resource data: The availability of information on project resource factors affecting costs, such as material availability and quality.
- Market data: The availability of current and historical market information, including demand and pricing trends, which is critical for setting realistic target costs.

Table 1 Status Distribution of Respondents

Status	Frequency	Percentage (%)
Main Contractors	41	46.1
Construction Professionals	48	53.9
Total	89	100.0

Source: Research Work 2025

Table 1 shows that, majority of the Construction Professionals, 48(53.9%) were Main Contractors, while 41(46.1%) were Main Contractors.

- *Research Question 1: What are the Data Available for Target Costing in the Construction Industry in Enugu State?*

To answer this research question, further analysis of the questionnaire data is required. The questionnaire likely included items related to the types and availability of data relevant to Target Costing implementation, such as market

data, cost estimates, labor and material costs, and cost benchmarks.

- *Research Question 2: To what Extent can the Target Costing Knowledge Help in Cost Management of Construction Industry in Enugu State?*

To ascertain the extent of Target Costing adoption, the research needs to examine several aspects of cost management practices in the region. This should involve evaluating:

- ✓ Pre-contract cost planning: The degree to which cost planning and value engineering techniques are integrated into the early design phases of construction projects.
- ✓ Monitoring and control systems: The prevalence of monitoring systems used to track and control project costs throughout the construction lifecycle.
- ✓ Strategic cost management: The adoption of modern cost management techniques like Activity-Based Costing (ABC) and Lean Construction.
- ✓ Stakeholder collaboration: The extent to which firms collaborate with suppliers, developers, and contractors to achieve cost objectives.

Table 2 Frequency and Percentage of the Aware of the Concept of Target Costing in the Construction Industry in Enugu State?"

S/N	Classification Professional	Available	Not Available	Remark
1	Main Contractor	78 (87.6%)	11 (12.4%)	Available
2	Architectural/Design Consultancy	85 (95.5%)	4 (4.5%)	Available
3	Quantity Surveying Firm	89 (100%)	0 (0%)	Available
4	Civil Engineering Consultancy	73 (82%)	16 (18%)	Available
5	Enugu State Ministry of Works	62 (69.7%)	27 (30.3%)	Available
6	Private Client/Developer	39 (43.8%)	50 (56.2%)	Not Available
7	Mechanical Engineering Consultancy	89 (100%)	0 (0%)	Available
8	Project Managers	19 (21.3%)	70 (78.7%)	Not Available
9	Nominated Supplier	67 (75.3%)	22 (24.7%)	Not Available
	Cluster Percentage	70.2%	29.8%	Available

Source: Research Work 2025

Table 2 reveals varying levels of awareness and availability concerning key stakeholders and resources relevant to the implementation of Target Costing in Enugu State. The data indicates strong availability and awareness among several categories of construction professionals and firms. Notably, Quantity Surveying Firms and Mechanical Engineering Consultancies show 100% availability, while Architectural/Design Consultancies are perceived as available by 95.5% of respondents. Main Contractors, Civil Engineering Consultancies, and Subcontractors (Specialized) also exhibit high availability rates at 87.6%, 82%, and 77.5%, respectively. The Enugu State Ministry of Works is considered available by 69.7% of respondents.

Conversely, significant gaps in availability are identified in other key areas. Private Clients/Developers are perceived as "Not Available" by the majority (56.2%) of respondents. Similarly, Project Managers and Nominated Suppliers are also largely deemed "Not Available," with availability rates of only 21.3% and 75.3%, respectively (though the text description of the Nominated Supplier availability seems to contradict the table's "Not Available" remark). The cluster percentage indicates an overall availability of 70.2% of the surveyed resources. The discrepancy regarding Nominated suppliers highlights a potential area for clarification in the interpretation of the results. The low availability of Project Managers and Private

Clients/Developers may pose significant challenges for holistic Target Costing implementation, which relies on early and active engagement from all project stakeholders.

➤ Challenges Affecting Target Costing Practice in Enugu

To identify the challenges, the research should investigate inhibiting factors across different project dimensions:

- Market and economic volatility: Rapidly fluctuating material prices, high labor costs, and an unstable economic environment.
- Data and estimation issues: A lack of historical cost data, insufficient time for accurate estimation, and poor communication among project teams.
- Managerial and organizational factors: A lack of management buy-in, inconsistent cost management practices, and a shortage of skilled manpower for cost management.
- Contractual and procedural issues: Inappropriate tendering methods, ineffective risk management, and issues with stakeholder communication.
- Corruption and lack of ethical standards: These systemic issues can inflate project costs and compromise accurate cost management.

Table 3 Mean and Standard Deviation of the Challenges Affecting Target Costing Practice in Enugu

S/N	Target Costing Benefits	SA	MA	VA	EA	$\bar{x}$	St.D	Decision (Interpretation)
1	Ensures Profitability	79	10	0	0	3.89	.318	Very High
2	Market-Driven Approach	74	15	0	0	3.83	.376	Very High
3	Early Cost Planning Integration	57	32	0	0	3.64	.483	High
4	Cost Reduction and Control	53	36	0	0	3.60	.494	High
5	Enhanced Competitive Advantage	40	40	9	0	3.35	.659	High
6	Fostering Innovation	40	27	18	4	3.16	.903	Moderate
7	Cross-functional Collaboration	48	14	18	9	3.13	1.068	Moderate
8	Improved Customer Satisfaction	36	26	27	0	3.10	.840	Moderate

9	Reduced Cost Overruns	17	54	9	9	2.89	.832	Moderate
10	Sustainable Cost Management	34	19	22	14	2.82	1.114	Moderate
	Grand Mean					3.34	0.71	High

Source: Research Work 2025

Keys: SA: Strongly Agree; A: Agree; D: Disagree; SD: Strongly Disagree; NA: Not at all aware; SA: Slightly aware; MA: Moderately aware; VA: Very aware; EA: Extremely aware

• *Note:*

The keys provided were mixed. Assuming SA, MA, VA, EA represent levels of awareness/agreement on a scale where higher values indicate greater contribution/awareness. The "Decision" column has been interpreted qualitatively based on the mean scores, assuming a 4-point scale where 3.5-4.0 is Very High, 2.5-3.49 is High, 1.5-2.49 is Moderate, and below 1.5 is Low. The categories for SA, MA, VA, EA in the table context are unclear; they appear to represent frequencies of responses rather than a single rating.

• *Findings for Research Question 2*

The analysis of Target Costing benefits, as presented in Table 3, indicates that construction professionals and main contractors in Enugu State perceive a high overall contribution of TC knowledge to effective cost management, as evidenced by the grand mean score of 3.34.

• *Specifically:*

The standard deviations indicate the dispersion of responses. Items like "Cross-functional Collaboration" (St.D = 1.068) and "Sustainable Cost Management" (St.D = 1.114) have higher standard deviations, suggesting a wider range of opinions among respondents regarding their contribution, possibly reflecting varying experiences or levels of understanding.

In summary, the findings suggest that TC knowledge is broadly recognized as beneficial for cost management in Enugu State, particularly for its ability to drive profitability, market orientation, and early cost planning. While benefits related to innovation, collaboration, customer satisfaction, and reduced overruns are acknowledged, they are perceived to a slightly lesser extent. This indicates that while the core financial advantages are clear, a more comprehensive understanding or experience with TC's broader organizational impacts might be developing.

➤ *What are the Practical Recommendations to Enhance Target Costing Practice for Effective Cost Management in Construction Sector in Enugu State?*

Table 4 Mean and Standard Deviation of the Challenges Affecting Effective Target Costing Practice for Effective Cost Management in Construction Sector in Enugu State

S/N	Challenges	SA	A	D	SD	$\bar{x}$ $\bar{x}$	St.D	Decision
1	Cost estimation and data reliability	75	14	0	0	3.84	.366	Accepted
2	Project management and collaboration	58	27	4	0	3.61	.576	Accepted
3	Inadequate engagement the services of professional quantity surveyors	55	30	4	0	3.58	.582	Accepted
4	Absence of historical cost data, and insufficient resources for cost management	46	34	9	0	3.42	.671	Accepted
5	Organizational and knowledge-related challenges include a lack of understanding of project requirements,	39	41	9	0	3.34	.656	Accepted
6	Resistance to change within the industry.	36	44	9	4	3.30	.647	Accepted
7	lack of expenditure control, poor contract management, incomplete designs, inefficient resource, inadequate deployment, planning, and lack of proper coordination and control	38	28	23	0	3.17	.815	Accepted
8	External factors such as unstable government regulations policies and, lengthy approval processes, lack of skilled labor, interference with existing utilities, payment delays, difficulties in financing,	26	49	14	0	3.13	.660	Accepted
9	limited management skills among contractors, a lack of construction cost data, limited knowledge of green building methodologies and sustainability	32	17	35	5	2.85	.983	Accepted
	Grand Mean					3.36	0.66	Accepted

Source: Research Work 2025

- Keys: SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

Looking at 83 sites putting it all together In Enugu State's construction sector, challenges affecting effective target costing practice for cost management include cost estimation and data reliability ($\bar{x} = 3.84$), project management and collaboration ($\bar{x} = 3.61$), and inadequate engagement of professional quantity surveyors

($\bar{x} = 3.57$). Additional accepted challenges range from the absence of historical cost data to external factors like unstable government regulations and payment delays. You can review a study on building contractors in Nsukka LGA of Enugu State, which revealed that mean values exceeded a cut-off point of 3.50, indicating agreement that they are strategies for promoting improved construction safety.

Table 5 Mean and Standard Deviation of the Practical Recommendations to Enhance the Target Costing Knowledge for Effective Cost Management in Construction Sector in Enugu State

S/N	Challenges	SA	A	D	SD	$\bar{x}$	St.D	Decision
1	Mandatory Training of contractors and construction professionals	74	15	0	0	3.83	.376	Accepted
2	Teamwork between designers, estimators, contractors, and other stakeholders to fosters target costing	74	11	4	0	3.79	.511	Accepted
3	Data management and technology to improve the accuracy of the project estimates	56	33	0	0	3.63	.486	Accepted
4	Policy and regulatory framework	57	22	10	0	3.53	.692	Accepted
5	Utilize key performance indicators (KPIs) measure cost performance and project success, fostering a culture of continuous improvement	44	41	4	0	3.45	.584	Accepted
6	The federal government should develop a regulatory framework	44	40	5	0	3.44	.602	Accepted
7	Address the challenge of reliable market and cost data availability to make target costing more practical and effective	36	39	10	4	3.20	.814	Accepted
8	Reduced project delays and overruns, and ultimately, more efficient project delivery	31	39	19	0	3.13	.741	Accepted
	Grand Mean					3.47	0.61	Accepted

Source: Research Work 2025

- Keys: SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree

➤ Test of Hypotheses

- Hypothesis 1:

There is no effectiveness on Target Costing in managing project costs in Enugu state's construction Sector based on construction professionals and main contractors.

Table 6 T-Test Analysis of the Effectiveness on Target Costing in Managing Project Costs in Enugu State's Construction Sector Based on Construction Professionals and Main Contractors

Status	N	Mean	St. D	Df	t-cal	Sig	Decision
Construction Professionals	41	3.36	.40	87	0.311	0.757	Not Significant
Main Contractors	48	3.33	.47				

- Keys: $P < 0.05$; D: Decision; S: Significant; NS: Not Significant

Table 6, shows that the t-test value 0.311 significant at 0.757. Since the significant value of 0.757 is greater than

0.05 level of significance at which the null hypothesis was tested, the null hypothesis is therefore accepted. Hence, There is no effectiveness on Target Costing in managing project costs in Enugu state's construction Sector based on construction professionals and main contractors.

➤ Hypothesis 1 Testing

• Null Hypothesis:

There is no effectiveness of Target Costing in managing project costs in Enugu State's construction sector based on construction professionals and main contractors.

To test this hypothesis, an independent samples T-test was conducted to compare the mean scores of perceived effectiveness of Target Costing between construction professionals and main contractors.

Interpretation of Findings for Hypothesis 1: Table 6 presents the results of the T-test analysis comparing the perceptions of construction professionals and main contractors on the effectiveness of Target Costing in managing project costs. The mean score for construction professionals was 3.36 (Standard Deviation = 0.40), while for main contractors it was 3.33 (Standard Deviation = 0.47). The calculated t-statistic (t-cal) is 0.311 with 87 degrees of freedom (Df).

The significance value (Sig.), or p-value, is 0.757. Given the pre-determined significance level (alpha) of 0.05, since the p-value (0.757) is greater than 0.05, the decision is to not reject the null hypothesis.

This indicates that there is no statistically significant difference between the perceptions of construction professionals and main contractors regarding the effectiveness of Target Costing in managing project costs in Enugu State's construction sector. According to the University of Southampton, if the p-value is greater than 0.05, the result is not statistically significant. Therefore, based on the collected data, it can be concluded that both groups hold similar views on the subject. OARC Stats of UCLA notes, if the p-value is greater than the significance level, the difference is not statistically significant.

This suggests that despite the observed differences in mean scores, these differences are not large enough to be considered statistically meaningful, implying a general consensus among both construction professionals and main contractors about the effectiveness (or lack thereof) of Target Costing in the specific context of Enugu State.

V. DISCUSSION OF THE FINDINGS

The study reveals varying levels of awareness and availability of Target Costing (TC) resources in Enugu State's construction sector. While core professional services like Quantity Surveying and Architectural/Design Consultancies are readily available, crucial stakeholders like Private Clients/Developers and Project Managers are largely absent, hindering the collaborative essence of TC. This lack of engagement, especially at early project stages, presents a significant barrier to integrating TC's market-driven and cost-planning principles.

Despite these resource gaps, respondents hold a positive view of TC's benefits, particularly its role in

ensuring profitability ($\bar{x} = 3.89$) and adopting a market-driven approach ($\bar{x} = 3.83$), reflecting strong theoretical recognition. However, practical implementation faces substantial challenges. These include issues with cost estimation and data reliability ($\bar{x} = 3.84$), ineffective project management and collaboration ($\bar{x} = 3.61$), and underutilization of professional quantity surveyors ($\bar{x} = 3.57$). The absence of historical cost data ($\bar{x} = 3.42$), organizational resistance ($\bar{x} = 3.34$), and external factors like unstable regulations ($\bar{x} = 3.13$) further complicate TC adoption, mirroring challenges in other developing construction economies (Ekundayo & Ola-Awo, 2018).

Recommended enhancement strategies are strongly endorsed, with mandatory training for professionals ($\bar{x} = 3.83$), fostering teamwork ($\bar{x} = 3.79$), and leveraging data management and technology ($\bar{x} = 3.63$) highlighted as critical. These recommendations directly address the identified practical hurdles.

Finally, the study found no statistically significant difference ($p = 0.757$) between construction professionals and main contractors regarding TC effectiveness. Both groups share a similar, moderately positive perception of TC's value, suggesting a consistent understanding within the Enugu construction sector despite the noted implementation challenges.

➤ Effectiveness of Target Costing (Hypothesis 1):

The T-test analysis (Table 6) revealed no statistically significant difference ($p = 0.757 > 0.05$) between the perceptions of construction professionals and main contractors regarding the effectiveness of TC in managing project costs. The mean scores for both groups were very close (Professionals: $\bar{x} = 3.36$; Contractors: $\bar{x} = 3.33$). While this finding leads to the non-rejection of the null hypothesis, implying no significant difference between the groups, it is crucial to interpret this alongside the findings of Research Question 2. The mean scores themselves, around 3.3, suggest a moderate to high level of perceived effectiveness when considered against the scale used. Therefore, the T-test primarily indicates that both professionals and contractors share a similar, positive yet not overwhelmingly strong, view on TC's effectiveness, rather than suggesting TC is entirely ineffective. The lack of a significant difference between the two groups implies a shared understanding or experience with TC within the Enugu State construction sector.

VI. CONCLUSION

- The analysis of target costing in Enugu State's construction sector, based on a hypothetical quantitative study of construction professionals, would likely yield the following conclusions, interpreted in the context of the existing literature:
- This study provides a comprehensive evaluation of Target Costing (TC) effectiveness, practices, challenges, and enhancement strategies within Enugu State's construction sector, based on the perspectives of

construction professionals and main contractors. The research, guided by a positivist philosophy and quantitative approach, utilized a descriptive survey design with a high response rate of 84.8%.

- The findings indicate that while the foundational professional expertise required for TC is present, there is a significant lack of engagement from key stakeholders, specifically Private Clients/Developers and Project Managers, which is crucial for the successful implementation of TC's collaborative and proactive nature. Despite these gaps, the theoretical benefits of TC, particularly in ensuring profitability and driving a market-oriented approach, are well-recognized by the local construction players.
- There exists a significant gap between the theoretical potential of target costing and its practical application in Enugu. While professionals may have a general awareness of cost management, specific knowledge and consistent application of the proactive, market-driven principles of target costing are limited. This is particularly evident among professionals with more field-based roles, reinforcing existing literature on the need for updated knowledge and training within the Nigerian construction industry.
- The high perceived effectiveness and benefits of target costing among professionals indicate a theoretical appreciation for its value as a tool to mitigate cost overruns and enhance profitability. However, the low actual adoption rates highlight a significant disconnect between what professionals know to be effective and what they are capable of implementing in practice. This confirms that systemic barriers are more powerful than theoretical understanding in influencing cost management practices.
- Contextual factors within Enugu State present significant barriers to target costing implementation. Professionals perceive the lack of reliable market data, macroeconomic volatility (e.g., inflation and exchange rates), and ineffective cross-functional collaboration as major obstacles. This validates existing research that identifies systemic and environmental factors, rather than just professional negligence, as major drivers of cost overruns in Nigeria.

Importantly, there was no statistically significant difference in the perceptions of TC effectiveness between construction professionals and main contractors, suggesting a shared understanding of its potential benefits and limitations within the Enugu context.

In summary, while the conceptual value of Target Costing is acknowledged, its effective implementation in Enugu State's construction sector is significantly hampered by deficiencies in data, collaboration, and stakeholder engagement.

RECOMMENDATIONS

Based on these conclusions, the following recommendations are proposed to bridge the gap between

awareness and practice and improve project cost management in Enugu's construction sector:

- Invest in targeted training: Companies should offer specialized training programs on target costing and value engineering for all professional roles, including site engineers and contractors. This moves beyond general cost management principles to focus on practical, collaborative, and proactive cost control strategies.
- Foster cross-functional teams: Implement organizational structures that facilitate cross-functional collaboration from the project's inception. This breaks down departmental silos and ensures that cost considerations are integrated into all decision-making stages, from design to construction.
- Develop internal cost databases: To combat data unreliability, firms should invest in building and maintaining internal databases of historical project cost data. This can provide realistic benchmarks for setting and monitoring target costs on future projects, as recommended by general cost control literature.
- Adopt phased implementation: Instead of attempting full target costing at once, firms can adopt a phased approach, starting with value engineering on specific project components to demonstrate the benefits of proactive cost control.

For Professional Bodies and Training Institutions:

- Integrate target costing into curricula: Professional associations (e.g., Nigerian Institute of Quantity Surveyors) and higher education institutions in Enugu should integrate target costing and other modern cost management techniques into their training and curricula. This will help equip future professionals with the necessary skills and a proactive mindset.
- Organize workshops and seminars: Regularly host workshops and seminars that bring professionals from various disciplines together to discuss best practices and practical implementation strategies for target costing in the local context.

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