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AN EVALUATION OF COST CONTROL PRACTICES IN BUILDING CONSTRUCTION PROJECTS IN ABUJA, NIGERIA

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ABSTRACT

Purpose*: Cost control in building construction entails the systematic management of expenditures to ensure projects are delivered within budget, without compromising quality or objectives. Effective cost control enables construction firms to maximize profits, mitigate financial risks, and enhance client satisfaction. Quantity Surveyors employ a range of conventional and contemporary methods to achieve these outcomes. this research evaluates the specific determinants influencing their selection of cost control methods for building projects in Abuja, Nigeria.*

Design/methodology/approach*: This study utilized a survey-based approach, administering questionnaires to Quantity Surveyors in Abuja. A sample of 38 professionals was selected via snowball sampling. Data were analysed using mean score ranking and Pearson product-moment correlation coefficients.*

Findings*: The primary construction estimates used by QS in Abuja were ranked as: detailed estimates (1st), substantive estimates (2nd), and preliminary estimates (3rd). The key cost estimation methods employed were ranked as: analogous (1st), parametric (2nd), bottom-up (3rd), three-point (4th), and expert judgment (5th). The principal determinant of method selection was the specific purpose of the cost estimate. Pearson product-moment correlation analysis revealed a strong correlation between the awareness of cost estimation methods and the determinants of method choice, aligning with the benchmarks established by Burris (2005).*

Research limitations/implications*: This study utilised a relatively small sample of 38 Quantity Surveyors in Abuja, recruited via snowball sampling; this approach limits the generalisability of the findings across Nigeria. Consequently, future research should extend evaluations to other geographic regions and investigate why awareness exerts a more significant influence on method choice in Abuja compared to other contexts. These limitations present opportunities to refine theoretical models*

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regarding professional decision-making within construction cost management. ***The Practical implications****: Professional bodies and training providers should systematically strengthen cost estimation education at both pre-service and post-qualification levels. Specifically, Higher National Diploma and degree programmes should be enhanced to address the curricular and practical gaps that currently restrict exposure to contemporary methods. Such improvements are essential for elevating project delivery standards within Abuja's construction sector.*

Originality/value*: This research provides a targeted empirical evaluation of Quantity Surveyors' cost control practices in Abuja, quantifying method preferences and drivers through statistical ranking and correlation analysis. It uniquely identifies awareness as a dominant influencer within a Nigerian urban context, furnishing novel evidence to inform both educational reforms and professional practice enhancements.*

Keywords: Cost Control Practices, Estimation Methods, Building Construction Projects

1.0 INTRODUCTION

The construction sector in Abuja, Nigeria, grapples with escalating costs driven by rapid urbanisation, fluctuating material prices and infrastructural demands, rendering effective cost control practices indispensable for sustainable project delivery (Oladapo, Ojelabi & Tunji-Olayeni, 2023; Aiyetan & Smallwood, 2024; Eze & Okoye, 2025). In this context, building construction projects frequently exceed budgets due to inadequate monitoring, scope creep and economic volatility, underscoring the urgency for rigorous evaluation of cost control mechanisms to enhance value for money and project viability (Idoro & Iyogba, 2023; Ofori, 2024; Babatunde, Opawole & Akinsiku, 2025). Cost control practices in quantity surveying refer concretely to the systematic processes employed by quantity surveyors to forecast, monitor, allocate and regulate project expenditures from inception through completion, ensuring actual costs align with the approved budget while optimising resource utilisation and mitigating financial risks (Brook, 2023; Cartlidge, 2024; Opentunji & Adebayo, 2025). This encompasses pre-contract elemental cost planning, interim valuations, variation assessments and postcontract final accounts, all underpinned by value engineering and variance analysis to prevent deviations that could erode project profitability (Ashworth et al., 2023; Willis & Trench, 2024; Oke & Aigbavboa, 2025). In Nigeria's dynamic construction landscape, these practices distinguish professional quantity surveying from ad hoc approaches, fostering transparency and accountability as mandated by the Nigerian Institute of Quantity Surveyors (NIQS) code of conduct (NIQS, 2023; Idowu & Lawal, 2024; Ugwu & Onyekwere, 2025).

In Nigeria, Quantity Surveyors bear the statutory duty to determine the cost of every building construction project, as enshrined in professional regulations and procurement laws, positioning them as the primary financial advisors who translate design intents into viable economic models (NIQS, 2023; Oladimeji & Gbewaa, 2024; Aina & Opawole, 2025). This responsibility stems from their specialised training in measurement, pricing and contractual management, enabling accurate pretender estimates that safeguard client interests against inflated bids and unforeseen liabilities (Ezeokoli & Okolie, 2023; Laryea & Watermeyer, 2024; Kasim et al., 2025). During cost determination, six paramount factors amongst others necessitate rigorous cost control practices by Quantity Surveyors as cost professionals: volatile material prices influenced by import dependencies and Naira fluctuations; labour shortages exacerbated by skill gaps and migration; design alterations driven by client changes or regulatory shifts; site-specific risks like geological instabilities in Abuja's terrain; contractual disputes arising from ambiguous bills of quantities; and macroeconomic pressures including inflation and forex constraints, all of which demand proactive monitoring to avert overruns (Oladapo, et al., 2023; Idoro & Iyogba, 2023; Abdullahi & Ibrahim, 2023; Windapo & Rotimi, 2024; Babatunde et al., 2025; Nwaobasi et al., 2025).

As members of the NIQS, Quantity Surveyors uphold best practices in cost determination for proposed projects, employing standardised methods like the New Rules of Measurement (NRM) and elemental cost analysis to eschew patchy practices that plague informal sectors (NIQS, 2023; Opentunji & Adebayo, 2025; Ugwu & Onyekwere, 2025). These professionals integrate digital tools such as Building Information Modelling (BIM) for real-time cost tracking and lifecycle costing, ensuring decisions reflect holistic value rather than superficial savings (Oke & Aigbavboa, 2025; Aiyetan & Smallwood, 2024; Eze & Okoye, 2025). By prioritising evidence-based forecasting and stakeholder collaboration, NIQS members elevate project outcomes in Abuja, bridging the gap between budgetary aspirations and construction realities while advancing Nigeria's built environment sustainability (Idowu & Lawal, 2024; Ofori, 2024; Aina & Opawole, 2025). This study thus evaluates cost control practices in Abuja's building projects, spotlighting the pivotal role of quantity surveyors as cost custodians amid Nigeria's burgeoning construction economy, where post-2022 data reveal cost overruns averaging 25-40% in public sector initiatives (Abdullahi & Ibrahim, 2023; Windapo & Rotimi, 2024; Nwaobasi, Udeagha & Chukwuma, 2025).

2.0 LITERATURE REVIEW

Cost in construction is generally understood as the monetary value of resources consumed to deliver a building, including labour, materials, plant, finance, overheads and risk allowances and it provides the central basis upon which affordability, feasibility and value for money are assessed in project decisionmaking (Okereke, Nwachukwu, & Ibrahim, 2022; Omoregie, 2025; Abani & Alaba, 2023). In quantity surveying discourse, project cost is not simply a final account figure but a structured forecast of anticipated expenditure over the project life cycle, expressed through cost plans, elemental analyses and cash-flow projections, which allow clients to balance scope, quality and time against available financial resources (Impact of Project Cost Control, 2024; Omoregie, 2025; Abani & Alaba, 2023).

Cost control refers to the systematic process of planning, monitoring, comparing and regulating actual costs against planned budgets in order to keep a project within its approved financial limits while maintaining required performance standards (Okereke et al., 2022; Impact of Project Cost Control, 2024; Osuizugbo, Osuagwu, & Eze, 2022). In the construction context, cost control encompasses the establishment of target costs, continuous measurement of cost performance, variance analysis and timely corrective action such as design optimisation, scope adjustment or procurement changes to prevent or mitigate overruns (Abani & Alaba, 2023; Impact of Project Cost Control, 2024; Omoregie, 2025). Cost control practices, therefore, can be concretely defined as the coordinated set of professional methods, procedures and digital tools that quantity surveyors and project managers employ to implement cost control on real projects, from inception to completion, in a repeatable and auditable way (Okereke et al., 2022; Omoregie, 2025; Osuizugbo et al., 2022). These practices include detailed cost planning, preparation of bills of quantities, value engineering, cost–time integration, regular cost reporting, cash-flow control, earned-value analysis and final account reconciliation, increasingly supported by building information modelling (BIM) and institutional cost databases (Okereke et al., 2022; Adebowale & Oyinleye, 2024; Impact of Project Cost Control, 2024).

The justification for cost control practices in building projects is both economic and strategic, as Nigerian and wider African evidence shows that ineffective cost control is strongly associated with cost overruns, time delays, quality defects and weakened financial performance of construction firms (Impact of Project Cost Control, 2024; Ibitoye & Omopariola, 2024; Omoregie, 2025). Studies of Nigerian construction projects report that inadequate planning, poor communication, weak monitoring systems and corruption contribute significantly to project cost escalation and that robust, proactive cost control practices help reduce these risks by providing early warning signals and structured responses (Impact of Project Cost Control, 2024; Okereke et al., 2022; Osuizugbo et al., 2022). Empirical analysis further indicates that effective cost control practices positively influence firms' profitability indicators

such as return on assets and return on equity, by limiting overruns, improving cash-flow management and supporting timely delivery, which underscores cost control as a strategic competence rather than a purely technical function (Impact of Project Cost Control, 2024; Ibitoye & Omopariola, 2024; Prospect of Construction Cost Management Practices, 2024). In Abuja's high-value market, where many projects are publicly financed or involve large corporate investments, cost control practices also carry a governance dimension, supporting transparency, accountability and public trust in how construction budgets are spent (Okereke et al., 2022; Omoregie, 2025; QSRBN, 2024).

Quantity surveyors adopt a wide spectrum of methods for cost determination, reflecting different project stages, information levels and client needs and the literature shows that at least fifteen approaches are widely recognised in contemporary Nigerian and African practice (Omoregie, 2025; Okereke et al., 2022; Umeh & Adebisi, 2024). Approximate estimating methods such as floor-area, cube and storey-enclosure methods are used at conceptual stage when design detail is limited but rapid order-of-magnitude costs are required to test project affordability, making them attractive for early decision-making in fast-moving markets like Abuja (Okereke et al., 2022; Abani & Alaba, 2023; Osuizugbo et al., 2022). Elemental cost analysis and elemental cost planning are adopted once schematic designs are developed, because they allow costs to be allocated to building elements (for example substructure, superstructure, finishes and services), enabling systematic comparison of alternative design options and supporting value-for-money assessments (Omoregie, 2025; Umeh & Adebisi, 2024; Impact of Project Cost Control, 2024). Bills of quantities and detailed unit-rate estimating remain central to formal tendering, because they provide an itemised description and pricing of work that supports competitive bidding, contractor selection and contract administration and their adoption is justified by the need for transparency and contractual clarity (Okereke et al., 2022; QSRBN, 2024; NIQS, 2024).

Resource-based and operational methods such as labour-output-based estimating, plant-usage analysis and construction method-based costing are increasingly used by quantity surveyors and contractors to reflect productivity realities on Nigerian sites and they are adopted because they help address the gap between textbook rates and actual performance in varying local conditions (Osuizugbo et al., 2022; Impact of Project Cost Control, 2024; Abani & Alaba, 2023). Life-cycle costing and whole-life cost analysis are gaining prominence, particularly on public and institutional projects, as they enable decision-makers to compare alternatives based on total cost of ownership— including maintenance, replacement and operation—rather than only initial capital cost, which aligns with sustainability and value-for-money agendas (Umeh & Adebisi, 2024; Olatunde, 2025; Prospect of Construction Cost Management Practices, 2024). Pre-tender cost checks, cost modelling and parametric estimating are adopted to reconcile design development with budget constraints and to provide rapid scenario testing as drawings evolve, which is especially important in Abuja's inflationary environment (Okereke et al., 2022; Udo & Enyinna, 2023; Omoregie, 2025). BIM-enabled 5D cost integration and the use of national cost databanks are emerging methods justified by their ability to link quantities, rates and design models dynamically, reduce manual errors and embed up-to-date market information into cost determinations, thereby enhancing accuracy and efficiency (Udo & Enyinna, 2023; Adebowale & Oyinleye, 2024; NIQS, 2024).

Several recent studies have cross-examined cost control practices in Nigeria and related contexts, but they leave important gaps that justify a focused evaluation of cost control practices in Abuja building projects (Okereke et al., 2022; Impact of Project Cost Control, 2024; Omoregie, 2025). Okereke, Nwachukwu and Ibrahim examined project cost control practices for enhanced time efficiency and quality delivery at national level, but they did not disaggregate their analysis to capital-city dynamics or focus on the specific role of quantity surveyors in Abuja's building sector, leaving a contextual gap that this study addresses (Okereke et al., 2022; Abani & Alaba, 2023; Osuizugbo et al., 2022). The

conceptual review on the impact of project cost control on financial performance of construction firms provided strong evidence linking cost control to profitability, yet it focused on firm-level financial metrics and did not investigate project-level methods and behaviours of quantity surveyors on specific urban projects (Impact of Project Cost Control, 2024; Ibitoye & Omopariola, 2024; Prospect of Construction Cost Management Practices, 2024). Omoregie's investigation of cost management practices used national survey data but did not drill down into detailed practice patterns in Abuja or compare adopted methods with emerging NIQS databank and BIM-based approaches, leaving open questions this research seeks to clarify (Omoregie, 2025; Udo & Enyinna, 2023; Adebowale & Oyinleye, 2024).

Other works have addressed specific aspects such as capital project planning, financial control systems or post-contract cost management, but they tend to adopt either a general project-management lens or a contractor-centred view and do not systematically evaluate how professional quantity surveyors in Abuja combine different cost determination methods and cost control techniques in day-to-day practice (The Effect of Capital Project Planning, 2023; Onyeka, 2023; Osuizugbo et al., 2022). Regional studies on the prospects of construction cost management practices highlight the benefits of effective cost management for predicting expenses, reducing waste and improving competitiveness, yet they also note skill gaps and limited adoption of advanced tools among professionals, without providing a focused Abuja case (Prospect of Construction Cost Management Practices, 2024; Impact of Project Cost Control, 2024; Okereke et al., 2022). Collectively, these studies underscore that while the importance of cost control is widely accepted, there is still limited empirical evidence on how quantity surveyors in Nigeria's capital actually implement cost control practices, which methods they prioritise, how contextual factors such as inflation and procurement regimes shape their choices and where practice diverges from emerging professional guidance such as NIQS' cost databank initiative (Adebowale & Oyinleye, 2024; NIQS, 2024; Omoregie, 2025). By concentrating on building construction projects in Abuja and by examining both the cost determination methods and the operational cost control practices of quantity surveyors, the present study responds to these gaps and aims to provide evidence that can inform professional training, institutional policy and improved project outcomes in Nigeria's construction industry (Okereke et al., 2022; Impact of Project Cost Control, 2024; Umeh & Adebisi, 2024).

3.0 METHODOLOGY 3.1 Design and setting

The research design was survey research: as it facilitates the collection of standardised, quantifiable data that can be subjected to descriptive and inferential statistical analysis, enabling robust comparisons across project types, firm sizes, procurement routes and professional roles in Abuja's building sector (Musarat, Qureshi & Abdullah, 2024; Kelechi & Chinemerem, 2025). Primary sources of data were employed via questionnaire administration (with close-ended, open-ended and Likertscale questions) was as the instrument for data collection. Quantity Surveyors in Abuja, F.C.T Nigeria (i.e. study population) were gotten through snowball sampling technique for its effectiveness in accessing Quantity Surveyors who are countable, hidden or hard to reach population of professionals in Abuja, F.C.T., Nigeria is countable and hidden (Ting, Greener & Martelli, 2025). Snowball sampling, which well suited to reaching "hard to access" or network-based populations of Quantity Surveyors: who are busy, dispersed across multiple sites and not listed in any single public sampling frame was adopted in getting sample units/elements in the study area (Ting, Fam & Tan, 2025).

3.2 Sample/participants

The population of this study were registered quantity surveying firms in Abuja, Nigeria. According to the directory of Nigerian Institute of Quantity Surveyors (NIQS, 2024), there are 46 registered quantity surveying firms in Abuja, which forms the sample frame for this study. According to Krejcie and Morgan (1970), for research where the sample frame is 46, the sample size must not be lesser than 40

but 41 was selected as the sample size; which is 89.13% of the sample frame. Out of 41 administered questionnaires (to a quantity surveyor in each firm at the study area), 27 questionnaires were retrieved: which is 65.85% retrieval.
The inclusion criteria encompassed Associate members and Fellow members of Nigerian Institute of Quantity Surveyors that are Principal Partners, Partners, Senior Quantity Surveyors and Junior Quantity Surveyors at various Quantity Surveyors' firms within Abuja, Nigeria.

3.3 Data collection

Pilot survey was conducted to ensure data reliability and data validity. Data reliability was conducted using test-retest method of 10 questionnaires. In this retest method, five (5) questionnaires were first administered to Quantity Surveyors at various Quantity Surveyors' firms within Abuja, Nigeria and retrieved, while the same five (5) Quantity Surveyors at various Quantity Surveyors' firms within Abuja, Nigeria were re-administering the same set of questionnaires after 14days of retrieving those earlier administered. An intraclass correlation coefficient (ICC) value gotten was gotten was 0.76: signifying a good reliability (Koçak, Yıldırım & Erdem, 2024).

Meanwhile, content validity was carried out for the validity test. The researchers made four (4) copies of the proposed questionnaire available to four (4) professionals in the field of quantity surveying to assess the worthiness of the questionnaire before pilot survey and research survey. All the observations were corrected before the questionnaire was administered for the pilot and field survey.

Data collection was performed using a two-section questionnaire. The first section collected the participants' demographic characteristics including the gender of the respondents in the study area, the profession professional grading of respondents, respondents' ages, the academic qualification of respondents, the professional qualifications of the respondents, number of years of becoming members of Nigerian Institute of Quantity Surveyors, the period of working with firms of Nigerian Institute of Quantity Surveyors, numbers of NIQSs in the firms. The second section was on Professional Values of Nigerian Institute of Quantity Surveyors' members. This second section has questions on source of your education and level at which contemporary cost estimation method was taught, seminars attended on contemporary cost estimation method, frequency of usage of contemporary cost estimation method in the last 10 years, purposes that warrant the usage of contemporary cost estimation method etc.

Ethical concern was also given a priority by avoidance of ambiguous questions and none of the questionnaires has means of identity. The respondents remain confidential and anonymous throughout to avoid any problem that may be detrimental to these Quantity Surveyors.

3.4 Statistical analysis

Data were analysed via Statistical Packages for Social Sciences (SPSS) version 25 using descriptive statistics (frequency, percentage, mean and standard deviation).

Options	**Frequency**	**Percentages (%)**
Male	23	85.19
Female	4	14.81
Principal Partner	10	27.04
Senior Quantity Surveyor	7	25.93

4.0 PRESENTATION AND DISCUSSION OF RESULTS

4.1 Presentation of Results

Table 1: Demography of the Respondents

Variables			
Gender			
Position	Junior Quantity Surveyor	8	29.63
	Probationer	2	7.41
Age of respondents	30 Years and below	4	14.81
	31-40years	11	40.74
	41-50years	6	22.22
	51-60years	4	14.81
	61 and above	2	7.41
Academic qualification	Higher National Diploma	11	40.74
	First Degree	7	25.93
	Postgraduate Degree	4	14.81
	Masters Degree	4	14.81
	Doctor of Philosophy	1	3.70
Period of working in Estate Surveyor's and Valuer's firm	1-10YEARS	7	25.93
	1120YEARS	12	44.44
	21-30YEARS	6	22.22
	ABOVE 30 YEARS	2	7.41

Source: Field Survey (2025)

Table 1 presents the demographic characteristics of the respondents. The male respondents are 23, which is 85.19% while the female respondents are 4, which is 14.81%. This signifies that the male respondents are the majority in this study. The position of the respondents indicates that Principal Partners are 10 respondents, Senior Quantity Surveyors are 7, Junior Quantity Surveyors are 8and the Probationers are 2, which is 27.04%, 25.93%, 29.63% and 7.41% respectively. This signifies that majority of the respondents are Principal partners in Quanty Surveying firms.

The age of the respondents reveals that Quantity Surveyors of age of 30years and below are 4; signifying 14.81%, 31 – 40 years are 11, which is 40.74%%, 41 – 50 years has 6 respondents, which is 22.22%, 51 – 60 years has 4 respondents, which is 14.81% and 61 years and above has 2 respondents, which is 7.41%. This revealed that age group of 31 – 40years dominated the respondents sampled. However, respondents with Higher National Diploma are 11, which is 40.74%, First Degree has 7 respondents, which is 25.93%, those with Postgraduate Degree are 4, which is 14.81%, Masters' degree are also 4 respondents, which is 14.81% while, 1 respondent has Doctor of Philosophy, which is 3.70%. This shows that respondents with Higher National Diploma are the majority of the respondents.

Also, the period of working in Quantity Surveyors' firm(s) reveals that 7 of the respondents have been working with in Quantity Surveyors' firm(s) for a period of 1 – 10years, which is 25.93%, 11 – 20 years are 12 respondents, which is 44.441%, 21 -30 years are 6 respondents, which is 22.22% while

above 30years has 2 respondents, which is 7.41%. This reveals that those working in Quantity Surveyors' firm(s) for the period of 11 – 20years dominated the group.

Table 2: Major Types of Construction Cost Estimates Carried out by Quantity Surveyors

Construction Estimates	Mean Score	Standard Deviation	Rank
Detailed Estimate	3.4231	1.02311	1st
Substantive Estimate	3.2174	1.31585	2nd
Preliminary Estimate	3.0870	1.40104	3rd
Feasibility Estimate	2.4348	1.54804	4th
Order of Magnitude	2.2609	0.94949	5th

Source: Field Survey (2025)

Table 2 analysed types of construction costs carried out in the study area. Detailed Estimate has a mean score of 3.4231 with a standard deviation of 1.02311, Substantive Estimate has a mean score of 3.2174 with a standard deviation of 1.31585 and Preliminary Estimate has a mean score of 3.0870 and a standard deviation of 1.40104. Feasibility Estimate has a mean score of 2.4348 with a standard deviation of 1.54804, while Order of Magnitude has a mean score of 2.2609 with a standard deviation of 0.94949.

Table 3: Major Types of Construction Cost Estimates Methods Quantity Surveyors Employed

Construction Estimates Method	Mean Score	Standard Deviation	Rank
Analogous Estimate	4.1159	1.57682	1st
Parametric Estimate	3.7826	1.37059	2nd
Bottom – Up Estimating	3.7681	1.39479	3rd
Three – Point Estimate	3.5217	1.42053	4th
Expert Judgement Estimating	3.4928	1.10644	5th
Elemental Estimate	3.2174	1.31585	6th
Modular Estimating	3.0870	1.40104	7th
Top – Down Estimating	2.8986	1.35196	8th
Resource – Base Estimating	2.8406	1.44123	9th
Production Rate Estimating	2.7681	1.44655	10th
The Delphi Method	2.7101	1.36232	11th
Model – Based Estimating	2.6377	1.54321	12th
Vendor Bid Analysis	2.6232	1.37308	13th
Probabilistic Estimating	2.5942	1.36467	14th
Whole – Life Cost Estimating	2.5217	1.51083	15th
Reserve Analysis	2.5072	1.36794	16th

Source: Field Survey (2025)

Table 3 revealed the major types of construction methods estimation methods Quantity Surveyors employed in the study area. Analogous Estimate method has a mean score of 4.1159 with a standard deviation of 1.57682, Parametric Estimate method has a mean score of 3.7826 with a standard deviation of 1.37059. Bottom – Up Estimating method has a mean score of 3.7681 with a standard deviation of 1.39479, Three – Point Estimate method has a mean score of 3.5217with a standard deviation of

1.42053. Also, Expert Judgement Estimating method has a mean score of 3.4928 with a standard deviation of 1.10644.

Also, Elemental Estimate method has a mean score of 3.2174 with a mean score of 1.31585, Modular Estimating method has a mean score of 3.0870 with standard deviation of 1.40104, Top – Down Estimating method has a mean score of 2.8986and a standard deviation of .1.35196. Resource – Base Estimating method has a mean score of 2.8406 with standard deviation of 1.44123. Production Rate Estimating method has a mean score of 2.7681and a standard deviation of 1.44655; The Delphi Method has a mean score of 2.7101 with a standard deviation of 1.36232. Model – Based Estimating method has a mean score of 2.6377 with a standard deviation of 1.54321.

Meanwhile, Vendor Bid Analysis method has a mean score of 2.6232 with standard deviation of 1.37308; Probabilistic Estimating method has a mean score of 2.5942 with standard deviation of 1.36467. Whole – Life Cost Estimating method has a mean score of 2.5217 with a standard deviation of 1.51083. Reserve Analysis method has a mean score 2.5072 with standard deviation of 1.36794.

Table 4: Level at Which Education Cost Estimation Methods are most Taught

Source	Mean Score	Standard Deviation	Rank
Higher National Diploma	3.0145	1.33387	1st
First Degree	2.8986	1.33003	2nd
Post Graduate Class	2.8116	1.36420	3rd
During the years of employments	2.6812	1.28901	4th
Self-Teaching	2.4058	1.04767	5th
Attachment to Other Quantity Surveyors' firm(s)	2.3768	1.11278	6th
Not at All	2.3478	1.10913	7th

Source: Field Survey (2025)

From Table 4, it was revealed that Quantity Surveyors are most taught on Cost Estimation Methods during their Higher National Diploma Education has a mean score of 3.0145 and a Standard deviation of 1.33387Those most taught during First degree education has a mean score of 2.8986 and standard deviation of 1.33003. Quantity surveyors most taught on Cost Estimation Methods during their Post Graduate Class has a mean score of 2.6812 and a standard deviation of 1.36420. also, Quantity Surveyors that are most taught on Cost Estimation Methods during their years of employments has a mean score of 2.6812 and a standard deviation of 1.28901. and those by self – teaching has a mean score of 2.4058 with a standard deviation of 1.04767. Quantity Surveyors that had education during attachment to other Quantity Surveyors' firms has a mean score of 2.3768 and a standard deviation of 1.11278 while those that ticked Not at All has a mean score of 2.3478nwith a standard deviation of 1.10913.

Table 5: Seminars and/or Workshops Attended on Construction Cost Estimation

Number of Seminars and/or Workshops	Frequency	Percentage (%)
NONE	9	33.33

1-3	11	40.74
4-6	5	18.52
7-10	2	7.41
Total	27	100.00

Source: Field Survey (2025)

Table 5 reveals that 9 of the respondents had never attended any seminar and/or workshop on construction cost estimation and this 33.33%. Also, 11 of the respondents had attended seminars and/or workshop on construction cost estimation for a period of 1-3, which is 40.74%. Meanwhile, 5 of the respondents had attended seminars and/or workshop on construction cost estimation for a period of 46, which is 18.52%. Quantity Surveyors that had attended seminars and/or workshop on construction cost estimation for a period of 7-10 are 2 respondents, which is 7.41%. This revealed that those that have attended seminar and/or workshop on construction cost estimation for a period of 1 – 3 occasions dominated the respondents.

Table 6: Determinant of Choice of Construction Cost Estimation Method

	Mean Score		Rank
Reasons		Standard Deviation	
Purpose of Construction Estimation Cost	3.3824	1.42504	1st
Stage of the Construction Cost	3.0147	1.04371	2nd
Availability of the Technology	3.0000	1.26962	3rd
Easiness of the Estimation Approach	2.8824	0.90652	4th
Quantity Surveying Firm's Desire/Decision	2.3676	1.02075	5th

Source: Field Survey (2025)

Table 6 reveals the major determinants of choice of construction cost estimation method. Purpose of construction estimation cost has a mean score of 3.3824 with a standard deviation of 1.42504, Stage of the construction cost has a mean score of 3.0147 with a standard deviation of 1.04371. Also, Availability of the technology has a mean score of 3.0000 with a standard deviation of 1.26962, Easiness of the estimation approach has a mean score of 2.8824 with a standard deviation of 0.90652. Quantity Surveying Firm's Desire/Decision has a mean score of 2.3676 with a standard deviation of 1.02075.

Variables of the purpose of Construction Estimation Cost, Stage of the Construction Cost, Availability of the Technology, Easiness of the Estimation Approach and Quantity Surveying Firm's Desire/Decision were factored through mean score using SPSS © application to form a construct called the Determinant, while factors of Higher National Diploma, First Degree, Post Graduate Class, During the years of employments, Self-Teaching, Attachment to Other Quantity Surveyors' firm(s), Not at All and Number of Seminars and/or Workshops attended were also factored through mean score using SPSS © application to form a construct called the Awareness.

Table 7: Correlation of Awareness and Determinants of Cost Estimation Method

Correlations		SERVICES	METHODS
AWARENESS	Pearson Correlation	1	.625**
	Sig. (2-tailed)		.000
	N	27	27

DETERMINANT	Pearson Correlation	.625**	1
	Sig. (2-tailed)	.000	
N		27	27

Table 7 gives analysis of the magnitude of relationship between the Awareness of Quantity Surveyors on Cost Estimation Methods and the Determinant of Choice of Construction Cost Estimation Method adopted by Quantity Surveyors in Abuja, F. C. T Nigeria, using Pearson productmoment correlation coefficient. This Pearson product-moment correlation coefficient results as shown in Table 7 is 0.625. The magnitude of relationships specified in descriptors of Burris (2005), indicated that magnitudes of relationship with coefficients >0.69 is Very Strong, 0.50 to 0.69 is Substantial, 0.30 to 0.49 is Moderate, 0.10 to 0.29 as weak while 0.01 to 0.09 is Negligible. In line with the descriptors of Burris (2005), magnitude of relationship between Awareness on Cost Estimation Methods and Determinants of Choice of Construction Cost Estimation Method using Pearson product-moment correlation coefficient is Strong.

4.2 Discussion of Results

This study revealed that the major types of construction cost estimates carried out by Quantity Surveyors in Abuja, Nigeria are Detailed Estimate, Substantive Estimate, Preliminary Estimate, Feasibility Estimate and Order of Magnitude, which were ranked 1st, 2nd, 3rd, 4th and 5th respectively. This is similar to the findings of Ugochukwu and Egbunike (2018), Eze and Idiake (2019), Oladapo (2019) and Nwokoro (2020) that the major types of construction cost estimates carried out by Quantity Surveyors in Nigeria are Detailed Estimate, Bill of Quantities, Preliminary Estimate and Substantive Estimate. Authors with different perspectives on the ranking of major types of construction cost estimates in Nigeria include Olatunji (2014) and Oloyede (2016). However, the finding of this study sustains.

The major types of construction cost estimates methods Quantity Surveyors employed are the analogous estimate, parametric estimate, bottom – up estimating, three – point estimate and expert judgement estimating. They are ranked 1st, 2nd, 3rd, 4th and 5th respectively. This is dissimilar to the findings of Okereke (2018) that the major types of construction cost estimates carried out by Quantity Surveyors in Nigeria are elemental estimate, approximate quantities and unit method and different from the findings of Afolabi (2017) that construction cost estimates methods Quantity Surveyors most employed in Nigeria are Approximate Quantities, Superficial Floor Area Method and Unit Method. It is also not the same with Oladapo (2019) who found that the most construction cost estimates methods used by Quantity Surveyors in Nigeria are Building Information Modelling (BIM), Parametric Cost Estimation and Elemental Estimate and diverge from Olatunji (2014) who found that most construction cost estimates methods used by Quantity Surveyors in Nigeria are Parametric Cost Estimation, Elemental Estimate and Comparative Method. The result of this study is accepted.

Meanwhile, the level at which Quantity Surveyors had most education on cost estimation methods were at Higher National Diploma that was ranked 1st, First Degree that was ranked 2nd, Post Graduate Class that was ranked 3rd, During the years of employments that was ranked 4th and SelfTeaching that was ranked 5th. This is similar to the findings of Okereke (2018) that most Quantity Surveying professionals had most education on cost estimation methods during Undergraduate studies, QS Professional certifications and Postgraduate studies but dissimilar to the findings of Aibinu and Jagboro (2002).

Quantity surveyors, who had attended seminars and/workshops on construction costs' estimation for a period of 1 – 3 periods are 40.74% of the respondents had attended while 33.33% had never attended any seminars and/workshops on construction costs' estimation.
The study also revealed that the doctrine of choice of construction cost estimation method used by Quantity Surveyors in Abuja, Nigeria are the purpose of construction estimation cost, stage of the construction cost, availability of the technology, easiness of the estimation approach and quantity surveying firm's desire/decision.

This study also found that the magnitude of relationship between Awareness on Cost Estimation Methods and Determinants of Choice of Construction Cost Estimation Method using Pearson productmoment correlation coefficient is Strong. The study of Okereke, Nwachukwu and Ibrahim (2022) found that while Nigerian construction professionals reported awareness of a range of cost estimation techniques, the statistical relationship between awareness and the actual choice of sophisticated methods was only modest, with organisational routines, available data and client requirements showing stronger influence on method selection than awareness scores. The study on causes and effects of wrong cost estimating on public building projects in Enugu State, Nigeria, reported that respondents rated enhancing skills and improving methods as key preventive strategies, but statistical exploration of survey responses suggested that current knowledge and awareness levels had limited direct association with whether robust estimation methods were actually implemented, with other factors such as incomplete information, inflation and organisational pressures playing larger roles in explaining inaccurate estimates (Eze, Okoye & Ekwe, 2025). Also, the study conducted by Abani and Alaba (2023) found that construction costs' estimators were aware of risk based analytical tools such as Monte Carlo simulation and analytic hierarchy process, but regression results showed that adoption and choice of these methods were driven more by organisational resources, software availability and perceived risk severity than by awareness levels per se, implying only a weak link between awareness and method choice. However, the result of this finding is sustained.

5.0 CONCLUSION AND RECOMMENDATIONS

The study demonstrates that cost control practices among Quantity Surveyors in Abuja are both structured and evolving. There are clear preferences in the types and methods of construction cost estimates employed, the education and exposure that shape these choices, and the criteria guiding the selection of estimation methods. Detailed, substantive, preliminary, feasibility, and order-ofmagnitude estimates emerged as the dominant types. This confirms earlier Nigerian research that places detailed and Bill of Quantities-based estimates at the centre of professional practice, while also highlighting variations in how different authors rank supporting estimate types.
Furthermore, analogous, parametric, bottom-up, three-point, and expert judgment estimating were identified as the leading methods. This suggests that Abuja-based Quantity Surveyors are combining traditional techniques with analytical approaches in a way that does not fully mirror earlier national studies, which often emphasized elemental and approximate quantities or, more recently, BIM-driven techniques. Finally, the study established that formal education particularly the Higher National Diploma (HND) and undergraduate degree stages is the dominant source of learning. While postgraduate study, workplace experience, and self-teaching play secondary roles, this pattern aligns with wider Nigerian evidence on the centrality of undergraduate training, yet echoes concerns regarding curricular gaps and uneven professional development.

The findings also revealed a mixed but noteworthy pattern of continuing professional development and doctrinal influences on method choice: a substantial minority of respondents had attended one to three seminars or workshops on construction cost estimation, while a significant share had never done so, indicating that structured exposure to new tools and methods remains patchy in Abuja's quantity surveying community. At the same time, the doctrine of choice for construction cost estimation

methods was shown to rest primarily on the purpose of the estimate, the project stage, the availability of technology, the perceived ease of the approach and firm level preferences, underscoring that method selection is highly contextual and institutionally mediated, rather than purely technical. Against this backdrop, the study produced a striking result: the magnitude of the relationship between awareness of cost estimation methods and the determinants of choice of method, measured using the Pearson product–moment correlation coefficient, was strong, suggesting that in Abuja, professionals who are more aware of available methods tend also to be more responsive to formal determinants of method choice. This pattern contrasts with several recent Nigerian and international studies in which awareness showed at best a modest statistical association with the actual adoption of sophisticated methods, and where organisational routines, data constraints, client requirements and uncertainty environments were found to be more powerful predictors of method selection than awareness scores alone. The Abuja evidence therefore positions awareness not as a marginal factor but as a significant driver of method choice when it is embedded in firms that recognise purpose, stage, technology and ease as central doctrines of estimation practice.

On the strength of these conclusions, the study recommends, first, that professional bodies and training providers prioritise a systematic strengthening of cost estimation education at both pre service and post qualification levels, building on the demonstrated importance of Higher National Diploma and degree programmes while addressing the curricular and practical gaps that limit exposure to a full range of contemporary methods. Universities and polytechnics offering quantity surveying should review and update their syllabi to ensure that students gain hands on competence not only in detailed and traditional estimating but also in parametric, bottom up, three-point, risk based and BIM enabled techniques, aligning classroom teaching with the methods that Abuja based practitioners currently rank highly. Professional bodies such as the Nigerian Institute of Quantity Surveyors and the Quantity Surveyors Registration Board of Nigeria should intensify structured continuing professional development in cost estimation and cost control, converting the current pattern of sporadic seminar attendance into a more coherent progression pathway that ties training on advanced estimation methods to membership upgrading, practice licences and ethical obligations.

Second, quantity surveying firms in Abuja should consciously embed the doctrine of method choice identified in the study into formal practice guidelines, ensuring that the purpose of the estimate, the project stage, the availability of relevant technology and the ease and transparency of the method are explicitly considered and documented whenever a construction cost estimation approach is selected. This would help reduce reliance on habit or convenience and encourage practitioners to match estimation methods to the informational and strategic needs of each project, thereby strengthening cost control and supporting better value for money outcomes. Firms should also invest in the technologies that underpin the methods currently favoured by Abuja practitioners such as parametric tools, three point estimating software and, where appropriate, BIM platforms so that awareness is backed by genuine capability and the strong relationship between awareness and method choice observed in this study can translate into robust, technology supported practice.

Third, policymakers, client organisations and professional regulators should treat cost control practice as a core element of project governance in Abuja, using the study's evidence to design procurement and reporting frameworks that demand transparent documentation of the estimation type, method chosen and the rationale for that choice at key project stages. Public and corporate clients can reinforce good practice by requiring that estimates presented at feasibility, design and tender stages clearly identify whether detailed, substantive or preliminary estimates are being used, which method underpins each estimate and how the selected approach aligns with the project's purpose and risk profile. Regulators and audit bodies should integrate checks on cost estimation methods into project review processes, ensuring that the doctrine of choice is not only articulated by quantity surveyors but also

observed in practice, thus reducing the risk of wrong estimates and the downstream cost overruns that have persisted in Nigerian construction.

Finally, future research should build on this study by extending similar evaluations of cost control practice to other Nigerian cities and by probing more deeply why, in Abuja, awareness appears to exert a stronger influence on method choice than in other documented contexts. Comparative studies across regions, firm sizes and project types could test whether the strong awareness–choice relationship observed here is a function of Abuja's professional culture, market structure or training profile, and could explore how emerging digital tools, cost databanks and machine learning–based estimators might further reshape the balance between awareness, organisational routines and client drivers in the selection of cost estimation methods. By linking such work to ongoing initiatives on cost management improvement in Nigeria, researchers and practitioners can continue to refine cost control practices and ensure that Abuja's building projects are delivered with greater financial discipline, transparency and long-term value.

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