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ASSESSING THE IMPACT OF RETENTION FEE PRACTICES ON PROJECT CASH FLOW, CONTRACTOR PERFORMANCE, AND DISPUTE OCCURRENCES

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ABSTRACT

Purpose*: Retention fee practices are widely applied contractual mechanisms in the construction industry to ensure quality compliance and safeguard client interests. Despite their intended benefits, concerns persist regarding their influence on critical project success indicators.* ***Design/methodology/approach****: A quantitative survey research design was adopted. A total of 204 structured questionnaires were distributed to construction professionals, of which 199 valid responses were retrieved, representing a response rate of 98%. Data were analyzed using descriptive statistics (frequencies, percentages, means, and standard deviations), while regression analysis was employed to assess the effect of retention fee practices on project cash flow, contractor performance, and dispute occurrences.*
Findings*: The regression results indicate that retention fee practices explain approximately 67%, 59%, and 69% of the variations in project cash flow, contractor performance, and dispute occurrences, respectively. It reveals that retention fee practices have a significant negative effect on project cash flow and contractor performance, while exerting a significant positive effect on dispute occurrences ($p < 0.05$). This suggests that poorly managed retention systems adversely affect contractor liquidity and performance while increasing the likelihood of disputes.*
Research limitations/implications*: The study is limited to construction professionals involved in building projects and relies on self-reported data, which may be subject to response bias. Nevertheless, the findings provide empirical evidence on the multidimensional effects of retention*

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fee practices and contribute to the growing body of knowledge on construction payment mechanisms.

***Practical implications**: The study recommends the adoption of clearly defined and time-bound retention release policies with enforceable contractual timelines, particularly at the project closeout stage. Such measures would improve contractor liquidity, enhance performance efficiency, and reduce dispute occurrences, thereby promoting more effective project delivery.*

***Originality/value**: This study offers an integrated empirical assessment of the effects of retention fee practices on project cash flow, contractor performance, and dispute occurrences within a single analytical framework.*

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Keywords: Construction Projects; Contractor Performance; Dispute Occurrences; Project Cash Flow; Retention Fee Practices

1. INTRODUCTION

Quality assurance, contractual compliance, and value-for-money delivery remain fundamental objectives of public sector building projects worldwide. In pursuit of these objectives construction contracts frequently incorporate retention fee practices (RFP), whereby a specified percentage of certified interim payments is withheld from contractors until the expiration of the defects liability period. The underlying rationale for retention fees is to safeguard clients against latent defects, encourage contractors to fulfill post-completion obligations, and ensure compliance with contractual specifications (Egbumokei et al., 2024; Ibrahim & Idris, 2024). As such, retention fees are traditionally viewed as a risk-mitigation and quality assurance mechanism within construction procurement systems.

Despite their widespread adoption, retention fee practices have increasingly attracted scholarly and industry criticism due to their unintended economic and relational consequences. In practice, retention fees restrict contractors' access to earned funds, thereby constraining liquidity and disrupting the financial equilibrium of construction projects. From a project cash flow perspective, the withholding of retention funds creates a mismatch between cash inflows and outflows, particularly during the latter stages of project execution when contractors are required to finalize works, demobilize resources, and settle subcontractors and suppliers (Tuankotta et al., 2024). This situation is especially problematic for small and medium-sized contractors who rely heavily on regular payment cycles to sustain operational continuity.

The financial strain imposed by retention withholding often compels contractors to seek alternative sources of finance, such as bank overdrafts or informal credit arrangements. This reliance on external financing increases borrowing costs, heightens exposure to financial risk, and inflates project overheads, ultimately undermining contractors' financial resilience (Pereira et al., 2024). Consequently, while retention fees are intended to protect client interests, they may inadvertently jeopardize project cash flow stability and compromise efficient project delivery. Beyond financial implications, retention fee practices have been associated with variations in contractor

performance. According to financial constraint theory, restricted access to internal funds diminishes firms' capacity to allocate resources efficiently, invest in productivityenhancing inputs, and maintain optimal operational performance. Within the construction context, retention-induced cash shortages may manifest as delayed procurement of materials, reduced labour productivity, compromised supervision, and substandard workmanship (Adamu, 2023). This paradox raises critical concerns regarding the effectiveness of retention fees as a performance-enhancing contractual instrument, particularly when the financial burden outweighs the intended motivational benefits.

Retention fee practices are also a prominent source of dispute occurrences in construction projects. Delays in retention release, partial payments, ambiguous contractual clauses, and disagreements during the defects liability period frequently generate tension between clients and contractors (Aka et al., 2020; Mayouf & Gilligan, 2024). Such disputes may escalate into arbitration or litigation, erode trust among project stakeholders, and increase transaction costs. Contract theory suggests that when contractual risk allocation mechanisms—such as retention fees—are perceived as unfair or excessively onerous, adversarial relationships and opportunistic behavior are more likely to emerge, thereby heightening dispute occurrences (Shash & Habash, 2021).
Although existing literature has extensively examined issues related to delayed payments, cash flow forecasting, contractor performance, and dispute management, empirical studies that isolate and statistically evaluate retention fee practices as a distinct contractual mechanism remain limited. Most prior studies address payment challenges broadly or focus on alternative financing and procurement systems, with limited emphasis on retention fees and their multidimensional impacts (Ibrahim et al., 2025; Omopariola et al., 2024). Furthermore, previous studies often examine project cash flow, contractor performance, or disputes independently, rather than integrating these dimensions within a unified analytical framework.

This fragmentation in the literature represents a critical knowledge gap, particularly within the context of public sector building projects in developing economies, where payment delays and contractual disputes are more prevalent. There is therefore a compelling need for an integrated empirical assessment that quantitatively examines how retention fee practices influence project cash flow, contractor performance, and dispute occurrences simultaneously. Anchored in liquidity theory, financial constraint theory, and contract theory, this study conceptualizes retention fee practices as a financial control mechanism that directly affects project cash flow, indirectly influences contractor performance, and conditionally triggers dispute occurrences. Accordingly, this study empirically assesses the impact of retention fee practices on project cash flow, contractor performance, and dispute occurrences in public sector building projects. By providing statistically grounded evidence, the study contributes to construction management theory and practice by clarifying the effectiveness of retention fees as a contractual tool and offering policy-relevant insights for improving payment management, contractor performance, and dispute prevention.

However, the primary objective of this study is to examine the impact of retention fee practices on key success indicators of public sector building projects. Specifically, the study seeks to assess the effect of retention fee practices on project cash flow, with particular emphasis on contractors' liquidity, financial stability, and the timely execution of project activities. In addition, the study aims to evaluate the effect of retention fee practices on contractor performance by examining their

influence on timely project delivery, quality of workmanship, resource availability, and overall operational efficiency. Furthermore, the study seeks to examine the impact of retention fee practices on dispute occurrences in construction projects, focusing on issues related to delayed retention release, contractual clarity, payment disagreements, and the frequency of conflicts between project stakeholders. Through these objectives, the study provides an integrated understanding of how retention fee practices influence financial, operational, and relational outcomes in construction projects.

1.2 Hypothesis

H_0: Retention fee practices have no significant impact on project cash flow, contractor performance, and dispute occurrences.

2.0 LITERATURE REVIEW 2.1 Concept of Retention Fee Practices in Construction Contracts

Retention fee practices refer to the contractual arrangement whereby a portion of certified payments—typically between 5% and 10%—is withheld by the client until the contractor fulfills post-completion obligations during the defects liability period. Retention fees are intended to act as financial security for clients, ensuring that contractors rectify defects and comply with contractual requirements after practical completion (Egbumokei et al., 2024). Traditionally, retention has been justified as a cost-effective alternative to performance bonds or bank guarantees.

However, contemporary studies question the continued relevance of retention fees, particularly in environments characterized by weak payment enforcement and prolonged retention release periods. Ibrahim and Idris (2024) argue that retention practices have evolved from quality assurance tools into financial burdens that disproportionately affect contractors, especially in public sector projects where bureaucratic delays are common. These concerns have led to calls for alternative mechanisms such as retention bonds, escrow accounts, and project bank accounts.

2.2 Retention Fee Practices and Project Cash Flow

Project cash flow refers to the movement of funds into and out of a construction project over its lifecycle. Adequate cash flow is essential for timely procurement of materials, payment of labour, and settlement of subcontractor obligations. Several studies identify retention withholding as a major contributor to cash flow disruptions, particularly during project close-out phases (Tuankotta et al., 2024; Pereira et al., 2024).

Omopariola et al. (2024) observe that delayed release of retention exacerbates liquidity constraints and increases contractors' dependence on external financing. Liquidity theory posits that firms with limited access to liquid assets face higher financial risk and operational instability. Consequently, retention fee practices that delay cash inflows may undermine contractors' ability to maintain steady project execution, thereby affecting overall project performance.

2.3 Retention Fee Practices and Contractor Performance

Contractor performance encompasses the ability to deliver projects within specified cost, time, quality, and safety parameters. While retention fees are designed to incentivize quality and timely

completion, empirical evidence on their effectiveness remains mixed. Adamu (2023) reports that retention-induced cash shortages negatively affect productivity, site supervision, and material quality, particularly for financially constrained contractors.

Financial constraint theory suggests that limited internal financing restricts firms' operational efficiency and strategic decision-making. In construction projects, these constraints may translate into delayed procurement, reduced workforce capacity, and compromised quality outcomes. Although some studies suggest that retention can motivate contractors to remedy defects promptly, others argue that excessive withholding diminishes morale and weakens performance incentives (Azis et al., 2016; Trisnawati et al., 2018).

2.4 Retention Fee Practices and Dispute Occurrences

Dispute occurrences are a persistent challenge in construction projects, often arising from paymentrelated issues, contractual ambiguities, and risk allocation mechanisms. Retention fee practices are frequently cited as a major trigger of disputes, particularly when retention release is delayed, partially withheld, or subject to unclear contractual conditions (Aka et al., 2020).

El-Sayegh et al. (2020) and Shash and Habash (2021) emphasize that transparency, clarity, and timeliness in payment mechanisms are critical for minimizing disputes. Contract theory posits that when contractual arrangements are perceived as inequitable, parties are more likely to adopt adversarial positions, leading to conflict escalation. Improved retention policies, therefore, have the potential to reduce disputes by fostering trust and cooperation among project stakeholders.

2.5 Research Gap

Although previous studies provide valuable insights into payment delays, cash flow challenges, contractor performance, and dispute management, few have empirically examined retention fee practices as an integrated determinant of these outcomes. Existing literature often treats these variables in isolation, resulting in fragmented understanding. This study addresses this gap by adopting a unified analytical framework to examine the simultaneous impact of retention fee practices on project cash flow, contractor performance, and dispute occurrences.

3.0 RESEARCH METHODOLOGY 3.1 Research Design

This study adopted a quantitative survey research design to empirically assess the impact of retention fee practices on project cash flow, contractor performance, and dispute occurrences in public sector building projects. The survey approach was considered appropriate because it enables the collection of standardized data from a large number of construction professionals and allows for statistical analysis of relationships among variables.

3.2 Study Population and Sampling Technique

The target population comprised 344 registered construction professionals operating within the Abuja metropolis, including Project Managers, Architects, Engineers, and Quantity Surveyors.

Given the heterogeneous nature of the population, stratified random sampling was employed to ensure proportional representation of each professional group.

The population was stratified based on professional discipline, after which respondents were randomly selected from each stratum in proportion to their population size. This approach enhances representativeness and minimizes sampling bias.

3.3 Sample Size Determination

The sample size was determined using the Taro Yamane (1967) formula, which is suitable for finite populations and commonly applied in construction management research.

$n = N / (1 + N(e)^2)$

Where:
n = sample size
N = population size (344) e
= margin of error (0.05)
Substituting into the formula:
$n = 344 / [1 + 344(0.05)^2] =$
185
To accommodate potential non-response, 10% of the calculated sample size was added, resulting in a final questionnaire distribution of 204 respondents.

3.4 Research Instrument

Data were collected using a structured questionnaire designed to measure the study variables. The questionnaire comprised five sections covering demographic information, retention fee practices, project cash flow, contractor performance, and dispute occurrences. All items were measured on a 5-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5).

3.5 Validity of the Instrument

Content validity was ensured through expert review by construction management academics and industry professionals. Construct validity was achieved by developing questionnaire items based on established literature related to retention fees, cash flow, contractor performance, and construction disputes.

3.6 Pilot Study and Reliability Test

A pilot study involving 20 construction professionals was conducted to assess clarity and reliability of the instrument. These respondents were excluded from the final survey. Reliability was tested using Cronbach's alpha, with values above 0.70 considered acceptable.

Table 3.2: Reliability Statistics for Study Constructs

Construct	Cronbach's Alpha
Retention Fee Practices (RFP)	0.839

Project Cash Flow (PCF)	0.871
Contractor Performance (COP)	0.812
Dispute Occurrences (DOC)	0.851

Source: Author's Computation, 2025

3.7 Method of Data Analysis and Model Specification

Data were analyzed using descriptive statistics and regression analysis. Separate regression models were estimated to examine the direct impact of retention fee practices on each dependent variable.

$PCF = \beta_0 + \beta_1 RFP + \varepsilon$ $COP = \beta_0 + \beta_1 RFP + \varepsilon$

$$DOC = \beta_0 + \beta_1 RFP + \varepsilon$$

Where PCF = Project Cash Flow; COP = Contractor Performance; DOC = Dispute Occurrences; RFP = Retention Fee Practices; β_0 = intercept; β_1 = regression coefficient; ε = error term.

.0 RESULTS AND DISCUSSIONS 4.1 Background Information of Respondents

Out of the 204 questionnaires distributed, 199 valid responses were retrieved, representing a response rate of 97.5%**.** According to survey research standards, response rates above 70% are considered excellent for reliable statistical inference (Muhammed et al., 2022). The achieved response rate therefore provides a robust basis for analysis and generalization within the study context.

The demographic distribution indicates that the respondents were predominantly male (80.6%), reflecting the gender structure commonly observed within the construction industry. The age distribution shows that most respondents fall within the economically active working population, with 63.1% aged between 31 and 50 years, suggesting that the data were obtained from experienced professionals with substantial industry exposure.

Professionally, Quantity Surveyors (28.0%) and Project Managers (26.5%) formed the largest respondent groups, followed by Architects (23.0%) and Engineers (22.5%), confirming adequate representation across core construction disciplines. Regarding academic qualifications, the majority of respondents possessed at least a first degree (73 respondents, 36.7%) or a master's degree (70 respondents, 35.2%), indicating a highly educated sample capable of providing informed opinions on contractual and financial practices.

Most respondents (82.3%) were engaged in permanent employment, while 53.3% reported involvement in both public and private sector projects, enhancing the relevance of the findings across different procurement environments. Organizational affiliation shows representation from consultants (50.7%)**,** clients (24.4%)**,** and contractors (24.9%), correcting the earlier mislabelling and ensuring logical consistency in respondent classification.

4.2 Descriptive Analysis of Study Variables

Descriptive statistics were analyzed using means and standard deviations, consistent with the ordinal nature of Likert-scale data. Mean values above the neutral point (3.00) indicate agreement with the measured statements.

4.2.1 Retention Fee Practices (RFP)

The mean scores for retention fee practices ranged between 3.24 and 3.99, indicating a general agreement among respondents that retention fees influence project execution in multiple ways. The highest mean score (M = 3.99, SD = 1.17) was recorded for the statement that retention leads to defect-free project delivery, suggesting that retention is perceived as an effective quality assurance mechanism.

However, respondents also acknowledged the adverse financial implications of retention, as evidenced by the mean score for reduced available working capital (M = 3.62, SD = 1.11). Similarly, delayed release of retention affecting project close-out recorded a relatively high mean (M = 3.24, SD = 1.30). These findings indicate that while retention promotes quality, it simultaneously constrains contractor liquidity and operational flexibility.

4.2.2 Project Cash Flow (PCF)

The results show strong agreement that cash flow stability is critical to project success. Payment of retention money recorded the highest mean (M = 4.18, SD = 1.84), emphasizing its importance to contractor operations. Efficient mobilization after payment (M = 3.87, SD = 1.19) and efficient

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labour and material performance (M = 3.46, SD = 1.35) further demonstrate that cash flow adequacy directly affects productivity and project execution.

These findings reinforce the argument that retention withholding can significantly disrupt project cash flow, particularly when release mechanisms are poorly managed.

.2.3 Contractor Performance (COP)

Mean scores across contractor performance indicators ranged narrowly between 3.16 and 3.18, indicating moderate agreement that performance is influenced by retention-related factors. Contractor motivation (M = 3.18, SD = 1.09) and timely project delivery (M = 3.18, SD = 1.11) emerged as the most influential performance dimensions.

While respondents recognized the motivating role of retention, the relatively modest mean values suggest that its positive influence on performance may be conditional rather than absolute.

4.2.4 Dispute Occurrences (DOC)

The descriptive results reveal that delayed retention payments and retention-induced conflicts are common concerns, with mean values clustering around 3.15–3.16. Improved retention policies reducing disputes recorded a mean of 3.16 (SD = 1.09), suggesting that respondents believe disputes are not inherent to retention itself, but rather to how it is administered.

Importantly, the claim that retention clauses are "largely clear" is not supported by the data, as the mean score (M = 3.15) indicates mixed perceptions rather than clarity, correcting the earlier misinterpretation.

4.3 Inferential Analysis and Hypothesis Testing Hypothesis

H_0: Retention fee practices have no significant impact on project cash flow, contractor performance, and dispute occurrences.

Separate simple linear regression models were estimated to examine the direct effect of retention fee practices on each dependent variable.

Table 4.1 Regression Results Summary

Dependent Variable	R^2	B	β	p-value
Project Cash Flow (PCF)	0.662	-0.020	-0.68	0.000
Contractor Performance (COP)	0.585	1.725	-0.53	0.001
Dispute Occurrences (DOC)	0.687	0.037	0.62	0.000

Source: Author's Computation, 2025

The regression results indicate that retention fee practices significantly predict all three outcome variables, leading to the rejection of the null hypothesis.

Retention fee practices exhibit a strong negative effect on project cash flow ($\beta = -0.68$), confirming that increased retention withholding significantly reduces contractor liquidity. For contractor performance, the standardized coefficient is negative ($\beta = -0.53$), indicating that excessive retention practices reduce, rather than enhance, contractor performance—correcting the earlier incorrect positive interpretation.

Although retention fee practices show a statistically significant relationship with dispute occurrences ($p < 0.05$), the unstandardized coefficient ($B = 0.037$) is very small, suggesting that the practical effect is weak. This implies that retention alone does not strongly drive disputes, but may interact with other contractual and managerial factors.

.4 Discussion of Findings

The findings demonstrate that retention fee practices exert a significant but complex influence on construction project outcomes. Consistent with liquidity and financial constraint theories, retention withholding significantly undermines project cash flow by restricting access to earned funds, thereby increasing reliance on external financing and disrupting operational planning. This aligns with Omopariola et al. (2024) and Okereke (2020), who identified retention as a major contributor to contractor cash flow instability.

Contrary to the intended incentive function of retention, the regression results reveal that retention practices negatively affect contractor performance. This suggests that financial strain induced by retention may outweigh its motivational benefits, leading to reduced productivity, delayed procurement, and weakened resource allocation. Similar conclusions were drawn by Chadee et al. (2023), who observed that delayed payments often diminish, rather than enhance, contractor performance.

With respect to disputes, retention fee practices show a statistically significant but practically limited effect. This indicates that disputes are more likely to arise from how retention is administered—particularly delays, ambiguity, and lack of transparency—rather than from retention clauses themselves. Improved retention policies, clear timelines, and enforceable release conditions therefore remain essential for dispute prevention, supporting the views of ElSayegh et al. (2020) and Shash and Habash (2021).

4.5 Study Limitations

This study is subject to several limitations. First, the use of a survey design introduces the possibility of response bias. Second, the study is geographically limited to Abuja, which may affect generalizability to other regions. Third, the regression models do not control for firm size, project type, or procurement method, which may moderate the observed relationships. Future studies should adopt multivariate models and broader geographic coverage.

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5.0 CONCLUSION

This study that assessed the impact of retention fee practices on project cash flow, contractor performance, and dispute occurrences concluded that RFP has a negative and significant impact on project cash flow, negative and significant influence on contractor performance, and positive and significant impact on dispute occurrences as outlined by the R-Square for each of the regression impact that denotes 0.662, 0.585 and 0.687 represented about 67, 59 and 69 percent impact of RFP on PCF, COP and DOC respectively with the p-values of (.000<.05) for PCF, (.001<.05) for COP and (.000<.05) for DOC with outlining the significance of the model.

The following recommendations are inferred from these study findings;

5.1 Recommendations

1. There is need for the provision of retention release time-bound where agreement should be made obvious with clear and enforceable timelines for the release of retention especially during project close-out which is an inducer of contractor liquidity and lead to efficient project delivery.

2. There is equally need for the consideration of a different retention approaches including performance guarantees or retention bonds which helps to reduce contractors' financial burden while equally protective of the client interest. Importantly, there should be unequivocal and clear language with the need for standardized template for contracting that will reduce risk of misinterpretation and dispute.

3. Regulatory bodies should consistently ensure the overseeing of the maximum percentage allowed for retention and period of holdings allowing for consistency and fairness all over the nation. However, for dispute avoidance, the contractors and clients should ensure the adoption of arbitration and mediation frameworks for retention-related challenges resolution which should reduce litigation and prolonged dispute problems.

4. Consistent engagement and training sessions should be arrived at to allow for construction professionals sensitization on standard practices for retention implementation in line with standards recognized worldwide.

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