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# BARRIERS TO THE APPLICATION OF PROJECT PLANNING TECHNIQUES IN PUBLIC CONSTRUCTION PROJECTS IN ABUJA, NIGERIA: AN ASSESSMENT OF BARRIER SEVERITY

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## Abstract
This paper assesses the severity of barriers to the application of project planning techniques in public construction projects in Abuja, Nigeria, with a view to establishing which constraints most critically inhibit structured planning practice. A quantitative survey design was adopted. Stratified random sampling was used to administer structured questionnaires to 175 registered construction professionals (Architects, Quantity Surveyors, Engineers, and Builders) operating across public ministries, departments, and agencies in the Federal Capital Territory. A total of 162 valid responses were analysed (92.57% effective response rate). Data were analysed using descriptive statistics, specifically frequencies, percentages, and mean item scores (MIS), with standard deviations used to assess consensus. Institutional, governance, and financial constraints emerged as the most severe barriers. Insufficient funding for planning activities ranked highest (M = 4.41, SD = 0.76), followed by corruption and mismanagement (M = 4.35, SD = 0.82), bureaucratic delays (M = 4.28, SD = 0.79), and political interference (M = 4.19, SD = 0.87). Individual-level factors, such as resistance to change (M = 3.29, SD = 1.07) and unclear project objectives (M = 3.05, SD = 1.15), were rated considerably lower. Low standard deviations across the leading barriers indicate strong practitioner consensus on their severity. The study provides empirical evidence that structural governance and funding defects, rather than practitioner-level deficiencies, constitute the primary obstacles to formal planning in Nigerian public construction. This reframes capacity-building interventions toward institutional reform.

***Keywords: Project planning techniques; Barriers; Public construction projects; Barrier severity; Abuja; Nigeria***

## Introduction
Planning is a fundamental managerial function and a cornerstone of project management, providing the framework through which project scope, time, and cost objectives are defined and controlled (Fayol, 2016; Passenheim, 2009). In construction, planning entails determining the optimal sequence of tasks and allocating resources to ensure successful delivery (Akinradewo *et al.,* 2022). Planning techniques ranging from basic Gantt charts to advanced methodologies such as the Critical Path Method (CPM), Earned Value Management (EVM), and 4D/5D BIM-linked scheduling provide the tools through which these objectives are operationalised (Ibrahim, Daniel and Ahmad, 2014; Harris and McCaffer, 2013).
The consequences of inadequate planning are well documented. Windapo and Rotimi (2012) note that the construction industry has been maligned by building collapse, incessant delays, abandonment, and cost overrun outcomes frequently traceable to defective or absent planning (Altoryman, 2014; Hussein and Klakegg, 2014). In Nigeria, the failure rate of public construction projects remains high, evidenced by mass abandonment of projects, which constitutes a significant impediment to economic growth (Adebisi, Ojo, and Alao, 2018; Akande *et al.,* 2018). Ubani et al. (2010) observed that Nigerian contractors are particularly vulnerable to losses arising from inability to plan, defective plans, and inefficient management, while Inuwa et al. (2014) noted that contractors in developed economies have embraced planning techniques with demonstrable positive effects on performance and profitability.
While the benefits of planning techniques are widely acknowledged, their application in Nigerian

public construction remains uneven and often superficial. Existing studies have examined planning practices generally (Inuwa *et al.,* 2014; Oke and Aghimien, 2018) and barriers to specific techniques such as lean construction (Sarhan and Fox, 2013; Musa *et al.,* 2023) and the Critical Path Method (El-Sayed, 2009). However, there is limited empirical evidence ranking the relative severity of these barriers across the full spectrum of planning techniques within the Nigerian public sector context. This paper addresses that gap by assessing the severity of barriers to the application of project planning techniques in public construction projects in Abuja, Nigeria. The specific objective is to assess the severity of the barriers to the application of project planning techniques in public construction projects in the study area. The findings are intended to inform policymakers and practitioners on where intervention efforts should be concentrated.

## Literature Review

### Theoretical Framework

This study is grounded in institutional theory, propounded by Meyer and Rowan (1977). Institutional theory examines how organisations are shaped by their societal, state, national, and global environments, and how formal and informal institutions comprising rules, norms, and structures guide individual action within specific social contexts (Herold, 2018; Meyer and Rowan, 1977). The theory posits that organisational behaviour is influenced not only by internal efficiency considerations but also by external pressures, including regulative structures (government policies and legal frameworks), normative structures (societal norms and industry standards), and cognitive structures (beliefs, values, and perceptions of stakeholders) (Hillebrand, Nijholt and Nijssen, 2011).

Applied to this study, institutional theory provides a lens for understanding why formal planning techniques may be underutilised despite their known benefits. Barriers such as insufficient planning funding, political interference, and bureaucratic delay can be interpreted as regulative and normative institutional pressures that shape and constrain planning practice in Nigerian public construction. This theoretical framing directs analytical attention toward systemic, structural constraints rather than individual practitioner deficiencies.

Construction Project Planning and Planning Techniques

Construction project planning involves the definition of work tasks and their interactions, assessment of required resources, and estimation of activity durations (Hendrickson, 2008; Chitkara, 2008). Planning is one of the most significant factors for efficient and effective project delivery, providing the capability to reveal trends toward cost overrun and schedule slippage before they become critical (Syal *et al.,* 1992).

Harris and McCaffer (2013) identify the principal planning techniques as Bar Charts/Linked Bars, Work Breakdown Structure (WBS), Network Analysis (comprising PERT and CPM), and Line of Balance (LOB). The WBS decomposes project scope into manageable work packages, serving as a fundamental communication and resource allocation tool (PMI, 2017; Kerzner, 2003). CPM connects activities through dependencies, enabling determination of earliest and latest start and finish dates and identification of the critical path (Kelley and Walker, 1959; Kathy, n.d.). Gantt charts visually represent tasks against a timeline, facilitating communication and progress tracking (Gantt, 1910; Behnam *et al.,* 2016). EVM integrates scope, schedule, and cost performance, providing insights into project health and predicting future performance trends (Fleming and Koppelman, 2010; Kerzner and Kerzner, 2017). Lean construction emphasises waste elimination, workflow optimisation, and collaborative stakeholder engagement (Ballard, 2000; Koskela *et al.,* 2002).

### Barriers to the Application of Planning Techniques

Literature identifies a range of barriers inhibiting the application of planning techniques, which may

be broadly categorised as institutional/governance, financial, technical, and human-attitudinal. Institutional and governance barriers include bureaucratic delay, political interference, corruption, and inconsistent government policies. Usman and Yakubu (2019) identified political expediency and budget delays as primary disruptors of structured planning in Nigerian public procurement. Similarly, Amade *et al.* (2021) confirmed that institutional governance failures exert a greater negative impact on tool implementation than practitioner skill deficiencies.

Financial barriers centre on inadequate funding for planning activities. Insufficient pre-contract planning budgets constrain the ability of project teams to conduct site investigations, engage specialist planners, or procure advanced scheduling software. Technical and knowledge barriers include lack of skilled personnel, inadequate training, and limited access to modern tools. Sarhan and Fox (2013) found that lack of adequate lean awareness and understanding, culture and attitudinal issues, and lack of top management commitment were the most severe barriers to lean construction application. Musa et al. (2023) reported similar findings, including lack of training, low understanding of concepts, and weak communication among participants.

Human-attitudinal barriers encompass resistance to change and poor communication among stakeholders. However, there is contestation in the literature regarding the relative importance of these factors. Olanrewaju and Abdul-Aziz (2018) contended that lack of practitioner technical knowledge and resistance to organisational change represent the foremost hurdles to institutionalising planning frameworks a position that stands in contrast to the institutional-governance emphasis of Usman and Yakubu (2019) and Amade et al. (2021).

This study contributes to resolving this contestation by empirically ranking barrier severity in the Abuja public construction context.

**Project Performance**

Project performance is conceptualised as a multi-dimensional construct encompassing time performance, cost performance, quality and technical scope, health, safety and environment (HSE), and stakeholder satisfaction (Castro *et al.,* 2019; Leong *et al., 2014*; Wawak *et al.,* 2020). While this paper focuses on barrier severity, performance outcomes provide the normative justification for concern with planning application, as structured planning has been shown to account for substantial variance in delivery outcomes (Zwikael and Globerson, 2021; Oke *et al.,* 2020).

Methodology

The study adopted a quantitative survey design, appropriate for eliciting structured professional judgements on barrier severity across a defined population (Wanyona, 2005; Inuwa, 2014).

The study was conducted in Abuja, the Federal Capital Territory (FCT) of Nigeria, which serves as the administrative capital and a hub for significant public sector infrastructure development.

The target population comprised core construction procurement professionals actively involved in public building projects in Abuja: registered Architects, Builders, Engineers (structural and services), and Quantity Surveyors operating within client organisations, consulting firms, and contracting companies. The sampling frame comprised the official registers of professionals registered with their respective regulatory bodies (ARCON, CORBON, COREN, QSRBN) and active in the study area, totalling 317 professionals. Using the Krejcie and Morgan (1970) sample size determination table, a sample size of 175 was adopted for the population of 317. Stratified random sampling was employed to ensure balanced representation across the four professional categories, minimising selection bias.

Data were collected through a structured questionnaire administered directly to respondents. Section A captured demographic information; Section C presented 14 barrier variables, rated on a five-point Likert scale (1 = Very Low Severity to 5 = Very High Severity). The instrument was subjected to construct validity testing, and reliability was assessed using Cronbach's alpha coefficient, which measures the internal consistency of questionnaire constructs (Field, 2006; Pallant, 2011; Ibrahim, 2011). Of the 175 questionnaires administered, 168 were returned and 162

confirmed valid, yielding an effective response rate of 92.57%. Data were coded and analysed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics frequencies, percentages, mean item scores (MIS), and standard deviations were used to assess barrier severity and consensus.

## Results

### Demographic Profile of Respondents

Quantity Surveyors constituted the largest professional group (29.63%, f = 48), followed by Engineers (27.78%, f = 45), Architects (25.93%, f = 42), and Builders (16.67%, f = 27). A majority possessed over five years' industry experience, with 33.33% (f = 54) having 11–15 years and 17.90% (f = 29) over 15 years. Government Ministries (35.80%, f = 58) and Agencies (26.54%, f = 43) dominated organisational representation, while 54.32% (f = 88) of respondents operated within the Abuja Municipal Area Council (AMAC). The sample is therefore well-distributed and experienced.

### Severity of Barriers to the Application of Project Planning Techniques

Table 1: Severity of barriers to the application of project planning techniques

| S/N | Barrier Variable | Mean | SD | Rank |
|---|---|---|---|---|
| 1 | Insufficient funding for project planning activities | 4.41 | 0.76 | 1 |
| 2 | High levels of corruption and mismanagement | 4.35 | 0.82 | 2 |
| 3 | Bureaucratic processes delaying implementation | 4.28 | 0.79 | 3 |
| 4 | Political interference in project planning processes | 4.19 | 0.87 | 4 |
| 5 | Lack of skilled personnel in project planning techniques | 4.08 | 0.85 | 5 |
| 6 | Short-term political cycles disrupting efforts | 3.96 | 0.92 | 6 |
| 7 | Inadequate training and development programs | 3.88 | 0.90 | 7 |
| 8 | Limited access to modern tools and software | 3.75 | 0.96 | 8 |
| 9 | Inconsistent government policies and regulations | 3.69 | 1.01 | 9 |
| 10 | Insufficient data and information for decisions | 3.52 | 0.98 | 10 |
| 11 | Poor communication among stakeholders | 3.41 | 1.04 | 11 |
| 12 | Resistance to change among team members | 3.29 | 1.07 | 12 |
| 13 | Inadequate stakeholder engagement and involvement | 3.18 | 1.11 | 13 |
| 14 | Lack of clear objectives and goals in projects | 3.05 | 1.15 | 14 |

Table 1 shows that institutional, financial, and governance factors are the most severe impediments to adopting structured planning tools. Insufficient funding for planning activities ranked highest (M = 4.41, SD = 0.76), closely followed by corruption and mismanagement (M = 4.35, SD = 0.82), bureaucratic delays (M = 4.28, SD = 0.79), and political interference (M = 4.19, SD = 0.87). The low standard deviations across these leading barriers indicate strong consensus among respondents. Conversely, individual-level factors ranked lowest: resistance to change (M = 3.29, SD = 1.07) and lack of clear project objectives (M = 3.05, SD = 1.15). Notably, the standard deviations for the lowest-ranked variables are higher, indicating greater dispersion of opinion on these items.

## DISCUSSION

The findings reveal a clear hierarchy of barriers, with systemic institutional and financial constraints dominating over individual practitioner-level factors. This has important implications for both theory and practice. The dominance of funding deficits, corruption, bureaucratic bottlenecks, and political interference as leading barriers corroborates the conclusions of Usman and Yakubu (2019), who identified political expediency and budget delays as the primary disruptors of structured planning in Nigerian public procurement. The finding also concurs with Amade et al. (2021), who confirmed that institutional governance failures and financial

misappropriation exert a far greater negative impact on tool implementation than practitioner skill deficiencies or individual resistance to change. Conversely, the finding disagrees with Olanrewaju and Abdul-Aziz (2018), who contended that a fundamental lack of practitioner technical knowledge and resistance to organisational change represent the foremost hurdles to institutionalising project planning frameworks. The Abuja data suggest that while technical capacity gaps exist (ranked 5th and 7th), they are subordinate to governance and funding constraints. Viewed through the lens of institutional theory (Meyer and Rowan, 1977; Herold, 2018), these results are explicable. The leading barriers insufficient funding, corruption, bureaucratic delay, and political interference constitute regulative and normative institutional pressures that structure the organisational field within which public construction planning occurs. When regulative structures fail to guarantee dedicated planning budgets or protect planning processes from political short-termism, and when normative structures tolerate corruption and bureaucratic inertia, individual practitioners however skilled operate within severely constrained parameters. The relatively lower severity attributed to human-attitudinal barriers (resistance to change, communication) suggests that the institutional environment, rather than practitioner disposition, is the binding constraint.

This interpretation carries a critical practical implication: interventions focused narrowly on training and capacity building, while necessary, are unlikely to be sufficient. As the findings indicate, structural governance and financial reforms including protected pre-contract planning budgets, enforcement of the Public Procurement Act, and mechanisms to curb political interference are prerequisites for meaningful improvement in planning practice.

## CONCLUSION

This study assessed the severity of barriers to the application of project planning techniques in public construction projects in Abuja, Nigeria. The findings lead to the conclusion that systemic governance, financial, and institutional bottlenecks represent the most critical barriers to implementing formal planning techniques. Insufficient funding allocation for pre-contract planning, pervasive corruption, bureaucratic friction, and political interference significantly outweigh individual practitioner resistance or skill deficits as primary disruptors. The low standard deviations across the leading barriers indicate strong professional consensus on their severity, strengthening confidence in the findings. The study concludes that overcoming these implementation gaps requires structural policy reforms and dedicated financial provisioning for planning activities rather than isolated technical training. In the absence of such reforms, the application of advanced planning techniques in Nigerian public construction will remain constrained, with attendant consequences for cost and schedule performance.

## RECOMMENDATIONS

Based on the findings, the following recommendations are made:

1. Government policy should mandate dedicated budget allocations specifically earmarked for pre-contract planning and site investigations, shielded from reallocation or political short-termism.
2. Enforce procurement governance: Strict adherence to the Public Procurement Act should be enforced, with transparent digital e-tendering platforms and independent oversight mechanisms instituted to curb political interference, bureaucratic delay, and financial mismanagement.
3. Public agencies should review and simplify approval processes for planning activities to reduce bureaucratic friction that delays implementation.
4. While technical training in advanced planning techniques (Line of Balance, EVM, BIM-linked planning) remains necessary, professional bodies and MDAs should recognise that such training will yield limited returns unless the institutional environment is reformed to permit

and incentivise formal planning.

5. Formal planning compliance should be made a prerequisite for project approval, embedding structured planning within the regulative framework governing public construction.

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