# Exploring the Effects of Alternative Dispute Resolution (ADR) Implementation on Cost and Time Efficiency in Nigerian Construction Projects: A Comprehensive Analysis


## Abstract

*Construction projects still experience significant cost and time overruns, dispute being one of the cause. Alternative dispute resolution (ADR) methods have been developed to reduce the negative impact of disputes. While research works have covered several areas, the focus seems to skip determining the impact of the ADR methods on cost and time. Determining the significance of the gains in cost and time where ADR methods were used is vital. This research therefore assesses the impact of ADR methods on cost and time of projects. In achieving this, the extensions in the cost and time of projects where ADR methods were used were assessed to establish how significant. The ADR methods widely employed in construction dispute settlement including the main subjects in dispute were assessed. The nature of the relationship between time and cost extension under ADRs was analyzed. Seven ADR methods that have been applied in Nigeria from literature formed a set of questionnaires to generate data through online means. Descriptive statistics, correlation analysis and bar charts were used for the analysis. The research found the most widely used ADR methods for dispute resolution in Nigeria to be negotiation and arbitration methods. Cost and time extended during disputes resolution remain significant having an overrun impact factors of 0.70 and 0.69 for cost and time respectively. Claims, poor quality work and slow work progress on site are the main subjects during construction dispute. Strong positive correlation exists between time and cost extension during ADR process. It is recommended that dispute avoidance be emphasized rather than to rely on ADR. To avoid dispute, stakeholders must be wary and make contingency plans against claims, work quality and work progress as key factors often causing construction dispute. Further research should consider using larger data or using a case study approach. Also, cost and time overruns of projects that used ADR and those that used litigation can be compared.*



*Key words: alternative dispute resolution (ADR), construction project, cost and time overruns, dispute resolution*


## 1.0 INTRODUCTION

There are priorities in every construction project. These priorities depend on the needs of the owner in line with the nature of the project. The owner of the project determines a set of desire as objectives in which other stakeholders work to achieve. Notwithstanding, quality, cost and time objectives remain important to achieve in most projects (Olawale and Sun, 2010). This emphasis on cost, time and quality or any combination of the three make researchers to name them an iron triangle or the devil's triangle (Stojcetovi et al., 2014). This is by virtue of not only importance objectives, but also the difficulty posed to project management. While quality can easily be attained if right specifications are observed by the constructor, time and cost often posed undue challenges. Suma et al. (2017) identified cost and time as the main constraints in construction management functions. There isn't any clear and assured way to achieve time and cost factor in construction projects management due to the kind and magnitude of associated risks and

uncertainties of which often wreak construction assembly process. Risk and uncertainty therefore remain major construction challenge among stakeholders (Osuizugbo and Okuntade, 2020).

Dispute among stakeholders has been identified as one among uncertainties that often tinkers with cost and time of construction. Dispute or conflict (Adeku, 2018) has caused cost and time extensions and rendered construction projects objectives unattainable, thus, igniting research interest on diverse related areas (Sing and Song, 2018, Danja et al., 2021). Being a human impaired factor (Ejohwomu et al., 2016), the incidence of dispute and the extent of devastation cannot easily be predicted at the onset of construction project. This has caused some attempts made to avail human traits factors impairing dispute management (Danja et al., 2021).

On the other hand, dispute might not be viewed on the negative perspective always because, not every dispute causes negative impact. Dispute (Tajul and Sutrisna, 2010) could be beneficial to construction processes if properly managed. Proper management of construction dispute can add value to construction project objectives. These extreme cases call for greateer attention in dispute management.

In the Nigerian construction sector, dispute has been found to impact negatively on cost and time objectives of projects (Aiyewalehinmi. and Nkumah, 2019). To prevent expensive and time consuming litigation when dispute arises, the alternative dispute resolution methods (ADR) developed are used to manage dispute. Sakete and Dwahale (2017) and Itumo, Ogunoh and Okongwu (2021) believes that the ADR methods are a realistic alternative to litigation for being cheaper and quicker in dispute resolution and do not easily lead to a breakdown in the working relationship between the parties. However, these ADR methods are different in their characteristics and also impact differently in construction procurement (Oladopo and Onabanjo, 2009). In Nigeria, ADR methods such as Negotiation, Arbitration, Mediation, Conciliation, Adjudication and Mini trial have been used at varying degrees (Oladopo and Onabanjo, 2009, Idowu and Hungbo, 2017**),** but studies seem to focus less on how the ADR methods have impacted on time and cost of projects. Studies are therefore required to avail if the cost and time performance of construction projects using ADR meets expectations (Sakate and Dwahale, 2017, Itumo, Ogunoh and Okongwu, 2021). This research therefore aimed at assessing the impact of ADR methods on cost and time of construction. The objectives are to avail the most frequent ADR methods used for dispute resolutions, rate the extent in which time and cost are controlled, identify the main subjects often forming the basis of dispute and establish the cost-time relationship in the use of ADR methods. Findings enabled recommendations that can improve dispute management under ADR along cost and time objectives.



## 2.0 LITERATURE

### 2.1 Sources of dispute

The complex nature of construction projects makes it prone to high incidence of dispute. In a single project, many stakeholders are involved with myriads of tasks to accomplish and diverse interest of taskmasters to meet. The taskmasters are assembled from different backgrounds to

work together to achieve common construction goal. These are most likely to differ in understanding, opinion and approach on a particular matter ((Ejohwomu, Oshodi and Onifade, 2016) the diverse opinion being often influenced by traits (Naismith, Sethi, GhaffarianHoseini and Tookey, 2016). If two people fail to agree on a particular matter, dispute has begun. Dispute or Conflict (Molwus, Ewuga and Orih, 2016, Ejohwomu et al., 2016) is simply when diverse interests fail to align. This is common with construction where ad hoc supply chains assemble from different backgrounds with their behavioral factors such as human interaction, personality, cultures and professional background, including individual 's ambition, frustration, dissatisfaction, desire for growth, communication and level of power, fraud and faith that often cause disputes (Jaffar et al., 2011).

Danja et al. (2021) observed that, apart from diverse professional backgrounds, some persons in construction contracting are highly educated, others less educated and yet others not educated at all, but all working together for common goal. One's background influences the traits in the individual, which also affects the kind of interest or priorities he places and pursues in construction procurement (Divakar and Kumar, 2015, Rauzana, 2016). These diverse interests are a major source of construction dispute during construction contract implementation. If not properly managed, it will lead to impediments of project process flow and prevent achievement of objectives vis a' vis cost and time objectives (Sakate and Dhawale, 2017). ADR is an attempt to avoid costly, lengthy and adversarial litigation. They are used with the hope of reducing or avoiding the negative impact of disputes in construction. Diverse ADR methods have been designed that can best suit different dispute conditions.

Aryal and Dahal (2018) reviewed the causes of dispute in construction so as to avail better understanding and choice of ADR methods. The scholars believe that various dispute situations can best be managed with some ADR methods. This view is in line with El-Sayegh, Ahmad, Aljanabi, Herzallah, Metry and El-Ashwa (2020) classified dispute resolution methods into avoidance, early resolution and late resolution methods. The scholars classified negotiation among the avoidance and mostly used at the early stage of dispute development. Various causes of dispute were classified into three groups (Aryal and Dahal, 2018) namely, client related, contractor and consultants related. Others are Material, Labor & Equipment Related Factor, Contract & Contract Relationship and lastly External Related Factors. Divakar and Kumar (2013) studied the causes of dispute based on when it arises and the sources behind its occurrence. Issues related to Retention of Deposit, Delay in Settlement of Final Bills and Claims were found to be significant sources at the point when dispute actually arises. Furthermore, Claims in Time and Cost Increase, Work Quality, Valuation of Variations were important sources of dispute.

### 2.2 The alternative dispute resolution (ADR) methods

All out-of-court dispute resolution procedures are called alternative dispute resolution (ADR) methods (Bvumbwe and Thwala, 2011, Alsharani, 2017). The ADR was described as a variant of systems where disputes are resolved privately without going through litigation in the public courts and with less court procedures (Alsharani, 2017). Litigation is a complex and formal process using public courts, and being regulated by a substantial number of rules and procedural requirements. This has often been described as characterized as adversarial, costly and lengthy

procedure. Arbitration on the other hand is an out of court settlement method, but follows the court procedures using a Neutral. Circumstances can also make arbitration to be adversarial, costly and lengthy like litigation. Being an out of court settlement method arbitration falls within ADR which Bvumbwe and Thwala (2011) also described as encompassing a range of procedures other than litigation designed to resolve conflicts. The essence of ADR is to deemphasize on courts during dispute resolution process. Therefore, ADRs often limit the influence and effect of the normal legal process in resolving dispute between parties and are comparatively cheaper, quicker and less adversarial (Hayati et al., 2017). Seven common ADR methods are found to have been used at varying degrees in Nigeria and summarized below (Animashaun and Odeku, 2014, Karape and Josji, 2018, Danja et. al., 2021):

**Negotiation**: The parties in dispute make attempt to settle their differences voluntarily and without serious influence of a Neutral. The disputants in this case control the process and the outcome by themselves. Karape and Josji (2018) believed it to be the most commonly used method in general. It has been used in many cases as means of avoidance of conflict in construction (Osuizugbo and Okuntade, 2020).

**Mediation**: under this method, the Neutral plays greater role on the process compared to negotiation. The Neutral attempts to aid communication and negotiation, but has no power to impose a solution on the disputants; instead, he assists them in shaping solutions to meet their interests.

**Conciliation**: this has similar approach with negotiation, however, the neutral person makes his own evaluation, and suggests a settlement for the dispute. The settlement is not binding on the parties, the focus being to seek for concessions.

**Adjudication**: Neutral(s) may be one or three persons. Decision is usually binding until overturned in arbitration or litigation.

**Facilitation**: A facilitator acts as a shadow project leader. He tries to make the team to act on what they should be acting on. He clarifies the issues and makes the team to function effectively, without being involved in substantive issues.

**Expert tribunal (Mini-Trial):** Used by parties to test for the possible outcome of their case. Their counsels present an abridged version of their cases before a panel chosen by the parties. The panel decides on the case. Alaloul, Hasniyah and Tayeh (2019) described the settlement process as adopting the elements of negotiation and mediation. Furthermore, the parties get exposed to the theories, strengths, and weaknesses of each side of the case, the main goal being to predict the results of an actual trial, thereby enabling the parties to come to a business decision to resolve their dispute.

**Arbitration**: believed to be most commonly used in Nigeria (Lal, 2021). This is a private legally-binding process. A neutral third party called arbitrator is at the heart of the situation. "The arbitrator considers documents and facts that concern the situation and can make a decision that favors one side if the parties fail to achieve consensus". Arbitration has a procedure often based on the ordinary rule (Karape and Joshi, 2018), that means it is based on some relevant Arbitration Law and

the procedure that was laid down in the arbitration agreement. The decision can't be cancelled by law courts, except in some cases.

**Cost and time reduction of projects under ADR**

Each of the identified ADRs has different features as well as attributes that can offer different values when applied in dispute resolution (Idowu, Ogunbiyi and Hungbo, 2015). It has been observed that the need to eliminate costs of litigation and the factors causing project cost-overruns influences the adoption of ADR in construction projects disputes management (Kirimi and Wanjohi, 2019). Alshahrani (2017) believes that there are cost factors in dispute resolution that are avoidable when proper choice of resolution method is done. Kirimi and Wanjohi (2019) found a positive association between costs minimization and the use of alternative dispute resolution in construction projects. The scholars did not set to observe if the actual cost reduction through the use of ADR is significant or not. The incidence of cost in which ADR can contain if properly applied was classified into direct and indirect cost which can sum up to 5.9% of the contract sum (Alshahrani, 2017). The direct cost category listed (Alshahrani, 2017) are legal services, arbitration, consultants and in-house resources. The indirect category is delay against the project, adverse performance of the project, reduced morale and the erosion of confidence and trust in working relationships. Others are adverse reputational impact, emotional impact on people involved and the loss of people to the industry because of wasted effort, including disillusionment, frustration and the lost opportunities for future work due to the destruction of business relationships. Some ADR methods are effective and can offer better cost value if properly applied (Alshahrani (2017). Danja et al. (2021) believe that proactive dispute management approach using a right ADR method will offer good management results. The scholars assessed the traits of construction stakeholders to dispute resolution procedures as means to identifying the best management approach for effective management performance. There seems to be a gap in literature on the significance of cost and time reduction in the use ADR.

## 3.0 METHODOLOGY

This study utilized quantitative technique in determining the impact of alternative dispute resolution on cost and time of construction projects. A set of questionnaires was sent through online means to generate the data for analyses. This method using internet according to Benfield and Szlemko (2006) has advantages of being non-bias with greater sample diversity. If utilized properly, it can yield a more representative samples. The questionnaire was divided into two main sections. Section 1 was set to generate general information about the respondents while section 2 dealt with the issues to obtain data to answer the research questions. Respondents were to either tick a box where there are multiple alternative choices or rate in a Likert's scale of 1-5 (1-being no impact to 5-being high impact) where applicable. Descriptive statistics, charts and correlation analyses were used to analyze the data.

The targeted respondents were construction and legal experts with practical experience in ADR cases. These include Architects, Quantity Surveyors, builders, lawyers and engineers who are either working in the consulting, clients' or contracting organisations. There was no record of the number of professionals documented as having experience on ADR cases. Therefore, it makes the

targeted population of those with practical experience unknown. The approach to data collection then became open with a question added on whether a respondent has ever been involved in a panel of construction ADR, which became the basis of identifying those with practical experience. the questionnaire was hosted on the professional bodies' sites in which forty-eight (48) respondents returned their completed online questionnaires and 42 used for analysis after sorting them out.

In this study, the analysis employed a simple statistical tool, which is descriptive statistics. The five point Likert scale used was to allow a range of responses to be generated including neutral answers, and it does not force a decision as in the case of "yes" or "no" type of questions. The adopted scale also allowed individuals to express their opinion on how much they strongly find the impact or otherwise of ADR on cost and time with the following weight assigned, very low=1, low impact=2, average=3, high impact=4, very high impact=5. The impact of ADR methods on cost and time was measured by computing the impact factor as follows (Ekhator, 20160:

$$\text{Impact factor (IF)} = \frac{w1n1 + w2n2 + w3n3 + w4n4 + w5n5}{5N}$$

Where: w1 to w5 = the weight or measuring scale from 1-5 used in the questionnaire
n1 = number of respondents for very low impact
n2 = number of respondents for low impact
n3 = number of respondents for average impact
n4 = number of respondents for high impact
n5 = number of respondents for very high impact
N = represent the total number of respondents

Correlation analysis was used to establish the kind of relationship that exists between the impact of ADR methods on time and cost of projects. The charts compared the frequency of occurrence among groups of variables.

## 4.0 DATA ANALYSIS AND DISCUSSIONS ON FINDINGS

This section presents the data and the analysis of data and then discussed the results.

### 4.1 Respondents' profile.

This section presents the profile of respondents that returned their questionnaires online. Table 1 indicates that respondents were drawn from both client, contractor and consultants organisations and have handled either engineering, building or both building and engineering projects. About 40.48% were consultants, 33.33% and 26.19% were contractors and clients respectively. Quantity surveyors, architects and engineers were 34.15%, 21.95% and 14.63% respectively, while builders and lawyers were 4.88% and 17.07% respectively. Those who spent 11 years and above are about 61.90%. A further 30.95% have spent between 6 and 10years. Most respondents are within management level in their organisations with top management 38.10% and mid management 42.86% and lower management level 16.67%. By virtue of their resume,

respondents are qualified persons and can understand the questions on the subject put forward in this research, thus, their responses can be relied upon for the analysis.

**Table 1 Respondents' profile**

| | | ***Frequency*** | ***Percentage*** |
|---|---|---|---|
| *Types Of Organization* | Client | 11 | 26.19 |
| | Contractor | 14 | 33.33 |
| | Consultants | 17 | 40.48 |
| | **Total** | **42** | **100** |
| *Types Of Projects* | Building | 18 | 42.86 |
| | Engineering | 3 | 7.14 |
| | Both | 21 | 50 |
| | Total | 42 | 100 |
| *Respondents' profession* | Quantity Surveyors | 14 | 34.15 |
| | Architects | 11 | 21.95 |
| | Engineers | 6 | 14.63 |
| | Builders | 2 | 4.88 |
| | Lawyers | 8 | 17.07 |
| | Total | 42 | 100 |
| *Years Of Experience* | 1-5yrs | 3 | 7.14 |
| | 6-10yrs | 13 | 30.95 |
| | 11-20yrs | 15 | 35.71 |
| | 21 And Above | 11 | 26.19 |
| | **Total** | **42** | **100** |
| *Management Position* | Top Management | 16 | 38.10 |
| | Mid Management | 18 | 42.86 |
| | Lower Management | 7 | 16.67 |
| | Not Management | 1 | 2.38 |
| | **Total** | **42** | **100** |



**4.2 Research questions**

This section deals with the research questions in line with the research objectives which are- to identify the extent of application of the identified ADR methods, assess the subject of disputes in the ADR processes, impact of the ADR methods used on time and cost of projects and also establish the kind of relationship between time and cost impact.

Table 2 reports that all the 42 respondents have participated in at least one case in construction ADR, as such have personal experience in resolving construction dispute matters using alternative means other than litigation. Those that served as umpire are 23.53%, client representatives are

54.86%, contractor representative, 29.86% and expert witness, 4.86%. More than half of the respondents were clients' representatives. The total number of cases respondents have participated put together, are 206 in number indicating that some respondents have experienced ADR cases more than once. The research was not set to capture the time spread of the occurrence of the cases. However, the results further confirmed the quality of respondents as qualified individuals to respond to the questions in this research.

**Table2: The participation of respondents in ADR**

| | *Question* | *Choice* | *Frequency* | *Percentages* |
|---|---|---|---|---|
| *1* | *Ever participated in ADR* | Yes | 42 | 100 |
| | | No | 0 | 0 |
| | | No response | 0 | 0 |
| | | **Total** | 42 | 100 |
| *2* | ***Position served*** | Umpire | 48 | 23.53 |
| | | Client representative | 98 | 46.08 |
| | | Contractor representative | 55 | 26.96 |
| | | Expert witness | 7 | 3.43 |
| | | **Total** | **206** | **100** |
| *3* | ***Who was the Plaintiff*** | Client | 131 | 63.59 |
| | | Contractor | 75 | 36.41 |
| | | **Total** | **206** | **100** |

Out of 206 ADR cases that respondents participated, Table 2 indicates that the client was the plaintiff in 131 instances (63.59%) and the contractor in 75 (36.41%). The client is almost as twice most likely to resort to ADR process than the contractor. This high tendency is either by virtue of client's traits that is prone to such reactions as means of dispute resolution when the contractor defaults or that the contractor is most often defaulting in contracting process causing high tendency of client's reactions in like manner.

The research sought to establish what kind of ADR methods often employed in dispute resolutions. Having participated in construction ADR, respondents were requested to indicate the frequency of the kind of ADR methods they used in resolving disputes. Figure 1 compares the frequency in which each method was used out of the 206 cases. The most frequent method used in resolving construction dispute in Nigeria is shown **as** negotiation (62.14%). The next most widely used method is arbitration (23.30%), followed by adjudication (6.31%). While conciliation was used 1.46%, facilitation and mini-trial were used less than 1% to resolve construction dispute by the respondents.

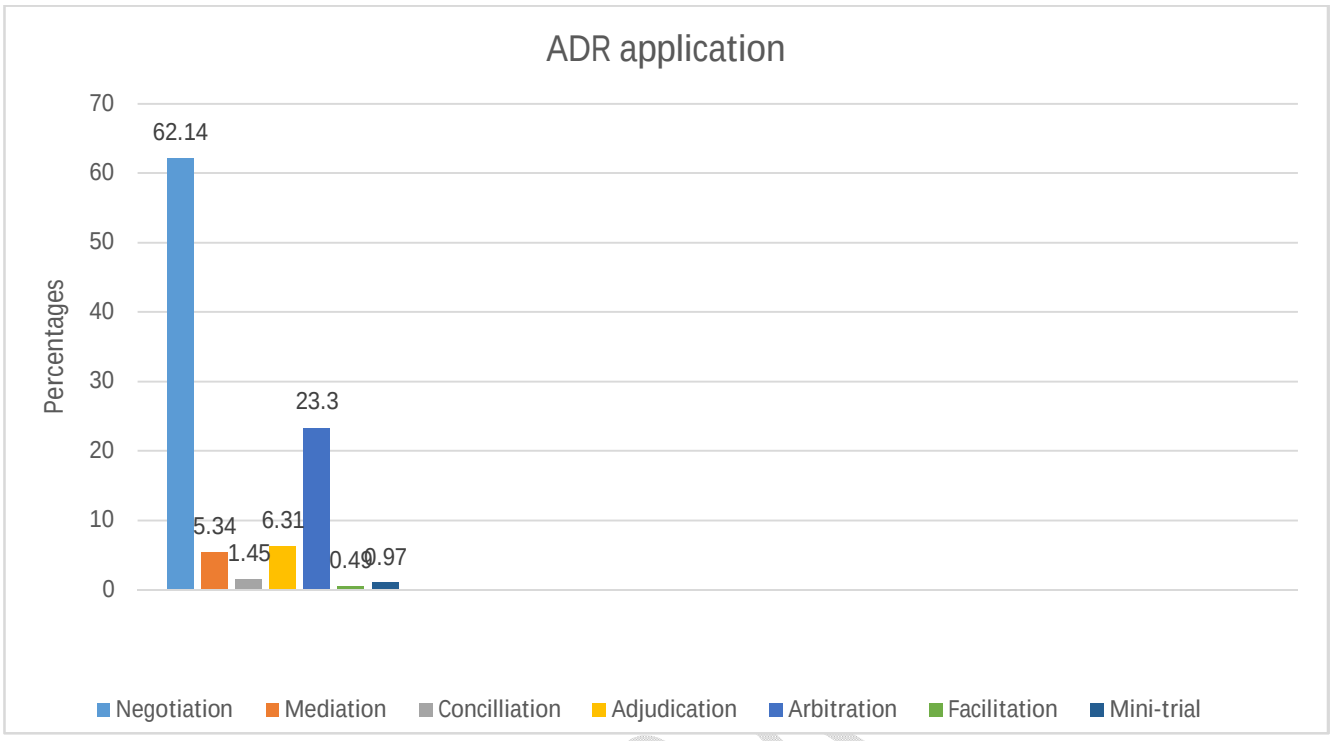


**Figure 1: Application of ADR methods in dispute resolution**

Figure 2 compares the subject of dispute in ADR in construction contracting. Respondents were requested to indicate the subjects in dispute as listed out of the number resolved. The highest is out of the 206 cases is that they resolved "claims-related cases with 33.01%". Claims often originate from, but not limited to, contract variations, fluctuations, discrepancies in contract documents and delay, and if failed to settle results to construction disputes. The subject for dispute was followed by "poor work quality, 22.82%" and "slow work progress, 14.08%". Notably, dispute relating to interim payments is the fourth with 13.11%. It is evident that most of the client's agitations leading to dispute emanates from poor work quality and slowness of work progress on site by the contractor. Therefore, the high frequency of client going to ADR may not be unrelated to an uncompromising stance on quality and progress of work. Contractors are to be wary that clients have a high tendency of seeking redress in ADR when there is default than they (the contractors) do.

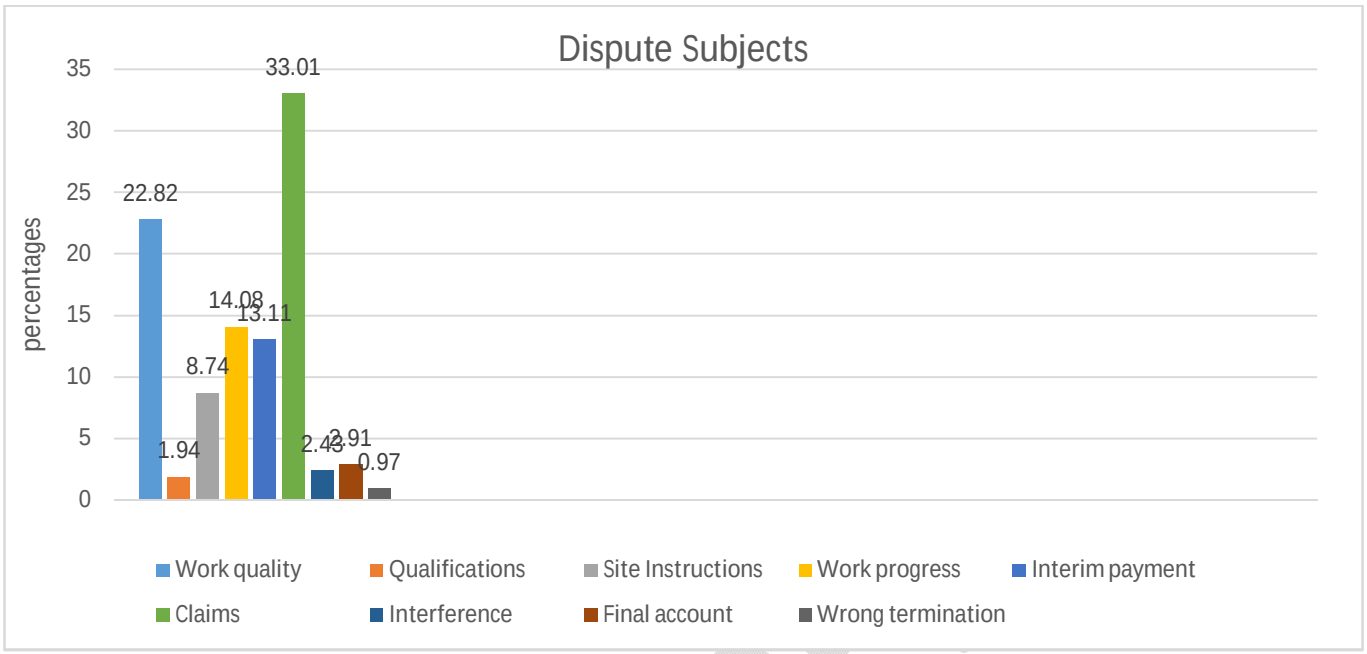


**Figure 2: Key subjects causing construction dispute**

Disputes related to site instructions did not indicate high frequency of occurrence (8.74%). Wrongful termination of contracts, 0.97% and poorly qualified workers on site, 1.94% are the least rated. Therefore, in the Nigerian contracting business, claims related issues, poor work quality and slow work progress are most likely to cause dispute which might lead to ADR.

### Cost and time increased

This section assesses the chances in which cost and time of projects will increase if ADR method is used in resolving dispute cases. Respondents were asked to indicate the number of times projects experienced significant cost and time overruns against each of the ADR methods used. Table 3 reports the frequency in which time and cost of projects were extended for each ADR method used. Out of 206 cases, negotiation was used 128 times and 82 cases (64.06%) caused significant time extensions on contracts and 72.66% caused significant cost extensions. Mediation was used 11 times and all the cases 100% caused time extension and 45.45% caused cost extensions. Adjudication was used in 13 cases and 11 (84.62%) caused significant time extension and 53.85% cost also.

**Table 3: Frequency of time and cost extension of ADR on construction projects**

| | ADR methods | Frequency of used | Frequency of time extended | % of time extension | Frequency of cost extended | % of cost extension |
|---|---|---|---|---|---|---|
| 1 | Negotiation | 128 | 82 | 64.06 | 93 | 72.66 |
| 2 | Mediation | 11 | 11 | 100 | 5 | 45.45 |
| 3 | Conciliation | 3 | 0 | 0 | 0 | 0 |
| 4 | Adjudication | 13 | 11 | 84.62 | 7 | 53.85 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 | Arbitration | 48 | 44 | 91.67 | 47 | 97.92 |
| 6 | Facilitation | 1 | 0 | 0 | 0 | 0 |
| 7 | Mini Trial | 2 | 2 | 100 | 2 | 100 |
| 8 | Any Other | 0 | 0 | 0 | 0 | |
| | **Total** | 206 | 148 | 72.82 | **154** | **74.76** |

Arbitration was used 48 times but 44 (91.67%) cases caused significant time extension and 97.92% cost. However, conciliation was used 3 times and none caused time and cost extension. On the average, 72.82% of all the ADR methods used caused significant time extension and 74.76% cost. There is a high rate of time and cost extension when ADR is used in construction dispute resolution. Arbitration indicates the highest frequency of the extension of cost and time. This indicates that when a dispute involves arbitration, it is almost certain that cost and time will overrun. Mini-trial also indicates a high case of extensions but for the low frequency of use as a dispute resolution method.

**The impact of ADR methods**

On whether ADR has significant impact on time and cost of construction was a subjects enquired and discussed in this section. The overruns impact factors were computed by the measure of the chances that cost and time will be extended if ADR is used. Respondents were asked to rate either very low to very high indicating that what extent contract period and contract cost increase when using ADR in Nigeria. This question is irrespective of the type of method used. Values were assigned to, very low =1 to very high =5. Computed value that is low implies that there is a low overruns impact factor or that the chance of projects to overrun is low. In other words, it implies high positive impact of ADR on cost and time. High values computed implies high overruns impact factor, i.e., there is high chances that overruns will occur at a significant level. It therefore implies that the ADR process has low positive impact. Table 4 reports the overruns impact factors of the ADR methods on contract duration and cost.

**Table 4: impact of ADR methods used on time and cost of construction projects**

| **Impact on time** | **Very low`** | **Low** | **Average** | **High** | **Very high** | **Max score** |
|---|---|---|---|---|---|---|
| **Scale** | **1** | **2** | **3** | **4** | **5** | **200** |
| Frequency | 3 | 6 | 11 | 9 | 11 | 40 |
| Score | 3 | 12 | 34 | 36 | 55 | 140 |
| Impact factor | 0.02 | 0.06 | 0.17 | 0.18 | 0.28 | 0.70 |
| | | | | | | |
| **Impact on cost** | **very low`** | **low** | **average** | **High** | **very high** | **Max score** |
| **Scale** | **1** | **2** | **3** | **4** | **5** | **200** |
| Frequency | 3 | 3 | 15 | 12 | 7 | 40 |
| Score on cost | 3 | 6 | 45 | 48 | 35 | 137 |
| Impact factor on cost | 0.02 | 0.03 | 0.23 | 0.24 | 0.18 | 0.69 |

Forty respondents responded to this question who rated on whether the chance of time and cost extension is very low (1) to very high (5). Most respondents rated "very high" (0.28 factor) to imply that the ADR methods will cause time overruns. Likewise, on cost they rated "high" with 0.24 factor. The general overruns impact factor on time is 0.70 while on cost is 0.69, thus imply high chances of overruns if ADR methods are used. It can be concluded that the positive impact of ADR methods on time and cost when resolving construction disputes in Nigeria is still low. Once there is a construction dispute that results to ADR process, there is no assurance that time and cost will not be extended significantly which can affect the overall feasibility of a project.

The kind of relationship between time and cost extensions when resolving dispute through ADR methods in construction projects was established. A correlation analysis between the cases in which time was extended and that of cost extension was done as shown in Table 5.

**Table 5: Frequency of time and cost extension of ADR on construction projects**

| | ADR methods | Frequency of used | Frequency of time extended | Frequency of cost extended |
|---|---|---|---|---|
| 1 | Negotiation | 128 | 82 | 93 |
| 2 | Mediation | 11 | 11 | 5 |
| 3 | Conciliation | 3 | 0 | 0 |
| 4 | Adjudication | 13 | 11 | 7 |
| 5 | Arbitration | 48 | 44 | 47 |
| 6 | Facilitation | 1 | 0 | 0 |
| 7 | Mini Trial | 2 | 2 | 2 |
| 8 | Any Other | 0 | 0 | 0 |
| Correlation value between time and cost extended | | | | **0.995** |

The correlation value is positive with a value of 0.995. This implies that there is a strong positive relationship between the time extended and the cost extended. It is such that time and cost do extend in the same manner when ADR is used to resolve cases. Further, for any ADR method used, the cost and time extensions behave in similar ways.

## 5.0 CONCLUSION

This research found two most used ADR methods in Nigeria to be Negotiation and arbitration. Negotiation is used in more than half the entire cases of ADR. This is in line with Sing and Song (2018) who stated that negotiation is the most widely used method to resolve construction disputes reaching 70% of cases. El-Sayegh et al. (2020) also classified negotiation under dispute avoidance category and suggesting that negotiation is often used as first step to avoid dispute generally. It is when negotiation fails that arbitration or other methods are employed (Osuizugbo and Okuntade, 2020). El-Sayegh el al. (2020) found negotiation and arbitration at the top of choice to use in the UAE ADR also. However, despite using negotiation as means of avoiding dispute, over half of the negotiations still caused significant time and cost overruns in this research suggesting that negotiations often fail. This case is similar to the case of adjudication.

The use of negotiation and adjudication as ADR methods in Nigeria do not guarantee that projects' time and cost will not increase significantly unlike in literature where these methods are expected to significantly save time and cost of construction by virtue of dispute.

Furthermore, the client is more likely to go to ADR than the contractor. This is in line with the high culpability of the contractor compared to the client. In this study, the contractor is most likely to breach than the client. The contractor often breaches the contract in two main ways, which relate to poor work quality and slow work progress on site. The high incidence of client resorting to ADR therefore is connected to an uncompromising stance on work quality and work progress. The finding also supports an earlier study by Danja et al. (2021) who studied behavioral tendencies of construction disputants in Nigerian construction sector. The traits of disputants were appraised and found that the client is most likely to impose own interest and his will over the other opponent during dispute resolution process even if at the expense of the opponent. This stance by the client cannot guarantee quick resolution of dispute especially if blended with an emotional behavior in which Danja et al. (2021) identified. Danja et al (2021) further found the contractor most often evading ADR process. This may explain the prolonged time of dispute resolution and finally cost overrun usually experienced in ADR as found in this study. On a general note, the use of ADR in Nigeria still leaves behind a significant time and cost overruns. This research therefore avails these summary of findings that:

1. The key subjects of dispute are claims, poor work quality and slow work progress.
2. The contractor is more culpable in construction contracting than the client.
3. The client is uncompromising on quality and work progress as such, comparatively most likely to take the contractor to dispute resolution panel if default occurs.
4. Despite ADR methods found to contribute positively in construction dispute management, the system is yet to guarantee prevention of significant cost and time extensions during dispute resolutions as cost and time overruns remain high even when ADR is used to resolve dispute.
5. Conciliation exhibits a promising cost and time savings if utilized for dispute resolution.
6. Going into arbitration is almost certain that cost and time will overrun significantly even if it performs better than litigation.
7. There's a strong positive correlation between construction time and cost extensions when using ADR methods therefore, controlling time is a good factor in controlling cost of projects when using ADR.

## 6.0 RECOMMENDATIONS

1. Dispute avoidance should be given more attention since ADR methods may not guarantee significant savings in the cost and time of projects
2. Construction stakeholders should be aware that claims, poor work quality and slow work progress are the most likely cause of dispute therefore preliminary arrangements be made to contain their occurrence and negative impact at the onset of contracting.
3. Contractors should note that clients are uncompromising on quality and work progress and are most likely to resort to dispute resolution panel when such cases occur.

4. The need for wider use of other methods other than the ADR dominant methods which are negotiation and arbitration should be explored especially that they still cause high negative impact.
5. ADR managers should reduce time taken to resolve a dispute as much as possible.

**Areas for further research**

Further research work can use the case studies approach where dispute records can be accessed and data generated for in-depth analysis. Furthermore, cost and time savings using ADR methods like arbitration should be compared with the cost and time of litigation to establish how significant the difference.

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