Covenant Journal in Research & Built Environment (CJRBE) Vol. 8 No. 1, June, 2020
***ISSN*: p. 2384-5724 e. 2384-5716 DOI: xxxxxxxxxxxxxxx**

An Open Access Journal Available Online

Conflict Management Practice among Stakeholders in Construction Project Delivery

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Received: 21.12.2019 Accepted: 08.05.2020
Date of Publication: June, 2020

Abstract: Conflict is a natural phenomenon among people, groups, and organisations. Due to the unique and complex nature with different parties, conflict is inescapable in most construction projects. These complexities and unsure nature of construction projects need effective stakeholder management approaches to contain conflicting stakeholder interests and to build coexistence among construction and ensure attainment of overall organisational goal. Little consideration has been given to stakeholders' conflict management strategies in construction project delivery. This study seeks to investigate stakeholders' conflict management practices in the construction project delivery using Lagos as the study area. The study adopted survey research method. Questionnaires were distributed to the targeted population. A total of 192 respondents' data were found to be valid and appropriate for the analysis which represents 76.8% response rate. Data obtained were analysed using frequency, percentages, mean score, ranking, spearman rank correlation and ANOVA. The findings of the study revealed that, "be aware causes and result", "negotiation", "take steps to deal with the causes", "establish cooperative goals" and "mediation" were the most used conflict management strategies in construction project delivery. Likewise, "absence of adequate institutional framework", "fear of change", "inadequate planning and preparation", "misunderstanding and loss" and "lack of awareness in alternative dispute resolution (ADR)" were agreed to be the major challenges to a conflict management process. The t-test result shows that there is a strong agreement ($P < 0.05$ $t=2.09, 2.03$) between the opinions of the construction stakeholders on the conflict management techniques and challenges. The study recommended that construction stakeholders should be

conversant with the various conflict management techniques at their disposal to maintain a coexistence attitude among themselves.

Keywords: Conflict management, construction projects, Nigeria, project delivery, stakeholders

1.0 Introduction

The unique characteristic of the construction industry brings about the involvement of various stakeholders during the life cycle of a project. Stakeholders according to Thompson (2002) are people or organisations having interest or influence on construction project. As a matter of fact, most organisations rely on their stakeholders for critical success factors (Johnson, Scholes and Whittington, 2005). The need to engage these stakeholders lies on its influence on the construction projects and the environment (Glass and Simmond, 2007), likewise its social responsibilities to the construction (Jawahar and McLaughlin, 2001). Every construction project usually involved stakeholders whether small, large or medium size project, but the stakeholders' involvement will depend on the magnitude and complexity of the project. However, construction projects frequently involve many stakeholders such as users, owners, managers, legal practitioners, designers, subcontractors, general public, competitors, insurance organisations, network representatives, suppliers, government institutions, visitors, customers, developers, banks and the media (Smith and Love, 2004; Newcombe, 2003).

However, due to the diversity of stakeholders with different ideologies, cultures, and race, conflict is most likely to occur. According to Lynch (2006), when the stakeholders are many in a project, there is a huge potential for conflict among them (especially large or medium-sized construction project), and if the organisation focuses on a stakeholder, the interests of other stakeholders will be threatened (Doyle and Stern, 2006). The multi-discipline involved in construction projects is the beginning of conflict itself due to possible differences in interest, concerns, training, and perception. Ejohwomu, Oshodi and Onifade (2016) affirmed this to be evident in human interactions during these phases and can affect project outcomes. Awakul and Ogunlana (2002) buttress the points that if these conflicts are not well managed within some allowable or bearable limit it can negatively affect the outcome of the project such as constraints in the implementation of the project objectives and the effective management of the project.

The essentials of every construction project are its ability to meet up with the stipulated deadline and schedules without any constraint on quality delivery. Conflict is considered to be the major problem among stakeholders in the construction sector (Forsman, 2017). Conflict causes project cost overrun, delays, low productivity and even damage relationships among project stakeholders (Loosemore, 2006; Rowlinson and Cheung, 2008). Earlier research has considered the causes of these conflicts and

demonstrated some few adverse effects (Simons and Peterson, 2000; Jehn, 1995; Lau and Cobb, 2010; Okuntade, 2014) while few works had been conducted mainly on the management aspect of conflict in the construction industry, especially in Nigeria (Olalekan, 2013; Longe, 2015).

Furthermore, because the construction industry is unique, that is, no two projects are the same (Sears, Sears, Richard, Rounds and Segner, 2015), this can be translated to mean that the conflict management style in a project can never be the same because the cultural, purchasing and communication channels may differ. The mindset of team members will also differ as a result of traditions of the stakeholders involved (Loosemore, 2006; Ochieng and Price, 2009). According to Jones (2006), conflict in the construction industry is unavoidable and antagonistic bringing about the loss of time, resources, and efficiency. Therefore, there is a need to look at the management approaches to conflict critically among construction stakeholders.

The management approaches of conflict involve creating an effective framework for the prevention of conflict in construction projects in Nigeria. Majority of previous work on conflict management as seen from the literature suggested that conflict have negative impacts on the construction project. One major finding in this literature is that many of the researchers focused on the causes of conflict and not on the management aspect of the conflict. The main goal of this study is to better the understanding of such managerial approaches in tackling the issue of conflict than the focus on the causes. Thus, if conflict adversely affects project execution, benefits and morale in the industry, at that point there is motivation to examine how it can be managed effectively. The expectation is to comprehend what factors add to the conflict and what management approaches or model can be used to solve the problem. This paper attempts to make a significant contribution to the management of conflicts by providing a series of conflict management techniques that will aid the stakeholders in construction projects delivery manage conflicts efficiently and effectively. Thus, the study aims to evaluate the conflict management practice among stakeholders in construction project delivery in Lagos, Nigeria with a view to providing a better understanding of various strategies in managing conflicts in construction project delivery, thereby improving their managerial performance in conflicts management.

2.0 Literature Review

2.1 Conflict Management

All conflicts have management approaches. However, not all management approaches are successful. For conflict management approaches to really take place, and be successful, stakeholders need to have the sense that the conflict mechanism was fair and in their best interest. Generally, construction industry are faced with a dynamic and complex level of uncertainties in the project environment, as a result, the management of conflict among

stakeholders need a critical execution mechanism (Cicmil, Williams, Thomas and Hodgson, 2006; Winter, Smith and Cooke, 2006; Blomquist, Hallgren, Nilsson and Soderholm, 2010). Attention must be given to the prominent role of the project stakeholders occupy as an essential part of project development. Ogunlana and Mahato (2011) explained that the construction industry was majorly seen as a project-based industry with the unique characteristics of diverse people within the project life cycle, this diversity in the industry involving various stakeholders can bring about conflict such as a serious disagreement between them. As the construction industry is becoming more globalised, the sector has grown into a multicultural and multidisciplinary setting forcing construction managers to mix and align with numerous stakeholders.

Conflict management is a process of communication for changing the negative emotions in conflict to a state of emotions that allow for working out a solution to the conflict (Taher, Das and Rashed, 2008). Conflict management refers to the action that allows one to deal with dissimilarities of preferences, interests and perceptions so as to maximise organisational effectiveness. In essence, the notion of conflict management assumes that conflicts can be managed for the benefits of parties involved in a conflict.

According to Alshehri (2012), construction projects have four major distinct phases which are; brief, design, construction, and post-construction. The completion of each of these phases requires the services of stakeholders in various disciplines within the construction environment. In a related development, the studies of Ohlendorf (2001), Brahnam, Margavio, Hignite, Barrier and Chin (2005), Suterfeld, Friday and Blackwell (2007), Thomas (2009), Aula and Sirra (2010), found that today's managers spent around 20% of their productive time dealing with conflicts. For example, conflict among major stakeholders such as the designers and the builders where the designers continue to influence the creativity and aesthetics of the building, but not the buildability, whereas, professional builder is only interested in working with a design that is realistic with less cost and fewer challenges, all this are responsible for conflict in the construction sector.

The intricacy of the construction industry is becoming bigger as the construction industry continues to grow in innovations and technologies. Jaffer, Tharim, and Shuib (2011) expressed that the construction industry itself is perplexing and conflicts effectively happen within the construction circles. The construction industry has been known for a pro-long experienced time of exorbitant conflict litigations that consume project time in the long run. Shin (2000) stated that it is tedious to deal with the contention than fabricate the construction industry. There is a need to take conspicuous activity to determine the negative issue in the construction sector. The achievement of the construction sector relies upon various factors.

Literally, conflict management approaches involve any process that can end the conclusion of conflict especially the most severe informal negotiations among the conflicting stakeholders through the introduction of a more direct intervention mechanism from external sources. These approaches will empower the conflicting stakeholders to resolve their incompatibility themselves. In another perspective, Ntiyakunze (2011) acknowledges the impact of conflict management mechanism but argued that each conflicting stakeholders must first accept that conflict exists before the principles can be adopted. Hence, Ntiyakunze (2011) stated in summary that conflict management is the belief that all conflicts cannot be essentially resolved, but learning how to manage conflicts can reduce the likelihood of non-productive conflict escalation and secondly, that conflict management entails obtaining skills related to establishing a structure for management of conflict, conflict resolution, conflict communication skills and self-awareness about conflict modes.

2.2 Construction Stakeholders

Construction projects by differing nature have organisations and individuals actively
involved in the project, or whose interest may be negatively or positively affected by the outcome of the project (Eyiah, Aigbavboa, Ohis, Thwala and Wellington, 2016). “The question has been who are these stakeholders, what are their interest and how should they be managed” (Eyiah et al. 2016). According to Chinyio and Akintoye (2008), construction stakeholders are a group of people with interest in a project. Construction stakeholders are Engineers, Builders, Architects, contractors, owners, suppliers and subcontractors (Gebken and Gibson, 2006; Ning and Ling, 2013). Stakeholders can be divided into internal and external (Atkin and Skitmore, 2008). According to Atkin and Skitmore (2008), internal stakeholders such as employees, owners, suppliers and customers, are those directly involved in an organisation's decision-making process while external stakeholders like local authorities, local community, neighbours and general public, are those affected by the organisation's activities in a significant way.

2.3 Construction Stakeholders and their Involvement in Project Delivery

Every construction stakeholder in any project has their specific functions and objectives to the project, due to this fact, construction stakeholder’s task and functions are becoming complex depending on the nature of the construction project (Bal, Bryde, Fearon and Ochieng, 2013). According to Vaux (2014), every project begins with the stakeholders working towards a quality, profitable and successful project, but most times conflict emerges to undermine those goals. In fact, construction stakeholders can contribute to the failure or success of a construction project (Newcombe, 2003). This challenge can be reduced if construction stakeholders increase

their effectiveness, efficiency and choice decisions on projects. The study by Saghatforoush, Trigunarsyah, Eric and Ami (2011) found that, many stakeholders developed a comprehensive involvement plan in order to cope with the complexity of the project.

However, previous studies such as Bal et al. (2013), Bosher, Dainty, Carrillo and Glass (2007), Olander (2007) also support the fact that stakeholder involvement is essential in enhancing the effectiveness of project results. Heravi, Coffey and Trigunarsyah (2015) opined that stakeholders need to be committed to carrying out their responsibilities if not the project delivery will be affected. It is very important that parties to the contract which consist mainly of construction stakeholders are committed to the project to avoid conflict or poor quality delivery.

3.0 Methodology

This study adopted field survey technique to reveal the practice of conflict management among the stakeholders in construction project delivery in Lagos, Nigeria. A wide-ranging literature review was conducted to establish the conflict management approaches and conflict management challenges. The list of conflict management approaches and conflict management challenges criteria were used to design a survey questionnaire in order to achieve the aim of the study. This survey instrument was used to obtain the attitude of the stakeholders in construction project delivery regarding conflict management. The questions were constructed using the Likert scale where the respondents were asked to choose the conflict management approaches they use or apply by raking from 1 for not used, 2 for little used, 3 for fairly used, 4 for used and 5 for mostly used. Five groups of stakeholders in construction industry of Nigeria were approached to participate in the research, namely architects, builders, quantity surveyors, engineers and contractors. To determine the accuracy and comprehensiveness of the survey instrument, a pilot study was conducted before administering it to the participants. The study employed Statistical Packages for Social Science (SPSS 20). The reliability test shows a Cronbach Alpha Scores of 0.85 against the measured item, therefore, the data obtained are highly reliable, accurate, reproducible, and consistent from one testing occasion to another. Frequency, percentages, mean score, ranking, spearman rank correlation and ANOVA were used to analyse the data collected from the survey.

3.1 Study Area

The research was carried out in Lagos, Nigeria. The reason for the selection was that Lagos is the center of the country's economy, power and commerce. Also Lagos is a built-up environment with many infrastructures and construction activities for both private and public developments.

3.2 Sample Size

This study adopted the selective random sampling method in the process of administering the questionnaire. To establish the required sample size, Krejcie and Morgain's formula was adopted as

shown in equation (1) using a sample frame of 250 population size.

S = equation (1)

Where:

S = required sample

x = Table of the value of Chi-Squared for 1 degree of freedom at the desired confidence level (taken as 3.841)

N = population size

P = population proportion (assumed to be 0.5)

d = degree of accuracy expressed as a proportion (taken as 0.05)

Therefore;

$$S = \frac{3.841 \; x \; 250 \; x \; 0.5(1-0.5)}{0.052\,(250-1) + 3841 \; x \; 0.5(1-0.5)}$$

= 249.9 approximately 250

Therefore, a total number of 250 questionnaires were administered to construction stakeholders for the purpose of this study. Table 1 shows the summary of the survey responses.

Table 1: Questionnaire Responses

	Architec	Builde	Enginee	Quantity Surveyor	Contractor	Total
No distribut	50	50	50	40	60	250
No Receive	41	42	30	27	52	192
Percentage	21.3%	21.9%	15.6%	14.1%	27.1%	100

Table 1 revealed that out of 250 questionnaires distributed, 192 were adequately filled and returned representing 76.8% effective response rate. The responses were further analyzed to determine the profile of respondents, strategies for resolving conflicts and the challenges of conflict management from the perspective of the Architects, Builders, Contractors, Engineers, and Quantity surveyors.

4.0 Results and Discussion

This section presented the questionnaire survey results, characteristics of respondents, conflict management strategies identified, conflict management challenges identified, analyses of the results and findings of the study.

4.1 Characteristics of Respondents

Most of the respondents were contractors with 27.1%. Builders are next with 21.9%, followed by architects accounting for 21.3%, with engineers and quantity surveyors contributing 15.6% and 14.1% respectively.

4.2 Conflict Management Strategies

The study identified Twenty-one (21) strategies for conflict management.

Average Conflict Strategies	Architect Mean	R	Builder Mean	R	Engineer Mean	R	QS Mean	R	Contractor Mean	R
Collaboration	5.00	**1**	4.20	7	3.72	10	4.38	9	4.14	11	4.34	7
Negotiation	4.82	**2**	4.33	6	5.00	**1**	4.84	**5**	4.64	9	4.71	**2**
Compromising	4.53	**3**	3.40	13	4.63	7	5.00	**1**	5.00	**1**	4.48	6
Mediation	4.23	6	4.46	**4**	5.00	**1**	4.69	6	4.78	**4**	4.60	**5**
Latent acceptanc	4.17	7	2.66	18	2.66	17	2.53	16	1.42	21	2.62	16
Smoothing	3.64	10	3.33	14	3.36	14	3.23	13	3.64	13	3.45	13
Private method	3.29	13	3.26	15	2.72	16	2.07	18	2.42	18	2.80	15
Mixed approach	3.05	14	2.73	17	3.36	14	2.07	18	1.64	19	2.57	18
Hybrid processe	2.88	15	2.13	20	1.90	20	1.92	21	1.64	19	2.14	21
Expert Determination	2.76	16	3.53	12	3.45	12	4.07	11	4.71	6	3.67	12
Concession	2.70	17	4.73	**3**	4.36	9	4.53	7	5.00	**1**	4.20	8
Avoiding	2.47	18	2.13	20	2.00	19	2.38	17	2.71	17	2.35	19
Adjudication	2.41	19	4.06	9	3.54	11	3.15	14	3.64	13	3.32	14
Competing	1.82	20	3.26	15	2.18	18	2.61	15	3.21	16	2.61	17
Interdependence	1.76	21	2.66	18	1.90	20	2.00	20	3.42	15	2.35	19
Be aware causes and result	4.52	**4**	4.86	**1**	4.81	5	5.00	**1**	5.00	**1**	4.82	**1**
Take steps to de with the causes	4.52	**4**	4.40	5	5.00	**1**	5.00	**1**	4.71	6	4.70	**3**
Establish cooperative goal	3.94	8	4.80	**2**	5.00	**1**	5.00	**1**	4.78	**4**	4.62	**4**
Address dispute concomitantly	3.76	9	4.00	10	3.72	10	3.72	12	4.21	10	3.90	11
Note alternative	3.64	10	3.60	11	4.81	5	4.53	7	4.71	6	4.20	8
Be open minded	3.35	12	4.13	8	4.45	8	4.14	10	4.14	11	4.04	10

Note: R = Rank ; QS = Quantity Surveyor

Table 2 shows the mean and ranking of the various strategies of conflict management. The top five strategies of conflict management as ranked by the respondents are; "be aware causes and result", "negotiation", "take steps to deal with the causes", "establish cooperative goals" and "mediation" with their mean scores 4.82, 4.71, 4.70, 4.62 and 4.60 respectively. Whereas, the least among the conflict management strategies includes; "avoiding", "interdependence" and "hybrid processes" with their mean scores 2.35, 2.35 and 2.14 respectively.

ANOVA analytical test was ran using SPSS-20 to determine the level of agreement of the stakeholders in construction project delivery. The result is shown in Table 3 and 4.

Table 3: Level of agreement of the construction stakeholders

ANOVA: Single Factor

Groups	Count	Sum	Average	Variance
Architect	21	73.26	3.49	0.92
Builder	21	76.66	3.65	0.72
Engineer	21	77.57	3.69	1.26
Quantity Surveyor	21	76.86	3.66	1.37
Contractor	21	79.56	3.79	1.42
Total	**21**	**76.49**	**3.64**	**0.86**

Table 4. ANOVA F - Analytical test

Source of Variation	SS	Df	MS	F	P-value	F-crit
Between Groups	0.99213	5	0.198426	0.181837	0.968977	2.289851
Within Groups	130.9473	120	1.091227			
Total	131.9394	125				

Since F < F-crit, that is 0.181 < 2.29 as shown in Table 4, the null hypothesis was accepted. This shows that, there a difference in their level of agreement. In Table 3, the mean for each of the Five (5) group of professional was calculated. The group means are 73.26, 76.66, 77.57, 76.86 and 79.56. These group means are distributed around the overall mean for all 21 observations, which is 76.49. If the group means are clustered close to the overall mean, their variance is low. However, if the group means are spread out further from the overall mean, their variance is higher. In Table 4, the ANOVA uses the F-test (2.28) to determine whether the variability between the group means is larger than the variability of the observations within the groups. Hence, since the ratio of between-group and within-group is sufficiently large, the study concluded that, all the means are unequal which interprets that there is a statistical difference in their level of agreement. This result shows that each group of the respondents has different ways of managing conflict in relation with size of project.

4.3 Conflict Management Challenges

The study identified Thirty-two (32) challenges to conflict management.

Table 5: Determination of the severity rank of the conflict management challenges among the construction stakeholders

	Architect		Builder		Engineer		QS		Contractor		Average	
Challenges	**Mean**	**R**	**Mean**	**R**	**Mean**	**R**	**Mean**	**R**	**Mean**	**R**	**Mean**	**R**
Secrecy and Deception	2.76	26	4.53	**4**	3.73	19	3.00	29	5.00	**1**	3.79	19
Unwillingness in other party's Negotiation	3.29	19	3.87	17	4.27	11	4.69	**5**	5.00	**1**	4.17	11
Inadequate planning and preparation	4.53	6	4.53	**4**	4.82	**5**	5.00	**1**	5.00	**1**	4.76	**3**
False first impressions and perception	3.88	9	4.27	8	3.64	20	4.23	16	5.00	**1**	4.21	9
Grief	3.47	15	4.13	10	3.45	24	4.38	13	5.00	**1**	4.09	14
Systematic distrust	2.12	31	4.13	10	4.27	11	3.31	24	5.00	**1**	3.69	22
Failure to communicate and listen	4.47	7	3.53	18	4.45	9	4.54	9	4.93	8	4.37	7
Insufficient focus on underlying interests	3.76	12	4.27	8	3.55	23	4.08	18	4.86	10	4.11	12
Partisan perception, judgmental overconfidence, and wrong baseline	3.18	20	4.13	10	3.64	20	3.46	21	4.86	10	3.84	18
Reactive Devaluation	2.94	23	3.33	23	4.18	13	3.77	19	4.71	14	3.73	20
Misunderstanding and loss	4.41	8	4.00	15	5.00	**1**	4.38	13	4.64	16	4.46	**4**
Failure to give opponents face, respect, and dignity	3.29	18	3.40	22	4.18	13	3.62	20	4.36	21	3.73	20
Comparative gain and equity consideration	2.65	28	2.00	29	4.09	16	3.46	21	2.21	32	2.80	29
Loss Aversion	4.88	**3**	2.00	29	4.09	16	4.23	16	2.50	27	3.54	23
Biases within the construal process	2.71	27	2.00	29	2.45	32	2.54	30	2.43	28	2.43	31
Reactive devaluation of compromises and concession	2.88	25	2.00	29	3.09	28	2.23	31	2.57	25	2.54	30
Dissonance about the past and unrealistic hopes about	2.18	30	2.40	28	3.18	27	2.08	32	2.36	30	2.40	32

the future											
Multiple Interest group and Agency problems	3.53	14	2.60	27	3.09	28	3.08	26	2.79	24	3.03	26
Political and constituency consideration	3.82	11	2.67	26	3.64	20	4.31	15	2.29	31	3.33	25
The desire for formal adjudication	2.94	23	2.93	25	2.82	30	3.08	26	2.43	28	2.84	27
Broader linkages	2.47	29	3.47	21	2.64	31	3.08	26	2.57	25	2.84	27
The problem of Enmity	4.65	**5**	3.33	23	4.55	8	4.46	12	3.21	23	4.03	15
Lack of awareness in ADR	5.00	**1**	3.93	16	4.64	7	4.69	**5**	3.93	22	4.44	**5**
interest of improving the knowledge and usage	3.47	15	4.67	**3**	5.00	**1**	4.85	**4**	4.43	20	4.41	6
Shortages of experience in the use of ADR	3.12	22	4.47	6	4.82	**5**	5.00	**1**	4.64	16	4.33	8
Absence of adequate institutional framework	5.00	**1**	5.00	**1**	5.00	**1**	5.00	**1**	5.00	**1**	5.00	**1**
Personalizing the misunderstanding	3.88	9	3.53	18	3.91	18	3.46	21	4.71	14	3.90	17
Signs of weakness	1.71	32	4.33	7	3.45	24	3.23	25	4.79	12	3.44	24
Parties intransigence	3.47	15	4.07	13	4.18	13	4.62	8	4.79	12	4.19	10
Concerns of the final decisions effectiveness	3.18	20	4.07	13	3.45	24	4.54	9	4.64	16	3.96	16
Concerns of trusting non-judicial bodies	3.65	13	3.53	18	4.45	9	4.54	9	4.64	16	4.11	12
Fear of change	4.71	**4**	4.93	**2**	5.00	**1**	4.69	**5**	4.93	8	4.84	**2**

Note: R = Rank ; QS = Quantity Surveyor

Table 5 shows the mean and ranking of the various challenges to conflict management. The results from Table 5 shows that, "absence of adequate institutional framework" (5.00), "fear of change" (4.84), "inadequate planning and preparation" (4.76), "misunderstanding and loss" (4.46) and "lack of awareness in alternative dispute resolution (ADR)" (4.44) are the five most paramount challenges to a conflict management process in construction project delivery. Table 5 also reveals that, "reactive devaluation of compromises and concession" (2.54), "biases within the

construal process" (2.43) and "dissonance about the past and unrealistic hopes about the future" (2.40) as the most three least agreed on challenges to a conflict management process in construction project delivery in the study area.

4.4 Significant Testing for Hypothesis

Spearman rank correlation was used to determine the extent of agreement in response of the respondents regarding the ranking of various conflict management approaches in construction project delivery. Results obtained are shown in Table 6.

Table 6: Test of agreement on the rank of the various **conflict management approaches**

Stakeholders	Rs	t-cal	t-tab	Reject Ho	P-value
Architect/ Builders	0.49	2.09	1.72	Yes	<0.05
Builders/Engineer	0.84	2.09	1.72	Yes	<0.05
Engineer/ contractor	0.79	2.09	1.72	Yes	<0.05
Contractor/ Quantity surveyor	0.91	2.09	1.72	Yes	<0.05

Spearman rank correlation (Rs), t–cal (t–calculated), t–tab (t–tabulated), Ho (null hypotheses), P-value (probability that rejects null hypotheses wrongly).

The hypotheses were set up to test if there is an agreement on the rank of the identified conflict management approaches as opined by the different groups. Table 6 shows the result of the computation of Spearman's rank correlation coefficient, the t-values, and the decision rule of rejection of null hypotheses for the severity rank of approaches to conflict management process in construction project delivery by the different groups in the construction industry. Table 6 reveals that t–cal 2.09 are greater than t–tab of 1.72 with 19 degrees of freedom at $p < 0.05$ significance level. It can be concluded that there is a general agreement between the different groups (Architect, Builder, Engineer, Quantity surveyor and contractors) with respect to their perceptions of the rank of the conflict management approaches in construction project delivery.

Also, spearman rank correlation was used to determine the extent of agreement in response of the respondents regarding the rank of various challenges of conflict management in construction project delivery. Results obtained are shown in Table 7.

Table 7: Test of agreement on the rank of the various **challenges of conflict management**

Challenges of conflict management	Rs	t-cal	t-tab	Reject Ho	P-value
Participants responses	0.95	2.03	1.69	Yes	< 0.05

Spearman rank correlation (Rs), T–cal (t– calculated), T–tab (t– tabulated), null hypotheses (Ho), P-value (probability that rejects null hypotheses wrongly).

The hypotheses were set up to test if there is an agreement on the rank of the identified conflict management challenges as opined by the different groups. Table 7 shows the result of the computation of Spearman's rank correlation coefficient, the t-values, and the decision rule of rejection of null hypotheses for the severity rank of challenges of conflict management process in construction project delivery by the different groups in the construction industry. Table 7 reveals that t–Cal 2.03 is greater than t–tab of 1.69 with 30 degrees of freedom at $p < 0.05$ significance level. It can be concluded that there is a significant degree of agreement between the different groups (Architect, Builder, Engineer, Quantity surveyor and contractor) with respect to their perceptions of the rank of the challenges to conflict management process in construction project delivery.

5.0 Conclusion and Recommendations

This study aims to evaluate the conflict management practice among stakeholders in construction project delivery in Lagos, Nigeria with a view to providing a better understanding of various strategies in managing conflicts in construction project delivery, thereby improving their managerial performance in conflicts management. The research highlighted the strategies adopted by stakeholders in managing conflicts in construction project delivery and conflict management challenges confronting them. Based on the survey findings, the top most five strategies of conflict management as considered by the respondents are; be aware causes and result, negotiation, take steps to deal with the causes, establish cooperative goals and mediation with their mean scores 4.82, 4.71, 4.70, 4.62 and 4.60 respectively. Secondly, the study revealed that "absence of an adequate institutional framework" (mean is 5.00), "fear of change" (means is 4.84), "inadequate planning and preparation" (means is 4.76), "misunderstanding and loss" (mean is 4.46) and "lack of awareness in alternative dispute resolution (ADR)" (means is 4.44) are the five most paramount challenges to a conflict management process in construction project delivery. In recommendations, the study recommends that the strategies for the management and avoidance of conflicts in construction projects should be adopted and duly implemented. The paper makes a significant contribution to the management of conflicts by providing a series of conflict management techniques that will aid the stakeholders in construction projects delivery manage conflicts efficiently and effectively. An understanding of the conflict management techniques among construction stakeholders is important for achieving project success.

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