CONFLICTS IN CONSTRUCTION PROJECTS PROCURED UNDER TRADITIONAL AND INTEGRATED METHODS: A CORRELATION ANALYSIS

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ABSTRACT

Conflicts occur on construction projects and may degenerate into unpleasant situations such as claims, lawsuits and project abandonment. This research investigated the frequency and correlates of conflicts in identified conflict centers on projects procured with either the traditional method or integrated methods. Conflicts were measured in terms of their frequencies of occurrence. Five internal conflict centers on construction projects were identified and used. Questionnaires were administered through purposive and snowballing techniques on 274 projects located in twelve states and Abuja in Nigeria. 96 usable responses were obtained. The collected data were subjected to both descriptive and inferential statistical analyses. The most critical area of conflict was around resources for project execution on projects executed with the integrated procurement method, while the most critical area of conflicts on projects executed with the traditional method was conflict arising from administrative procedures. There were significant correlations between overall satisfaction with project procurement and the frequency of conflicts. However, the results of the analyses do not suggest that any significant correlations exist between the method used for the procurement of the projects and the frequency of conflicts on the projects. The study recommends that the central place of the person, the psychological make-up and personality of team members, instead of structure, may be variables to watch out for with respect to frequency of conflicts, handling of conflicts and overall satisfaction with project procurement. It is recommended that similar analyses can be done on the basis of intensity or seriousness of conflicts.

KEYWORDS: Conflict, Project procurement, Overall satisfaction, Nigeria.

INTRODUCTION

Construction procurement addresses the organizational and contractual structures under which a project is brought about. Often times, the construction project brings together individuals or organizations that are separate and disparate to form what has been termed a temporary multi-organization or a temporary project coalition (Murray et al., 1999; Rowlinson, 1999). Even in non-traditional procurement methods where participants on the construction project can sometimes be under a single organization, interactions on the project can lead to conflicts. Projects are executed through what can be described as a collection of people or teams. The teams can be intra-organisational or inter-organisational. Conflicts remain a challenge in the construction industry (Kassab et al., 2010) with the potential to leading to project failures (Tsai & Chi, 2009), litigation and sometimes outright project abandonment (Yiu & Cheung, 2006; Tazelaar & Snijders, 2010). Tazelaar and Snijders (2010) referred to other works to conclude that the harshness, pressures and toughness of the construction industry predisposes

it to conflicts and disputes. Additionally, relationships in the industry are characterized as being antagonistic and confrontational (Saad et al, 2002), there is a blame culture with strong disposition to using litigation to resolving conflicts (Colledge, 2005). While researchers agree that construction exists in an adversarial environment and that conflict is unavoidable on projects (Kassab et al., 2010; Ng et al., 2007; Yiu & Cheung, 2006), the high financial and other costs associated with resolving conflicts or attending to the consequences of conflicts warrant that project participants should know these areas of conflict on projects and prepare to manage them to prevent the conflicts from being harmful to project objectives. Tsai and Chi (2009) indicated that conflicts and contractual disputes is one of the major problems affecting the prosperity of publicly funded projects in Taiwan. Equally, Ng et al. (2007) gave the high cost of resolving lawsuits arising out of disputes and conflicts in the United States design and construction projects, as averaging 5 billion Dollars annually. This value could have translated to 40,000 jobs in an era of job losses. In Nigeria, the direct monetary losses due to litigation on construction projects is not known, yet what is known is that conflicts occur on projects and sometimes degenerate into lawsuits, contract determination, project abandonment and other manifestations of project failure, which are costly features for a developing economy like Nigeria (Dada, 2004; Olateju, 1997). It is in this context that the current study sought to investigate factors that have significant relationships with conflicts on projects executed with either the traditional or integrated project procurement method. The rationale for focusing on the two methods is that while the traditional method has been reported as the most historically dominant method, the integrated method (through any of its variants such as design-and-build) is reported to be the fastest growing method in some countries including Nigeria (Dada, 2004).

THEORETICAL PERSPECTIVES AND SOME WORKS ON CONFLICTS

Conflict is an expressed struggle between at least two interdependent parties who perceive that incompatible goals, scarce resources and interference from others are preventing them from achieving their goals (Wilmot & Hocker, 2001). Conflict was further defined by Pena-mora et al. (2003) as cited in Ng et al. (2007) as any action or circumstance resulting from incompatible or opposing needs. Construction procurement by its nature brings individuals and groups into contact (whether virtual or real) with themselves on projects. Li et al. (2012) in a research indicated that conflicts can arise on public projects as a result of mismatch of perceptions or expectations of stakeholders and prevailing reality.

Jia et al. (2011) explored mega projects from the perspective of social conflict theory. In their exploration, Jia et al. (2011) referred to Dahrendof's (2007) discussion of the functional effect of conflict on civilizations. Dahrendof (2007) was reported to have claimed or postulated that conflict is the driving force for man's progress. From the social perspective, society means ruling, ruling means inequality, inequality brings conflict, and conflict constitutes a source of social progress, including the source of survival chance for the majority of people. Furthermore, Sportsman and Hamilton (2007) interpreted conflict as a positive driver for social change or a positive response to change, but the negative and undesirable effects of conflicts in the social sphere is manifested in wars. Functional conflicts challenge the status-quo and could lead to progress and civilization.

Yiu and Cheung (2006) proposed, tested a model and concluded that prevention is better than cure as far as construction conflict resolution is concerned. The model indicates a positive correlation between conflict and the tension level among project teams. Their works

distinguished between conflict and conflict behaviour. To them conflict is one of the major influences on conflict behaviour. A high conflict leads to a feeling of frustration that manifests as aggressive behaviour. They referred to the study of Chen and Spector (1992) and other authors to show that the existence of conflict correlates with aggressive behaviour. In the model, tension is assumed to affect conflict level. The intensity of tension tends to increase with the decrease in the social distance between groups and with the increase in the amount of energy behind them. In a project, tension may result from inconsistent demands from team members, identity crises, uncertainty or extra-organisational pressures. Incompatible groups sometimes as in the case of a team also increase tension. Time to deliver a project increases tension. Further, behavioural flexibility was regarded as a splitting model. Flexible individuals will adjust (their conflict resolution styles) to a situation seeking to maximize potential collaboration to the benefit of all. The higher the behavioural flexibility of an individual, the better is that person's ability to positively respond in conflict situations. Chen and Spector (1992) concluded that a change in conflict level may turn into psychological struggles between contracting parties.

With respect to the construction industry, Ng et al. (2007) asserted that project conflicts can be described as a spiral between various parties in a design and construction project. Ng et al. (2007) developed a spiral of conflict. They argued that organizational issues or uncertainty in a project initially cause the spiral. In essence, conflicts could arise from organisational issues that could arise from structure, process or people. Conflicts could also arise from uncertainty which is classified as either internal or external (Ng et al., 2007). The external uncertainties include political risks, weather risks among others. Thamhain and Wilemon (1975) classified and categorized the causes of conflict in a project lifecycle into seven major sources: project priorities, administrative procedures, technical opinions and performance trade-offs, manpower resources, costs, schedules and personality. Keszbom (1992) added six other sources of conflict to Thamhain and Wilemon's (1975) list. The additional sources of conflict include communication, reward, structure/performance appraisal, politics, leadership, ambiguous role/structure, and unresolved prior conflicts. Thamhain (1988) wrote on issues that have to do with conflict and interpersonal relations. Thamhain (1988) in his work asserted that interpersonal relations were obvious and significant causes of conflict in all phases of a project lifecycle. In essence, administrative issues or procedures, technical issues, personality issues, resources for project execution and project or client goals (or project priorities and deliverables) with external uncertainty could result in conflicts on projects. The administrative procedures have to do with the administration of the project. Administrative procedures also address structures and established or agreed ways put in place for running the project. Technical issues have to do with core professional and technical issues regarding the project implementation. Conflicts can result from technical issues and performance trade-offs. Professionals on a project can have different proposals and approaches to solving a problem. Each proposal may have its merits or otherwise, but presentation, communication and acceptance from others may meet hiccups. Personality issues have to do with interpersonal or group relationships. Resources for project implementation have to do with issues that have to do with the availability in adequate and acceptable form of resources for the implementation of the project. These resources include money, manpower, machinery, materials, among others, required for the implementation of the project. Equally, organizational pressures, inconsistent demand from team members, time and other deliverables could cause tension leading to conflicts on project.

Some other authors undertook works on conflicts in the construction industry. Yousefi et al. (2010) acknowledged that the attitude of decision makers is an important psychological factor in the negotiations that take place in handling conflict at the various stages of a construction project. Ng et al. (2007) also concluded that conflicts could arise from organisational issues of structure, process or people and also from uncertainty that could be either internal or external. Li et al. (2012) analysed stakeholder concerns and buy-in in the management of conflicts in infrastructure projects. Results of their questionnaire investigation reveal differences in views among stakeholders due to mismatch in people's perceptions and expectations on the development. This mismatch leads to a potential for and possibility of conflicts on projects. Tazelaar and Snijders (2010), in their works on the Dutch construction industry, found evidence that Dutch construction industry has higher percentages of transactions than in information technology or other general business to business transactions leading to either arbitration, suspension of the relationships or other legal steps.

Yiu and Cheung (2006) equally agreed and explained that some issues increase tension and predispose to conflicts in projects. As such, Yiu and Cheung (2006) alluded to the social distance between persons: the smaller the distance, the greater the tendency to conflict. Equally, according to them while citing some authors, in a project, tension may result from inconsistent demands from team members, identity crises, uncertainty or extra-organisational pressures. Incompatible groups, sometimes as in the case of a team, increase tension. Additionally, the time to deliver a project increases tension. The deduction is that personality and relationship issues and project or client goals and other organizational pressures can give rise to conflicts.

Dada (2012) investigated the frequency or incidence and the intensity or seriousness of conflicts on some projects executed with traditional and integrated procurement method in Nigeria, using some selected conflict centres. The results of his investigation indicate that there were no significant differences in the incidence of conflicts, between the traditional and integrated procurement methods. There were however significant differences in the intensity or seriousness of conflicts between projects executed with the traditional method and those executed with integrated methods in the following areas: technical issues, administrative matters and personality issues.

In essence, the thrust from literature point to the harshness and toughness of the construction industry due to pressures and competitiveness (Tazelaar & Snijder, 2010). The construction process is complex, the product is fixed while the process is flowing (Zhang & Hu, 2011). Work is done under varying weather conditions; the social stratification and proportion of construction workforce, from the unskilled to the highly skilled, also pose a challenge for people management. Conflicts are common in all construction projects (Kassab et al., 2010; Yiu & Cheung, 2006). Conflicts equally occur in areas that include processes, people, resources, structure and uncertainty. One observation however is that the ranking of the occurrence of conflicts in some major areas and processes of construction project procurement has not been done. Little or no empirical research and evidence exist in the environment of the research as to the relationship between some variables and the frequency of conflicts in some selected areas of project procurement. This is one of the gaps this study intends to fill. Additionally, literature presentations suggest that the traditional method has a major weakness of adversarial and confrontational relationships (Dada, 2012). The reported or perceived weaknesses in the traditional method and dissatisfaction with it have been a justification for stakeholders' recourse to other methods. The other methods, especially the

collaborative and integrated methods, are in principle assumed or supposed to overcome the weaknesses of the traditional method. Yet the traditional method remains the most dominant in the procurement of both public and private sector projects in some nations including Nigeria (Gordon, 1994; Ling et al., 2003; Nubi, 2003; Idoro et al., 2007). This research thus attempts an empirical investigation into how projects procured with the traditional and integrated methods fare on issues relating to conflicts. Furthermore, it investigates the incidence or frequency of conflicts and its relationship with such issues as procurement methods and overall project satisfaction.

RESEARCH METHODS

Ng et al. (2007) had focused on organizational issues and uncertainty with respect to causes of conflicts. This research distils from the works of some authors such as Ng et al. (2007), Yiu and Cheung (2006) and Thamhain and Wilemon (1975) to arrive at the conflict centres used. Thus the research used the people, process and structure concepts that Ng et al. (2007) had earlier on classified under organizational issues. Also this research collapsed the resources and cost classification of Thamhain and Wilemon (1975) into 'resources for project execution'. Furthermore, schedules were assumed in this study to be under administrative procedures. The research thus focused on the internal characteristics of the project. The research did not deal with external (environmental) sources of conflicts on the projects. For instance, there were some locations or states in the country where there was restiveness and agitation by host communities during project implementation. In this research, such sources of conflict, deemed external to the projects were ignored. The researcher thus deliberately isolated the external characteristics that could bring in some inconsistency in comparisons as the projects were located in different parts of Nigeria. In the process five conflict centres were used in this study. The areas where conflicts could occur on projects have been called 'conflict centres' in this research. Specifically, the conflict centres used in this investigation are: project/client goals, administrative procedures, technical issues, resources for project, and personality issues. As a result, the emphasis in the investigation is on structure, resources and personality issues.

The study investigated construction projects (building and civil engineering) that were executed/being executed in various states in Nigeria, using traditional and integrated methods. The traditional method has been the most popular method historically in the procurement of both public and private infrastructure projects in Nigeria (Idoro et al., 2007; Babatunde et al., 2010). The integrated method is however reported to be the fastest growing method in other places. It is becoming the preferred procurement choice for some clients as a result of their dissatisfaction with other alternatives (Ogunsanmi et al., 2011).

The data collection instrument, a project specific questionnaire, sought to know how an already executed or on-going project performed or was performing. It sought to obtain demographical information of the respondents. Other information collected include: project location, building or project type, size of building, number of floors of building, foundation type, client type, characteristics of design team, characteristics of construction team, nature of construction organization, client's experience with respect to construction commissioning, client's business focus - whether speculative or bespoke. Thereafter, respondents were required to indicate the procurement methods used for the projects. They were required to supply information on the tendering method and other project particulars (e.g. initial contract price or estimated total cost as appropriate, final contract price/anticipated final cost. Further

data sourced included: initial or programmed contract duration, year of completion or projected year of completion, final contract duration and the total time of design and construction. Key aspects of the questionnaire covered questions relating to conflicts on the projects. Respondents were required to assess the frequency of conflicts in the selected conflict centres on an ordinal scale of: 1 for 'never', 2 for 'rarely', 3 for 'often', 4 for 'always'.

Purposive and snowballing sampling techniques were used in data collection on projects being executed with the traditional and integrated methods. The projects targeted were located in different states of Nigeria including the Federal Capital Territory, Abuja. Respondents were construction industry professionals or practitioners that included architects, engineers, builders, quantity surveyors and estate surveyors involved in building project development. The respondents were then required to distribute the questionnaire to other layers of contacts known by the first set of contacts. The recourse to these non-probabilistic techniques was due to the fact that there was no database of projects being executed through the two procurement methods. Similar approach to data collection was adopted in Li et al. (2005) by using convenience sampling due to lack of reliable database of the projects and subjects they investigated. Furthermore the explanation of Kidder (1981) justifies this method as it is the only practicable and reliable way of getting required data in some instances. Additionally, the respondent on any of the projects could be a representative of any of the following organizations: client, contracting or consulting organizations. This was partly due to the impracticability of getting representatives of the three organizations on all the projects especially the ones that had been completed at the time of questionnaire administration. Co-location of project participants on such projects had ended before administering the questionnaire. A set of 274 questionnaires were thus sent out to elicit responses on projects. Data was obtained on projects located in twelve states and Abuja in Nigeria. 96 completed questionnaires, adjudged usable for analysis in this research were analysed. The average response rate to the questionnaires was about 35%, which is judged acceptable (Li et al., 2005; Hoonakker et al., 2010). The response rate in this research is higher than the 29% and 12% respectively obtained by Hoonakker et al. (2010) and Li et al. (2005) which have been reported in construction and project management journals.

ANALYSIS, RESULTS AND DISCUSSIONS

Descriptive Analysis

The descriptive analyses of the results are presented. Table 1 shows some descriptive characteristics of projects investigated. The table indicates that 30 (31.25%) of the projects were executed using integrated methods while 64 (68.75%) were executed with the traditional method. A breakdown of the integrated procurement method shows that design and build projects were 26 (86.7%), package deal – 1 (3.33%), turnkey – 1 (3.33%) while build-operate-transfer or variant were 2 (6.67%). Client classification for the projects shows that 32 (33.33%) of the projects are owned or sponsored by private individuals, 29 (30.20%) by private organizations, 32 (33.33%) by public organizations, and 4 (4.18 %) by non-profit organizations. On the use of the buildings, 8 (8.33%) of the projects were for industrial uses, 23 (23.96%) commercial, 40 (41.67) % for residential, 19 (19.79%) for institutional use, while 5 (5.21%) fall into the 'others' category. With respect to the composition of design team, 45 (46.88%) of the projects were designed by in-house teams, 31 (32.29%) by external teams, while 18 (18.75%) were designed by a mixed team. Additionally, 26 (27.08%) of the

projects were constructed/being constructed by in-house team, 47 (48.96%) by external team while 21 (21.88%) were designed by a mixed team. In-house team refers to either of these options: the project is being constructed by direct labour or it was a design-and-build project being constructed by the organization which has the contractual responsibility for design.

Table 1: Demographic information on projects investigated

Issues Covered	Frequency	Percentages
Procurement method		
Integrated method	30	31.25
Traditional method	65	68.75
Total	**96**	**100**
Project classification based on client type		
Private individual	32	33.33
Private organization	29	30.20
Public sector	31	32.29
private nonprofit organization	4	4.18
Total	**96**	**100**
Use of building or development		
Industrial	8	8.33
Commercial	23	23.96
Residential	40	41.67
Public (institutional)	19	19.79
Others (e.g. religious, not for profit organisation)	5	5.21
Not indicated	1	1.04
Total	**96**	**100**
Design team		
In-house team	45	46.88
Mixed team	18	18.75
External team	31	32.29
Not indicated	2	2.08
Total	**96**	**100**
Construction team		
In-house team	26	27.08
Mixed team	47	48.96
External team (contractor)	21	21.88
Not indicated	2	2.08
Total	**96**	**100**

Table 2 on the other hand, presents information on the ranking of opinions of the respondents on the conflict centres on projects they have been involved in. The rankings are based on the calculation of the mean score for each procurement type i.e. integrated 'IT', traditional, 'TR' and the combined rankings of both methods. The highest rated conflict centre in the integrated procurement method is issues around administrative procedures. The next conflict centre is 'resources for project execution' which has a tie with 'personality issues'. 'Technical issues' relating to project execution was ranked fourth, while the least ranked conflict centre is 'project/client goals'. In projects procured using traditional methods, the 'resources for project execution' was ranked as the most important conflict centre. This was followed consecutively by 'administrative procedures', 'technical issues', 'personality issues' and then 'project/client goals'. The aggregated ranking for projects executed with the two procurement methods indicates that 'resources for project execution' was perceived to be the greatest conflict centre or conflict zone. Issues around 'administrative procedures' ranked second.

'Technical issues' were ranked third while 'personality issues' were ranked fourth. The least issue in ranking is 'project/client goals' when both procurement methods are combined.

Table 2: Mean scores and ranks of conflict centres based on frequency

Conflict area	Mean (IT)	Rank (IT)	Mean (TR)	Rank (TR)	Mean (CB)	Rank (CB)
Resources for project execution	2.23	2	2.32	1	2.28	1
Administrative procedures	2.37	1	2.14	2	2.23	2
Technical issues	2.20	4	2.11	3	2.15	3
Personality issues	2.23	2	2.02	4	2.09	4
Project/client goals	1.97	5	1.78	5	1.85	5

IT = Integrated method; TR = Traditional method; CB = Combined

Inferential Statistical Analysis

The focus of the research is to investigate the relationship that exists between the frequency of conflicts in the identified project conflict centers and some variables such as procurement method and overall satisfaction. The three main null hypotheses that were postulated to give direction to the work are indicated as $H_{0A,}$ H_{0B} and H_{0c} below. All three main null hypotheses have respective sub-hypotheses under them as are equally indicated.

$H_{0A:}$ There is no correlation between the frequency of conflicts and the procurement method used for the project.

The following sub-hypotheses were formulated under H_{0A}:

H_{0A1}: There is no correlation between the frequency of conflicts on resources for project execution and the procurement method used for the project.

H_{0A2}: There is no correlation between the frequency of conflicts on administrative procedures and the procurement method used for the project.

H_{0A3}: There is no correlation between the frequency of conflicts on technical issues and the procurement method used for the project.

$H_{0A4:}$ There is no correlation between the frequency of conflicts on personality issues and the procurement method used for the project.

$H_{0A5:}$ There is no correlation between the frequencies of conflicts on project or client goals and the procurement method used for the project.

$H_{0B:}$ There is no correlation between the frequency of conflicts and overall satisfaction with the project procurement.

The sub-hypotheses formulated under H_{0B} are:

$H_{0B1:}$ There is no correlation between the frequency of conflicts on resources for project execution and overall satisfaction with the project procurement.

$H_{0B2:}$ There is no correlation between the frequency of conflicts on administrative procedures and the overall satisfaction with the project procurement.

$H_{0B3:}$ There is no correlation between the frequency of conflicts on technical issues and the overall satisfaction with the project procurement.

$H_{0B4:}$ There is no correlation between the frequency of conflicts on personality issues and the overall satisfaction with the project procurement.

$H_{0B5:}$ There is no correlation between the frequencies of conflicts on project or client goals the overall satisfaction with the project procurement.

$H_{0C:}$ There is no correlation between the frequencies of conflicts on projects in the identified conflict centers.

The sub-hypotheses formulated under H_{0C} are:

H_{0C1}: There is no correlation between the frequency of conflict in the area of project/client goals and frequency of conflict on the projects in the area of administrative procedures

H_{0C2}: There is no correlation between the frequency of conflict in the area of project/client goals and frequency of conflict on the projects in the area of technical issues in project execution

H_{0C3}: There is no correlation between the frequency of conflict in the area of project/client goals and frequency of conflict on the projects in the area of resources for project execution

H_{0C4}: There is no correlation between the frequency of conflict in the area of project/client goals and frequency of conflict on the projects in the area of personality issues

H_{0C5}: There is no correlation between the frequency of conflict on projects in the area of administrative procedures and frequency of conflict on the projects in the area of technical issues in project execution

H_{0C6}: There is no correlation between the frequency of conflict on projects in the area of administrative procedures and frequency of conflict on the projects in the area of technical issues in project execution

H_{0C7}: There is no correlation between the Frequency of conflict on projects in the area of administrative procedures and frequency of conflict on the projects in the area of personality issues

H_{0C8}: There is no correlation between the frequency of conflict on technical issues in project execution and frequency of conflict on the projects in the area of personality issues

H_{0C9}: There is no correlation between the frequency of conflict on technical issues in project execution and frequency of conflict on the projects in the area of resources for project execution

Two approaches were used in the correlation analysis with respect to the hypotheses on frequency of conflicts and selected variables. The main hypotheses were tested as well as the sub-hypotheses. These two approaches were meant to further illuminate the work. For the main hypotheses, the responses on the frequency of conflicts in all the conflict centres for each project were aggregated or summed to one column in the SPSS as a variable and then a correlation analysis performed to investigate relationships with other selected variables. Thereafter, correlation analysis was performed between the frequencies of conflict in each of the conflict centers on each project with the other selected variables. Table 3 presents the results of the correlation analysis.

Table 3: Correlation analysis of issues of conflict and other project variables

No	Issues correlated	Correlation coefficient	P-value	Significance of correlation	Decision
A					
1	'Frequency of conflict in all conflict centres' and 'the procurement method used for the project'	.068	0.517	Not significant	Accept H_{0A}
2	'Frequency of conflict in the area of resources for project execution' and 'procurement method used for the project'	-0.035	0.739	Not significant	Accept H_{0A1}
3	'Frequency of conflict on the projects in the area of administrative procedures' and 'procurement method used for the project'	0.116	0.268	Not significant	Accept H_{0A2}
4	Frequency of conflict on technical issues in project execution and 'procurement method used for the project'	0.041	0.696	Not significant	Accept H_{0A3}
5	'Frequency of conflict in the area of personality issues' and 'procurement method used for the project'	0.105	0.317	Not significant	Accept H_{0A4}
6	'Frequency or incidence of conflict in the area of project/client goals' and 'procurement method used for the project'	0.078	0.459	Not significant	Accept H_{0A5}
B					
1	'Frequency of conflicts in all conflict centres' and 'overall satisfaction with the project procurement'	0.366**	0.001	Significant	Reject H_{0B}
2	'Frequency of conflict on technical issues in project execution' and 'overall satisfaction with the project procurement'	0.265**	0.009	Significant	Reject H_{0B1}
3	'Frequency of conflict on personality issues in project execution' and 'overall satisfaction with the project procurement'	0.450**	0.001	Significant	Reject H_{0B2}
4	'Frequency of conflict in the resources for project execution' and 'overall satisfaction with the project procurement'	0.274**	0.007	Significant	Reject H_{0B3}
5	'Frequency of conflict in the area of project/client goals' and 'overall satisfaction with project procurement'	0.302**	0.001	Significant	Reject H_{0B4}
6	'Frequency of conflict on the projects in the area of administrative procedures' and 'overall satisfaction with project procurement'	0.283**	0.005	Significant	Reject H_{0B5}
C					
1	Frequency of conflict in the area of project/client goals and frequency of conflict on the projects in the area of administrative procedures	0.624**	0.001	Significant	Reject H_{0C1}
2	Frequency of conflict in the area of project/client goals and frequency of conflict on the projects in the area of technical issues in project execution	0.659**	0.001	Significant	Reject H_{0C2}
3	Frequency of conflict in the area of project/client goals and frequency of conflict on the projects in the area of resources for project execution	0.614**	0.001	Significant	Reject H_{0C3}
4	Frequency of conflict in the area of project/client goals and frequency of conflict on the projects in the area of personality issues	0.434**	0.001	Significant	Reject H_{0C4}
5	Frequency of conflict on the projects in the area of administrative procedures and frequency of conflict on the projects in the area of resources for project execution	0.619**	0.001	Significant	Reject H_{0C5}
6	Frequency of conflict on the projects in the area of administrative procedures and frequency of conflict on the projects in the area of technical issues in project execution	0.696**	0.001	Significant	Reject H_{0C6}
7	Frequency of conflict on the projects in the area of administrative procedures and frequency of conflict on the projects in the area of personality issues	0.643**	0.001	Significant	Reject H_{0C7}
8	Frequency of conflict on technical issues in project execution and frequency of conflict on the projects in the area of personality issues	0.584**	0.001	Significant	Reject H_{0C8}
9	Frequency of conflict on technical issues in project execution and frequency of conflict on the projects in the area of resources for project execution	0.717**	0.001	Significant	Reject H_{0C9}

For the interpretation of the correlation coefficients summarised in Table 3, all values of the coefficients (negative or positive) less than 0.400 are taken as weak. Values from 0.400 to 0.600 are taken as moderate, while values greater than 0.600 are taken as strong. From Table 3, it is observed that the correlation coefficient between frequency of conflicts in all conflict centres and the procurement method used is 0.068, a value that is both weak and statistically insignificant. Furthermore the correlation values of the frequency of conflict in each of the five identified conflict centres with respect to the procurement method that was used are all weak. The correlation values for items A (2- 6), shown in the third column and corresponding to the conflict centres are indicated as -0.035, 0.116, 0.041, 0.105 and 0.078 respectively. The implication of the correlation coefficients for items A (2- 6) is that, apart from the coefficients being weak, there is no significant correlation between the frequency of conflicts and procurement method used for the project. As such, all the null hypotheses under section A of Table 3 are accepted.

Procurement methods are the organisational or contractual formalisation for the arrangement of parties for the delivery of construction projects. The correlation results suggest that formalisation of organisational arrangements for procurement is not the antidote to conflicts in construction projects. This result seems to align with the findings of Spector (1992) that individual psychological make-ups, not the procurement arrangement, affects conflict handling behaviour. Further this result agrees with Kassab et al. (2010) who concluded that conflicts are common on all types of construction projects. The result may further imply that it is the centres where conflicts exist that differ in construction procurement. This finding calls to question the often repeated claim that some procurement methods are more prone to conflicts or adversarial relationships than others. The empirical results casts doubt on such claim. Perhaps this area requires further investigation as the methodology used in the current study with respect to sampling may limit its generalisability.

It is also observed from Table 3 (for items under B) that all the correlations values are significant. The coefficient of correlation of the total frequency of conflicts with the overall satisfaction with project procurement is 0.366 at $p < 0.01$. This value (0.366) is weak but significant. Items B (2-6) show the correlation coefficients for the correlations of the frequency of conflicts in the respective conflict centres with the overall satisfaction with the project procurement. The respective correlation coefficients for items B (2-6) are 0.265, 0.450, 0.274, 0.302 and 0.283 which are all significant at $p < 0.01$. However, all the correlation values are weak apart from 0.450 which is moderate. Further examination of the result with respect to items under B suggests a rejection of the null sub hypotheses. One import of the findings under section B of Table 3 is that when the total frequency of conflicts is correlated with overall satisfaction regarding the project procurement, positive significant correlations are obtained. This also applies when the frequency of conflicts in the individual conflict centres are correlated with overall satisfaction regarding project procurement. This implies that there is correlation between overall satisfaction and the frequency of conflicts on projects. This result throws up further implications for closer scrutiny.

While it is true that correlation does not translate to or explain causation, the direction and magnitude of correlations indicate the direction and magnitude of relationships between the correlated variables. This finding suggests that as the frequency of conflicts in the conflict centres increases so does overall satisfaction with project procurement. This finding runs against the grain of normal expectations; perhaps it can be rationalized that the conflict handling and teambuilding modes deployed might have resulted in overall satisfaction. The

finding might also lead to further possible rationalisation that conflicts lead to better understanding of members of the project team and that they learn useful lessons from previous conflicts. The finding also suggests that the conflicts are not allowed to grow in intensity to be dysfunctional, thus the conflicts are productively handled. This seems to agree with Darhendof (2007) who concluded that conflicts could lead to human progress. Additionally, this finding should be located in the context of the earlier finding under section A that does not show any significant correlation between procurement methods and the frequency of conflicts in the conflict centres. That finding may leave us with just one other inference and conclusion that if structure has no relationship to the frequency of conflicts and yet there are conflicts, the next place to explore may be the personalities or individuals within the contracts. It thus implies that personality characteristics of members of the project team may explain the incidence of conflicts under the two procurement methods.

In essence these findings suggest the centrality the person, the psychological make-up and personality of team members instead of structure, as variables to watch out for in conflicts, handling of conflicts and overall satisfaction with procurement methods. This is in line with the works of Yousefi et al. (2010) who acknowledged that the attitudes of decision makers, personality trait, is an important psychological factor in the negotiations that take place during various stages of construction projects. Also behavioural flexibility of individuals in responding to conflict situations and preventing conflicts from degenerating provides credence to their importance in construction conflicts (Chen and Spector, 1992).

For issues correlated in section C of Table 3, the correlation coefficients of the frequency of conflicts in the respective conflict zones all indicate positive significant correlations. The correlation coefficients of the variables identified in the conflict centres are respectively 0.624 (strong), 0.659 (strong), 0.614 (strong), 0.434 (moderate), 0.619 (strong), 0.696 (strong), 0.643 (strong), 0.584 (moderate) and 0.717 (strong), all at $p < 0.01$. The decision for all the null hypotheses $H_{0C1\text{-}0C9}$ therefore is rejection. The implication is that increasing the frequency of conflicts in one identified conflict centre predisposes to conflict increasing in another area or conflict centre. This may tend to suggest the ripple effect of conflicts or the fact that conflicts occur in a spiral as indicated by Ng et al. (2007) who described the spiral of conflicts as manifesting in issues such as structure, process and people. In this research, however the structures (procurement methods) have no significant correlation with the frequency of conflicts.

In interpreting these results, the limitation of non-generalisability of the sampling method used must be taken into consideration. Nonetheless, the research has indicated the statistical relationships among variables, at least, with respect to incidence of conflicts. Further work in other environments, where practicable and feasible, could adopt probabilistic sampling techniques for generalisability.

CONCLUSIONS

The research investigated the frequency of conflicts in identified centres on projects procured with using traditional or integrated methods. On projects executed with the integrated methods, the most critical conflict centre is around resources for project execution, while on projects executed with the traditional method, the most critical conflict centre is issues arising from administrative procedures. The research further investigated the correlations that exist

between such variables as procurement methods, overall satisfaction with project procurement and the frequency of conflicts in identified conflict centres.

One major finding of the research is that there is weak and non-significant correlation between the frequency of conflicts in the identified conflict centres and the type of procurement method used on projects. Further, when the total frequency of conflicts in all conflict centres on each project is correlated with overall satisfaction with the project procurement, positive significant correlations that range from weak to moderate, was obtained. When the frequency of conflicts in the individual conflict centres on each project is correlated with overall satisfaction with project procurement, positive significant correlations that range from moderate to strong was obtained. This implies that there is significant correlation between overall satisfaction and the frequency of conflicts. While this runs against the grain of common expectations, it suggests that when conflicts arise on projects, team members are able to handle and manage the conflicts, so that they do not to grow in seriousness or intensity to be dysfunctional. Additionally, the correlations of the frequencies of conflicts in the respective conflict zones with one another all indicate positive significant correlations. The implication is that increasing the frequency of conflicts in one identified conflict centre predisposes to conflict increasing in another conflict centre.

For overall satisfaction with the project procurement to increase with frequency of conflicts may imply that there had been a deployment of conflict handling modes of team members. Some other implications of the findings of the research are: if structure has no relationship to the frequency of conflicts and yet there are conflicts, the place to explore may be the person or individuals involved in projects. Thus while the integrated method implies an organisational or contractual arrangement of design and construction participants into one entity, this formalisation is no guarantee to avoid conflicts. There is thus a need to look somewhere else for a solution, not in the forms and structure, but in the personalities that make up the team. That may imply that the teambuilding characteristics that a person brings to the procurement organisation may go a longer way in reducing conflicts than a decreed or formalised structure. Thus a bad person in a ‘good’ structure may not guarantee a conflict free process.

The study recommends that the central place of the person, the psychological make-up and personality of construction team members, instead of structure, may be variables to consider with respect to frequency of conflicts, handling conflicts and overall satisfaction with project procurement methods. As this research analysed conflicts on the basis of their frequencies to arrive at its findings and conclusions, it is recommended that a similar research could be conducted on the basis of intensity or seriousness of conflicts. This may further indicate relationships, if any, between the frequency of conflicts and the intensity of conflicts. On a final note, conflicts used in this research excluded all conflicts that are external to construction projects, the sampling procedure adopted based on the peculiarities of the environment for field work remains an inhibition to the generalisability of the findings. Nevertheless, the findings are indicative and they raise further issues that are a launching pad for further investigation.

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