

Beyond project control: Governing contractor-subcontractor relationships to mitigate subcontractor's opportunism

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ABSTRACT

Purpose of this paper

The total cost management community of practice has built a profession around project control. This is understandably so given the fact that project control is foundational to project success. However it appears that interfirm governance which is also crucial to project success has received limited attention in the total cost management literature. Strategic assets such as buildings and transport infrastructure are created using a coalition of independent project actors who, more often than not, act opportunistically to optimize individual gains. Without effective governance of these webs of project-based relationships, project success might be elusive. Focussing specifically on contractor-subcontractor relationships, this research examines how Nigerian main contractors manage subcontractor's opportunism (subcontractor's self interest seeking with guile).

Design/methodology/approach

An empirical investigation is conducted among contractors who are members of Federation of Construction Industry (FOCI) – the leading trade association for construction contractors in Nigeria. Following an in-depth literature review, which identify key indicators of subcontractor's opportunism, a questionnaire was administered to members of FOCI within Lagos State. The respondents who were senior decision makers within the responding firms were asked to rate the prevalence of a number of pre-identified subcontractor's opportunistic behaviours on a 5-point Likert scale, where 1 and 5 represent the polar ends: "not often" and "very often" respectively. Behaviours that were rated below 3 were excluded in the second stage of the empirical work. The objective of the second stage is to isolate the governance responses of selected firms to the more prevalent behaviours identified during the questionnaire administration via semi structured interviews. Eight firms participated in the second stage.

Findings and value

The top five prevailing manifestations of subcontractor's opportunism are identified in this study include opportunistic bidding, quality shirking: delivering shoddy jobs with poor workmanship, renegeing on an agreed sum for doing a piece of work, abandoning an ongoing contract for a more profitable ones and exploiting post –contract specification changes. Governance tools for managing these behaviours are also isolated.

Research limitations/implications

Caution should be exercised in generalising the results of the empirical questionnaire survey, given the small sample size of 34 main contractors who agreed to participate in the research. Future researches could use the findings here in a wider cross sectional survey to assess subcontractors' governance practices of main contractors within the country. Subcontractor's opportunism was examined from the contractor's perspective. Future studies could examine contractor's opportunism as experienced by subcontractors.

Practical implications

The practical implication of this work lies in the fact that the developed governance framework could guide contractors in managing their relationships with subcontractors.

Originality/value of paper

A synthesis of the findings from the empirical questionnaire survey, the interviews and insights from the literature culminates in a project governance tool for contracting firms – a framework for managing the prevailing subcontractors' opportunism within the Nigerian construction industry.

Keywords: opportunism, subcontractors, project governance, uncertainty, asset specificity

1 INTRODUCTION

Project success is a goal towards which project owners, financiers, project managers and cost engineers press. Unfortunately research shows that this worthy goal has eluded many projects around the world (Chan and Kumaraswamy, 1997; Toor and Ogunlana, 2008) despite sophisticated project control skill-sets and toolsets in the hand of professionals wielding multiple, globally recognized certifications. Root cause analysis shows that problems such as cost overruns, project benefits overestimation, time overruns and poor quality of work are traceable to the behaviour of project actors that constitute the temporary organisations that are often set up to transform project ideation to strategic assets. A key group within project coalition are subcontractors.

Given market volatility (unstable and seasonal demand) for which the construction industry is known (Kale and Arditi, 2001), large construction firms do not execute the entire construction process with their own workforce and equipment. Rather, main contractors split capital projects into specialist work packages which are executed by subcontractors. Since the contractors and subcontractors are independent economic entities interacting on project by project basis to maximize their individual gains, project-based transactions are vulnerable to mutual opportunism (self interest seeking with guile from either of the co-transactors. Lee *et al* (2009) wrote that approximately 80–90% of construction work is performed by subcontractors. It is pertinent then that these webs of project-based relationships are governed appropriately if projects are to be successful.

While interfirm governance has received much attention in mainstream management literature (Joshi and Stump, 1999; Brown *et al*, 2000; Hawkins *et al*, 2003; Wittmann and Beyerlein, 2008; Canel and Gelderman, 2010; Jiang and Jin, 2010), the total cost management community of practice has paid limited attention to this issue. To this end, the work reported in this paper explored the governance of subcontractors by main contractors in Nigeria.

The aim of the study is to develop a governance framework for use by main contractors in managing their relationships with subcontractors. The specific objectives of the study are to:

- i. To isolate the key indicators of opportunistic behaviours in main contractor-subcontractor relationships.
- ii. To assess the prevalence of opportunistic behaviours in main contractor-subcontractor dyads.
- iii. To identify the extant governance devices for mitigating opportunistic behaviours in the relationship.

2.0 CONCEPTUAL FOUNDATIONS

A dominant theory often deployed in the analysis of interfirm relationships is Transaction Cost Economics. The idea underlying Transaction Cost Economics (TCE) was seeded by the economist Ronald Coase in 1937 (Walker and Wing, 1999). However it was Williamson's husbandry of the concept that has earned it its influential status in inter-organisational studies (Williamson, 2002). The thrust of transaction cost economics is that any analysis aimed at minimising the costs of delivering goods and services should consider both production costs and transaction costs incurred. If a prime contractor say organization 'A' assigns a part of its building production process to another firm say subcontracting firm 'B' for execution; firm 'A' incurs additional costs covering the search for the appropriate firm 'B', establishing agreements with firm 'B', the establishment of processes or structures

for (i) monitoring the performance of 'B' such that 'B' is prevented from ripping 'A' off, (ii) resolving disputes should they arise and enforcing established agreements. These categories of costs are transaction or governance costs. They are distinct from the production costs. Production costs are costs incurred by firm 'A' had it carried out or internalized the work subcontracted to 'B'.

Transaction Cost Economics hints that two behavioural traits (opportunism and bounded rationality) of economic actors interact with contingency factors (uncertainty , transaction specific investments, transaction frequency and small number relationships) to create the need to govern interfirm relations (Lynch, 1996;Winch,2001; Parker and Hartley,2003).

2.1 Opportunism

Wathne and Heide (2000) define opportunism as "self-interest seeking with guile". Hawkins, Wittmann, and Beyerlein (2008) list things like stealing, cheating, breach of contract, dishonesty, distorting information, obfuscating issues, confusing transactions, false threats and promises, cutting corners, cover-ups, disguising attributes or preferences, withholding information, deception and misrepresentation as manifestations of opportunism. Behaviours such as (1) putting a competent team of engineers and artisans forward to win work, but supplying a totally different and less experienced team to deliver the project; (2) listing equipments that a contractor does not own as equipment possessed on a prequalification form ; (3) using different contracting organisations controlled by the same owners to bid for the same project under a competitive contracting scenarios ; (4) bidding unreasonably low to win work with the intention of deploying margin recovery strategies such as claims to generate profit are listed by Ogunsina *et al* (2013) as observable contractor's opportunism within the Nigerian construction industry. The present work however seeks to isolate subcontractor's opportunistic behaviours in their interactions with main contractors. What enables opportunism? Answering this question is foundational to mitigating opportunism. Antecedents of opportunism are now examined.

2.2 Uncertainty, Bounded Rationality, Asymmetric Information and Opportunism

Uncertainty has been described as the inability to quantify the probability that an event will occur (Ting *et al* 2007). The three types of uncertainty found in the formation of temporary organizations are goal uncertainty, resource uncertainty and process uncertainty. Luo (2006) classifies uncertainty into external and internal uncertainties. External uncertainty covers market volatility, information unverifiability, regulatory variability and legal unprotectability. Internal uncertainty in an exchange relationship , according to Luo (2006), refers to the extent to which dyadic relations are unstable, where the instability is caused by goal disparity, resource misfit, cultural dissimilarity and bargaining power asymmetry between co-transactors.

Hawkins *et al* (2008) write that uncertainty may either be behavioural (individual motivations) or environmental (market volatility) . Winch(1989) opines that uncertainty is a function of the difference between the quantity of information requisite for a decision and the quantity of available information. The more the difference, the higher the uncertainty. He identifies two drivers of uncertainty , namely complexity and dynamism. Under a complex decision making scenario, the required information is available in principle. However the problem is that the urgency of the situation make the collection and analysis of the information technically impossible. It could also be that the cost of securing complete information outweighs the benefit. A dynamic situation on the other hand is a fluctuating situation where conditions change so rapidly such that we can not use today's data to predict the future confidently. Under these situations the ability to take rational decisions is limited.

Besides external factors that induce uncertainty in interfirm relationships, transactor's own limitations contribute to uncertainty in interfirm exchanges. Bounded rationality is such an intrinsic limitation of all economic actors. Lynch (1996) , posits that the capacity of the human mind for formulating and solving problems is very small compared with the size of the problems whose solutions is required for objective rational behaviour in the real world. This is the essence of bounded rationality. It refers to limitations of rational decision making (Issato and Formoso, 2011) . While man seeks to be rational in his decision making, he is limited by his analytical and data-processing capabilities - the cognitive limitations of the human mind (Walker and Chau, 1999), accessible information, and the finite amount of time available (Issato and Formoso, 2011). Other limitations to man's decision-making rationality could be language-related. Lynch (1996) posits that language limits have to do with the inaptitude of individuals to convey their knowledge or feelings by the use of words, numbers, or graphics to others without being misunderstood by the recipient. The use of powerful computers with large memories that are deployed in decision making has not eliminated these limitations.

Winch(1989) presents the nature of uncertainty as found in the construction industry. He identifies two broad categories of uncertainties in construction: project uncertainties and contracting uncertainties. Project uncertainties covers task uncertainty, organizational uncertainty and natural uncertainty. Task uncertainty stems from the non repetitive nature of most construction projects. In most instances each project demands solving new design and production problems, thus making it difficult to predict the procurement tasks accurately. Organizational uncertainty in construction stems from the construction industry practice of assembling a new coalition of project actors for every project. The liability of newness carried by every project team member makes it difficult to predict the behaviour of the project coalition members. Each project actor seeks to maximize its interests leading to tension within the coalition. It should be noted that the bigger the project organization, the greater the tension and the more the organizational uncertainty. Natural uncertainty may come in the form of limited geological information about the site for large civil or building engineering projects. Performance uncertainty is another form of uncertainty associated with multi-party responsibility scenario such as when subcontractors are imposed on main contractors via the nominated subcontracting provisions of some forms of contract. Apportioning fault, tracing causative project actor and receiving compensations for loss, when the specified level of performance is not achieved in multi-party responsibility situation is not an easy task (Ive and Chang,2007).

According to Winch(1989), the use of competitive tendering is the source of contracting uncertainty. He identifies two sources of this category of construction project uncertainty, namely contractors'estimating-related errors and the existence of a kind of accelerator effect on the demand curves facing individual contracting firm. The demand curve of most contracting firms is such that small changes in the tender success rate produces large changes in the levels of turnover. This is the case because each contract represents a high fraction of total turnover for most construction firms. Discontinuous workload (Ive and Chang,2007) or what has been called demand uncertainty increases the pressure on contracting organizations to optimize their gains from every contract won irrespective of the effect on their co-transactors. Corroborating this is the submission of Hawkins *et al* (2008) who posit that a contractor will use ex post differing site conditions and ex ante design design flaws as an opportunity to improve their profit position at the expense of the client especially where they are losing money or behind schedule.

The foregoing shows that uncertainty boils down to lack of information for decision-making. Viewed from this perspective, uncertainty especially behavioural/organisational uncertainty is related to the concept of asymmetric information in agency theory. Asymmetric information occurs when one party to an exchange has more or superior information than the other party about the object of exchange (Lofgren, Persson and Weibull, 2002). A subcontractor bidding for a project knows more about his capability than the main contractor. Asymmetric information gives rise to two categories of opportunism: adverse selection and moral hazard.

In the light of the foregoing, it is logical to suggest that the degree of uncertainty associated with a construction procurement transaction will have a positive significant influence on the level of opportunism within the relationship. Mitigating opportunism therefore calls for reducing uncertainty. So what tools do main contractors use to reduce uncertainty in their relationships with contractors? This work among other things seeks the answer.

2.3 Asset Specificity and Opportunism

Asset specificity refers to the degree to which transaction-specific investments or assets are non-redeployable (Lynch, 1996; Ryu *et al*, 2012). Antia and Frazier(2001) opines that transaction specific investments are investments that cannot be redeployed from existing uses and users except at a significant loss of productive value. Hawkins *et al* (2008) describes a transaction specific investment as a non-transferable investment whose utility is unique to a specific relationship. The degree of asset specificity associated with a transaction could vary from non-specific to mixed to idiosyncratic(Issato and Formoso,2011).

Prior to signing a contract, asset specificity in client-contractor or main contractor-subcontractor relationship (viewed from either party's perspective) is low. The client or contractor is free to select from a number of competing contractors or subcontractors. At this point in the relationship, the contractor/subcontractor has not made any transaction-specific investments. The situation changes, once the contract is signed and the contractor begins work on site, from an analytical baseline of unconstrained bargaining or bilateral voluntary exchange to a command structure within which one party's ability to retaliate is limited(Wathne and Heide,2000;Ive and Chang, 2007). The client/contractor has invested at least time and resources to select the contractor/subcontractor. The contractor on the other hand must have incurred expenses bidding for the contract and mobilising his resources-human and plants to the site. This post-contract market situation of the transacting parties has been described

as a small numbers bargaining situation (Winch,1989;Lynch,1996) ,which is a weak competitive environment where the client's freedom to choose contractors is severely restricted. So asset specificity is high at the post contract stage. The farther the parties have gone in the contract execution, the higher the transaction asset specificity.

The high post-contract stage asset specificity, termed process specificity by Ive and Chang (2007), makes it possible for the under-invested party (the contractor in client –contractor relationship; the subcontractor in main contractor-subcontractor dyad) to hold-up the transaction should unanticipated events arise. Construction industry experiences show that post contract specification changes by clients are often exploited by contractor to extract a concession from the client in form of exaggerated variation claims (Winch,1989;2001). Rokkan ,Heide and Wathne(2003) provide empirical evidence from buyer supplier –relationships substantiating the claim that transaction specific investments increase opportunism on the part of the under-invested exchange partner,while decreasing opportunism from the party with higher transaction –specific assets. It follows from the foregoing reasoning that one way to mitigate opportunism from the underinvesting contractor is to impose transaction-specific assets as a requirement for entering into the contract. Such transaction-specific investments imposed on a co-transactor to mitigate opportunist behaviour are called economic hostages.

Traditional contractual provisions like the deduction of retention fees from interim certificates, the demand that contractors secure advance performance bonds are economic hostages intended to attenuate contractor's opportunism. In order to curb subcontractor's opportunism, one would expect contractors to ask their subcontractors to invest in transaction specific assets. Do contractors use these provisions in their relationships with subcontractors? We attempt to answer this question in this work.

2.4 Transaction frequency/long term orientation and opportunism

Will a subcontractor (in a contractor-subcontractor transaction) hold-up the transaction opportunistically in the presence of 'shadow of the future'(Kamann,Snijders,Tazelaar and Welling;2006)? The phrase "shadow of the future" refers to the expected likelihood that the co-transactors will meet for business in the future.The expectations of two parties to a transaction about the future of the relationship strongly affect their predisposition to opportunistic behaviour in the current transaction (Yaqub,2009) . Kamann *et al* (2006) posits that opportunistic behaviour becomes tempting and attractive in spot market exchanges. Parker and Hartley (2003) point out that, buyers in one-off exchanges are especially at the risk of entering disappointing transactions. On the other hand, cooperative behavior in buyer-supplier relations is more probable, when there is a strong basis for more future transactions .Frequency of transaction might be one –off, occasional or recurrent. The basis for believing that a future exists for the relationship might be a history of successful past transactions('shadow of the past'). The promise of future businesses in the contractual agreement between the parties might be a basis for optimism about the shadow of the future.

This reasoning agrees with the utility maximization orientation of all economic actors. If the present value of stream of gains accruable to an economic actor from future transactions is far more than the immediate gains from opportunism, the chances are great that the opportunistically predisposed project actor will exercise self- restraint. The converse of this statement is also true. If a relationship comes into existence because of a one-off transaction, the chances are great that the parties will seek unilateral optimization of their interests. Jesus parable of the dishonest slave corroborates the veracity of this claim (Luke 16:1 – 8 New King James Version).The parable is a powerful anecdotal illustration of exit opportunism associated with structures where there is no opportunity of future transaction.

Unfortunately transaction frequency is low in construction.Winch(2001) argues that the value is unity for most client /supplier dyadic relationships.Traditional serial contracting and the recent experimentation with framework agreements address this problem(Tennant and Fernie, 2012). It is pertinent to point out that transaction frequency has indirect mitigating effect on opportunism via reduction in uncertainty.It has been explained earlier that uncertainty and bounded rationality enables opportunism. Transaction frequency leads to inter-organizational learning.The more you work with a procurement co-transactor, the more you know about his competence and character,his strength and weaknesses. This in turn mitigates behavioural uncertainty associated with working with new exchange partner. To this end, one would expect main contractors in Nigeria to promote long term relationship with their subcontractors as a way of mitigating opportunism.

2.5 Indicators of subcontractor's opportunism

The following manifestations of opportunism are treated in this paper as indicators of opportunism. They are actions that illustrate opportunistic behaviours.

2.5.1 Opportunistic Bidding

It is a usual practice for main contractors to prepare cost estimate for the work to be performed by his resources and invite subcontractors to submit their quotations. After submission of quotation, subcontractor selection is usually on the basis of lowest tenderer. Opportunism in the form of opportunistic bidding is more prevalent during economic recessions because construction firms tend to bid below minimum profit level and therefore hope to compensate the lost from claims and disputes. A subcontractor that is in dire need of work might bid unreasonably low to win work with the intention of cutting corners or making claims to make up for any loss.

2.5.2 Hold-up Problem / Forced renegotiation

The hold-up problem involves exploiting changes in the environment of a transaction or unforeseen circumstances to extract more payment from one's co-transactor. The opportunistic exchange partner often asks for renegotiation of contractual terms. This form of opportunism is often displayed by the underinvested exchange partner (Ryu et al, 2012). In main contractor / subcontractor dealings, a specialist subcontractor on which the main contractor depends might use post-contract specification changes to hold up the transaction and push for a renegotiation, offering a take-it-or-leave-it price to the main contractor.

2.5.3 Violation of contract

Considerable efforts are made by main contractors to administer and control the activities, processes, outputs, and obligations of subcontractors. However, opportunistic subcontractors might cut corners by not adhering to rules of engagement and contract specification. Such violation of contractual terms is blatant opportunism. Relationship contracting comprises rules and norms of behaviour that guide perceptions, evaluations, attributions, judgments, behaviours, and interactions within the relationship. Self interest seeking subcontractors might violate these rules for personal gain. Such violation might come in the form of poor workmanship, outright stealing of contractor's materials and the like.

Ordinarily, opportunism is reduced by the use of written contracts and explicit procedures that dictate the duties and responsibilities of both parties. However, the usage of a strong bureaucratic structuring could frustrate the subcontractors due to the excessive restrictions on him which in turns makes him to violate the rules of engagement.

2.5.4 Misrepresentation of competence

Misrepresentation of competence which is usually an ex-ante form of opportunistic behaviour emerges as a result of information asymmetry. Subcontractors misrepresent their competence to the main contractors by holding asymmetric information about what they are capable of doing from them. This might involve lying about their capability and what they have done in the past especially when they are to receive commission from the main contractor for the first time (Costello, 2000).

2.5.5 Low level of commitment (Shirking and Refusal to adapt)

Commitment leads directly to cooperative behaviours that are conducive to relationship success. Morgan and Hunt (1994) define relationship commitment as involving an exchange partner's belief that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it; that is, the committed party believes the relationship is worth working on to ensure that it endures indefinitely. Three variables predict the degree of commitment to relationships. They are the degree to which individual was satisfied with the relationship prior to its decline; the magnitude of the individual's resources in the relationship and the quality of the individual's best alternative to the current relationship. A subcontractor, that redirects his resources from an existing contract to a new contract that he finds

more profitable, shows low level of commitment to the first relationship. Such display of low commitment is a form of opportunism.

Although, low level of commitment is generally viewed as a lack of desire to maintain a valued relationship, it is also grossly related to shirking (evasion of obligation) and refusal to adapt to a changing circumstance. Both are regarded as passive opportunism (Wathne and Heide, 2000). With shirking, subcontractors behave opportunistically by engaging in activities or short cuts that make work easier for them at the expense of specified standards. The refusal of subcontractors to adapt to changing circumstances by showing inflexibility and unwillingness to switch to new production method, working processes and machineries also denote a low level of commitment in main contractor-subcontractor dyad.

3.0 RESEARCH DESIGN AND METHODS

The research reported in this paper adopted both quantitative and qualitative data collection instruments in a two stage data collection process. The first stage involves the self administration of questionnaires among members of Federation of Construction Industry (FOCI), the leading trade association for main contractors in Nigeria, within Lagos State. The choice of Lagos is informed by its status as Nigeria's most important economic state. The sampling frame for the administration of the questionnaire is the list of FOCI members obtained from the website – www.foci.com. Efforts were made to administer the questionnaire randomly to the sixty one member organisation. Unfortunately, some of the randomly selected respondents were inaccessible. Eventually, forty two questionnaires were administered on a questionnaire per firm basis. A non-probabilistic sample of thirty four FOCI member firms responded to the empirical questionnaire survey.

The empirical questionnaire survey follows a literature review that captures the indicators and antecedents of opportunism. The survey is necessary to achieve the first two objectives of this study, namely: to isolate the key indicators of opportunistic behaviours in main contractor-subcontractor relationships; to assess the prevalence of opportunistic behaviours in main contractor-subcontractor dyads. To this end, the respondents were asked to rate the prevalence of ten pre-identified subcontractor's opportunistic behaviours on a 5-point Likert scale, where 1 and 5 represent the polar ends: "not often" and "very often" respectively. In view of the fact that reluctance to cooperate is indicative of opportunism, we assessed the prevalence of subcontractor's cooperative behaviours. We asked the respondents to rate the prevalence of ten pre-identified cooperative behaviours on a 5-point Likert scale, where 1 and 5 represent the polar ends: "not often" and "very often" respectively.

The second stage of the research involves an exploration of governance devices in use by main contractors in mitigating opportunistic behaviours with mean score above 3.0. This was achieved by conducting case study interviews with senior decision makers of eight of the firms that participated in the empirical questionnaire survey. Each interview took an average time of 45 minutes, all of which were recorded and transcribed into written documents.

4.0 FINDINGS

4.1 Survey responses

Of the 42 questionnaires administered among the population of sixty one FOCI member organisations, 34 were retrieved back. This represents an unusual survey response rate of 80.95 % was recorded. This success rate is not common in survey research (Frei and Mbachu, 2009). The "wait and get" self administration of the questionnaire, by one of the researchers, must have contributed to achieving the excellent response rate. Another measure taken to increase response rate includes the assurance in the covering letter that the information provided by respondents will be treated with strict confidence and that individual firms will not be identified. In addition responding firms were assured of getting individual research reports on completion of the research. Furthermore, all the returned questionnaires are suitable for analysis. This is expected given the care exercised in ensuring that only senior decision makers who are involved in subcontracting relations responded to the questionnaire.

Table 1: Demographic Information of the Respondents

Category	Classification	Frequency	Percentage (%)
Gender	Male	32	94.1
	Female	2	5.9
	Total	34	100
Position held	Contract Manager	14	41.2
	Q.S	6	17.6
	H.O.P	4	11.8
	Site Supervisor	4	11.8
	C.E.O	3	8.8
	Engineer	3	8.8
	Total	34	100
Years of working experience	1-5	5	14.7
	6-10	9	26.5
	11-15	16	47.1
	16-20	4	11.8
	Total	34	100
Length of employment (in present organization)	1-5	14	41.2
	6-10	13	38.2
	11-15	5	14.7
	16-20	2	5.9
	Total	34	100

4.2 Demographic information of respondents

The demographic variables of the respondents are presented in Table 1. Ninety four percent of the respondents are male while six percent are female. About nine percent of the respondents are the chief executive officer of their firms. Twelve percent of the respondents head the procurement departments (HOP). Forty one percent of the respondents are contract managers in their organisations. Eighteen percent of the respondents are professional quantity surveyors(QS). Nine percent are professional engineers with the firm while the rest of the respondents are site supervisors-twelve percent .

The years of working experience shows that eighty five percent of the respondents have spent a minimum of six years working in the industry. The length of employment with their organisation as at the time of the survey shows that about sixty percent of the thirty four respondents have spent a minimum of six years with the company. In the light of this, it is safe to assume that their responses to the issues raised in the questionnaire are reliable.

4.3 Indicators of subcontractor's opportunism and their prevalence

Table 2 captures the 5-point Likert scale ratings of the respondents from the participating firms to the question: how often do subcontractors that work with you display the behaviours listed?

"Subcontractors bidding unreasonably low to win work when competition is high (and thereafter put up claims to improve their margin)" and "subcontractors delivering shoddy jobs with poor workmanship in the absence of company supervisors" both share the highest mean score of 4.06, followed by "subcontractors abandoning an ongoing contract in favour of a more profitable work" with a mean score of 3.44. "Subcontractors renegeing on an agreed sum for a piece of work" has a mean score of 3.41. "Exploiting post contract specification changes to extract more money from the main contractor" has a mean score of 3.35. The table also reveals that subcontractors infrequently use materials, labour and equipments of the contracting organization for their own private purposes with low mean score of 2.21. "Collecting advance payment for work without doing the work" scores 1.85.

Table 2: Key indicators of subcontractor's opportunism and their prevalence

Opportunistic Behaviours	Mean	Rank
When competition is high, subcontractors bid unreasonably low to win work and thereafter result to claims to improve their margins.	4.06	1
In the absence of supervisors from site, subcontractors deliver shoddy jobs with poor workmanship.	4.06	1
Subcontractors abandon an ongoing contract with us, in favour of a more profitable work with others.	3.44	3
After agreeing to work with us for an agreed sum, subcontractors renege on the agreed sum to do the work arguing that the sum is too small for doing the work.	3.41	4
Post contract specification changes are exploited by subcontractors to extract more money from us.	3.35	5
Subcontractors lie about their capabilities and experience.	2.65	6
Subcontractors refuse to take responsibility for defects associated with the works they execute.	2.35	7
Subcontractors use substandard materials which are not as specified in the contract (specification).	2.29	8
Subcontractors use our materials, labour and equipments for their own private purposes.	2.21	9
Subcontractors collect advance payment for work and never return to carry out the work.	1.85	3

4.4 Subcontractors refusal to cooperate

The future is unknown, yet exchange partners often anticipate situations that might materialise in the future and devise contingent plans to manage them. However there is a limit to what could be anticipated by economic actors who by default are limited in their ability to foresee the future. For this reason, it is impossible for exchange partners in construction procurement exchanges, to specify ex ante all contingent actions for every possible future outcomes in the contractual agreements that bind the two procurement transactors. In the absence of such explicit contractual terms, an opportunistic co-transactor could hold-up the transaction ex post when unanticipated events materialise. The hold-up problem is not likely to arise where both contractors and subcontractors are cooperative business partners. Since refusal to cooperate under changing circumstances is opportunistic, we sought to find out the how prevalent subcontractors cooperative behaviours are observed by the main contractors. Table 2 captures the results .

Table 2: Prevalence of Cooperative Behaviours

Cooperative Behaviours	Mean	Rank
Subcontractors do settle their grievances with us amicably without going to the law court or abandoning the work.	4.35	1
Subcontractors readily share their experience and knowledge with our members of staff.	4.00	2
When faced with deadline problem, subcontractors willingly agree to work for extra hours.	3.76	3
Subcontractors readily share accurate information about the problems and challenges they are facing on site with us.	3.59	4
When problem occurs, our subcontractors always concentrate on solving them rather than trying to blame us.	3.56	5
While bidding for major contracts for our clients, subcontractors work closely with us, providing pricing information about their different work packages.	3.41	6
Subcontractors willingly procure plants, equipments and machineries which are solemnly meant for our project alone.	2.80	7
When faced with cash flow problem, subcontractors offer their services on credit to meet project deadlines.	2.53	8
Our subcontractors always provide incentives and motivation for their workers so as to work conscientiously on site.	2.47	9
Subcontractors draw our attention to available business opportunities.	1.91	10

The table reveals that “subcontractors’ settling their grievances amicably with the contracting organization without litigation or abandoning the work” is the most common cooperative behaviour with

a mean score of 4.35, followed by “subcontractors sharing their experience and knowledge readily with the members of staff of the contracting organization with 4.00”. The table also reveals that subcontractors procuring plants, equipments and machineries which are solely meant for the contracting organization’s project” has a mean score of 2.80, closely followed by “subcontractors offering their services on credit” to meet project deadlines or when faced with cash flow problem has a mean score of 2.53. “Subcontractors providing incentives and motivation for their workers so as to work conscientiously on site” has a mean score of 2.47 while subcontractors drawing contracting organization’s attention to available business are the least rated cooperative behaviour with a mean score of 1.91.

4.5 Case study findings

Eight case study interviews were conducted in eight main contractors firms. Each interview took an average time of 45 minutes, all of which were recorded and transcribed into written documents. Each interview opens with some background information about the company and the interviewee. Thereafter issues such as the company’s practices with regards to the adoption of long term relationship with subcontractors, the organization attitude towards the use of subcontractors / employees, their subcontracting /bidding procedures and varying governance responses to the pre-identified subcontractors’ opportunistic behaviours were explored. Following Wu and Choi’s precedent (2005), the written transcriptions were analysed and summarised in Table 3.

4.5.1 Long term orientation, competitive bidding and subcontracting practices

All the eight firms recognise the importance of fostering long term relationship with their subcontractors. Some of them have pool of subcontractors they regularly deal with. To avoid a situation in which the subcontractors exploit the long term relationship, the contractors continue to bid competitively for subcontract packages. One of them even has the practice of making sure one of the bidders is a new subcontractor they have not dealt with before. Some of the firms interviewed engage craftsmen as employees to carry out non-specialised work packages while relying heavily on subcontractors to do the specialised works. While price plays a key role in awarding subcontracts, some of the interviewees expressed their bias for considering how trustworthy the subcontractor is in taking subcontract award decisions.

4.5.2 Governance responses to subcontractor’s opportunism

Governance mechanisms are tools or arrangement that are designed to discourage opportunistic behaviours while encouraging cooperative behaviours .The case interviews shows that some contractors deploy traditional governance tools often used in client-main contractor relationships. Such tools include the client’s withholding a fractional part of the amount payable to a contractor as an incentive for the contractor to complete the project on time (Cartilidge, 2009). The study shows that some contractors adopt this tool to govern their subcontractors. Other traditional governance tools deployed by some of the contractors interviewed include advance payment bond and performance bond. Promoting long term relationship with contractors in the form of continuous patronage is also adopted as a governance tool. Other devices to discourage subcontractor’s opportunism include monitoring and supervision of subcontractors by company engineers. Competitively awarding subcontracts is a form of market governance which discourages exploitative pricing of works. It is noteworthy that contractual agreements with the subcontractors are used by all the main contractors, even in cases where there is a trusted relationship between the contractor and subcontractor.

Table 3: Case Interview Findings on Contractor-Subcontractor Governance Practices

Company Identity	Profile of company	Profile of company's Spokesman(the interviewees)	Practices towards long term relationships with subcontractors	Subcontracting /competitive bidding practices	Governance responses for mitigating subcontractor's opportunism
A	Privately held building construction company, established in 1983	A senior quantity surveyor in the Contract Management Department of the firm. Interviewee has 15years experience, 11 of which have been spent in the firm	Company maintains long term relationship with their subcontractors. Company maintain a pool of 12 subcontractors in the common building trades. Most of these subcontractors have been working with the company for three decades	Not minding the long term relationships it has with its pool of subcontractors, company engages competitive bidding for subcontracts. For each subcontract, 5 to 8 bids are often invited. This arrangement prevents a situation in which the subcontractors take advantage of the long term relationship	Company builds trust with the subcontractors fulfilling its own part of any agreements. Written agreements are always signed with the subcontractors. Company places more emphasis on trust than lower bids from new bidders with unknown competence. Bids from subcontractors are scrutinized properly to ensure they are reasonable. The result has been that subcontractor's opportunism is not pronounced in their relationship with the pool of subcontractors. There have been cases in which subcontractors provide profitable business leads. Subcontractors often work on "credit" when there are cash flow problems.
B	Privately held civil engineering firm that has been in business for about 20 years with emphasis on road construction for the state government	A veteran engineer with 19years of work experience with the company.	Company maintains long term relationship with their subcontractors. The newest set of subcontractors has spent at least five years with the firm.	Company relies on those subcontractors they have worked with in the past whenever there are new contracts. Company relies on their subcontractors for the bulk of the physical construction as opposed to salaried tradesmen.	Continuity of work is emphasized. Written agreements are signed with the subcontractors. When payments from clients are delayed, company sources funds from financiers to pay the subcontractors. Monitoring by competent site engineers is stressed. Subcontractor's opportunism is not common. There were cases, during the early years, of subcontractors abandoning agreed work for more profitable work elsewhere. With the company's emphasis on continuity of work for subcontractors, such cases have reduced drastically.
C	A publicly quoted ,building construction and civil engineering firm that was incorporated in 1958	A professional quantity surveyor that heads the estimating section of the commercial department of the company. He has over ten years experience working in contracting and consulting firms	Company C cultivates long term relationships with its subcontractors. Some of the subcontractors have been with firm for over ten years.	The company maintain a list of subcontractors for each of their subcontract packages. Subcontractors are competitively selected.	While price plays a role in awarding subcontracts, the company prefers trustworthy subcontractors to newer ones with lower tender. Subcontracts are awarded on the basis of written agreement. Retention fees and performance bonds are at times adopted in its relationship with the subcontractors. Subcontract bids are rigorously examined to ensure the subcontractors understand the scope of the work. Supervision by company's engineers is standard practice. Subcontractor's opportunism is limited in the relationship. Cooperative behaviours, such as drawing the attention of the contractor to business opportunities and working for "credit" given cash flow problems, are displayed by the subcontractors.

Company Identity	Profile of company	Profile of company's Spokesman(the interviewees)	Practices towards long term relationships with subcontractors	Subcontracting /competitive bidding practices	Governance responses for mitigating subcontractor's opportunism
D	Privately held six year old building construction company.	A quantity surveyor in the Quantity Surveying Department of the firm. Interviewee has 10 years experience, 2 of which have been spent in the firm	Company maintains long term relationship with its subcontractors since its inception. The company has a stable pool of subcontractors made up of 1 electrical works subcontractor, 3 for mechanical and plumbing installation subcontractors and 2 subcontractors for carpentry and formwork construction. Although, company D has supervisors and labourers who handle labour-only works like plastering and block-work, the company favours subcontracting works.	Company D selects its subcontractors based on competitive bidding. The company normally invites 3 or 4 subcontractors to submit their quotations for work on hand.	Company promotes mutual understanding with the subcontractors. Apart from providing drawings and bill of quantities to these subcontractors, company D often take the bidders to site so they could grasp what is involved in the work being tendered for. Written agreements are drafted with the subcontractors .In addition to price, how trustworthy a subcontractor is plays a role in award of subcontracts. The subcontractors have developed a reputation for working to specifications and expected standards, company supervision is limited.
E	Privately held civil engineering and building construction company that was established in 1985.	A veteran quantity surveyor with 14years of work experience, 3 of which have been spent with the company.	Company maintains long term relationship with their subcontractors. A number of the contractors have been working for the company for five years .	Company relies on subcontractors and artisans who are employees for carrying out physical construction. Culverts, drainage and road marking works are often subcontracted. To foster competition, company E normally invites up to 3 subcontractors to submit their quotations for any work packages. The company makes sure that there is at least one new subcontractor out of those bidding so as to be prevent their old subcontractors from exploiting the long term relationship.	Tenders from subcontractors are routinely reviewed by the QS department to ensure no unreasonably low bids are accepted. Subcontractors are provided with drawings, specifications and an un-priced bill of quantities when submitting quotations. After award of contract, an in-house condition of contract which stipulates the use of retention fees, mode of payment and conditions under which the contracts with the subcontractor shall be revoked forms part of the deal with the subcontractor. The company also requests performance bond and advance payment bond from the subcontractors. Company site engineers are required to certify that the subcontractor has done the work to specifications before payments are made to them.

Company Identity	Profile of company	Profile of company's Spokesman(the interviewees)	Practices towards long term relationships with subcontractors	Subcontracting /competitive bidding practices	Governance responses for mitigating subcontractor's opportunism
F	Privately held building and civil construction company.	A quantity surveyor in the Quantity Commercial Department of the firm. Interviewee has 5 years experience, 2 of which have been spent in the firm .	Company maintains long term relationship with its subcontractors. Some of the subcontractors have worked for close to 15 years with the firm.	Despite having artisans as employees, the company engages both specialist subcontractors and labour-only subcontractors. The company uses labour-only subcontractors when it is easier for the company to get the construction materials , but when the subcontractor is in the best position to do so, the company prefers to engage full subcontract(labour and material).	Drawings and "unpriced" bill of quantities and specifications are made available to the subcontractors while submitting their tenders/quotations. Written agreements are drafted with the subcontractors .In addition to price, a subcontractor's competence plays a key role in award of subcontracts.5% retention fees are applied on full subcontract. The company requests contractors to get an advance payment bond from bank or an insurance company when given an advance payment to start a work.
G	Privately held building construction company that was established in 1988.	A quantity surveyor who has spent 3 years with the company.	Company believes in long term relationship with their subcontractors. But no evidence was provided	Mechanical, electrical installation works, reinforcement, windows and roof woks are often subcontracted by the company while paid employees who are craftsmen handle the concrete and related works under supervision. At least 3 but not more than 5 subcontractors are normally invited by the company for competitive bidding for any subcontract.	Drawings from which physical measurement can be taken-off from are provided as well as schedules (for windows, doors etc) if necessary. After the award of subcontract, a written agreement stating the terms of payment, penalties, quality of work expected and retention fees is drawn to guide the transaction. Close monitoring on everyday activity do prevent their subcontractors from abandoning an ongoing contract in favour of a more profitable job elsewhere. Furthermore, detailed analysis of subcontractors tender is carried out so as to prevent opportunistic bidding from subcontractors. While continuity of work always helps to prevent subcontractors from exploiting post contract specification changes. The presence of engineers as supervisors also prevents the subcontractors from delivering shoddy jobs.

Company Identity	Profile of company	Profile of company's Spokesman(the interviewees)	Practices towards long term relationships with subcontractors	Subcontracting /competitive bidding practices	Governance responses for mitigating subcontractor's opportunism
H	Privately held building construction company.	A quantity surveyor in the Commercial Department of the firm. Interviewee has spent 3 years with the firm	Company maintains long term relationship with its subcontractors. Some of the subcontractors have been working with the company since it was established.	Company H selects its subcontractors based on competitive bidding. The company normally invites 3 subcontractors to submit their quotations for subcontracts to be awarded. Employees who are artisans are used to execute blockwork and concrete works.	Bill of quantities and specification are provided by the company for these subcontractors. In selecting the most suitable subcontractor, company H considers the capability and the organization structure of the firms. 5% retention fees are applied to subcontracts. Company does not adopt "when they pay us, we pay you" strategy. The company terminates the appointment of subcontractors who abandon an ongoing contract in favour of a more profitable work elsewhere. Proper prequalification and tender evaluation is used to prevent opportunistic bidding . Close monitoring and letter of satisfaction from the operation department for all works carried out prevents subcontractors from doing shoddy jobs.

5.0 Discussion

This research has shown that the more prevalent subcontractor's opportunism experienced by members of Federation of Construction Industry (FOCI), the leading trade association for main contractors in Nigeria, includes :

- Opportunistic bidding: bidding unreasonably low to win work in the face of competition with the intention of deploying margin enhancement tactics ex post to make profit. This is ranked one.
- Quality shirking: delivering shoddy jobs with poor workmanship in the absence of company site supervisors. This behaviour share the same mean rating score with opportunistic bidding
- Low level of commitment : abandoning an ongoing subcontract in favour of a more profitable one ranks 3
- Reneging on an agreement to execute a piece of work for an agreed sum is the fourth most prevalent opportunistic behaviour on the part of subcontractors.
- Exploiting post specification changes to make more money is also a prevalent behaviour.

It must be noted that these behaviours have a mean score above 3 on a 5-point scale. This findings support the stance of Williamson (1979), who theorizes that economic agents display varying degree of opportunism. Even those who are less opportunistic will manifest opportunism when stakes are high he adds.

The case study interviews shows that fostering long term relationship with subcontractors mitigates opportunism. Subcontractors with whom a main contractor maintains a stable relationship are observed to display cooperative behaviour such as the readiness to work on "credit" when the main contractor is having cashflow problems. This empirical finding agrees with previous works (Kamann *et al* ,2006; Yaqub,2009) that show that the expectations of two parties to a transaction about the future of the relationship strongly affect their predisposition to opportunistic behaviour in the current transaction. The study also shows that contractors continue to use variants of the three primary governance mechanisms, namely price, authority and trust in their relationship with subcontractors. The case study interviews shows that contractual agreements guide the relationship with the subcontractors even when the contractor has been working with the subcontractors for years. This findings resonates with Stinchcombe's (1985,1990) insightful analysis, cited by Ahola and Davies (2012), of the use of complex contracts for North Sea oil facilities in turning markets into hierarchical governance tools. The interview findings also show that the use of trust, a relational governance tool, is not incompatible with written agreement –a contractual governance tool. This support the findings of Poppo and Zenger (2002), who posits that relational and contractual governance, are complementary.

The case interviews also shows that some of the contractors adopt traditional governance tools like retention, advance payment bonds and performance bonds to govern the subcontractors. These investments represent a form of transaction specific investment imposed on the subcontractors. This practice follows the prescription of the governance literature that suggests that one way to prevent opportunism from under-investing exchange partners is to ask them to invest transaction specific assets in the relationship. The use of control actors (Winch, 2001) in the form of company supervisors is another governance tool in use by the main contractors interviewed.

Table 4 is an attempt at synthesising the findings from the study with insights on interfirm governance from the literature into a governance tool for managing the top five prevalent opportunistic behaviours identified in this study.

6.0 Conclusions, Recommendation and Future research direction

6.1 Conclusions and Recommendation

Using a structured questionnaire that was self-administered to a sample of thirty four members of Federation of Construction Industry (FOCI) in Lagos, this study sought to identify the most prevalent subcontractor's opportunistic behaviours in contractor-subcontractor dyads. The study also explored governance tools in use for mitigating these opportunistic behaviours via semi structured interviews with senior subcontracting decision makers of eight main contracting firms. The quality of responses received in both the survey and interviews was high and the survey response rate was excellent. The first objective of this study was to identify indicators of subcontractor's opportunism. A literature review synthesis

culminates in the identification of ten behaviours on subcontractor's part that are indicative of opportunism. These ten behaviours were presented in an empirical questionnaire survey to main contractors. The respondents were asked to draw on their experiential knowledge in rating how often they experience each of the listed behaviours. Behaviours whose mean score is less than 3 on a 5-point scale were treated as not critical and hence were not considered further in the research. Ranking the behaviours on the basis of the mean rating score, the following emerge as the top most prevalent opportunistic behaviours on the part of subcontractors.

- I. Opportunistic bidding ranked ranks "1"
- II. Delivering shoddy jobs with poor workmanship in the absence of company site supervisors shares the same rank with opportunistic bidding
Abandoning an ongoing subcontract in favour of a more profitable one ranks 3
- III. Reneging on an agreement to execute a piece of work for an agreed sum is the fourth most prevalent opportunistic behaviour on the part of subcontractors.
- IV. Exploiting post specification changes to make more money ranks 5.

The second objective has therefore been met. In order to achieve the third objective of identifying governance responses to these behaviours, case interviews were conducted. The interview findings show that governance tools in use includes an innovative combination of the price mechanism and trust in which long term; trusted subcontracting partners are required to submit bids in competition with newer ones, even when the contractor knows that the trusted contractor will do the work. The main contractors interviewed all make efforts at fostering long term relationship with the subcontractors. Transaction specific investments are used by the main contractors in the form of retention, advance payment bonds and performance bonds. Some of the contractors tie the payment of the subcontractors to certificates of approval or satisfaction from the site supervisor or engineer. Contractual agreements continue to be used as a governance tool.

While some of the findings of this research resonate with existing works, generalizing based on these findings comes with a caveat: the non - probabilistic convenient small sample size of thirty four contractors. To this end, a wider research targeting a significant proportion of main contractors in Nigeria is recommended.

6.2 Future research direction

While this work has examined subcontractor's opportunism, it is arguable that contractors are more predisposed to deal with subcontractors opportunistically. For one thing, the power asymmetry favours the contractors. So this raises the questions: What are contractor's opportunistic behaviours towards subcontractors? What are subcontractors doing to mitigate this? We suggest other researchers could investigate this.

Table 4: The Proposed Governance Tool for Mitigating Subcontractor's Opportunism.

Opportunistic Behaviour	Antecedents/Enablers	Governance tools
Abandoning work half-way in favour of a more profitable work.	<ul style="list-style-type: none"> • Information asymmetry. • Uncertainty 	<ul style="list-style-type: none"> • Build trust with subcontractors • Assure subcontractors of continuity of work. • Prequalify contractors. • Contractual agreement that deploys performance bond and advance payment bond and retention
Reneging on an agreed sum for doing a piece of work.	<ul style="list-style-type: none"> • Dependence. • Uncertainty. 	<ul style="list-style-type: none"> • Provision of detailed scope documents for subcontractors bidding • Rigorous subcontractor's tender review and validation • Build trust with subcontractors • Assure subcontractors of continuity of work. • Comparative analysis of subcontractors bids • Maintain a stable pool of at least 3 subcontractors for each package to be subcontracted
Bidding unreasonably low to win work/opportunistic bidding	<ul style="list-style-type: none"> • Information asymmetry. 	<ul style="list-style-type: none"> • Rigorous tender analysis and estimate validation. • Written agreement which binds the subcontractor to the exact price given. • Comparative analysis of subcontractors bids
Exploiting post-specification changes	<ul style="list-style-type: none"> • Uncertainty. • Dependence. 	<ul style="list-style-type: none"> • Build trust with subcontractors • Assure subcontractors of continuity of work. • Prequalify contractors. • Contractual agreement that deploys performance bond and advance payment bond and retention and other appropriate transaction specific events. • Review payment basis when change orders make subcontractors to incur additional expenses
Delivering shoddy jobs in the absence of company supervisors.	<ul style="list-style-type: none"> • Degree of formalization • Goal incongruence 	<ul style="list-style-type: none"> • Monitoring by site supervisors • Link payment of subcontractors to approval by control actors – site supervisors who are held responsible for the quality of work done. • Ensuring that the subcontractor whose quality of work depends on the work of others have a say in accepting or rejecting that work(e.g. concrete subcontractors should have a say in approving formwork construction.) • Using socialization, motivate subcontractors to be committed to quality work.

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