

Current Approaches for Bid/No Bid Decision Making by the Contracting Organisations in Sri Lanka

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Abstract

Construction bidding is the procedure for submitting comprehensive proposals by bidders for undertaking construction projects. Contractors often procure projects through competitive bidding and the bid/no bid decision making is a key milestone in a project. Though numerous bid/no bid decision-making models have been developed, most of these models have practical and theoretical limitations which limit their applicability in practice. Hence, the ultimate aim of this ongoing research is to propose an appropriate hierarchical framework for bid/no bid decision-making suitable for adoption by Sri Lankan contractors. Before proposing a framework, it is needed to ascertain the current practice of bid/no bid decision making approaches under the Sri Lankan construction scenario with the identification of factors affecting the decision. This research is based on a qualitative approach, which analysed using code-based content analysis, data obtained through semi structured interviews to provide significant findings. The results of the analysis indicate the consequences of the wrong bid/no bid decision making under two worst-case scenarios, viz, 'accepting a wrong bid' and 'rejecting a proper bid'. Furthermore, three common bid/no bid decision making approaches practiced by Sri Lankan contractors and factors that affect bid decision making were identified in order to assist future studies related to the same research.

Keywords: Bid/No Bid Decision, Contract Bidding, Decision-Making Approaches

1.0 Introduction

A construction project is a combination of many processes which interact with each other at different stages (Kiavash, Hazhir & Ali, 2011). Construction bidding is one of those processes, which involves the submission of a comprehensive proposal to undertake or manage a construction project and indicating the probable construction cost (Dagostino & Peterson, 2011). Construction contractors often procure projects through competitive bidding to ensure their continued existence (Wanous, Boussabaine & Lewis, 2003). Since the construction industry is extremely fragmented and competitive, contractors are called upon to deal with various bidding procedures to be in line with a variety of procurement routes available for satisfying a client's construction needs (Ma, 2011). Contract bidding therefore should essentially involve making a strategic decision, such as a bid/no bid decision to ensure the impartiality of the process (Egemen & Mohamed, 2007). Further, Egemen and Mohamed (2007) have stated that this decision should be made giving consideration to the probability of winning the tender and the expected profit margin. The bid decision making is a complex process which depends on numerous factors (Chua & Li, 2000). According to Flanagan and Norman as cited in Passer (2013), project size and value, managerial complexity, regional market conditions, current and projected workload of the tenderer, type of client and type of project are some of the factors affecting to bid /no bid decision. Therefore, every construction company, regardless of its size has its own approach for the bid/ no bid decision making (Garret, 2008).

Lin and Chen (2004) have mentioned the availability of numerous decision making models that can assist contractors to take more informed decisions. However, most of them are quantitative methods which have continued to remain within academic circles due to their inherent practical and theoretical limitations. Hence, contractors without making a systematic approach, rely on their experience and intuition when making bid decisions. However, such practices will not always guarantee consistent outcomes (Wanous, Boussabaine & Lewis, 2000a). The critical assessment of two worst case scenarios i.e. 'accepting a wrong bid' and 'rejecting a proper bid', indicates that proper bid decision making is strategically beneficial for any contracting firm (Bargies & Fortune, 2006). Hence, this study aims at proposing a suitable

approach for bid /no bid decision making of Sri Lankan contractors. The following objectives have been set up as milestones to achieve this aim.

- To identify existing bid/no bid decision making procedures/models
- To examine the importance of the bid/no bid decision with regard to the consequences of a wrong decision
- To recognize the bid/no bid decision making approaches currently practiced by the Sri Lankan Construction industry
- To identify factors to be considered by the contractors when making their bid /no bid decisions

1.1 Scope and limitations

Since this research is an ongoing study, this paper set out the initial layout to develop the hierarchical framework for bid/no bid decision-making by emphasising on identifying local bid/ no bid decision making approaches and the factors should be considered under those approaches. Further, the research is limited to the grade C1 contractors due to their higher familiarity of using systematic approaches than the below graded contractors.

This paper begins with a review of literature on bid/no bid decision making processes followed by the research methodology adopted and the findings of the study and ends up with conclusions and recommendations.

2.0 Overview of construction bidding

2.2 Construction bidding process

Bidding, in general, means the conversion of numbers in a competitive bid after consideration of market factors and risks (Cooke & Williams, 2004). According to Zhu (2008), construction bidding is the procedure of submitting a proposal by a contractor to carry out a construction project at a price mutually agreed with the client. Bidding is the only possible way for a contracting firm to survive within the highly unstructured construction industry and secure tenders and make profits. (Egemen & Mohamed, 2007) Similarly, the survival of a contractor firm strongly depends on as to how successful it can become under different bidding situations and time constraints (Wanous *et al.*, 2003). Further, continuous bidding for suitable projects would reap several benefits to the contractors such as the build-up of its reputation, increase of its income, opportunity that become available to understand the bidding process, improvement of its negotiation skills, etc.

Further, Tang (2004) has identified the construction bidding process under two perspectives, i.e. contractor's perspective and consultant's perspective. Though the bidding process is always initiated by the consultant, this study is in the process related to the contractor. Hence, as indicated in Figure 2.1 below, from the contractor's perspective, bidding is a process which involves a decision to bid and planning and submitting a competitive estimate to secure the work (Lin, Lo & Yan, 2006):



Figure 2.1: Typical phases in bidding process in the perspective of the contractor
Source: Lin *et al.* (2006)

The bidding decision can result in either the success or the failure of a construction contractor (Rodriguez, 2013), since a bidder in competitive bidding will be faced with two seemingly incompatible and contradictory objectives viz., to bid high enough to make a profit and to bid low enough to secure the contract (Tang, 2004). Competitive bidding therefore offers many opportunities under different bidding arrangements.

2.2 Different bidding arrangements

Bidding is considered as a way of obtaining a price from a contractor (Cook, 1991). According to Abu Shaaban (2008), a construction company can either negotiate with the client or use competitive bidding to obtain a contract. Liscum (2010) has classified bidding as practiced in the construction industry, either as public or private where public bidding is a competitive process and private bidding is a price driven process.

According to Drew, Skitmore and Lo (2001) a significant amount of construction work are done through competitive tendering. In competitive bidding, a client invites all contractors to bid for the project and the bid decision making would be at the contractor's discretion (Ma, 2011). As the name implies, incompetent bidding a number of contractors will compete against each other to offer in their view the most favourable bidding price (Cook, 1991). On the other hand, in non-competitive bidding, the client allows a single bidder identified by him to submit a bid and negotiate with him until he and the bidder mutually agree on the amount payable to the latter (Cook, 1991). Moreover, Cook (1991) has stated that the selection of the bidding type depends on the nature of the project and the client's requirements. This study is focused on the bid/no bid decision making procedure as applicable for competitive open bidding among Grade C 1 contractors in Sri Lanka.

3.0 Bid/no bid decision

The Project Management Dictionary (2014) defines the bid/no bid decision as the decision taken to submit or not to submit a proposal in response to an invitation received to bid. A bidding strategy of a construction company relates to two critical decisions that it can make, i.e. the bid/no bid decision and mark up size determination (Ravanshadnia, Rajaie & Abbassian, 2011; Egemen & Mohamed, 2008). However, out of these two decisions bid/no bid decision is more critical than the other as it is the first decision that has to be taken to act as a base for the other decision. (Egemen & Mohamed, 2007).

According to Ravanshadnia, *et al.* (2011) the bid/no bid decision is associated with uncertainty and complexity because of its subjectivity. Bagies and Fortune (2006) have mentioned that the bid/no bid decision will be critical for any firm since its success and existence will strongly depend on the outcome of that one-off decision. They have further stated that the bidding decision made by a firm has a significant influence on its short-term profits and long term performance. Hence, a proper bid/no bid decision is required to prevent an organization from preparing an ineffective proposal and thereby wasting its resources (Lin & Chen, 2004). Moreover, Egemen and Mohamed (2007) have stated that it is not easy to make a proper bid /no bid decision because of the dynamic nature of most of the projects. They have further suggested that there needs to be a concurrent assessment of many factors before arriving at a decision.

3.1 Factors affecting bid / no bid decision

Many scholars in their own studies in the past have identified factors that affect bid decisions. Many have identified the same set of factors and Table 3.1 below tabulates the list of such common factors identified by different researchers in recent years.

Table 3.1: Factors affecting bid/no bid decision

Source	Factors affecting bid/no bid decision
Bargies and Fortune (2006)	<ul style="list-style-type: none"> • Project characteristics • Business benefits • Client characteristics • Contract • Project finance • Company characteristics • Firms' previous experience • Bidding situation • Economic situation • Competition
Egemen and Mohamed (2007)	<ul style="list-style-type: none"> • Need for work • Strength of firm • Project conditions contributing to profitability • Risks of the project • Competitions • Strategic considerations
Flanagan and Norman (as cited in Wang, 2011)	<ul style="list-style-type: none"> • Project size and value, managerial complexity • Regional market conditions • Current and projected workload of the tenderer • Type of client • Type of project

Since, this research study aims at identifying the bid/no bid decision making procedures practiced by the Sri Lankan construction industry and their drawbacks, it would be helpful to get an idea about all the possible factors that can affect bid decision making. The set of factors identified by Bargies and Fortune (2006) has covered a wide variety of factors that has not been figured out by other scholars. Therefore, it has been taken into further consideration in this study.

3.2 Different approaches for bid/no bid decision making

In practice, bid/no bid decision is made subjectively relying on experience and intuition rather than through a systematic approach (Egemen & Mohamed, 2007). Yet, in the recent past, several studies have been conducted to assist bid/no bid decision making (Lin & Chen, 2004). According to Ravanshadnia, *et al.* (2011) bid decision making can be broadly divided into three models based on their method of justification, (1) probability theory (2) decision analysis and (3) knowledge based expert system. Similarly, Oo, Drew and Lo (2007) have grouped these models into (1) multi-attribute decision models (2) statistical models and (3) artificial intelligence-based models. Since, the classification done by Oo, *et al.* (2007) facilitates a clear cut among bid/no bid decision making procedures that classification has used in this research and the following is provided a brief description of each model.

- Multi attribute decision models

Multiple attribute decision modelling is easy to implement and understand and it focusses on the most important issues using qualitative data (Lin & Chen, 2004). Scholars have derived models based on an Analytic Hierarchy Process (AHP) and a fuzzy linguistic approach in order to subjective analysis (Seydel and Olson, 2000).

AHP is based on a deterministic approach which involves pair wise comparison of criteria effects on bid/ no bid decision and its judgments are expressed in a linguistic scale and each judgment is translated into a numerical point value in order to get the decision (Ravanshadnia, *et al.*, 2011), while Fuzzy approach provides a useful tool to deal with decisions in which the incidents are imprecise and vague (Ravanshadnia, *et al.*, 2011).

- Statistical models

According to Lowe and Parvar (2004). Statistical models basically rely on the probability theory and based on the quantitative data when arriving at the bid/no bid decision.

Parametric model is one of such statistical model which considers several parameters gathered based on the subjective data, analyzes those parameters considering their importance (Wanous, Boussabaine & Lewis, 2000b). Regression approach is another which analyses all the variables relate to bid/no bid decision using statistical tools and identify the relationship between variables (Lowe & Parvar, 2004).

- Artificial Intelligence based models

According to the Wanous *et al.* (2003), Artificial intelligent based models can find solutions in complex situations due to its computational base and most of the time those models were developed with the base of an expert system. Further, Wanous *et al.* (2003) stated that it offers a simple and user friendly tool to assist contractors in considering the most dominant bidding variables and is used to improve the stability of the bid/no bid decision-making process. According to Dias and Weerasinghe (1996) there are different types of ANNs available, i.e. self-learning networks and networks which have to be trained.

However, the main aim of this research is to address the bid/no bid decision making approaches practicing in the Sri Lankan construction industry, the features and characteristics of the aforementioned models have not been described comprehensively. Table 3.2 provides brief details of earlier researches done on the bid/no bid decision making approaches.

Table 3.2: Models developed to make bid/no bid decision

Category	Model
Multi-attribute decision models	A decision-Support system for modelling bid/no-bid decision problem (Ahmad, 1990)
	Multi criteria support for construction bidding (Seydel, & Olson, 2000)
	Multiple criteria decision-making models for competitive bidding (Liu <i>et al.</i> ,2000)
Statistical models	Comparative analysis of pre-bid forecasting of building prices (Gunner, &Skitmore, 1999)
	A parametric approach to modelling bid/no bid decision (Wanous, <i>et al.</i> , 2000; Lowe &Parvar, 2004)
	A logistic regression approach (Lowe &Parvar, 2004)
	A model ascertaining the effects of client and type and size of construction work on a contractor’s bidding strategy (Drew <i>et al.</i> , 2001)
Artificial intelligence-based models (new trend)	‘BidExpert’ is an expert system integrated with a database management program, called ‘BidTrack’, thatretrieve historical information from past bids submitted by the company and its rivals (AbouRizket <i>et al.</i> , 1993)
	An artificial neural network (ANN) model (Wanous <i>et al.</i> , 2003)
	Artificial Neural Networks for construction bid decisions (Dias &Weerasinghe, 1996)
	A computer program named ‘Expert Choice’ was developed, utilising AHP. (Abdelrazig, 1995)

3.3 Drawbacks of the established approaches

Although there are many approaches that have been used to assist the contractors in bid decision making, Bagies and Fortune (2006) have stated that some of these approaches are not intended to produce a bid/no bid decision support model and none of them comprehensively identifies bidding factors. Similarly, Egemen and Mohomad (2007) have stated that most of these models remain only as academic exercises and that they do not suit practical situations. A brief description about the drawbacks of the main bid /no bid decision making approaches is described below:

- Multi attribute decision making models:

As highlighted by Lin and Chen (2004), the terms used in these models for evaluating (i.e. high, medium and low) depend on the managerial expertise of the decision-maker. In addition, the computation and comprehensiveness of the conversion of a linguistic term into a weighted average is also a drawback of these approaches (Lin & Chen, 2004).

- Statistical approaches:

According to Wanous *et al.* (2000b), there are loopholes in mathematical bidding models such as the reduction of the number of potential users due to their mathematical complexity and the disregard of the objectives of the contractor other than the maximizing of profits. In addition, incompatibility of the assumptions which have been made for the models and unsuitability of the historical data used for model making are two other reasons for failure of the mathematical models which result in uncontrollable impacts on the contractor (Shashas cited in Ma, 2011).

- Artificial intelligent based models:

According to Wanous *et al.* (2003) though the artificial intelligence based models offer benefits compared to other traditional models, they have their own interpretation difficulties.

Since all of the above approaches have their own merits and demerits, it is advisable to use a combination of these approaches since the application of only one method can result in a wrong decision leading to many adverse consequences.

3.4 Research gap: Need for a proper bid/ no bid decision making approach

According to Bagies and Fortune (2006), the bid/no bid decision has been given less attention when compared with other factors related to bidding. Though there have been many studies done to develop bid decision making, many models have been confined only to academic circles and are not suitable to be applied in practice (Wanous *et al.*, 2000). However, Lowe and Parvar (2004) and Egemen and Mohamed (2007) have agreed that a systematic model would be

beneficial for contractors to improve their decision making, increase their productivity and achieve their business objectives.

According to ICRA Lanka (2011), the construction industry in post-conflict Sri Lanka is on an upward trend. This has prevented experienced contractors from idling while attracting new entrants to the industry (ICRA, 2011). However, even with all those opportunities available, a contractor will still be unable to select a project in an ad hoc manner as it can affect his profitability. Thus, there should be a proper selection procedure for a project. In making use of an available opportunity, a proper bid/no bid decision will play an important role. Further, in the Sri Lankan context, the bid/no bid decision will be critical, as there is only limited research available on this subject. Moreover, contractors lack adequate knowledge to identify the correct bid/no bid decision making process compelling them subsequently to engage in malpractices. Therefore, there is an urgent need for a research on bid /no bid decision making in order to identify a procedure that is applicable to bid/no bid decision making in the construction industry in Sri Lanka.

4.0 Methodology

An extensive literature review was carried out to identify the importance of bid/no bid decision and bid/no bid decision making procedures introduced by the previous researchers. Then the research gap in the existing literature was elaborated, since the literature has not facilitated the identification of the procedures practiced under the local context. The study then carried out on a qualitative approach consisting of semi-structured interviews conducted in two parts. The first part of the interview survey (Interview Part I) was conducted among three local industry experts. This preliminary survey identified the importance of the bid/no bid decision in terms of the impacts a wrong decision can have on the company as well as on its Quantity Surveyor and also the current bid/no bid decision-making approaches practiced by Sri Lankan contractors. With the intention of carrying out the research further, a set of detailed interviews (Interview Part II) followed by Interview Part I was conducted to identify the using pattern of the identified local approaches and the factors considered in the bid/no bid decision making procedures currently practiced by the Sri Lankan construction industry. The profiles of the interviewees of Interview Part I and Part II are shown in Table 4.1

Table 4.1: Respondents' profiles – Interviews Part I and Part II

Code	ICTAD grade	Designation	Experience
Interview Part I			
R-101	C1	Assistant General Manager (Estimation & Contracts)	07 years
R-102	C1	Manager Contracts	>30 years
R-103	C1	Chief Quantity Surveyor	07 years
Interview Part II			
R-201	C1	Manager Contracts	30 years
R-202	C1	Chief Quantity Surveyor	07 years
R-203	C1	Senior Quantity Surveyor	15 years
R-204	C1	Manager Contract Administration and	16 years
R-205	C1	General Manager (Designs and Projects)	36 years
R-206	C1	Quantity Surveyor	10 years
R-207	C1	General Manager-Construction	20 years
R-208	C1	Financial Controller	35 years
R-209	C1	Quantity Surveyor	08 years
R-210	C1	Senior Estimator	07 years

Miles and Huberman (1994) distinguished three iterative processes in the qualitative data analysis as, Data reduction, Data display and Conclusion. Thus, data display will be illustrated using the content analysis in this study. Content analysis is a systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding (Flick, 2006). Code-based content analysis was used in this study to capture significant findings from the interview transcripts. Major themes and sub themes were formulated in accordance with the objectives and the coding structure was developed accordingly. The QSR. NVivo 2010 computer software was used to simplify the work relating to content analysis. Finally, the conclusions of the research were arrived at by harmonizing all findings of the research.

5.0 Research findings and analysis

The results of Interview Part I indicated the importance of the bid /no bid decision with regard to the consequences of wrong decisions and identified the current bid /no bid decision making approaches practiced by the Sri Lankan Construction industry.

5.1 Importance of the bid/no bid decision

As already mentioned, the importance of the bid/no bid decision was examined first and the summarised findings are illustrated in Figure 5.1.

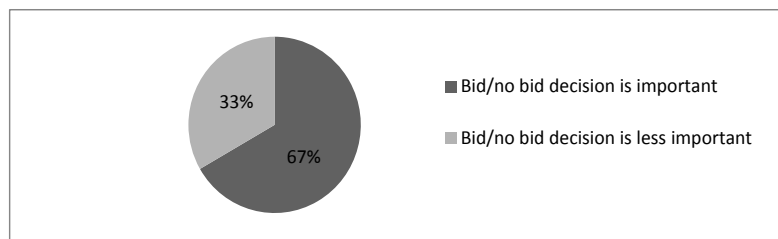


Figure 5.1 Importance of the bid/no bid decision

According to the above analysis of interview data, 67% of the expert interviewees believed that the bid/no bid decision is significant to contractors in the construction sector. Furthermore, R102 and R103 clearly mentioned that the bid/no bid decision and the decision making process crucially affect the operational activities as well as the long term existence of a company. However, according to R101, the bid/no bid decision is not that important to Sri Lankan contractors because of the long-time available from the time of the initial decision for them to submit the proposal during which time the final decision as to whether to proceed with the bidding process or to refrain from bidding will be taken. R101 extended his justification stating that *'bidding decision itself does not carry much risk because bidding does not mean agreeing to undertake the project as such since it is only making an offer'*. On the other hand, as per the majority view, R101 agreed that on some occasions, the bidding decision becomes important and risky because of the nature of the project concerned.

5.2 Impacts of the wrong bid/no bid decision

According to the three experts, it is the company and not its employees that will get affected by a wrong bid/no bid decision. Figure 5.2 shows the coding structure of the consequences of the wrong bid /no bid decision resulting from either accepting a wrong bid or rejecting a worthy bid. The effects on the company and the Quantity Surveyor have been separately taken into account.

Name	R101	R102	R103
Impacts of the wrong bid no bid decision to the company			
Accepting a wrong bid			
Bad mark to the company name	✓	✓	✓
Expected profit will reduce and have to cover it from another project	✓	✓	✓
Financial issues during construction	✓	✓	✓
Have to agree some unfair conditions of the client	✓	-	✓
Issues which can be led to the arbitration	✓	-	✓
Loss of future opportunities due to the problems in accepted wrong bid	-	-	✓
Opportunity cost	-	-	✓
Recourse wasting	-	-	✓
Time wasting	-	-	✓
Rejecting a proper bid			
Create opportunity for competitors due to the less relationship with the client	✓	✓	✓
Loss of chances to be specialized in one field	✓	✓	-
Loss of future jobs with same client	-	-	✓
Loss of good opportunity to make profits	-	-	✓
Resource idling can be happened since not accepting the project at right time	-	-	✓
Impacts of the wrong bid no bid decision to the Quantity Surveyor			
Bad mark to the professional carrier	✓	✓	✓
Less promotions and increments	✓	-	✓

Figure 5.2: Impacts of the wrong bid no bid decisions

It is commonly agreed that, accepting a wrong bid would result in waste of time and resources as well as affecting the company's well-being. Furthermore, the respondents have identified several direct financial consequences of a wrong bid decision, such as cash flow difficulties encountered during construction, loss of profits etc. R101 also mentioned that *'if we undertake a wrong project, at times it can create problems that will be difficult to get rid of'*. R102 stated that once a contractor becomes the successful bidder, he will have to agree to certain unfair terms and conditions which will later on make him to regret his decision to bid.

On the other hand, if the contractor rejects a proper bid, its main impact on him would be the loss of the opportunity to make a good profit and loss of future opportunities for bidding. Furthermore, R102 mentioned that if the project is a continuous project or a follow up of a previous project, the client would always prefer to work with the same contractor and hence a contractor who has not made an offer for the first project may not get invited to bid for the second project. According to R103, the decision of a contractor to not to bid for a good project, will indirectly provide an opportunity for his competitors to increase their market share of the industry.

Moreover, not only the company, but also its professionally qualified employees who were involved in the bid decision making can be affected through a wrong decision. According to R103, in Sri Lanka, the responsibility of making decisions rests with the top management. The role of a Quantity Surveyor would be only to provide the information required to make the decision., R103 thus stated that *'If the Quantity Surveyor has provided false information then it will affect his promotions and increments and may even finally lead to the termination of his services'*.

According to the analysis of the impacts caused by wrong decisions, it is quite clear that making a correct bid /no bid decision is important for any contractors' organisation and its professionally qualified employees who are involved in taking the bidding decision.

5.3 Bid/no bid decision making approaches practiced in Sri Lanka

It is commonly agreed that there are procedures to be followed by a contractor before he makes a bid/no bid decision. However, R101 mentioned that mathematical or theoretical bid/no bid decision approaches mentioned in Sub Section 3.2, are not practiced in Sri Lanka Through Interview Part I, four existing bid/no bid decision making approaches in the Sri Lankan construction industry were identified which are summarised in Table 5.1 below:

Table 5.1: Bid/no bid decision making approaches

R103	R103	R102	R101
Approach 'A'	Approach 'B'	Approach 'C'	Approach 'D'
<ul style="list-style-type: none"> • Examine the tender notice • Consider the Client's details and past experience to make the bid /no bid decision 	<ul style="list-style-type: none"> • Examine the tender notice • Consider basic factors mentioned in the tender notice and decide on purchasing the bidding document • Consider other factors also seriously • Prepare a tender check list • Prepare a major quantity list • Calculate the floor area of the project from the drawings provided and prepare a preliminary budget for the project • Submit all these documents to the top management for the bid/no bid decision 	<ul style="list-style-type: none"> • Examine the tender notice • Make contacts with the party issuing the tender document • Refer the document without purchasing • Consider deeply all factors affecting the decision • Prepare a report, including all the information and hand it over to the management • Senior Managers, discuss and make the decision • If the decision is 'yes' confirm with the employer and purchase the bidding document 	<ul style="list-style-type: none"> • Examine the tender notice • Purchase the tender document • Prepare the project information list by referring to the tender notice and tender document • Hand over that list to the top management to make the final decision • Consider in detail the relevant factors affecting the decision by conducting meetings with responsible personnel • Get the decision and work on pricing

Among the findings, three approaches (Approaches A, B and C) were taken into the consideration and approach D has disregarded due to the similar methodological arrangement as approach B. Further, according to the findings of the interview part II it was found that most of the C1 contractors are using Approach 'B' for bid/no bid decision making. Thus, the outcome of this ongoing research is the selection of Approach 'B' as the basis for developing a bid/no bid decision making approach suitable for Sri Lanka.

5.4 Factors affecting the bid/ no bid decision

Factors affecting the bid/no bid decision have been previously identified in Sub Section 3.1 through a comprehensive literature analysis. Since those factors relate to the international construction industry, the researchers decided on identifying factors which affect the bid/no bid decision in the local construction industry. The conclusions derived from the analysis of Interview Part II are tabulated in Table 5.2 which illustrates the main factors and sub factors affecting the bid/no bid decisions in Sri Lanka, This Table also indicates the respective sources of information.

Ten main factors have been identified and project characteristics, project finance and business benefits have been identified as the main factors, by all the respondents and therefore special attention needs to be paid for these sub factors. Client's characteristics is another factor to be considered. However, R208 argued that a contractor should be capable enough to deal with any type of client to earn profits from his business independent of the client's characteristics. Further, the details of the contract need to be critically considered before making the bid/no bid decision. R203 stated that *'major conditions that adversely affect the contractor should be considered'*. According to the respondents, the contractor's 'company characteristics' is another factor to be considered. R207 mentioned that *'the contractor should be aware of his competencies'*. Some respondents were not interested in the firm's previous experience. R203 stated that *'if we can comply with the requirements we do not worry about past experience'*. Similarly, R208 expressed that *'without experience also we do projects'*. R205 explained, saying *'Sometimes we go for new areas as we want to acquire experience'*. The competition drew most of the attention as a factor that needs consideration and also as a factor that can be disregarded. R202 revealed its importance citing an actual situation where a competitor first tried hard to get a project, regardless of its feasibility later deciding not to bid. On the other hand, some respondents argued that competition does not affect all their decisions to bid. According to R203, *'competition is there in any project. So we don't change our decision because of competition'*.

According to the respondents, the environmental effect and the country's economic situation are the two least significant factors to be considered when making the bid/no bid decision. R207 stated that changes in economic variables are considered as a general factor common to the entire industry and that therefore it will not require special attention in bid decision making.

In order to make a bid/no bid decision, contractors obtain information on the project from the tender notice, bidding document, past experience and past records and through discussions with the management.

Table 5.2 Factors and sub factors to be considered when taking the bid/no bid decision

Main Factor	Sub factors	Sources of information
Project Characteristics	Project type, Nature of the project, Location of the project, Project duration, Contract amount Scope and extensity of the project →	By referring to the tender notice By referring to the bidding document
Business benefits	Profitability of the project, Availability of future opportunities, Use of existing resources	Through a discussion with the management
Project finance	Nature of the funding agency	By referring to the tender notice
Client's characteristics	Nature of the client, Capacity of the client, Present relationship with the client	Through past experience
Contract	Particular conditions of the contract related to payment terms, method of measurement, variation procedures, major clauses such as the arbitration clause, BOQ and preamble notes	By referring to the bidding document
Contractor's company characteristics	Contractor's capacity, Resource availability, Distance between one's own plants and the project site, Ongoing projects Suppliers, Company turnover and credit line →	Through a discussion with the management Using past records
Firm's previous experience	Similar to past experience	Through past experience and records
Competition	Competitors' competitive level, Competitors' nature of bidding	Through past experience and records – Specially from the records of previous pre bid meetings
Economic situation of the country	Bank interest rates, Exchange rates	Through past records
Environmental effects	Weather conditions, Impact to the environment	Through past experience and records

5.0 Conclusions and recommendations

The ultimate aim of this research is to propose a practical bid/no bid decision making approach suitable for Sri Lankan contractors by filling the research gap. In order to achieve this aim, six objectives were formed and this paper has discussed four of them. According to literature findings, multi-attribute decision models, statistical models and artificial intelligence-based models are the models that have been previously identified. Moreover, these literature findings have revealed that most of these approaches are useful only for academic purposes and not for use by the industry.

Consequently, the importance of the bid/no bid decision was identified in relation to the consequences that a wrong decision can have. Basically, by deciding to not to bid for a project, a contractor could lose a good opportunity to make profits and bidding for an inappropriate project can make him incur huge losses. Out of the three bid/no bid decision making approaches that are being practiced in Sri Lanka (Refer Table 5.1), Approach 'B' is found to be common. The literature synthesis and opinions from the Interview Part II have highlighted ten main factors and a set of sub factors for each such main factor to be considered when making the bid/no bid decision (Refer Table 5.2). In summary, the findings have revealed that although there is a specific approach that can be followed when making the bid/no bid decision, the uniqueness of the construction project concerned will ultimately govern the suitability of that particular approach to the project concerned.

Finally, the study recommends certain steps that can be taken to ensure the success of bid/no bid decision making. Firstly, it is recommended to consider as much as possible all relevant factors when deciding to bid for a project. The more the number of factors that are considered, the more rational will be the decision made. Moreover, when considering these factors, it would be beneficial to have a computerized database containing all past details related to the relevant projects in order to make the process easier. Further, the establishment of a company's own strategy can also be useful in making a correct bid/no bid decision. Having a proper benchmark to filter the bid opportunities would result in quick decision making. Furthermore, it is recommended to have at least one person with adequate knowledge, skills, and experience in the management to take the decision for bidding based on the information provided by the Quantity Surveyor.

Further research

Since this research is an ongoing study, it will be extended to identify the drawbacks of the existing bid/no bid decision making approaches, suggestions to enhance those approaches and to develop a suitable bid/no bid decision making approach for Grade C1 contractors in Sri Lanka. Furthermore, this research can also be focussed on exploring the decision making from the consultant's perspective as well, i.e. whether to be a consultant for a project or not.

References

- Abu-Shaaban, N. N. (2008). *Development of multi criteria decision analysis models for bidding and contractor selection*. (PhD thesis, Napier University). Retrieved from http://researchrepository.napier.ac.uk/3746/1.haspreview_Thumbnail_Version/AbuShabeen.pdf
- Bagies, A., & Fortune, C. (2006). Bid no bid decision modelling for construction projects. In *Proceedings of the Annual ARCOM Conference*, (pp. 511-521). Retrieved from http://www.arcom.ac.uk/-docs/proceedings/ar2005110521_Bagies_and_Fortune.pdf
- Chua, D. K., & Li, D. (2000). Key factors in bid reasoning model. *Journal of Construction Engineering and Management*, 126(5), 349-357. Retrieved from <http://www4.hcmut.edu.vn/~ndlong/TK/mat/BaiBaoBaiTapNhom/Nhom03.pdf>
- Cook, A. E. (1991). *Construction tendering: Theory and practice*. London: B.T. Batsford Ltd.
- Cooke, L., & Williams, S. (2004). Two approaches to using client projects in the college Classroom. *Business Communication Quarterly*, 67(2), 139-152. Retrieved from http://wcupa.edu/_academics/sch_cas.eng/faculty/documents/Cooke_Oct2010vitae_000.pdf
- Dagostino, F. R., & Peterson, S. J. (2011). *Estimating in building construction*. New Jersey: Pearson Education.
- Dias, W.P.S., & Weerasinghe, R.L.D. (1996). Artificial neural networks for construction bid decisions. *Civil Engineering and Environmental Systems*, 13(3), 239-253. doi: 10.1080/02630259608970200

- Drew, D., Skitmore, M., & Lo, H. P. (2001). The effect of client and type and size of construction work on a contractor's bidding strategy. *Building and Environment*, 36(1), 393-406. doi:S03 6 0- 13 2 3(00) 0 0 00 9 – 3
- Egemen, M., & Mohamed, A. (2008). SCBMD: A knowledge-based system software for strategically correct bid/no bid and mark-up size decisions. *Automation in Construction*, 17(1), 864-872. doi:10.1016/j.autcon.2008.02.013
- Egemen, M., & Mohamed, A. N. (2007). A framework for contractors to reach strategically correct bid/no bid and mark up size decisions. *Building and Environment*, 42(1), 1373–1385. doi:10.1016/j.buildenv.2005.11.016
- Flick, U. (2006). *An introduction to qualitative research* (3rded.). London: Sage Publication Ltd.
- Garret, G. A. (2008). *Bid no bid decision making tools and techniques*. Retrieved from Navigant Consulting: http://www.navigant.com/~media/WWW/Insights/Government/Bid_No_Bid%20Decision%20Making%20_%20T_Government.ashx Site/
- ICRA Management Consulting Services Limited. (2011). *Industry report on Sri Lanka*. Retrieved from <http://www.icralanka.com/Sri%20Lanka%20Construction%20-%20Sept%2015%20final.pdf>
- Kiavash, P., Hazhir, R., & Ali, H. (2011). Estimating the impact factor of undiscovered design errors on construction quality. In *Proceedings of the International System Dynamics Conference*, (pp.1-16). Retrieved from <http://www.systemdynamics.org/conferences/v/2012/proceed/papers/P1298.pdf>
- Lin, C. L., Lo, W., & Yan, M. R. (2006). Exploring contractor's opportunistic bidding behavior and its impacts on construction market. In *Proceedings of the 2006 International System Dynamics Conference*, (pp.1-17). Retrieved from <http://www.systemdynamics.org/conferences/2006/proceed/papers/LIN186.pdf>
- Lin, C. T., & Chen, Y. T. (2004). Bid/no-bid decision-making – a fuzzy linguistic approach. *International Journal of Project Management*, 22, 585-593. doi:10.1016/j.ijproman.2004.01.005
- Liscum, C. (2010, December). Public Vs. private bidding. *Benchmark Perspectives*, 68(1),1-4. Retrieved from www.benchmarkinc.com
- Lowe, D. J., & Parvar, J. (2004). A logistic regression approach to modelling the contractor's decision to bid. *Construction Management and Economics*, 22(1), 643–653. doi: 10.1080/01446190310001649056
- Ma, H. (2011). *Factors affecting the bid no bid decision process of small to medium size contractors in Auckland*. (BSc thesis, Unitec New Zealand). Retrieved from <http://unitec.researchbank.ac.nz/handle/10652/1785>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded source book* (2 nded.). California: Sage Publications Inc.
- Oo, B. L., Drew, D. S., & Lo, H. P. (2007). Applying a random coefficients logistic model to contractors' decision to bid. *Construction Management and Economics*, 25(4), 387-398. doi: 10.1080/01446190600922552
- Passer, R. (2013). *Factors that affect bidding decisions/behaviour of construction companies and a description of 2 contemporary bidding models*. Retrieved from Academia.edu: https://www.academia.edu/1084098/Factors_that_affect_bidding_decisions_behaviour_of_construction_companies_and_a_description_of_2_contemporary_bidding
- Ravanshadnia, M., Rajaie, H., & Abbassian, H. (2011). A comprehensive bid no bid decision making framework for construction companies. *Transactions of Civil and Environmental Engineering*, 35(C1), 55-103. Retrieved from http://www.shirazu.ac.ir/en/files/extract_file.php?file_id=1446
- Seydel, J., & Olson, D.L. (2000). Multi criteria support for construction bidding. *Mathematical and Computer Modelling*, 34(1), 677-702. Retrieved from <http://cbafiles.unl.edu/public/cbainternal/facStaffUploads/MCM01b.pdf>
- Tang, W. H. (2004). *Bidding strategy: The consultants' perspective*. (Master's thesis, University of Hong Kong). Retrieved from <http://hdl.handle.net/10722/30787>

- Wang, Q. (2011). A scenario simulation study of decentralization on architecture, engineering and construction companies. In *Proceedings of the Engineering Project Organizations Conference*, (pp.1-21). Retrieved from <http://www.academicventplanner.com/EPOC2011/papers/wang.pdf>
- Wanous, M., Boussabaine, A. H., & Lewis, J. (2000b). To bid or not to bid: a parametric solution. *Construction Management and Economics*, 18(4), 457-466. doi: 10.1080/01446190050024879
- Wanous, M., Boussabaine, A.H., & Lewis, J. (2000a). A neural networks decision-support system for bidding in construction. In *Proceedings of the 17th ISARC*, (pp1-4). Retrieved from http://www.iaarc.org/publications/proceedings_of_the_17th_isarc/a_neural_networks_decisionsupport_system_for_bidding_in_construction.html
- Wanous, M., Boussabaine, A.H., & Lewis, J. (2003). A neural network bid/no bid model: the case for contractors in Syria. *Construction Management and Economic*, 21(7), 737-744. doi: 10.1080/0144619032000093323
- BIBLIOGRAPHY \1 1033
- Zhu, C. (2008). Rationality in bidding theory: a construction industry. In *Proceedings of the BuHu 8th International Postgraduate Research*, (pp.257-264). Retrieved from <http://eprints.qut.edu.au/14103/1/14103.pdf>