FREQUENTLY CHALLENGED DETERMINATIONS OF THE ENGINEER IN SRI LANKAN CONSTRUCTION CONTRACTS

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ABSTRACT

A sustainable procurement system should be capable of delivering a project free of disputes in its ideal perspective. However, disputes seem to be inevitable in construction projects resulting from its complex nature and involvement of different players in a temporary team setup which are conducive for conflicts. Thus, effective strategies to minimize disputes are the best potential contribution towards sustainability. In general, the Engineer is responsible to resolute the conflict since almost all the construction contracts empower the Engineer to give his fair determination in such situations. Better performance of Engineer's fair determination function would no doubt prevent the increase of project costs and time, by avoiding frequent dispute resolution referrals, and eventually minimize the resulting inefficiencies. In that scenario, the Engineer plays an extremely important role in a construction project. However, requirement of giving fair determination of the Engineer has been often debated in recent times. Engineer's determinations are often challenged devaluing the role of Engineer and putting the parties to lose their money on expensive dispute resolution procedures. This research was focused on identifying the situations where Engineer's determination is challenged in Sri Lankan context. The study was based on a documentary survey and finds that most frequently challenged decisions are related to adjustment for cost escalation, delayed instructions and fixing rates for variations. The findings are useful in formulating strategies to minimize such instances.

Keywords: *Construction; Disputes; Engineer's Determination, Sri Lanka.*

1. INTRODUCTION

Most construction contracts require fair determination by the Engineer for conflicts arising between the employer and the contractor. However, there has been many instances that this determination is challenged causing the parties sorting resolution through Alternative Dispute Resolution (ADR) or litigation incurring additional cost not only in terms of finance but also in terms of time, business relationships, and reputation. These costs do not add any value to the building project and therefore negatively affect the sustainable project delivery. It is imperative to develop solutions to minimize such challenges. As an initiative, a study was conducted to identify the most frequently challenged Engineer's determinations to help prioritizing solution development endeavours.

2. BACKGROUND

Success of a construction project relies on the three most important stakeholders of the project viz. Employer, Engineer (Consultant) and Contractor. Among them, the Engineer plays a vital role to ensure the time, cost and quality targets are met (Potts, 2008; Wang & Huang, 2005). The

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International Federation of Consulting Engineers' (FIDIC) Conditions of Contract for Construction - Red Book defines: "Engineer means the person appointed by the Employer, to act as Engineer for the purposes of the Contract and named in the Appendix to tender, or other person appointed from time to time by the Employer and notified to the Contractor". It further states that, if any conflict arises between Employer and Contractor, Engineer should consult both parties to reach an agreement. If the parties could not reach an agreement, Engineer should make a fair determination in accordance with the contract, taking due regard of all relevant circumstances (FIDIC, 1999).

The importance of guaranteeing that the Engineer acts fairly, where he is appointed with the duty of administrating a contract, and where such Engineer is paid for his services by the Employer, is often highlighted in practice (Samaratunga, 2009). Further, the Engineer is sometimes accused by the Employer for being biased towards the Contractor during the administration of the contract such as awarding extensions of time, in determining amounts of claims, and giving instructions in favour of the Contractor (Bunni, 1997). Even though the Engineer's fair determination is required by most standard Conditions of Contract (COC); there has been enough evidence that his impartiality is at times challenged (El-Adaway & Ezeldin, 2007).

Theoretically, in a perfect condition, a determination by the Engineer is not expected to be challenged by the parties, since dispute resolution process would not deliver an alternative result. However, in imperfect conditions, Engineer's decision may be challenged, expecting a different outcome through the dispute resolution process. However, in practice, the challenge to the Engineer's impartiality or fairness should not necessarily arise from him being partial or unfair. It may arise from the fact that his act does not provide evidence to show his impartiality while he is in fact impartial. Whatever the cause might be, if the Engineers determination is not accepted, it is likely to cause disputes adversely affecting the project success. Understanding about what determinations are usually challenged will help to develop strategies to minimize such challenges. Therefore, this research was focused on identifying frequently challenged determinations of the Engineers in Sri Lankan construction contracts with the purpose of presenting a knowledge base to develop strategies to minimize such challenges in future.

3. ENGINEER'S DETERMINATIONS

The primary focus of the literature review conducted was to identify the Engineer's determinations potentially be challenged by main contracting parties. The study began by identifying the Engineer's role. Bunni (1997) identifies the Engineer as a designer, as a supervisor, as a certifier and as an adjudicator or quasi arbitrator. Though this scope is beyond the FIDIC (1999) definition herein above mentioned, how Bunni identifies the role is from the perception of the stakeholders in the construction industry. The identification of Engineer's role as adjudicator and quasi arbitrator highlights the requirement of fairness and impartiality.

In absence of suitable list of Engineer's determinations required to develop the research hypotheses, a number of previous research work on sources of disputes were reviewed to identify the challenged determinations found in them. The works reviewed are listed along with a brief description about the nature of their study in Table 1.

Table 1: Literature Summary on Types/Sources of Disputes

Reference	Types/Sources of disputes analysed
Bekele (2005)	Disputes between Client and Engineer, disputes between Client and Contractor, disputes between Engineer and Contractor
Chan and Suen (2005)	Contractual matters, cultural matters and legal matters
Cheung and Yiu (2005)	Construction related and human behaviour related
Genton and Schwab (2000)	Delays/ accelerations, quality and performance, operation/guarantee period, financial issues

Reference	Types/Sources of disputes analysed
Jahren and Dammeier (1990)	Changed conditions, Payment issues, Time and delays, Errors in bids, Lack of communication
Kumaraswamy (1998)	Time claims, cost claims, construction claims
Knowles (2005)	Design, tenders, extensions of time, global claims, liquidated & ascertained damages, program, payment, variations, loss and expense, practical completion & defects, right & remedies and adjudication
Zaneldin (2006)	Changes claims, extra-work claims, delay claims, different site conditions claims, acceleration claims and contract ambiguity claims

The identified determinations were grouped in a suitable manner for the field study and analysis. FIDIC (1999) COC was used as the basis for identifying and defining the determinations. Selection of the FIDIC document for this was primarily due to researches' familiarity and its international acceptance; while one of other common standard COC would have served the purpose, researchers found this document would help consistent categorization with ease. The findings were logically tabulated with 12 categories and 49 subcategories as shown in Table 2. A group of categories with remote occurrence of challenge were combined to create a combined category "Miscellaneous" to make a more populated category and ease the analysis.

Table 2: Engineer's Determinations

Category of challenges	Subcategories (Type of Disputes)
Variations and Adjustments	Engineer's instruction on variation
	Fixing of rates in variation
	Value engineering
	Adjustment for changes in Legislation
	Adjustment for the cost of labour, Goods and other inputs to the Works (Escalation)
Commencement and Delays	Delay works due to Authorities
	Delay caused by Employer, Employer's personnel or Employer's other Contractors
	Delay due to exceptionally adverse climatic conditions
	Delay caused by variations
	Delay due to unforeseeable shortages in the availability of personnel or Goods
	Prolongations costs
	Delay due to third party actions
	Delay damages
Incompetence of work	Delayed drawings or instructions from Engineer
	Delayed instructions from Engineer on Fossils
	Changes in scope of work
	Inadequate soil investigation report
Defects in contract document	Misinterpretations of contract documents
	Errors in contract document
	Omissions in contract document
Quality and performance	Contractor fails to maintain rate of progress
	Rejection of Plant, Material or workmanship
	Remedial Work
	Testing (If Contractor suffers delay and/or incurs cost from additional testing)
	Testing (If failure in the test, Employer issue Taking over Certificate and cover cost for recovery)
	Interference with Test on Completion
	Failure to serve notices

Category of challenges	Subcategories (Type of Disputes)
	Failure to adhere to the design
Site availability	Delay in giving of possession of Siteby the Employer
	Lack of assistance to obtain work permits, licenses or approvals by the Employer
Measurement and Evaluation	Evaluating each item of work to agree or determine the Contract Price
	Omissions of any works forms part of the variation
Cease of work	Suspension of Works by the Contractor
	Termination of Work by the Contractor
	Termination of Works by the Employer
	Suspension of Works by the Engineer
Payment	Valuation of works in Interim Payment Certificate
	Schedule of payments
Employer's Taking Over	Additional cost/time for Taking Over and/or using a Parts of the Work
	Acceleration cost
Defects liability	Extension of Defect notification period
	Failure to Remedy Defects
	Contractor to search for the cause of any defect
Miscellaneous	
Employer's Risks	Consequences of Employer's Risks; war, terrorism etc.
Insurance	Insurance
Force Majeure	Consequences of Force Majeure
Unforeseeable physical conditions	Due to unforeseeable physical conditions on site
Setting Out	Due to errors in reference points and levels for setting out
Use of Employer's properties	Use of Employer's Electricity, Water and Gas
	Use of Employer's Equipment and Free-Issue Material
Corruptions	Corruptions
Nominated sub contractor	Nominated sub contractor related

4. RESEARCH METHODOLOGY

Once a determination of the Engineer is challenged, it is taken to next stage of conflict management procedure in a contract. This is often adjudication or arbitration. Thus, adjudication and arbitration cases were identified as the unit of analysis. Data was collected from reviewing adjudication and arbitration submissions. Since these submissions are confidential documents, data collection became a challenge. A data collection sheet which recorded only the number of occurrences of each determination challenged helped convincing the participants to allow access to documents. Still, the data collection was a challenge as the researchers had to review the document searching for data. At times, when the researches were confused or the documents did not clearly point the facts, assistance from the participant (i.e. the adjudicator or arbitrator as the case may be) was sought. Using this approach, 110 Engineer's determinations challenged were counted. Frequency distribution was used as the primary method of data analysis.

Selection of participants was by convenience that they would be willing to support the study. However, this should not have affected the representativeness of the sample because the identity of the dispute resolver would not affect the types of disputes occur. It should also be noted that, not all the documents related to disputes were given access to; but a limited set of documents, and sometimes limited pages from documents, appropriate enough to collect required data as determined by the participants were provided for review. Researchers found that it was difficult to distinguish if a dispute over delayed payment or a non-payment was a challenge to the Engineers determination or was an Employer's default, from the provided level of access. As a result, data collected excludes occurrence of challenges to Engineers determination resulting in delayed or withheld payments. This was a limitation of this study. However, other types of determinations related to payments were counted.

5. RESEARCH FINDINGS AND DISCUSSION

The relative frequencies challenged determinations in each of the 12 categories identified in Table 2 are shown in Figure 1. It was evident that the most challenged determinations were related to Variations, Delays, own performances and defects in contract documents. Table 3 presents determination which had been challenged more than five times (i.e. > 5%). A discussion on top listed categories and challenged determinations follows.

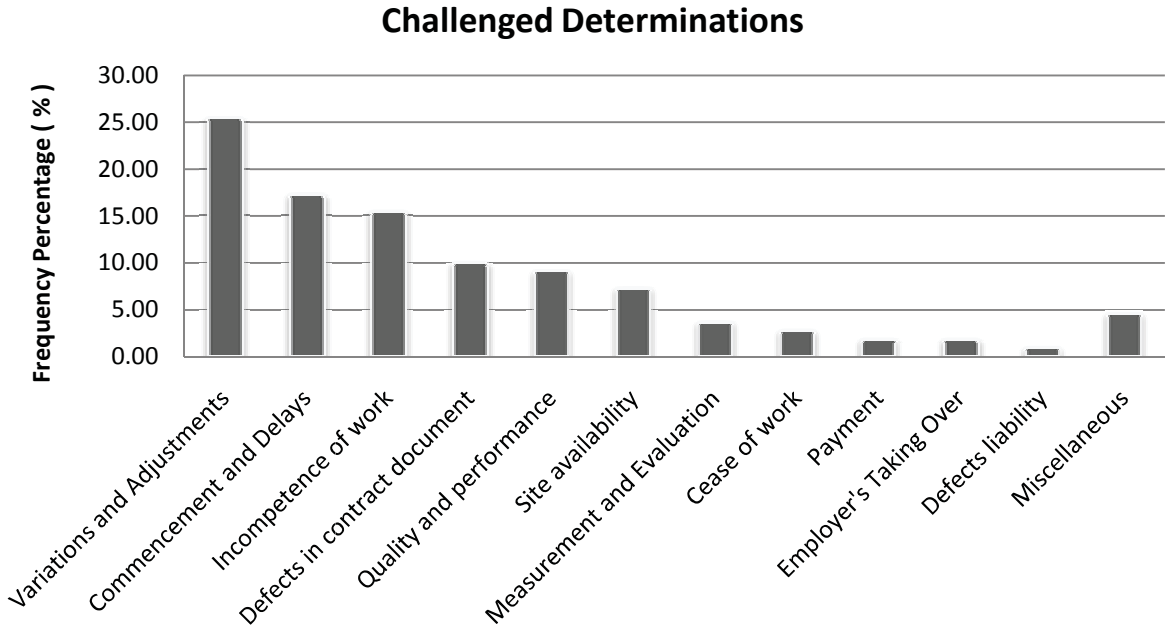

Figure 1: Distribution of Frequencies within Categories of Events

Table 3: Frequency of Challenged Determinations

Type of Determination	Category	Freq.
Adjustment for the cost of labour, Goods and other inputs to the Works	Variations and Adjustments	12
Delayed drawings or instructions from Engineer	Incompetence of work	8
Fixing of rates in variation	Variations and Adjustments	8
Engineer's instruction on variation	Variations and Adjustments	6
Changes in scope of work	Incompetence of work	5
Delay caused by variations	Commencement and Delays	5
Delay in giving of possession of Site by the Employer	Site availability	5
Misinterpretations of contract documents	Defects in contract document	5
Prolongations costs	Commencement and Delays	5

5.1. VARIATIONS AND ADJUSTMENTS

'Variations and Adjustments' category is the most frequently challenged determination category of the Engineer representing 25.45% from total number of challenged disputes in the sample. It consists of three significant subcategories (i.e. types of determinations).

Adjustments for the cost of labour, goods and other inputs to the works (Escalation)

Adjustments for the cost of labour, Goods and other inputs to the Works (Escalation)' has acquired a 42.86% within the category and 10.91% from the total determinations that were challenged. In Sri Lanka, most contracts use ICTAD formula method (see ICTAD, 2008) for adjustments for fluctuations in prices. It was found that some determinations on adjustment for cost using ICTAD method and/or indices has been challenged by the Contractors. However, they were not in fact challenging the ICTAD method; instead the disagreements were about the selection of price indices which they argued not sufficiently compensating their losses from price escalations. The challenges had arisen when applying resource input percentages and deciding on relevant price adjustment category for inputs.

Increase in fuel prices was another major reason that has caused some of the disputes. The unexpected increase of fuel price has affected directly or indirectly to the price of every construction material, labour, plant and machinery rates. Some contracts do not allow adjustment for price escalations; contractors' claims for these losses presented relying on 'force majeure' clause had been rejected by the Engineers and this had often been challenged.

Fixing of rates in variation

Most COC provides for the Engineer to fix rates for varied work on his own estimate if he considers the quoted rate is inappropriate. This authority is often used by the Engineer. The research revealed that fixing the rates for varied works to be another key determination which was frequently challenged. The primary reason observed was the lack of agreement of markup (profits plus overhead cost) rate at the time of contract agreement. Employer was quite obscured in this context and it was usually seen as a dispute between the Engineer and the Contractor.

Engineer's instruction on variation

In some cases, Engineer's determination had been challenged when variation orders are issued. Contractors assert that some of the changes result in change of the contracted scope and thus oppose the issue of the change as a variation in accordance with the COC. The primary reason seems to be the Contractors' resentment for executing changed work items at the contracted rates (prices). This situation often occurs under fixed rates contracts when price adjustment for escalation is not provided. However, this would still occur even if the price adjustment was provided, especially when the change involves underpriced work items in the contract.

5.2. COMMENCEMENT AND DELAYS

Majority of this category of challenge relates to the extension of time. 'Prolongations costs' and 'Delay damages' have also considerably contributed to the challenges under this category. Most challenges were for the determinations on extension of time (EOT) for 'Delay caused by variations'. In general, EOT has to be substantiated by showing that the variation affects the critical path of the project programme. In some cases, the determination of the Engineer regarding the effect of the variation had been challenged. This category also counts in some determinations of the Engineer on global claims. While technically the determination ('rejection' in most cases) may be seen as result of poorly articulated claim, Contractors insist on their entitlement to EOT and associated cost notwithstanding the quality of the claims submitted. There were also situations where determinations of prolongations cost claims arising from restrictions imposed by Authorities being challenged by the Contractors.

5.3. INCOMPETENCE OF WORK

The COC assigns the Engineer to make determinations on losses and disruptions from 'delayed drawings or delayed instructions from Engineer'. Given the fact that some delays in giving instructions are unavoidable, this condition allows compensating any loss to the Contractor arising from them. However, the condition also sometimes perceived as biased (thus unfair) that the Engineer

is given the authority to determine upon the effects of his own conduct. The Contractor's perception could be that the Engineer might not give a fair determination under this scenario because he would be troubled of reprisal from the Client. Thus, such determination would often receive suspicions resulting in being challenged. This situation is likely to occur due to delays occurring from incompetent work rather than unavoidable delays.

5.4. DEFECTS IN CONTRACT DOCUMENTS

Standard COCs are often amended by the Engineer when used in contracts. It was found that there were number of challenges to the Engineers determinations which involved interpretation of contract conditions. A larger majority of the disputed determinations were related to amendments made to standard COC. Unlike standard or common COCs, external interpretations (such as text books) for amended conditions are difficult to find. As a result, Contractor clings on to his own interpretations while the Engineer upholds his own.

5.5. QUALITY AND PERFORMANCE

Quality is very much linked to the cost. Bidders usually price the tenders for the minimum expected quality of work as detailed in tender documents to offer a competitive price. Therefore, the winner, who is usually the one comes with lowest bid, is likely to be the one with lowest expected quality in mind (Tan & Suranga, 2008). This may be one of the reasons for the increased number of challenges under the 'Quality and performance' category. 'Rejection of Plant, Material or Workmanship' has been identified as the most frequently occurred dispute event in this category. Engineer as a supervisor, certifier or as an agent of Employer, has a right to reject the Plant, Material or workmanship of the Contractor. Consequently, there were disputes incurred challenging such determinations by the Engineer.

5.6. SITE AVAILABILITY

Making the site available for the Contractor is one of the major obligations of the Client (the Employer) under the contact and its delay would result in a global claim situation giving entitlement to EOT. It was found that EOT and related cost entitlements from 'Delay in giving possession of Site from Employer' are amongst the ten most frequently challenged determinations of the Engineer. While this is thought to be comparatively an obvious context, there have been instances the Engineer failed to grant extension of time and related cost, which were challenged by the Contractor.

5.7. MISCELLANEOUS

The other determinations related to events such as Measurement and Evaluation, Cease of work, Payment, Employer's Taking Over, Defects liability and miscellaneous categories were not found to be challenged in the sample. From the miscellaneous category, 'unforeseeable physical conditions' related determinations were found to be amongst the top ten determination challenges. Within this context, there were several disputes over the question of defining what could be and what could not be foreseeable.

5.8. FREQUENCY OF THE DETERMINATIONS CHALLENGED BY A PARTY

Figure 2 shows number of projects which had certain frequency of disputes challenging the Engineer's determination. Compiling of this information was possible since participants had kept documents related each project separate. Even though the researchers did not record the project identification data, they recorded data for each project separately with a codename (P01, P02, etc.). While the information does not directly address the aim of this study, it helps to understand the nature of the industry in terms of the spatial issues. It can be observed that the number of determinations challenged

in a project usually varies between 1 to 5. This indicates that Engineers' determinations are not usually aggressively challenged.

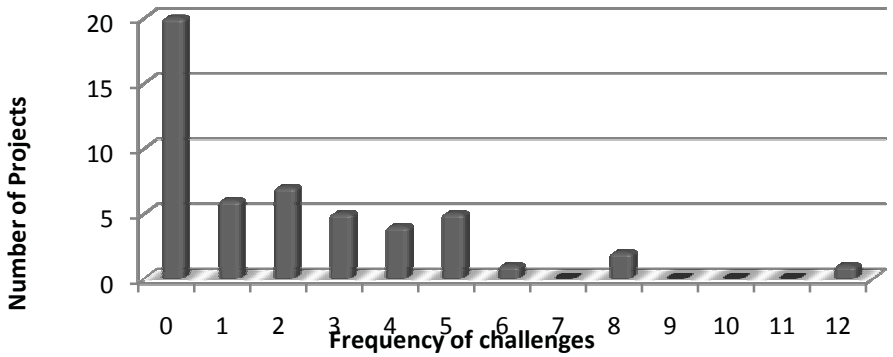

Figure 2: Distribution of challenging determinations of the Engineer

6. CONCLUSIONS AND RECOMMENDATIONS

The study finds most frequently challenged determination by the Engineer. The need was to provide the knowledge base to develop strategies to minimize the probability of such challenges. Engineer's adjustment for the cost of labour, goods and other inputs to the Works (Escalation) is the mostly challenged determination in the Sri Lankan construction industry. Most other instances of challenges are related to the skills and knowledge of the part of contractor and the Engineer. Therefore, it is recommended to find mechanisms to develop knowledge and skills in these fields. Standardize the practices among both Engineers and Contractors would help.

It should be noted that a challenge to a determination does not endorse that the determination had been wrong. A correct determination may be challenged if its presentation is not strong enough to convince the parties. Standardization would contribute solve this. Engineers' skills and attitudes shall be improved to present the determinations skilfully, and communication among parties shall be improved to minimize suspicions. Including the fundamentals of claims management into the academic curriculum of future Engineers (Consultants) would also be another strategy.

It was evident that Engineer's determinations were not aggressively challenged. Therefore it can be expected that a genuine attempt to minimize the instances of the determinations being challenged would give favourable results. Now that the critical areas are known, it shall be recommended to study further to find out ideal strategies to minimize the occurrence of challenges to Engineer's determinations.

7. REFERENCES

Bekele, A. (2005). *Alternative dispute resolution methods in construction industry: an assessment of Ethiopian situation.* (Master of Science in Civil Engineering), Addis Ababa University Ethiopia.

Bunni, N. G. (1997). *The FIDIC form of contract the fourth edition of the red book* (2nd ed.). London: Wiley-Blackwell.

Chan, E. H. W., & Suen, H. C. W. (2005). Dispute resolution management for international construction projects in China. *Management Decision, 43*(4), 589-602.

Cheung, S. O., & Yiu, K. T. W. (2005). Study of construction mediator tactics - Part I: Taxonomies of dispute sources, mediator tactics and mediation outcomes. *Building and Environment, 42*, 752–761.

El-Adaway, I. H., & Ezeldin, A. S. (2007). Dispute review boards: Expected application on Egyptian large-scale construction projects. *Journal of Professional Issues in Engineering Education and Practice, 133*(4), 365-372.

FIDIC. (1999) Conditions of contract - building and engineering works designed by the employer. (1st ed.). Geneva: International Federation of Consultant Engineer.

Genton, P. M., & Schwab, Y. A. (2000). The role of the engineer in disputes related more specifically to industrial projects. *Journal of international arbitration, 17*(4), 1–17.

ICTAD. (2008). *ICTAD formula method : for adjustments to contract price due to fluctuation in prices* (2nd ed.). Colombo 07: Institute for Construction Training and Development (ICTAD).

Jahren, C. T., & Dammeier, B. F. (1990). Investigation into construction disputes. *Journal of Management in Engineering, 6*(1), 39-46.

Knowles, R. (2005). *150 contractual problems and their solutions* (2nd ed.). Oxford: Blackwell Publishing.

Kumaraswamy, M. (1998). *Tracing the roots of construction claims and disputes*. Paper presented at the COBRA Conference Hong Kong.

Potts, K. (2008). *Construction Cost Management - Learning from case studies*. New York: Taylor & Francis.

Samaratunga, I. (2009). *Variation and valuation of variations under ICTAD and FIDIC forms*. 6th continuous professional development.

Tan, W., & Suranga, H. (2008). Winner's Curse in the Sri Lankan Construction Industry. *The International Journal of Construction Management, 8*(1), 29-35.

Wang, X., & Huang, J. (2005). The relationships between key stakeholders' project performance and project success: Perceptions of Chinese construction supervising engineers. *International Journal of Project Management, 24*, 253–260.

Zaneldin, E. K. (2006). Construction claims in United Arab Emirates: Types, causes, and frequency. *International Journal of Project Management, 24*, 453–459.