

# DISPUTE AVOIDANCE MODEL FOR SRI LANKAN CONSTRUCTION INDUSTRY

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## ABSTRACT

*Construction disputes have become a major hindrance for the performance of construction projects. Most of the practices in construction projects have contributed to avoid disputes while serving its own purposes. It is still hard to find a construction project with no disputes due the existence of root causes for disputes. Many steps have been taken to introduce effective dispute resolution mechanisms giving more concern on cost, time and enforceability of the solution, which still contain many drawbacks in practical applications. This ways to 'prevention is better than cure' and thus the concept of dispute avoidance being emerged. The research therefore aims to develop a dispute avoidance model for Sri Lankan construction industry.*

*Primarily, literature review was done in order to find the issues related to dispute and factors contributing to dispute avoidance. The review revealed that risk allocation, selection of contractors, quality of documentation, time management, and procurement method could contribute to dispute avoidance. A survey research approach was adopted and questionnaires were issues to the professionals who have experience in dispute management in Sri Lanka. The collected data was analysed statistically using t-test. The research proposed 'Dispute Forecasting Session (DFS)' as dispute avoidance model for Sri Lanka. The research revealed that DFS need to be carried out middle of the briefing stage, in between pre and post contract stage and beginning of post contract stage of the project. Further the research identified the participants to DFS in terms of each stage of construction project; in briefing stage client and consultant; in pre contract stage client, consultant and neutral third party; in post contract stage contractor, consultant, nominated subcontractor and neutral third party. In addition, the research participants identified the activities to be performed in each stage of projects in order to avoid deputes. Finally the research suggests to utilise the DFS dispute avoidance model which will forecast construction disputes, thereby avoiding the foreseen construction disputes in Sri Lankan construction industry.*

**Keywords:** Disputes; Dispute Avoidance; Dispute Forecasting; Dispute Resolution.

## 1. INTRODUCTION

The Construction projects are identified as one-off endeavors consisting of many unique characteristics (Zou *et al.*, 2007). As depicted in Emson Eastern vs EME Developments (1991) case, it is not virtually possible to achieve the same degree of perfection due to the said unique nature. Complexity nature of construction industry creates disputes which affects detrimentally on the construction projects (Edwin and Henry, 2005). According to Fenn *et al.* (1997), an incompatibility of interest leads to a conflict and it will turn as dispute. To avoid the conflicts or to minimise the conflicts, it is a must to identify the causations of the construction disputes thoroughly. Common categories in causes for disputes can be classified broadly as, owner related, contractor related, design related, contract related, human behaviour related, project related and external factors (Cakmak and Cakmak, 2014).

Ineffective management of disputes may cause project delays, undermine team spirit, increase project costs, and thereby damage business relationships (Cheung and Suen, 2002). Kumarswamy (1997) convinced that separation of the destructive conflicts and constructive conflicts could minimise disputes caused by unresolved conflicts. However, industry practitioners utilise Alternative Dispute Methods and

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litigation process for resolution of those disputes once they occur. With the emergence of the Alternative Dispute Resolution methods, the construction industry marked a significant preference instead of litigation due to the principal reasons of speed, cost, expertise, privacy and practicality (Jannadia et al., 2000). Stipanowich (1997) demonstrated that ADR procedures are established prior to the emergence of the disputes and therefore the rules must be more flexible while giving them more freedom to handle conflicts. Such revolutions in the subject of construction dispute management have lead the way to the new era which is in concern of dispute avoidance rather dispute resolution

According to ‘prevention is better than cure’, a growing awareness could be witnessed in the construction industry on the proactive rather than reactive measures (Gerber, 2000). This trend has led to utilise several models for dispute avoidance. Accordingly Gerber (2000) identified three main Dispute Avoidance Procedure models currently being practised in the industry namely; Dispute Resolution Advisor, Dispute Adjudication Board and Dispute Review Boards.

Many researchers convince that preparation of construction contracts should incorporate techniques which avoid disputes. Jannadia *et al.* (2000) emphasised that dispute avoidance methods in terms of contractual administration are namely; allocating fair contract risk, drafting dispute clauses, team building, provision of a neutral arbitrator and binding arbitration. Key areas in the scope of construction dispute avoidance are discussed as risk allocation, selection of contractors, quality of documentation, roles of the parties, cost management, nominated sub-contractors, time management, variations, claims administration, dispute resolution, alternative contract strategies, quality assurance and training (National Public Works conference and National Building and Construction Council, 1990). Even though several DAP models are in practice, it is important to develop a dispute avoidance strategy applicable for the Sri Lankan construction industry. Most of these key areas are yet to be investigated in order to develop a convenient dispute avoidance strategy under Sri Lankan context. Therefore the research aims to develop a dispute avoidance model for the Sri Lankan construction industry.

## **2. LITERATURE REVIEW**

### **2.1. DISPUTE AVOIDANCE IN CONSTRUCTION INDUSTRY**

Over the time owners, contractors, design professionals and other stakeholders in the industry who are engaged in construction claims, have realised the hours and dollars involved in attorney and expert fees, court costs, loss of staff time and additional overhead expenses incurred due to dispute resolution do not improve the value of the project. But they result in reduced bonding capacity, loss of good will, loss of privacy and other opportunity costs associated with it (Adems, 1996). In support of this, a survey carried out in Australian construction industry emphasised that, most of the industry practitioners are not satisfied on the dispute resolution methods used as they are not effective in terms of cost, outcome, time and process (Australian Constructors Association, 2006). Adems (1996) further highlighted that most of the construction disputes are predictable and the consequences of the dispute resolution processes are undesirable. This circumstance emerged the question, can more effective methods be found to avoid the disputes?.

Avoidance of disputes has been addressed throughout past several years in both industry and project specific levels. This concept is supported by the basic maxim that ‘prevention is better than cure’ (Cooperative Research Centre for Construction Innovation, 2007). Further it is identified that the industry has been repeatedly encouraged to embrace modern concepts of dispute avoidance. The reason because, these techniques has placed an emphasis on early involvement to the decision making process by the stakeholders. The fundamental principle with respect to dispute avoidance being that the likelihood of occurring disputes will be significantly reduced if a pro-active environment can be created in which change management an accepted tool (Cooperative Research Centre for Construction Innovation, 2007).

It was revealed that any construction contract begins with many dispute preventive measures which has made the topic dispute avoidance a vast area of study. It was stated that all most all contractual practices in a construction project serves the consent of dispute avoidance while serving their own purpose.

## **2.2. FACTORS CONTRIBUTING TO DISPUTE AVOIDANCE**

This section mainly focuses on developing the activities for the conceptual framework in developing dispute avoidance strategy.

### Risk Allocation

Construction projects are subjected to many risks from their nature. The key driving risk which causes disputes is the construction related risk. Accordingly in any building construction project, buildability exists on the underground conditions. Disputes arising as a result of underground conditions hinder the progress of the project at the very initial stage of the project, hence leading to damage the relationships throughout the construction period. All possible risks need to be identified at the initial stage of the project and allocate them in advance not to the party who has the obligation to bear it, but to the best party who can bare the risk.

### Selection of Contractors

It was identified that assessing the past performance is mandatory while giving a same weight on the market trends. Even though the tender evaluation process comprises of the said activity, fore seeing the attributable conflicts must be done when selecting the contractor. Market pattern here referred is, how the industry has identified the contractor in performing the cost, quality and time targets of past projects. So it is better to identify the concern of the client among the three pillars of cost quality and time, thereby selecting the suitable contractor for the evaluation criteria.

### Selection of Nominated Contractors

A standard form of contract for subcontracting has not yet come in to practice in Sri Lanka. Further existing subcontract agreements which are in practice have major drawbacks which are contradictory with the main contract. It is better to allow the Main contractor to nominate the list of subcontractors that they prefer along with the tender document. It can be considered in the tender evaluation. Also, getting the main contractor involved in the selection process of nominated subcontractors would be a practical solution to avoid disputes.

### Roles of the Parties

All the standard contracts in practice have given a higher emphasis on roles of the parties which have already contributed to dispute avoidance in large. It was emphasized that the fact that in many circumstances such as in variation handling and claims management, if Engineer's role is played absolutely in an impartial manner, disputes can be further avoided. Many disputes tend to occur directly and indirectly as a result of delayed payments by the Employer. Therefore the Employer's role also significantly contributes to dispute avoidance.

### Quality of Documentation

A significant root cause of disputes is quality of documentation. Need to specify a quality standard from the inception stage of the project was identified as a key success factor of a project. Contribution of inaccurate Bill of Quantities also cause construction disputes in projects. However, claiming the loss through litigation or through professional indemnity insurance is not in the Sri Lankan practice. This results in construction projects to allocate such risks to the contractor. Therefore, the contractor tends to price that risk in a higher rate as a variation. Such situations are the dispute causing factors, which needs more concern. The industry practice of copying and pasting the set of particular conditions in the contract, could also lead to disputes. Moreover it reduces the quality of documentation while creating unexpected disputes in a project.

### Time Management

It was identified that time management must be considered since the briefing stage of a project. Therefore realistic planning and programming is to be done at the pre-contract stage by the contractors when submitting the tender documents. Time management should also engage in reviewing the work programme in shorter intervals and thereby ensuring the key milestones are not affected.

### Quality Assurance

Quality in construction context refers to the capability to establish requirements with conformance to the pre defined quality standard. Requirements will be predefined by client in contract agreement and the requirements consist of characteristics of products, processes, and services (Leong *et al.* 2014).

Further according to Leong *et al.* (2014), it is evidenced that implementing quality management system to ensure quality, also can improve communication problems; minimize mistakes, rework, and material wastage while having better control of subcontractors and suppliers.

### Procurement Method

Procurement method is a factor which is identified as a crucial factor in dispute avoidance. The decision taken on the key procurement approach leads to the success of the project. Employers take the decision on payment method as lump sum having less accurate set of drawings and specifications in their hand which will be a major cause of disputes, while some others go for measure and pay having far accurate and complete set of information about the project and unnecessarily take risk of disputes. Therefore, major concern on procurement method must be taken before the design stage in order to determine the requirement of design detail at the tendering stage. However, the approach selected at the inception stage must be reviewed once the design stage comes to an end.

### Team Building

Team building is another dispute avoidance approach in construction projects, which can be instituted at the very beginning of the project (Jannadia *et al.*, 2000). Team building as a management strategy would reduce adversarial relationship among project participants. Moreover budget overruns and the schedule extensions are identified as two common problems, which can be greatly influenced by team building (Williams, 1998).

## **3. METHODOLOGY**

Initially, a comprehensive review of dispute avoidance in construction industry was carried out using existing journals, book and conference articles. The literature review fulfils the purpose of gaining depth knowledge in causes of disputes, prevailing dispute resolution techniques and contract administration methods in dispute avoidance and contributing factors of dispute avoidance. Using the comprehensive review of literature, questionnaire was developed. Questionnaire survey was conducted among the experts in dispute management in the Sri Lankan construction industry in order to identify the parties to DFS, stage of project in which DFS to be performed and the significant activities for DFS. A total of 35 questionnaires were issued and 32 were returned. Out of 32 respondents, 39% are from contracting firms and 61% are working in consultancy organisations. Questionnaires were issued to twenty (20) Quantity Surveyors, eight (08) Project Manager and four (04) Arbitrators. In terms of experience of the respondents, 59% are with 6-10 years of experience, 23% of them are having 11-15 years of experience and the rest are with more than 15 years of experience in handling disputes in Sri Lankan construction projects.

t-test was used to analyse the collected data. The t-test was used to find the significant activities, which are to be performed during Dispute forecasting Session. In order to determine the most effective set of activities, 't' test was carried out. 't' values were calculated and the respective 'P' values were obtained (see Table 1).

't' values were calculated according to the Eq: 01, and the P values were derived from the 't' table.

The test statistic was calculated as:

$$t = \frac{\bar{x} - \mu}{\sqrt{s^2 / n}} \quad (\text{Eq: 01})$$

**t** is a Student t quantile with n-1 degrees of freedom

**x** bar is the sample mean

**s**<sup>2</sup> is the sample variance

**n** is the sample size

**μ** is the specified population mean

### **Decision Rule**

H<sub>0</sub> - Sample mean less than or equals 4.

H<sub>1</sub> - Sample mean is greater than 4

Considering the above null hypothesis (H<sub>0</sub>) and alternative hypothesis (H<sub>1</sub>), the decision rule is developed as follows.

df = n - 1

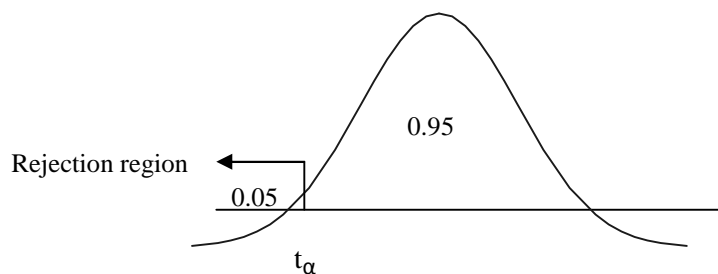
df - Degree of freedom

n - Sample size

Hence, df = 32-1, df = 31.

Using a 95% confidence level with a single-tailed test with 31 degrees of freedom (df), it was expected the distribution to look as follows.

P- Significance of calculated probability



Accordingly, if  $P > 0.05$ , the decision was taken to accept null hypothesis (H<sub>0</sub>) and if  $P < 0.05$ , the alternative hypothesis (H<sub>1</sub>) was accepted.

## **4. DATA FINDINGS AND ANALYSIS**

### **4.1. DISPUTE FORECASTING SESSIONS AS A STRATEGY**

‘Dispute Forecasting Session’ is expected to be developed as the dispute avoidance model applicable for the Sri Lankan industry. The respondents were asked indicate ‘Yes’ where they agree with dispute forecasting sessions as a strategy for dispute avoidance and ‘No’ where they disagree. All the respondents agreed that dispute forecasting sessions can be implemented in order to avoid disputes in Sri Lankan construction industry.

#### 4.2. SEQUENCE TO CONDUCT DISPUTE FORECASTING SESSIONS

A project can be identified in three major stages namely; briefing stage, pre-contract stage and post-contract stage. Respondents were asked to suggest the stages in which dispute forecasting need to be done. Each stages of project again divided in to four; beginning, middle, in between two and periodical. Figure 1 shows the sequence of conducting dispute forecasting session against the stages of construction project.

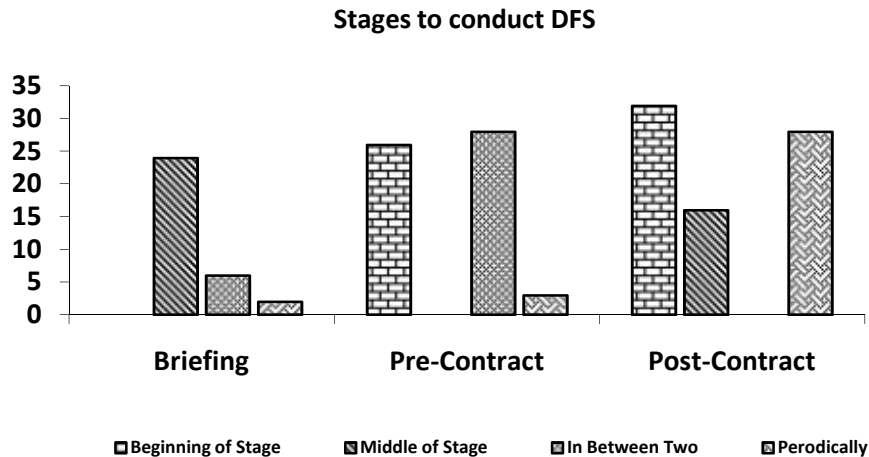


Figure 1: Sequence to Conduct DFS

According to Figure 1, 75% (24 out of 32) of the respondents proposed that Dispute Forecasting Sessions need to be conducted at the middle of the project briefing period and 18% of the respondents proposed to conduct in between briefing and pre-contract stage. Only two professionals indicated that DFS should be conducted periodically throughout briefing stage. Majority of the respondents indicated that DFS should be carried out beginning of the pre-contract stage and in between pre and post contract stages. Few respondents (3 out of 32) preferred to carry out DFS periodically during pre-contract stage. In terms of post-contract stage, all the respondents indicated that DFS need to be done at the beginning of the stage. 88% and 50% of the professionals revealed DFS should be performed middle of the stage and periodically respectively.

#### 4.3. PARTICIPANTS FOR THE DISPUTE FORECASTING SESSIONS

The research intended to find the participants for the dispute forecasting sessions at the main three stages of a construction project. Thus, the research participants were asked to suggest the parties important for the particular stage among the parties to contract; client, consultants, contractor, nominated sub-contractors. In addition to parties to contract neutral third party was also included in order to determine whether employing an external party other than the parties to the project is essential for the success of the Dispute Forecasting Sessions or not. The data gathered are presented in Figure 2.

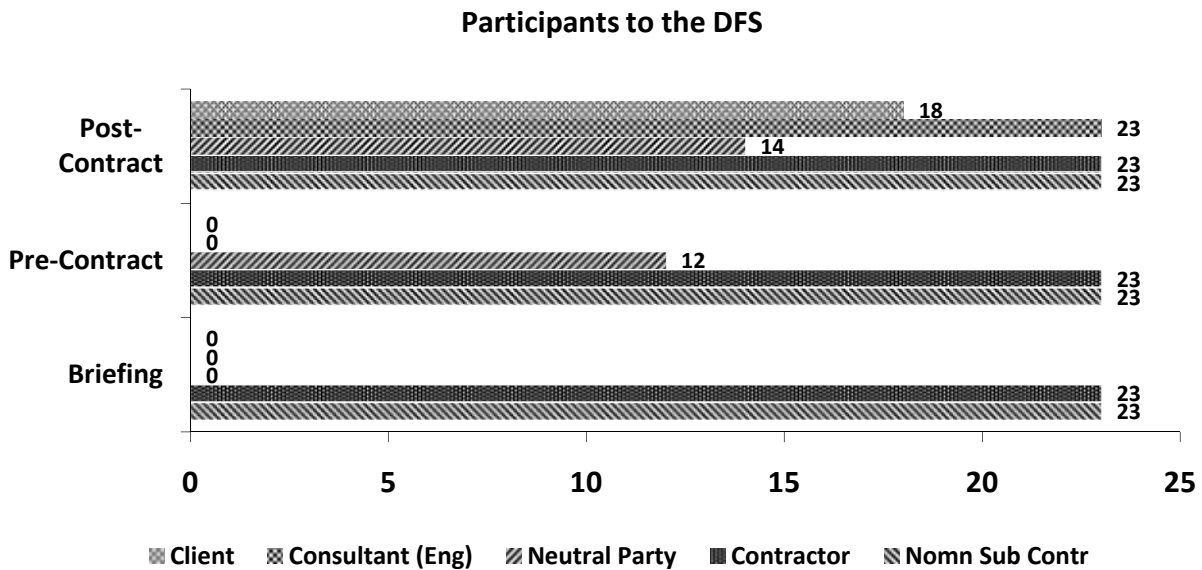


Figure 2: Participants to the DFS

According to the responses it is highlighted that participation of both client and the consultants are mandatory for the DFS at the briefing stage. None of the respondents indicated a neutral third party as a participant at briefing stage. In terms of pre-contract stage, client and the consultants are expected to participate in DFS by the majority of respondents (72%). 37% of the respondents indicated a neutral third party as a participant for DFS during pre-contract stage. Since the activities in the pre-contract stage significantly contribute to disputes, getting the viewpoint of a third party will attain better results in forecasting disputes. However, the results show that the dispute forecasting session can be conducted without the presence of a neutral third party according to 63% of the respondents.

Participation of the client, the consultants and the main contractor are depicted an equal importance during post contract stage by 72% of respondents of each. Nominated subcontractors are also been elected by 56% of the respondents which figures a significant importance. A total of fourteen (14) respondents suggested a neutral third party for the sessions at the post-contract stage, which has an increase level of importance compared to the pre-contract stage. According to the research participants, the impartial role of the Engineer to the project can be used as a substitution to the neutral third party. This will reduce the additional expenditure on the Dispute Forecasting Sessions.

#### 4.4. PROPOSED ACTIVITIES TO THE DISPUTE FORECASTING SESSIONS

Factors leading to dispute avoidance are identified through the review of disputes and the related issues across the construction industry. The factors were then developed as activities. These activities were developed focusing dispute avoidance and proposed as a framework to be followed in the Dispute Forecasting Sessions during the stages of a construction project. A total of twenty nine (29) activities were proposed to be performed as 5 in the briefing stage, 12 in pre-contract stage and 11 in the post-contract stage. Activities were in line with each factor leading to dispute avoidance shortlisted in the literature review.

Mean values of the 32 responses for each variable were calculated to identify the hypothesis mean for the variables, which was then considered as the null hypothesis. Most significant variables were recognised with the 't' test values with reference to the above null hypothesis. Distribution of the mean values are shown in Figure 3.

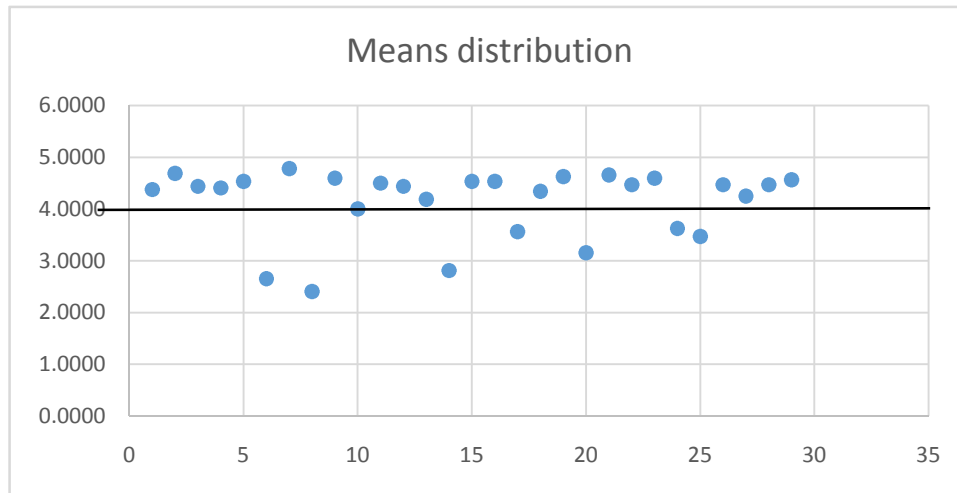


Figure 3: Distribution of Means

According to Figure 3, means of the data set have behaved more in a similar nature. 72% of the means were more towards 4 and between 4 and 5. Considering the spread of the means of the variables, it was decided to obtain 4 as the hypothesis mean of the population.

Table 1: Corresponding 't' Values and 'P' Values

Factor Leading to Dispute Avoidance	Activity		't' value	'P' value	Significant Activity
<b>Risk Allocation</b>	(a) Give more priority on financial risks due to changes in government policies	Briefing stage	4.31	0.000	
	(b) Identify the construction risks of the project, giving key concern on sub-soil conditions.	Pre-contract stage	8.25	0.000	
	(c) Allocation of the risk to the best party who can mitigate it.		4.91	0.000	
	(d) Suggest alternatives solutions to avoid or mitigate risks	Post-contract stage	3.73	0.000	
<b>Quality of Documentation</b>	(a) Specify a quality standard to be followed throughout the project.	Briefing stage	4.18	0.000	
	(b) Recheck the accuracy of major cost significant items in the BOQ.	Pre-contract stage	-13.93	1.000	
	(c) Tailoring the Particular conditions of the contract according to the project rather copying and pasting from a similar project.		10.52	0.000	
	(d) Check the compliance with the documentation quality standard.	Post-contract stage	-18.06	1.000	
	(e) Review the documentary errors which may lead to disputes.		6.73	0.000	
<b>Selection of Contractors</b>	(a) Give emphasis on market patterns	Pre-contract stage	0.00	0.500	
	(b) Evaluate work in hand of the bidders		5.56	0.000	
	(c) Evaluating recently completed projects with proof.		4.91	0.000	
<b>Selection of nominated sub-contractors</b>	(a) Propose alternative designs and specifications to have a variety of sub-contractors without getting limited to few specialised work items.	Pre-contract stage	1.53	0.068	
	(b) Propose the list of potential sub-contractors in the tender document by the Employer.		-9.10	1.000	



Factor Leading to Dispute Avoidance	Activity		't' value	'P' value	Significant Activity
	(c) Evaluating the main contractor's suggested list of sub-contractors to be nominated by the Employer.	Post-contract stage	5.29	0.000	
	(d) Getting the Main Contractor involved in the selection process of the nominated sub-contractors.		5.92	0.000	
Selection of Procurement Methods	(a) Get the decision on the key two payment approaches, measure and pay or Lump Sum basis	Briefing stage	-2.36	0.988	
	(b) Check the extent of the design details available and review the applicability of the decision taken on measure and pay or lump sum basis.	Pre-contract stage	3.23	0.001	
	(c) Preparation of a realistic cash flow forecast	Post-contract stage	7.18	0.000	
Roles of the Parties	(a) Suggest and appoint an individual to handle the project	Briefing stage	-4.19	1.000	
	(b) Set out a guideline for the Engineer to get decisions without consent of the client.	Pre-contract stage	7.69	0.000	
	(c) Highlight the impact of Engineer's impartiality	Post-contract stage	5.23	0.000	
	(d) Evaluate the effect of timely payments by the Employer.		6.73	0.000	
Quality Assurance	(a) Specify the Methodology to be used for quality assurance	Pre-contract stage	-2.82	0.996	
	(b) Review the applicability of the Quality assurance criteria on practical situations.	Post-contract stage	-4.47	1.000	
Time Management	(a) More precise decision on project key milestones.	Briefing stage	4.67	0.000	
	(b) Evaluate the reliability and build ability of the project plan.	Pre-contract stage	3.21	0.002	
	(c) Monitor Planning and programing in shorter intervals	Post-contract stage	3.69	0.000	
	(d) Review and reset the new project milestones if necessary		5.63	0.000	

The activities which obtain a positive 't' values and which lies on the 0.95 region of the curve shown in methodology are selected as the most significant activities. The activities carrying a value less than 0.05 for the 'P' value lies on the range of marked 0.05 on the curve. Therefore using 95% confidence level that the population means of the selected activities through the statistical test is equal or more than 4. According to the above decision rule, activities identified as the most significant and ticked ( ) in above Table 1.

Finally the research developed a dispute avoidance model in terms of DFS for Sri Lankan construction industry as showed in Figure 4.

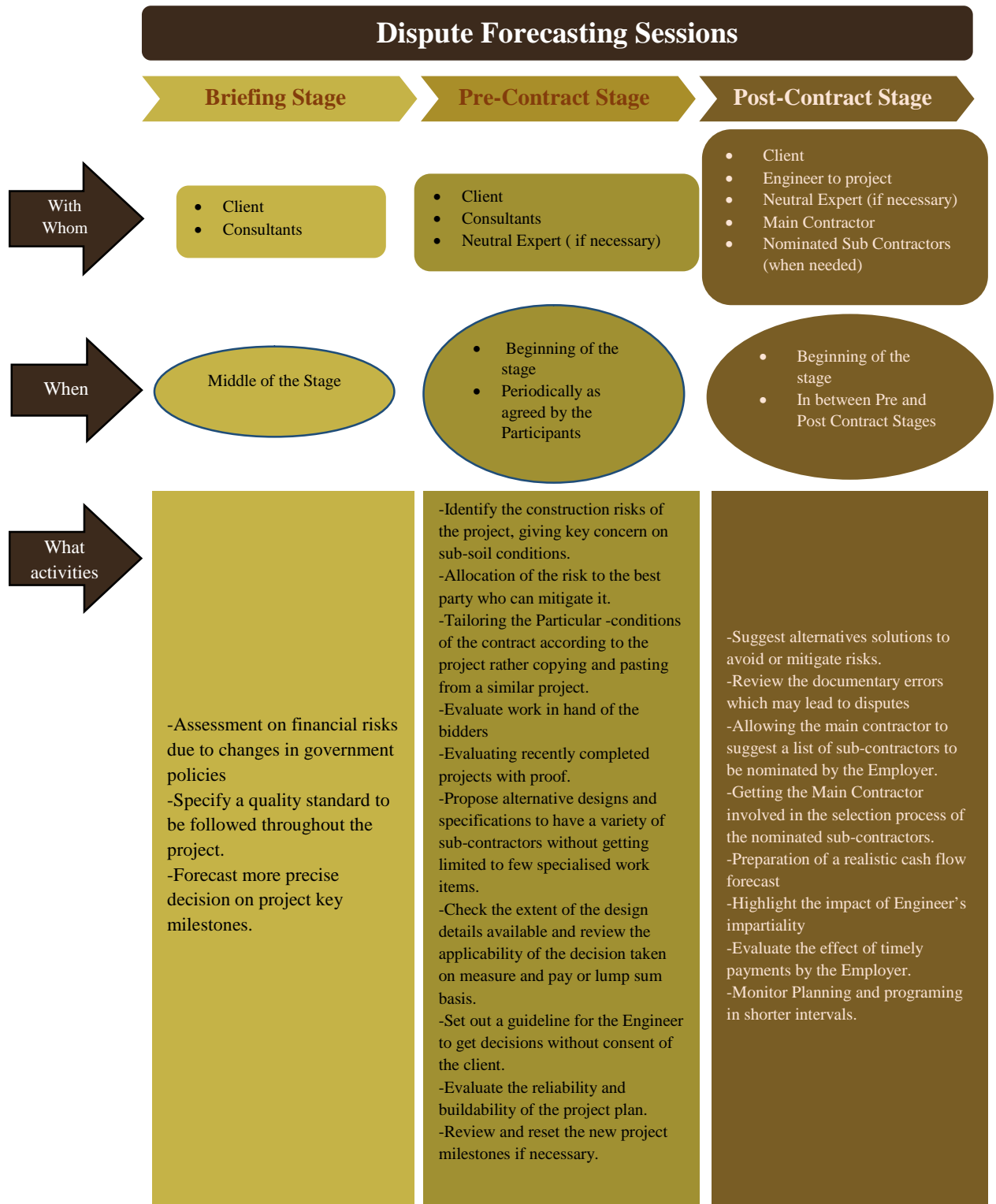


Figure 4: 'Dispute Forecasting Session' Model

The finding of the study finally presented the model for 'Dispute Forecasting Session' in Figure 4. The model addresses three major aspects; the details of parties to be involved in DFS, the stage in which DFS need to be carried out and the activities for DFS. A Dispute Forecasting Session is first to be held at the middle of the briefing stage with the participation of the Client and the Consultants. The key concerns of the members of the DFS at this stage shall be the Risk Allocation, Quality of Documentation and Time management. Figure 4 indicates that during pre-contract stage of the project DFS should be conducted at the beginning. Client and Consultants remain in the DFS while a neutral expert can be appointed if necessary. The concerns at the briefing stage drags up to this stage. In addition, the selection of

contractors, nominated sub-contractors, and procurement method and roles of the parties are also considered in pre-contract stage. During the post-contract stage, the parties such as Client, Engineer, main Contractor, nominated Sub-Contractors and a neutral expert are involving in the process of DFS. The sequences of conducting the DFS are, at the beginning of the post-contract period and periodical Dispute Forecasting Sessions depending on Engineer's decision. The concerns which are looked at the briefing stage and the pre contract stages are continued to this stage except the selection of the contractors. Thus, the model proposes DFS as a strategy to diagnose the dispute causing symptoms of the project process and taking relevant remedial actions to overcome them in order to avoid disputes with Sri Lankan construction projects.

## 5. CONCLUSIONS AND RECOMMENDATIONS

Disputes are widespread in the construction industry. The review of literature identified the factors contributing to dispute avoidance such as risk allocation, selection of contractors, selection of nominated contractors, roles of the parties, quality of documentation, time management, quality assurance, procurement method and team building. The research found that developing a dispute avoidance model as "Dispute Forecasting Sessions" could help to minimise disputes in Sri Lanka. The model includes the details of stages of project, participants for DFS, activities to be performed during DFS. The research participants revealed that DFS need to be carried out middle of the briefing stage, in between pre and post contract stage and beginning of post contract stage of the project. Further the research identified the participants to DFS in terms of each stage of construction project; in briefing stage client and consultant; in pre-contract stage client, consultant and neutral third party; in post-contract stage contractor, consultant, nominated subcontractor and neutral third party. The research developed activities to be performed in DFS using the contributory factors of dispute avoidance found in literature review. For example under the factor 'risk allocation', 'Give more priority on financial risks due to changes in government policies' identified as significant activity to be performed during briefing stage. Finally the research provides a model as 'Dispute Forecasting Session' in order to avoid dispute effectively in Sri Lanka. Therefore the research recommends that the industry practitioners could adopt this model during the stages of construction projects and thereby dispute could be minimised in Sri Lanka.

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