

**DEVELOPING A FRAMEWORK TO AVOID DISPUTES
IN CONSTRUCTION PROJECTS:
A PERSPECTIVE OF PROJECT CHARACTERISTICS**

MATHUSHA FRANCIS

148050D

Thesis submitted in partial fulfilment of the requirements for the degree
of Master of Philosophy

Department of Building Economics

University of Moratuwa

Sri Lanka

March 2022

Declaration

I declare that this is my own research proposal and this proposal does not incorporate without acknowledgment any material previously published submitted for a Degree or Diploma in any other university or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgment is made in the text.

Also, I hereby grant to University of Moratuwa the non-exclusive right to reproduce and distribute my thesis, in whole or in part in print, electronic or other medium. I retain the right to use this content in whole or part in future works (such as articles or books)".

Signature: *UOM Verified Signature*

Date: 05.03.2022

The above candidate has carried out research for the MPhil Thesis under my supervision.

Signature of the Supervisor(s):

UOM Verified Signature

Date: 05.03.2022

Dr. Thanuja Ramachandra

Abstract

Disputes continue to exist in the construction industry for several decades and affect the cost, time and quality of the projects. Worse still, it results in severe consequences such as abandonment of projects and bankruptcy of contractors. This encouraged the construction industry to step towards dispute prevention with the viewpoint of the causes of disputes. It is evident that the root causes could be well addressed through project characteristics at the early stage of a construction project. Further, disputes are more frequent in project contexts such as large scale, highly complex and traditionally procured. In addition, the dispute avoidance strategies such as allocating fair risk contracts and team building could be related to the procurement method. Therefore, this study aimed at developing a strategic framework to avoid disputes in the Sri Lankan construction projects from the perspective of project characteristics.

A mixed approach was adopted where a questionnaire and projects which experienced disputes were surveyed to collect data. Initially, questionnaires were administered to a sample of 78 experienced professionals including quantity surveyors, project managers, adjudicators and arbitrators who dealt with disputes in construction projects. Subsequently, a total of 44 building projects which experienced disputes and referred to alternative dispute resolution methods of either negotiation or adjudication or arbitration were studied by referring to relevant project documents such as contract documents, project summary reports, arbitration and adjudication referrals, claims documents and other project correspondences. Additionally, semi-structured interviews were conducted among experts who involved in the resolution of disputes of the said projects. The data collected were analysed using descriptive statistics and content analysis.

The questionnaire survey offered 32 causes and 9 project characteristics which significantly contributed to disputes in general. Consistently, both questionnaire survey and detailed investigation into projects revealed that the salient causes of disputes are payment delays, ambiguities in documents, and scope changes while project characteristics that significantly contribute to disputes are the degree of design complexity, time constraints, procurement method, size of the project, type of client, site factors, standard form of contract, source of funding and project cost. In addition, the study revealed that the strategies such as drafting dispute resolution provisions in the contract, practice of negotiation, standing adjudication, proper documentation and early contractor involvement could minimise disputes in construction projects. The survey of projects revealed that payment delays can be influenced by the type of client, cost/size of project and source of funding while ambiguities in the document can be correlated with the standard form of contract. The research further offered that the scope changes are critical in projects where high design complexity, design & build procurement method and large scale are in place. The findings revealed that the dispute avoidance strategies of drafting dispute resolution clauses, practice of negotiation, provision for standing adjudication and proper documentation can be correlated to the use of standard form of contract whereas early contractor involvement and third-party review of design can be correlated to procurement method. Thus, the research recommends the project stakeholders to adopt appropriate avoidance strategies by giving due consideration to project characteristics of the given context.

Key words: Disputes, causes, avoidance strategies, project characteristics, relationships

Acknowledgment

This dissertation has been written at the Department of Building Economics, University of Moratuwa, Sri Lanka under the supervision of Dr. Thanuja Ramachandra. First and foremost, I would like to express my sincere gratitude to Dr. Thanuja for her thoughtful guidance and assistance in completing this research successfully.

I would also like to sincerely thank ChQS. Suranga Jayasena, Head, Department of Building Economics and Prof. Yasangika Sandanayake, Former Head of Department of Building Economics, for her support. Further, I owe my gratitude to Dr. Sachie Gunatilake, Research Coordinator, Faculty of Architecture and other academic and non-academic staff members of the Department of Building Economics who contributed significantly to the completion of this research.

I also would like to thank Prof. Srinath Perera, my Progress Review (PR) specialist. You are a true inspiration and I feel humbled and grateful for all you have taught me. Your interest and honest questioning have made my work better and your constructive feedback have made the journey more valuable.

I would like to further extend my gratitude to all the research participants. I appreciate your kindness in providing time to share your views and experiences. I am so grateful for your input into my research.

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION	1
1.0 Background of the Research.....	1
1.1 Research Problem Statement.....	3
1.2 Aim and Objectives of the Research	5
1.3 Outline of Research Methodology.....	5
1.4 Scope and Limitations	6
1.5 Chapter Breakdown	7
1.6 Summary.....	7
CHAPTER TWO: LITERATURE REVIEW.....	8
2.0 Introduction	8
2.1 Disputes in Construction Industry – An Overview	8
2.2 Causes of Disputes	11
2.2.1 Frequency of Causes of disputes	15
2.2.2 Project Participants and Phases Responsible for Disputes.....	21
2.2.3 Causes of Disputes from the Perspective of Project Characteristics	25
2.2.3.1 Type of project	27
2.2.3.2 Type of client	28
2.2.3.3 Scope the project.....	29
2.2.3.4 Size of the project.....	30
2.2.3.5 Type of contract	30
2.2.3.6 Duration of the project	31
2.2.3.7 Project Cost	31
2.2.3.8 Degree of complexity.....	32
2.2.3.9 Time Constrains	32
2.2.3.10 Payment method of the project	33
2.2.3.11 Project location and site factors	33
2.2.3.12 Construction method and innovative technology.....	33
2.2.3.13 Procurement Methods	34

2.3	Effects of Disputes	38
2.4	Management of Disputes	39
2.4.1	Dispute avoidance	40
2.4.2	Frequency of Dispute Avoidance Strategies	44
2.5	Conceptual Framework: Relationship between Project Characteristics and Disputes.....	47
2.6	Summary.....	53
CHAPTER THREE: RESEARCH METHODOLOGY		54
3.0	Introduction	54
3.1	Research Process Adopted for the Study.....	55
3.2	Research Design	57
3.3	Research Questions (RQs).....	59
3.4	Research Paradigms and Philosophy	61
3.4.1	Research paradigms and philosophy in general	61
3.4.2	Research paradigms and philosophy specific to this research.....	64
3.5	Research Approach.....	65
3.6	Research Strategies.....	67
3.7	Survey as a Research Strategy.....	69
3.7.1	Questionnaire survey	70
3.7.1.1	Sample Selection.....	71
3.7.1.2	Data collection technique	72
3.7.1.3	Data analysis technique.....	73
3.7.2	Survey of projects.....	74
3.7.2.1	Sample Selection.....	74
3.7.2.2	Data collection techniques	77
3.7.2.3	Data analysis technique.....	78
3.8	Write up.....	79
3.9	Research Validity and Reliability.....	79
3.9.1	Construct validity	80
3.9.2	Internal validity	80
3.9.3	External validity	81

3.9.4 Reliability	81
3.10 Summary.....	82
CHAPTER FOUR: DATA ANALYSIS AND FINDINGS – QUESTIONNAIRE SURVEY	83
4.0 Introduction	83
4.1 Profile of Survey Participants.....	83
4.2 Causes of Disputes	84
4.3 Project Characteristics Contributing to Disputes.....	87
4.4 Dispute Avoidance Strategies Practiced in Sri Lanka.....	88
4.5 Summary.....	90
CHAPTER FIVE: DATA ANALYSIS AND FINDINGS- SURVEY OF PROJECTS.....	91
5.0 Introduction	91
5.1 Profile of Research Participants	91
5.2 Profile of the Projects Surveyed	95
5.3 Project Characteristics of the Projects Surveyed.....	97
5.4 Causes of disputes in the projects surveyed	98
5.5 Relationship between Causes of Disputes and Project Characteristics ...	112
5.6 Dispute avoidance strategies adopted in the projects surveyed.....	114
5.6.1 Drafting dispute resolution provisions in contract.....	118
5.6.2 Practice of negotiation or amicable settlement	119
5.6.3 Practice of timely notices	119
5.6.4 Proper documentation of contract document	121
5.6.5 Early contractor involvement.....	121
5.6.6 Third party review on design	121
5.6.7 Standing Dispute Adjudication Board (DAB)	122
5.6.8 Clarifying any issues in tender documents during tendering stage	123
5.7 Relationship between Dispute Avoidance Strategies and Project Characteristics.....	124
5.8 Summary.....	125

CHAPTER SIX: DISCUSSION OF RESEARCH FINDINGS	126
6.0 Introduction	126
6.1 Causes of Disputes	126
6.2 Project Characteristics Influencing Disputes.....	129
6.3 Dispute Avoidance Strategies.....	131
6.4 Relationships between Causes of Disputes and Project Characteristics..	133
6.5 Relationship between Dispute Avoidance Strategies and Project Characteristics	135
6.6 A strategic framework to avoid disputes in Sri Lankan Construction Industry	136
6.7 Summary.....	139
CHAPTER SEVEN: CONCLUSIONS AND RECOMMENDATIONS.....	140
7.0 Introduction	140
7.1 Achievement of Research Objectives.....	140
7.2 Contribution of the Research.....	144
7.2.1 Contribution to theory	144
7.2.2 Contribution to practice.....	146
7.3 Recommendations	147
7.4 Recommendations to Further Research.....	1478
7.5 Limitations of the Research.....	150
7.6 Summary.....	150
References.....	151
List of appendices	167

LIST OF FIGURES

Figure 2.1: Conceptualising construction dispute.....9

Figure 2.2: Categories of construction project procurement systems.....35

Figure 2.3: Dispute avoidance strategies.....43

Figure 2.4: Conceptual framework of dispute avoidance in construction projects from the perspective of project characteristics.....51

Figure 3.1: Research process adapted for the study.....56

Figure 3.2: Nested research model.....58

Figure 3.3: Research Onion.....59

Figure 3.4: Sample selection of projects.....76

Figure 4.1: Distribution of profile information.....84

Figure 6.1: Strategic framework to avoid disputes in Sri Lankan Construction Industry from the perspective of project characteristics.....137

LIST OF TABLES

Table 2.1: Frequency of causes of disputes.....15

Table 2.2: Causes of disputes in terms of project participants and phases.....21

Table 2.3: Features of procurement methods and its influence on disputes.....36

Table 2.4: Frequency of Dispute avoidance strategies.....45

Table 3.1: Research paradigms and philosophies.....62

Table 3.2: Justification of philosophical stand for each objective.....64

Table 3.3 Research strategies.....67

Table 3.4: Response rate.....73

Table 4.1: Causes of disputes.....85

Table 4.2: Project Characteristics Contributing to Disputes.....87

Table 4.3: Dispute avoidance strategies89

Table 5.1: Details of research participants and projects surveyed.....92

Table 5.2: Profile of research participants.....94

Table 5.3: Profile of projects surveyed.....95

Table 5.4: Project characteristics of the selected projects.....97

Table 5.5: Causes of disputes and its frequency.....99

Table 5.6: Causes of disputes and the project characteristics.....101

Table 5.7: Payment delays and the related project characteristics.....102

Table 5.8: Scope changes and the related project characteristics.....104

Table 5.9: Design errors and the related project characteristics.....106

Table 5.10: Design complexity and the related project characteristics.....107

Table 5.11: EOT related issues and the related project characteristics.....108

Table 5.12: Contractor’s cash flow difficulties and the related.....109

Table 5.13: Delay in progress of work and the related project characteristics.....110

Table 5.14: Unrealistic time targets set by the client and related project characteristics.....112

Table 5.15: Relationship between causes of disputes and project characteristics...113

Table 5.16: Dispute avoidance strategies and its frequency.....115

Table 5.17: Dispute avoidance strategies and the project characteristics.....117

Table 5.18: Drafting dispute resolution provisions in contract and related project characteristics.....118

Table 5.19: Practice of timely notice and related project characteristics.....120

Table 5.20: Standing dispute adjudication board and related project characteristics.....122

Table 5.21: Relationship between dispute avoidance strategies and project characteristics.....124

ABBREVIATIONS

ADR- Alternative Dispute Resolution

CIOB - Chartered Institute of Building

CRCCI- Cooperative Research Centre for Construction Innovation

DAB - Dispute Adjudication Board

EOT - Extension of Time

FIDIC - International Federation of Consulting Engineers

RDA- Road Development Authority

SBD - Standard Bidding Document

SPSS - Statistical Package for the Social Science