

**ARE THE CHANGES MADE TO THE STANDARD
FORMS OF CONTRACT LEAD TO DISPUTES?
THE CASE OF PROJECTS USING FIDIC RED BOOK IN
THE SRI LANKAN CONSTRUCTION PROJECTS**

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Degree of Master of Science

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Dissertation Submitted in Fulfillment of the Requirements for the Degree
of Master of Science in Construction Law and Disputes Resolution

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ABSTRACT

Are the changes made to the standard forms of contract lead to disputes? – The case of projects using FIDIC red book in the Sri Lankan construction projects

In last few years, Sri Lankan construction industry turned a new page towards the construction projects, innovative, complex in nature and boosting its construction outputs. The inherent characteristics, nature and its capacity to contribute to the national economy, is making it progressively challenging than ever for professionals to cope with work challenges. Different professionals are involved in the construction projects and due to its complexity and other characteristics, various types of construction contracts are in practice.

Main contract between the Employer and the Contractor is foremost and parties mostly prefer to follow standard forms of contracts so as to draft the rights and responsibilities of the parties via terms and conditions. Due to various driving factors, professionals who are drafting the construction contracts try to amend the standard forms but that are beyond the recommended changes by the originator.

Overview to the research is presented in chapter I, describing the background, problem statement, aims and objectives of the research, draft research design and limitations of the research. An extensive literature review is presented in Chapter II in order to form a theoretical framework for the research.

A quantitative approach was used for the achievement of the research objectives; hence questionnaire survey was conducted. Questionnaire was developed based on the findings obtained from the literature review and preliminary survey. Altogether, 62 questionnaires were distributed among respondents and among them 54 questionnaires were received. Among them 50 completed questionnaires were considered for the analysis.

Findings of the research were presented in Chapter V in detail. Accordingly, the respondents have stated that the expected outcome of the changes made to the standard forms of Contract not achieved, but still the Employers tend to change the standard forms. Hence, it should be further studied in order to find the alternative ways to achieve the expected outcome without amendments to the standard forms beyond the changes recommended by the originator.

Key words: *disputes, standard forms of contract, amendments, FIDIC 1999 Red Book, originator, recommend*

DEDICATION

*I dedicate this piece of research to,
Beloved parents and helping hands,
Together with me,
From the beginning to now,
of the journey of life*

ACKNOWLEDGEMENT

This research study is an outcome of much dedication and remarkable assistance received from many personnel and organizations, who subsidized in ample ways to complete this study. In fact, there were number of people behind me, who supported and directed me to the correct path and sincerely wished my success. I take this opportunity to convey my gratitude to all of them.

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ABBREVIATIONS

ADB- Asian Development Bank

ADR- Alternative Disputes Resolution

CIDA-Construction Industry Development Authority

EOT –Extension of Time for Completion

FIBTP - Federation Internationale des Bâtiment et des Travaux Public

FIDIC- Federation Internationale des Ingénieurs-Conseils

ICTAD- Institute of Construction Training and Development

JCT- Joint Contracts Tribunal

JICA-japan International Corporation Agency

OPEC-Organization of Petroleum Exporting Countries

RII- Relative Important Index

SBD- Standard Bidding Document

SFC-Standard Form of Contract

SPSS-Statistical package of Social Science

CHAPTER I

1.0 INTRODUCTION

1.1 Background

Construction industry is complex in nature due to many reasons and is developing day by day. Advanced, multifaceted performances are impending up and scale of the projects are enlarging with respect to the population growth. Therefore, due to the complexity of the industry, involvement of many stakeholders, use of technology, use of many documentation, interact with the environmental condition, uniqueness of every project, higher financial involvement and change the natural environment have become significant characteristics of the construction industry among other industries.

Construction projects infrequently ride smoothly owing to their complication and active in nature, together with the regularly challenging attitude of its stakeholders. Conditions of contract can be identified as the governing law of a contract otherwise can be seen as the constitution of a construction project which is applicable to all involved parties in different magnitude. There are many standard forms of contract used in the world and in Sri Lanka most commonly used ICTAD conditions of contract (SBD 01 and SBD 02) and FIDIC forms of contract. Out of which the ICTAD conditions used in many Sri Lankan Government funded contracts and some private construction contracts, which are less in magnitude with respect to project size as well as financially. exceptionally there are large scale private construction projects but most of large scale projects can be identified as foreign funded (ADB/World Bank/ JICA/ Opec etc...) that uses (almost mandatory to use) internationally accepted FIDIC forms of contracts.

As cited by Seeley, (1997), “No two projects are identical and site characteristics also vary extensively”. All these facts often create a challenging environment to the involved professionals since it drives towards disputes in different nature. According to statistical data, during last few decades, significant development can be visualized where step and complication of work and emergent demand for higher output have converted common topographies of the industry. As a result, number of dispute occurrences are also growing up.

A dispute can be well-defined as a conflict or else disagreement between the parties due to different opinions, assertion of right, claim or demand. In view point of construction disputes, the introduction of innovative construction material and designs, variations to the procurement and arrangement of the project and the reduced limitations of productivity provide a decent podium for disputes. Hence, the disputes are likely to stand up underneath the best conditions, even wherever each opportunity has been theoretically eliminated. Accordingly, the disputes amongst parties, it should be recalled, are really in no one's best interest (Ashworth, 2001).

According to Dasanayake, (2010), causes for disputes can be mainly categorized under two separate groups, namely common causes and uncommon causes. As per the investigations of the respondent profile, it has been found that most of the disputes are related to the documentation errors. Therefore, it is very important document to be used for smooth implementation of the project by the various stakeholders.

As above stated disputes are common phenomena in a construction contract. If any place, disputes may harm to the involved party's relationship, future opportunities as well as financial losses. Modern world required faster solution and everything goes fast track to achieve something as much as quickly, hence disputes should be eliminated or minimized to achieve desired goal of the parties.

Disputes are unwelcomed situation and everyone tries to avoid disputes and wish to have happy ending. Hence the disputes should be minimized which leads to good relationship, win-win situation and future opportunities. An inspection of origin and close causes of disputes proposed by past researches creates it problematic to determine what originally gave rise to the dispute in many instances (Love, Davis and Ellis, 2008).

Further, Ayudhya, (2011) has identified that "The main dispute classification can be categorized in to 4 main categories; contract and specification, financial, environment and other common problems" and under the Contract and Specification Dispute category it was identified that "the contract and specification dispute category was ranked as 1st dispute category in both domestic and international funded projects".

1.2 Problem statement

Standard forms of contracts have been developed and revised time to time to overcome or minimize the disputes and avoid discriminatory contracts. It allocates risks or shares the risks between contracted parties that can be recognize or identified prior to enter in to the contract and allocate sufficient provision such as pricing to balance such risks.

Mostly, these standard forms of contracts may change in order to furnish the relevant requirements and omit the insignificant provisions. Hence, this will cause to create unbalance situations and risks between parties and at the end that will lead to major dissatisfaction or disputes. According to Kumaraswami (1997), he has identified that inappropriate contract form and ambiguities of contract form leads to generate disputes. Therefore, any changes have to be implemented very carefully in order to avoid major disputes and miserable ending to the involved parties.

The above issues are rarely overlooked and considered for the studies. Therefore, it was identified that in depth analysis and research to be conducted to understand actual situation and have to have good understanding prior to provide solutions to such disputes.

1.3 Aims and Objectives

Aim

The aim of this research is to study the possibility of generating disputes due to the changes made to the standard forms of contract and to identify the achievement of the expected outcome of these changes in Sri Lankan construction industry perspective.

Objectives

- i). Identify various forms of contract used in Sri Lankan construction industry.
- ii). Identify changes made to the FIDIC Red Book beyond recommended by originator.
- iii). Identify the relationship between changes made to the conditions of contract (beyond recommended changes) and arisen of disputes.

- iv). Recommendations to overcome or minimize disputes due to non-recommended changes made to the standard forms of contract.

1.4 Research Methodology

A quantitative approach was carried out for the attainment of the objectives set out as above. Hence the findings to be demonstrated over descriptive statistics. An extensive literature review was conducted to establish the common backgrounds of disputes due to changes made for the standard documents and minimizing strategies. Based on that, a preliminary survey was carried out and detailed questionnaire was developed to gather information and finally analysis was done through SPSS statistical software, RII statistical technique and visual comparison.

1.4.1 Literature Review

Initially a literature review was expedited so as to conversant with the topic along with a purpose to identify the importance of the disputes management in construction projects. The study was managed through books, journals, articles, research papers and electronic media. Literature was gathered concentrating the objectives of the study fundamentally to cover the extents which were intended to be addressed.

1.4.2 Preliminary Survey

Based on the findings of the literature review, a draft questionnaire was prepared. Apart from that, a preliminary survey was carried out based on 15 number of completed projects in order to identify the major changes based on FIDIC 1999 Red book and the most frequent changes to the standard conditions. Findings obtained from both literature review and preliminary survey were included in the detailed questionnaire.

1.4.3 Questionnaire Survey

Based on the questionnaire prepared according to the findings of the literature and preliminary survey, it was authenticated before industry experts such as Arbitrators, Adjudicators, and Counselors etc. Thereafter the questionnaires were distributed

among professionals involved in disputes resolution (Arbitrators, Adjudicators, and Counselors etc.).

1.5 Scope and Limitations

The scope of the research is narrowed to the investigations on the Projects which based on FIDIC 1999 Red Book. Further the respondent profile was selected from key industry professionals involved in dispute resolution process such as Arbitrators, Adjudicators and counselors etc.

1.6 Layout of the Research

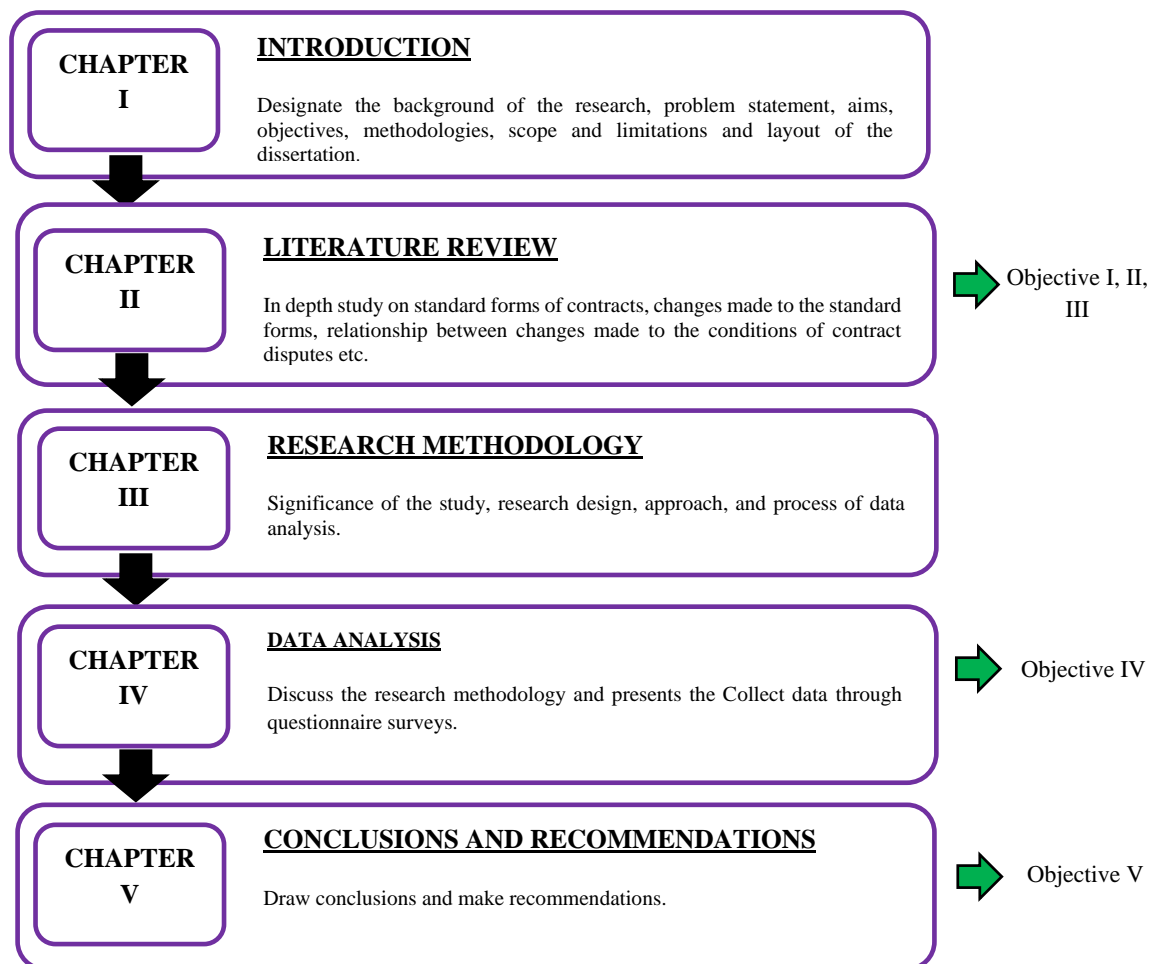


Figure 1.1 - Layout of the Research

1.7 Chapter Summary

This research is formed to study whether any chances to create disputes due to the changes made to the standard forms of contracts based on FIDIC 1999 Red Book, and to make recommendations to minimize any disputes due to changes made to the standard forms of contract. Accordingly, Chapter I reserved to describe the layout of the research.

2.0 LITERATURE REVIEW

2.1 Introduction

Every single year, hundreds or thousands of contracts are arrived into the construction industry in Sri Lanka. The work carried out underneath these agreements, and the worth of that exertion, is enormously diverse, fluctuating after inconsequential household makeovers to multi-billion-dollar infrastructure projects. It can be concluded that the problem causes specially related to the construction disputes leads wholly to superior competence in procurement and use of standard forms of contract inclines toward minimize preventable contract costs due to the complexity and variety of hazards, besides the executive measures tangled in construction developments, consume unruffled caused in industry awareness.

It has been recognized that, the difficult of disputes in the building industry is a universal miracle, hence charges related with undertaking disputes are substantial (Ilter, 2015). Straight costs accompanying with disputes levied in assortment from 0.5 to 5 percent of project's contract price was found by Love et al. (2010). On the other hand, there is a huge possibility to occur indirect costs, consequential from lost defeat of upcoming work, productivity, fatigue, stress, the charge of anxious commercial interactions among the various parties and smudged reputation may reason even additional harm to the project besides parties tangled. Respecting to their position, preclusion of disputes has become another significant aspect which the industry should focused on.

According to past researches, it has been verified that particularly for high commercial projects, business contributors together with legal advisers, increasingly standard forms are fewer habitually being used then, where they exist used, they are seriously modified (Sharkey, 2014). Due to these amendments, construction disputes are possible to be occurred and consequently, ultimate cost of the construction projects are rising up exceeding the expected values.

2.2 Construction Procurement

A development is operative, where the building/ infrastructure project is provided on precise period, by the suitable value and excellence criteria, besides delivers the Employer through a great level of gratification Ashworth (1991). Single significant aspect that willpower affect the attainment of those criteria and depress dispute is the form of procurement method selected and applied. Procurement is outlined as an organizational coordination that allocates precise accountabilities and establishments to the people and organizations, and describes the contacts of the numerous fundamentals in the construction project (Love *et al.*, 1998). Yates (1991) and Seeley (1997) categorize the procurement arrangements in the UK under four titles as follows:

- (1) Lump sum/conventional either consecutive or enhanced.
- (2) Design and build/package deal either direct, reasonable or progress and paradigm.
- (3) Design and accomplish whichever by contractor or consultant.
- (4) Fee-based construction/management technique either management contracting or construction management.

These procurement methods are also emerging in Sri Lankan construction industry including local contracts as well as foreign construction contracts.

There consumes a development of novel procurement approaches through the purpose of enlightening value for money, for example private finance initiative (Akintoye *et al.*, 1998; Cox, 2001; Zhang and Kumaraswamy, 2001) and partnering (Cox and Townsend, 1998; Stephenson, 1996; Hellard, 1997).

2.3 Construction Contracts

It is very clear that in business world, it is frequently considerate that contracts are lawful forms, premeditated by attorneys so as to defend companies touching dangers and make them for possible legal action in the poorest case consequence (Haarala, Lee and Lehto, 2010). A construction contract is a legally binding agreement amongst

two parties on the details, rights and obligations of the parties and cost of a construction project.

The construction industry is dissimilar than the manufacturing and other industries since construction is a precise extraordinary progression, and each project is exceptional with its nature and circumstances, consuming assorted characteristics a construction contract should be well administered.

Generally, a contract can be either oral or written. But almost all construction contracts are in written forms. Hence, the written forms of contracts can be categorized interested in;

- i). A modest conversation of correspondence;
- ii). A tailor made transcribed arrangement;
- iii). A standard form such as FIDIC, CIDA, JCT etc.
- iv). Regular terms and conditions of the corporate.

At the time of signing the contract, both parties must come to an agreement that this section offers an exact demonstration of the obligatory work. An agenda of exertion designates the milestones, start date and project completion date. The entire payment dates and development cost are comprised in the compensation particulars section.

Regularly contracting parties are understood as argumentative with contrasting benefits. Then this firm contracting typical or solid method to contracting highlights the contrasting benefits, it climaxes the essential of the parties to protection themselves in contradiction of hazards, through accurate and static solid terms (Haarala et al, 2010). Hence, at present time various procurement strategies have been undertaken by construction project participants. One of the decent instance of a sturdy essential to discover communal interests for both parties and somewhere the procedures of entirely the parties develop carefully entwined in Partnering and alliances (Walker and Hampson, 2003).

Generally, contracts are governed by the English Law. English law does not necessitate a specific method to contracts, then the terms besides eventually the hazard distribution is the excellent of the parties tangled. The principle aim of using Standard Form of

Contracts (SFC) is to minimize the time and cost of negotiating contracts. Some professionals trust that parties must not modify Standard forms of contracts through excellent, by way of there is a multifaceted collaboration between numerous of the terms (Ndekurgi and Rycroft, 2009) and alteration be able to modification the stability of hazard and generate lawful vagueness.

But, there are similarly circumstances wherever modification is essential; for instance, if convinced articles developed outmoded or else the industry moves and necessitates the presence of new-fangled terms. In the construction industry, the consequence of consuming a sensible construction contract agreement has converted vital to evade disputes and also to provide an even direction of contract (Bespoke Form of Contracts: A Scourage or Necessity? 2013).

2.4 Contract Documentation

Contract documentation is an important consideration of written construction contracts. Construction contracts generally included with two main responsibilities, design and construction. Design advisors for example architects and engineers are anticipated to practice sensible and normal attention in the repetition of their profession and their tasks are partly distinct by communal attribution (Grunwald, 2001). From a lawful viewpoint this is well recognized amongst the professions nonetheless clients are not constantly conscious or ended of mindful of this (Guckert and King, 2002).

Rounce (1998) has recommended that architects precisely absence measures to govern the design procedure and usually do not contrivance activities that guarantee conformism. As a consequence, design-related documents created frequently comprises mistakes and lapses and frequently clues to contractual claims and disputes (Diekmann and Nelson, 1985).

Figure 2.1 demonstrations an impression of the features that pay to specious contract credentials presence formed by project advisors besides the complications of development and building guidelines. There is an essential to get an exhaustive considerate of client necessities with the aim of progress the project's constraint

(together with purposes and restraints), which willpower impact the astringent approach namely unavoidably accepted for a development. Frequently clients do not contribute sufficient time to designers to design and document (Tilley and McFallan, 2000), which know how to impact the charges and reserve necessities for the project. Workforce through the suitable practice drive be owed to the project or a sequence of projects and this will impact discrete assignments.

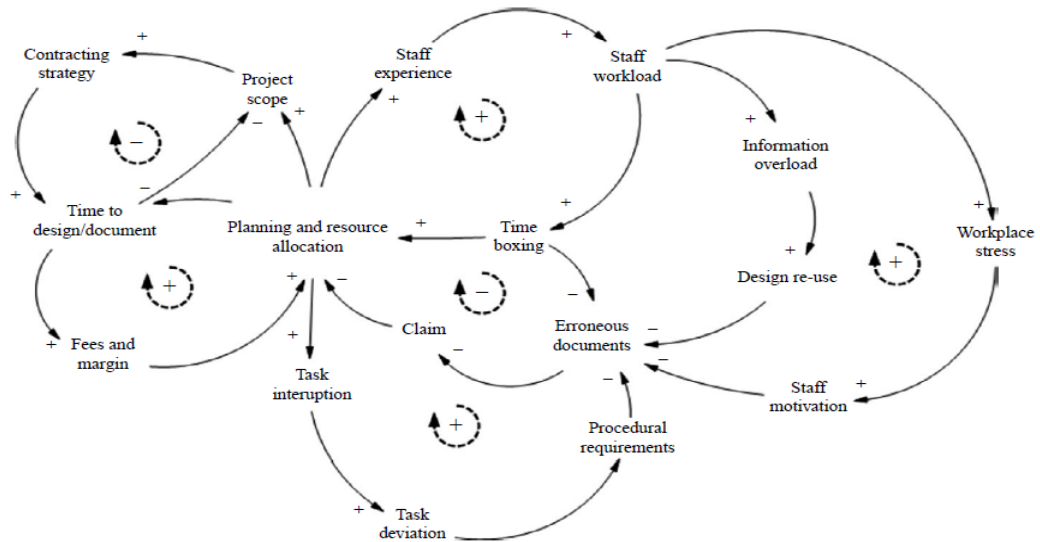


Figure 2.1-Factors influencing the occurrence of erroneous contract documents

(Source: Peter et al., 2010)

Inaccuracies can ascend owing to deprived knowledge, inattentiveness and neglect, and resolved (Kaminetzky, 1991). Deprived information is frequently a consequence of inadequate edification and working out, and familiarity.

Inattentiveness and neglect comprise mistakes in controls and specifying, and improper interpretation of drawings and specifications. These are mistakes of implementation and are a consequence of absence of owing meticulousness. Irrespective of the ability level, practice or exercise that entity's own, mistakes may be ended at some stint throughout a project's lifetime sequence. The future design mistakes are recognized in the project sequence the additional expensive they are possible designate to repair, particularly when construction takes begun.

According to above figure, contractual claims can be occurred due to erroneous documents.

2.5 Contractual Claims

Seeley (1997) describes a claim as a demand via the contractor to remuneration aimed at approximately damage or expenditure which he agonized or an effort to evade the obligation to recompense the liquidated and determined compensations. Also there can be claims from the Employer's side. In general, Claims happen when the consistent growth of the effort is late. Bubshait and Cunningham (1998) clarify that throughout a structure development, interruptions might be produced by: the contractor; the owner; by the third party and act of Gods.

The activities of the Client and his representative that reason extra expenses to the contractor in performing the project establish an honest claim. A claim will consequence from the contractor's protracted attendance on site, extra overhead costs, a site and general overheads, loss of profit for the extended period, extra costs on preliminaries, an extended attendance on the nominated subcontractors, variations, and acceleration costs (Oyegoke, 2006). The contractor's delay that clues to failure of completion of the development at the envisioned accomplishment time willpower consequence in compensation for liquidated damages to the Client.

The quantity surveyor, regulates the pertinent clauses that relate to it either straight or circuitously and their prescribed clarifications, on the receiving of the claim. The quantity surveyor appearances at the component of charges that are complicated and the financial prerogative that is defensible. For instance, this can be attained by determining the retro amongst the newest day once the drawings were essential and the day at which they were really provided to the contractor.

Also as of unavoidable surrounding of a claim in construction contracting, the British, the Finnish and the International Federation of Consulting Engineers (FIDIC) conditions of contracts comprise requirements for trade with claims once they ascend.

Vidogah and Ndekugri (1998) emphasized glitches in claims administration by way of below:

- Claims management is quiet achieved in ad hoc means;
- Contractor's administration data systems are not properly designed to care claims;
- yields of elementary administration exercise, such as logs, timesheets and programmes, frequently are insufficient in gratified though obtainable; and
- Some features of the claims are unbearable to count with a exactness though once the finest evidence is accessible.

Then honest claims are owing to the extra cost experienced by the contractor in the sequence of functioning the project, administration of such a claim is very significant for an appropriate compensation (Oyegoke, 2006).

2.6 Construction contract agreement as a product of communication process

As mentioned in previous paragraphs, it should be noted that, construction contract agreements stipulate the rights and obligations of the parties also it is a creature of a process which the same parties are assured by the contract. Their actions and relations are controlled by the contract and law. It is specifically the contractual and governmental controlling environment where struggles increase in production of construction projects.

The fact of the inclusions of a contract, i.e., the rules of behaviors of the parties, being strongminded by the agreement touched between the parties in the procedure of communication somewhat than by official inscribed necessities. So, when the parties become displeased with the movements of the other party, it shall be interpreted as a conflict as described earlier. Hence, when a conflict is not positively determined without involvement of a third party, then the matter to be referred as a 'dispute'. This is evident that construction contract agreements shall form a clear route as a product of communication process.

2.7 Causation of Disputes

Even if substantial energies been prepared by expert physiques and government, disagreements have developed a prevalent story of the construction industry. Though energies been prepared by construction groups to progress their routine over the acceptance of fresh effort performs, technologies and techniques entrenched inside thoughts for example supply lean production, chain management and knowledge management, disputes still endure to win out (Cheung, 2010).

Almost all the study that has been commenced just pursues to classify a list of issues or generates that display about suggestion by disputes (Peter, Love, Joanne and Cheung, 2010).

The problems for example rework, delays and scope alteration, a schemes viewpoint has been used to comprehend the apparatuses that subsidize to the underlying problems that arise in projects (Rodrigues and Bowers, 1996; Rodrigues and Williams, 1998).

It also encouraged that such a viewpoint delivers an important change in discerning and be able to inspire the “dispute problem” to be envisaged in a general way. Hence, the interaction between the said systems can be shown in figure 2.3.

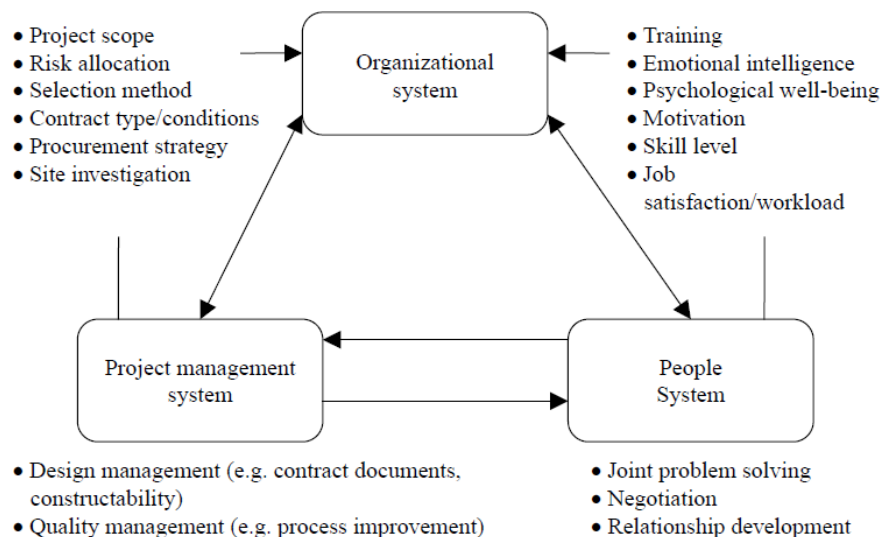


Figure 2.3: Interaction of systems within a project

Source: (Source: Peter *et al.*, 2010)

As cited in Awakul & Ogunlana, 2002, Construction clashes disturb the benefits of numerous investors regarding big funds; they decrease incomes besides are so very exclusive and lossmaking. Hence, these stakeholders have studied further that they develop progressively displeased with the lawful approaches of construction conflict resolution.

Consequently, conflicts occasionally appear unavoidable due to great variances in comforts amongst the members of construction projects in the construction industry (Yiu and Cheung, 2006).

Many publications on struggles and divergences in the construction industry completely covenant by the situations describing a struggle and incline to disregard the reasons thereof or wrongly existent pertinent statuses as grounds.

In an effort to scrutinize the causation of disputes, Kumaraswamy (1997) required after to govern the origin (the fundamental aim of the difficult and if eradicated, may avoid reappearance) and close (directly go before and yields the result) grounds. Root causes recognized by Kumaraswamy (1997) comprise: adversarial industry culture, unfair risk allocation, unrealistic time/cost/quality targets by the client, unrealistic information expectations and inappropriate contract type. Close grounds recognized comprised: sluggish client replies, inadequate brief, inexact design data, inappropriate contract form, imprecise design certification, unsuitable contractor selection and insufficient contract administration.

A conflict be able to be accomplished, the demands through a claim can be controlled and a dispute, which in this circumstance means litigation, can be evaded. Obviously, alternative dispute resolution (ADR) is also probable. On the other hand, a dispute must be determined even though it cannot be managed without the involvement of a third party. Hence, Disputes are typically determined by third parties (courts, arbitrators).

This situation was recognized by Acharya and Lee (2006) as the reason of conflicts in construction projects.

Table 2.1: Causes of Conflicts

OWNER	Confusing requirements of owner Excessive change orders Supremacy of owner/consultant Project scope definition not clear Site access delays Late handover of construction Site Owner furnished equipment	Lack of space in construction site Financial failure of owner Unbalanced risks Owner furnished materials Delay in decision by owner Delay in running bill payment
CONSULTANT	Errors and omission in design Excessive extra work Differing Site condition	Specification related Defective design Excessive quantity variation
CONTRACTOR	Financial failure of contractor Excessive change orders Incompetent contractor Major defects in maintenance	Subcontractor inefficiency Non-Payment to subcontractor Mentality of contractor Defective construction (quality)
THIRD PARTY	Change in government codes Labour disputes/ union strikes Adverse weather/acts of god	Market inflation Public disorder Third party delays
OTHER	Conflicts in document Change order negotiation Issue of security of construction Site Lack of communication Accident/ safety Interpretation of escalation/ de-escalation Necessity of environment improvement	Environmental Hazards Excessive correspondence Inadequate administration of project participants Material testing technique Difference in construction technique Acceleration or suspension of work Negligence or negative attitudes of project participants

As cited in (Mitkus & Mitkus, 2014), the sense of and the abstract peculiarity amongst the relations conflict and dispute frequently absences clearness. The significance of these relations has been realistically exposed by Acharya and Lee (2006).

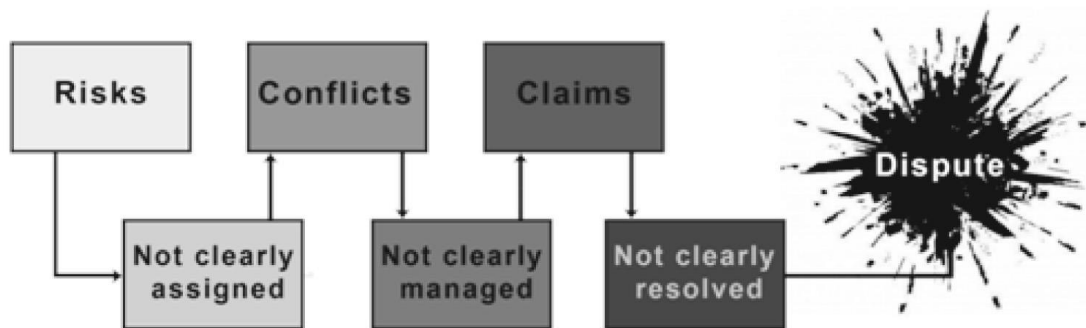


Figure 2.4: Risk, Conflict, claim and dispute continuum model

Source: Acharya and Lee (2006)

The perception of a dispute pyramid as a valuable instrument to analyze dispute resolution was primary presented and systematized by Sarat (1984).

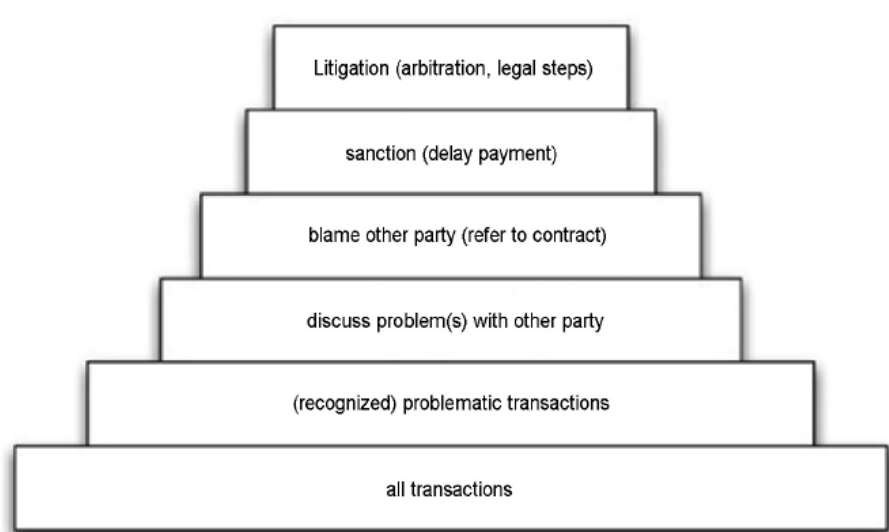


Figure 2.5 1: Sarat's pyramid of conflict (1984)

As cited in Peter et al., (2010), different authors have pointed out the following factors which are contribute to claims and/or disputes.

Table 2.2: Causation of Disputes

Waldron (2006)	Cheung and Yiu (2006)	Yiu and Cheung (2004)	Killian (2003)
<p>Nine key causes in disputes:</p> <ul style="list-style-type: none"> • Variations to scope. • Contract interpretation. • Extension of time (EOT) claims. • Site conditions. • Late, incomplete, or substandard information. • Obtaining approvals. • Site access. • Quality of design. • Availability of resources. 	<p>Three root causes of disputes:</p> <ul style="list-style-type: none"> • Conflict – task interdependency, differentiations, communication obstacles, tensions, personality traits • Triggering events – nonperformance, payment, time. <p>Contract provision.</p>	<p>Significant sources:</p> <ul style="list-style-type: none"> • Construction related: variation and delay in work progress. • Human behavior parties: expectations and inter-parties' problems. <p style="text-align: center;">Hewitt (1991)</p> <p>Six areas:</p> <ul style="list-style-type: none"> • Change of scope. • Change conditions. • Delay. • Disruption. • Acceleration. • Termination. 	<ul style="list-style-type: none"> • Project management procedure: change order, pre-award design review, Pre-construction conference proceedings, and quality assurance. • Design errors: errors in drawings and defective specifications. • Contracting officer: knowledge of local statues, faulty negotiation procedure, • Scheduling, bid review. • Contracting practices: contract familiarity/client contracting procedures.

Killian (2003) cont.....	Mitropoulos and Howell (2001)	Kumaraswamy (1997)	Semple et al. (1994)
<ul style="list-style-type: none"> • Site management: scheduling, project management procedures, quality. • Control, and financial packages. • Bid development errors: • Estimating error. 	<p>Factors that drive the development of a dispute:</p> <ul style="list-style-type: none"> • Project uncertainty • Contractual problems • Opportunistic behavior 	<p>Five common category of claims:</p> <ul style="list-style-type: none"> • Variations owing to site conditions. • Variations owing to client changes. • Variations owing to design errors. • Unforeseen ground conditions. • Ambiguities in contract documents. 	<p>Six commons categories of dispute claims:</p> <ul style="list-style-type: none"> • Premium time. • Equipment costs. • Financing costs. • Loss of revenue. • Loss of productivity. • Site overhead.
Watts and Scrivener (1992)	Colin et al. (1996)	<p>Five common causes of claims:</p> <ul style="list-style-type: none"> • Inaccurate design information. • Slow client response to decision. • Poor communication. • Unrealistic time targets. 	<p>Four common causes of claims:</p> <ul style="list-style-type: none"> • Acceleration. • Restricted access. • Weather/cold. • Increase in scope.
<p>Most frequent sources of claims:</p> <ul style="list-style-type: none"> • Variations. • Negligence in tort. • Delays. 	<p>Six key dispute areas:</p> <ul style="list-style-type: none"> • Payment and budget. • Performance. • Delay and time. • Negligence. • Quality. • Administration. 		

Sykes (1996)	Bristow and Vasilopoulos (1995)	Heath et al. (1994)	Rhys-Jones (1994)
<ul style="list-style-type: none"> • Two major groupings of claims and disputes: • Misunderstandings • Unpredictability 	<p>Five primary causes of claims:</p> <ul style="list-style-type: none"> • Unrealistic expectations by parties. • Ambiguous contract documents. • Poor communications between project participants. • Lack of team spirit. <p>Failure of participants to deal promptly with changes and unexpected outcomes.</p>	<p>Five main categories of claims:</p> <ul style="list-style-type: none"> • EOT. • Variations in quantities. • Variations in specifications. • Drawing changes. • Others. <p>Seven main types of disputes:</p> <ul style="list-style-type: none"> • Contract terms. • Payments. • Variations. • Extensions of time. • Nomination. • Re-nomination. • Availability of information. 	<p>Ten factors in the development of disputes:</p> <ul style="list-style-type: none"> • Poor management. • Adversarial culture. • Poor communications. • Inadequate design. • Economic environment. • Unrealistic tendering. • Influence of lawyers. • Unrealistic client expectations. • Inadequate contract drafting. • Poor workmanship.
<p>Diekmann et al. (1994)</p>			
<p>Three main dispute areas:</p> <ul style="list-style-type: none"> • Project uncertainty. • Process problems. • People issues. 			

As per the above List, it can be clearly identified that most of the Authors have identified that the contract documentation issues have led to occurrence of disputes. When variations ascend they might be considered to be vague and as a consequence incongruity amongst parties be able to stand up. This is since below the perception of circumscribed prudence not all possible eventualities are distinguishable and be able to be evaluated till they emerge (Williamson, 1979). Once parties arrive into a contract and an explicit clause flops to reason for an unanticipated occurrence or it is construed to outfit the specific conditions that have ascended, at that juncture there is a possible for deviousness. In this case there is probability for a party to resourcefully to achievement or delay one more to capitalize on their particular achievement (Mitropoulos and Howell, 2001).

Accordingly, above mentioned common causes of disputes identified by various authors can be summarized as follows;

- Variations to scope
- Contract Interpretation, Ambiguous contract documents.
- Delays, disruptions, acceleration and termination
- Extension of Time for Completion
- Site Conditions, Site Access
- Late, imperfect, or deficient information
- Gaining endorsements
- Quality of design, availability of resources, drawing changes.
- Deprived communications between project participants.
- Payment
- Economic environment.
- Unrealistic tendering.
- Influence of lawyers.
- Unrealistic client expectations.
- Poor workmanship.
- Human behavior parties: expectations and inter-parties' problems etc.

2.8 The importance of using standard forms of Contract

As cited by Cheung et al., 2006 and Cheung and Yiu, 2007, the adversarial nature and instinctive hazards (El-Sayegh, 2008) of the construction industry donates to the prompt growths of construction disputes. Above paragraphs identified the mutual reasons of disputes in the construction industry and one of the chief bases is the absence of accepting on the Contracts.

Underprivileged understanding and deprived considerate of the construction contracts mark the contracts clauses (Broome and Hayes, 1997), which consequences in alterations amongst the parties to the agreement on their lawful privileges and accountabilities.

It is also defensible in a training directed by Mohamad and Zulkifli (2006), where popular of the contractors stated about the difficulties in accepting the contract forms. It is to be determined that not only for contractors but also for the Clients essential designate well experienced in the clarification and considerate of clauses indicated in contracts.

The soft-skill resolution technique, i.e. avoidance are the dispute resolution approaches at the early phases of disputes and which suggestions a useful methodology to avert the probability of conflicts that may happen in a project by considerate the form of contract accompanied (White, 2002). It was emphasized that the main objective of dispute evasion procedure is to indorse solidarity and to generate a pleasant-sounding atmosphere (Cheung, 1999). Thus, although a total elimination may be impossible, an appropriate gratefulness of the construction contracts to the stakeholders will avert a dispute from decomposing.

It will contribution contract drafters and experts' appraisal and elucidate the clauses of the contract form in a considerate way to the parties. Afterward the parties comprehend and agreement to the clauses specified in the contract, the parties would identify their responsibilities and contractual privileges as obligatory in the contract (Bespoke Form of Contracts: A Scourage or Necessity ?, 2013).

2.9 Standard Forms of Contracts

A ‘Standard Form of Contract’ is generally a term used to refer in the construction industry as contracts without amendments, the majority of the terms and conditions which will be utilized by the parties to the agreement. These standard forms of contracts have been developed by professional bodies and practiced over years, hence tested before the courts and arbitration (Butt, 2014).

As mentioned in earlier paragraphs, construction contracts mainly stipulated the rights and obligations of the parties. For instance, verifications, design appraisals would decrease the occurrence of mistakes in documents, a completely industrialized scope would decrease the probability of choice vicissitudes, and standard forms of contract would eradicate misapprehension. Standard forms of contract should be accompanied, as both parties are usually acquainted with the responsibilities presumed by apiece party. (Love, Davis, & Ellis, 2010).

Springiness is frequently familiarized to contracts with personal approaches, trusting on decent individual dealings amongst business partners or cooperation influence and negotiation assistances. Contract documents frequently do not comprise instruments for dealing with eventualities, or “soft” contract terms (Haarala et al, 2010).

Standard forms of contracts are advanced by industry representatives who have a considerate of mutual project difficulties. Alterations can disturb the steadiness of risk and influence on the factual persistence; which is to deliver a reasonable contract framework that consequences in a fruitful project.

Difficulties can be accredited to three main jeopardies:

1. The collaboration amongst clauses.
2. The collaboration with common law.
3. Implied terms

According to Butt, 2014, use of standard forms of contracts has been distinguished the following notifications;

There is broad industry support for standard form contracts capable of effectual use without substantial

- Amendment – however, the general belief is that no adequate standard currently exists. In that regard, existing standards can be and are used as a ‘baseline’, but most still require significant amendment.
- Despite this, the general awareness is that “use of standard forms of contract inclines to minimize preventable transaction charges and overall centrals to superior competence in procurement”.
- The main reasons for using standard form contracts are familiarity, appropriate risk allocation and the need to minimize transaction costs.
- The primary reason for amending standard form contracts is risk shifting.
- The most common amendments to standard form contracts relate to extensions of time, delay damages (including liquidated damages), site conditions, payment (including the various security of payment legislation regimes), variations and warranties as to quality.

It was specially denoted that although ‘risk allocation’ as cited in the report as one of the main reasons for parties using standard form contracts in contrary to the ‘custom’ drafted contracts, the need to ‘transfer risk’ between parties was also cited as a preliminary reason that parties amended standard form of contracts. Consequently, this may be apparently attributable to differences in perception between Employers and Contractors as to whether or not risk is allocated appropriately.

2.10 Standard Forms used in Sri Lankan Construction Industry

In Sri Lanka, standard forms of construction contracts are published by the Construction Industry Development Authority (CIDA) which formerly established as ICTAD. The preliminary meaning of presenting the standard forms of contract into the Sri Lanka was to progress the impartiality and homogenize the privileges and duties of contracting parties.

The following table 2.3 indicates various forms of Standard Bidding Documents published by ICTAD.

Table 2.3: Standard Bidding Documents

<i>SBD Form of Contract</i>	<i>Specialty in Use</i>
ICTAD/SBD/01	Standard Bidding Document – Procurement of Works – [2nd Edition- (Revised) January 2007]. Applicable for the construction projects which Contract Price levied within 10mn -100mn.
ICTAD/SBD/02	Standard Bidding Document – Major contracts – [2nd Edition (Revised) January 2007]. Applicable for the construction projects which Contract Price levied beyond 100mn.
ICTAD/SDB/03	Standard Bidding Document – Minor Contracts – [2nd Edition (Revised) – January 2007. Applicable for the construction projects which the Contract Price levied up to 10mn.
ICTAD/SDB/04	Standard Bidding Document – Design & Build Contracts [1 st Edition (Revised) May 2003].

As mentioned in earlier paragraphs, recently Sri Lankan government has implemented large construction projects. Accordingly, most of the large infrastructure projects are foreign funded projects which are based on FIDIC forms of contracts.

The FIDIC suite of construction contracts is printed and circulated by the International Federation of Consulting Engineers. FIDIC stands for the French version of the Federation’s name (Federation Internationale des Ingenieurs-Counsel).

The greatest recognized and popular FIDIC forms are the Red Book (Conditions of Contract for Construction for Building and Engineering Works-Designed by the Employer) and the yellow Book (Conditions of Contract for Plant and Design - Build).

FIDIC circulated a reviewed suite of contracts with rationalized forms of the Red and yellow books together with a Green book as the short form of contract and a Silver Book for turnkey contracts.

In 2005, FIDIC has published an amended version of FIDIC Red Book as an application for the construction contracts for use by Multilateral Development Banks and in year 2007 published a seminar edition of the Gold Book for Design, Build and operate contracts. FIDIC construction contracts are also available for dredging and reclamation works in January 2006 as well as white book model for service agreements in October 2006.

Accordingly, now FIDIC suite of construction contracts now shields an extensive variety of projects and approaches of procurement. Following table 2.4 describes various FIDIC forms of contracts used in the construction industry.

Table 2.4: FIDIC forms of Contract

<i>FIDIC Form of Contract</i>	<i>Specialty in Use</i>
The Red Book	Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer.
The Yellow Book	Conditions of Contract for Plant and Design-Build.
The Silver Book	Conditions of Contract for EPC/Turnkey Projects.
The Green Book	Conditions of Short Form of Contract.
The Blue Book	Contract for Dredging and Reclamation Works.

<i>FIDIC Form of Contract</i>	<i>Specialty in Use</i>
MDB/FIDIC Contract	FIDIC conditions incorporated in the standard bidding documents of multilateral development banks.
The White Book	Client/Consultant Model Services Agreement.
The Gold Book	FIDIC Design, Build and Operate Projects.

This research aims to conduct a deep survey on amendments to the standard forms based on FIDIC Red Book.

2.11 FIDIC 1999 Red Book

The Federation Internationale des Ingénieurs-Conseils (“FIDIC”) organization was originated in 1913 via France, Belgium and Switzerland. Later, UK joined only in 1949. The first edition of the Conditions of Contract (International) for Works of Civil Engineering Construction was published in August 1957 having been organized in the best interests of FIDIC and the Federation Internationale des Bâtiment et des Travaux Publics (FIBTP) (Bespoke Form of Contracts: A Scourage or Necessity ?, 2013).

The Red Book delivers Conditions of Contracts for Construction works where the design is conceded out by the Client. Previous forms of Red Book were conscripted for the use on Civil Engineering projects. But, the current edition bears little resemblance to its precursors. Accordingly, the present edition droplets the words ‘civil engineering’ from the title and changed as the ‘Conditions of Contract for Construction of Buildings and Engineering works premeditated by the Client. Contents of the Red Book can be identified as;

- General Conditions of Contract
- Guidance of the Preparation of the particular Conditions.
- Forms of Tender and Contract Agreement.
- Dispute Adjudication Agreement.

Accordance with the previous forms of the FIDIC Red book, all administrations of the project and direction of the works is approved out by an Engineer who is appointed by the Client within the constraints set down in the Sub Clause 3.1, Engineer's Duties and authority. Accordingly, the Engineer is accountable, among other things, for determining completion, certifying payments, determining completion and delivering instructions.

Since, generally FIDIC Red Book is aimed for re-measurement type of contracts, expenses are dogged by measurement smearing the rates in the agreed Bill of Quantities. But, there is a choice to make the payments based on lump sum (Turner & Townsend, n.d.).

The General Conditions together with Particular conditions encompass the Conditions of Contract. Direction is providing in the Red Book in order to prepare the Particular Conditions should it be necessary to amend the General Conditions.

2.12 Drafting amendments

The use of standard forms provide various advantages for the parties of the construction projects comprising the rapidity at which tender documents be able to be formed, acquaintance for contract administrators (The amendment of standard form construction contracts, n.d.).

There are number of cases which have been arisen due to in appropriate amendments to the standard forms, hence special care should be taken while amending the standard forms.

As such, some of the cases can be listed and elaborated as follows;

➤ *Balfour Beatty vs. Docklands Light Railway Limited.*

This is a case where, Balfour Beatty was affianced by Docklands Light Railway to perform widespread civil engineering works for a sum in surplus of £20,000,000. Standard 5th Edition of the Institution of Civil Engineers' General Conditions of Contract was used for this particular Contract, nonetheless two substantial adjustments obligated have been incorporated. Two main Clauses were amended in this Standard Form of Contract basically the Engineer as the Certifier of the Payments have been replaced with an 'Employer's Representative' and the other Clause was Clause 66 which was wholly deleted and that clause was referred to dispute resolution by means of an Arbitration.

The Employer's Representative was qualified by the Contract to decide the claims less than for around £3,000,000 and the Contractor had claims over £3,000,000. Since the Clause 66 was totally eradicated from the Contract, consequent to the removal of the authority of the Arbitrator to "open up, review and revise" the choices of the contract administrator and certifier. Accordingly, this issue was similarly appeared to the court whether the court has authority to "open up, review and revise" which is substantiated by the Employer's Representative.

The final decision of the court was that the Contract must be interpreted severely and that the Contractor's right to obtain imbursement and extensions of time for completion shall be decided based on the decision of the Employer's Representative. Accordingly, further the court decided that the Employer's Representative has a general duty to act impartially whereas the court did not motivate the decision of the Employer's Representative was conclusive and final.

➤ *Bovis Construction (Scotland) Limited Vs. Whatlings Construction Limited.*

It was a Contract between Bovis, as management contractor and Whatlings as an employment contractor including a scope of Works to execute convinced parts of a new concert gallery. The General Conditions of Contract incorporated was Bovis' standard published General Conditions of Contract but several steady and sure amendments were done by the communications of the Parties and remained as a part of the Contract.

The standard General Conditions of Contract providing that uncertainty the trade contractor was in rupture of his responsibilities to perform the Works conscientiously, the trade contractor was to be accountable for the damage or injury agonized by the trade Contractor in importance of the fissure.

Nevertheless, it was decided that the trade Contractor is entitled for time associated Costs amounting to £ 100,000 which was decided vide communications between the Parties and discussions.

Bovis obtained their possession of Site and unsuccessful to continue industriously with the Works. Subsequent the facility of suitable signs, Bovis strongminded the appointment of the trade contractor and demanded damages of £2.7 million regarding breach of the trade contractor's responsibilities to perform the Works industriously.

Bovis, obviously declared the obligation to trade Contractor was incomplete to £100,000 as depart in the communication swapped previous to the formation of the Contract.

It was decided by the court that though the communication amongst the parties was operative in preventive the Bovis's obligation to compensate regarding postponements in achievement of the Works, wherever the Contract was over, time ended to have significance and the compensations demanded by the trade Contractor ran after delinquency and not dawn presentation. Accordingly, the limitation of liability set out in the correspondence was held not to be operative in limiting Contractor's claim.

Apart from that, there can be found further court cases relates to the amendments to the standard forms of contracts.

2.13 Guidance of the Preparation of the particular Conditions under FIDIC Red Book

There is a guideline provided by the originators to prepare the specific provisions and particular conditions of contract where they are beyond the project specific details. Generally, the FIDIC Conditions of Contract replicates the conclusions stretched by the Client in the pre tender stage and continues to describe the responsibilities and duties of the Parties and the distribution of jeopardy between them. Hence, most of the primary planning and organization activities of the project is organized by the Client at the pre tender stage.

The FIDIC contracts Guide, beneath the titles of Procurement and Project Documentation, delivers appreciated leadership to the Employer in respect of this primary panning and organization (Robinson M. D., 2013).

Chapter Summary

The construction industry is complex due to its inherent characteristics. Various complexities drive these Construction projects rarely run smoothly due to their dynamic in nature, together with the often challenging attitude of its stakeholders.

Accordingly, the facts often create a challenging environment to the involved professionals since it drives towards disputes in different nature. As a result, number of dispute occurrences are also growing up.

Generally, a dispute can be defined as a “conflict or controversy; a conflict of claims or rights; an assertion of a right, claim or demand on one side, met by contrary claims or allegations on the other”. Wherever a conflict occurs, rarely resolved without involvement of a third party and creating more complexity over it.

There are various standard forms of contract which currently in practice, and guidelines to prepare the particular conditions also provided as a guidance by the originator. Therefore, this research has been formed to study whether any potential causes lead to create disputes due to modified standard forms of contracts and to suggest possible solution to overcome such issues.

This chapter describes the background study on the areas such as ‘construction contracts’, ‘causes of disputes’, ‘difference between conflict and disputes’, ‘standard forms of contract’, ‘drafting amendments’. Hence, this chapter aims to develop a theoretical framework for the research drive.

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is a methodical way of attaining the research aim and objectives. (Kothari, 2004). The principle intention of this research is to conduct a deep study on the topic of “Are the changes made to the standard forms of contract lead to disputes? – The case of projects using FIDIC Red Book in the Sri Lankan Construction Projects” by addressing the research problem as outlined in chapter I. Therefore, this chapter presents the methodological framework of the research to explicate how the investigation was carried out in an ethical manner. The chapter includes the research design, research approach, research techniques and data analysis techniques under separated headings.

3.2 Research design

According to Yin, (2011), Research design could be haggard at whichever beginning or while scheduled as to it can modification during the cause of study. A plan for touching from the research problem to deduction could be simply distinct as research design (Tan, 2002).

As mentioned in Kothari (2004), it has been considered the research methods under two headings namely; quantitative and qualitative approach. Quantitative research is objective in nature, however qualitative research is more or less subjective (Naoum, 2007). Moreover qualitative research is conducted through a deep contact with a “field” or live situation (Miles & Huberman, 1994). On the other hand, Bertrand and Frans (2002) enlightened the efficiency of quantitative research approach in processes management perfect building. This research is more operations based meant to study whether the changes made to the standard forms lead to disputes in the Sri Lankan industry based on FIDIC Red Book 1999. For that, quantitative approach has been selected for the data collection and analysis.

It is important and essential to build a research procedure prior to receiving started with the research (Polonsky & Waller, 2011). Therefore, the research process starts with the research impression or title (Shajahan, 2004). Following figure 3.1 illustrates the research framework.

3.3 Research Process

It is essential to progress a suitable research process preceding to getting started with the research (Polonsky & Waller, 2011). Research idea or title is the general beginning of the research (Shajahan, 2004). Walliman (1993) specified to have to emerging a proper plan on problem investigation, data collection and analysis methods prior to proceeding ahead with a research.

❖ Objective I and II

Objective I, II and III of the research were;

- Identify various forms of contract used in Sri Lankan construction industry.
- Identify changes made to the FIDIC Red Book 1999 beyond recommended by originator.

By conducting a thorough literature review together with a preliminary survey, these objectives were achieved.

❖ Objective III

Objective III of the research was;

- Identify the relationship between changes made to the conditions of contract (beyond recommended changes) and arisen of disputes.

It was achieved by conducting a questionnaire survey and analyzing collected data via visual comparison, t-test and RII technique.

❖ Objective IV

Objective IV of the research was;

- Recommendations to overcome or minimize disputes due to non-recommended changes made to the standard forms of contract.

It was achieved by visual comparison and by introducing a suitable Likert scale to the questions in order to gather respondent's experience on non-recommended changes based on FIDIC Red Book 1999 and other latest editions.

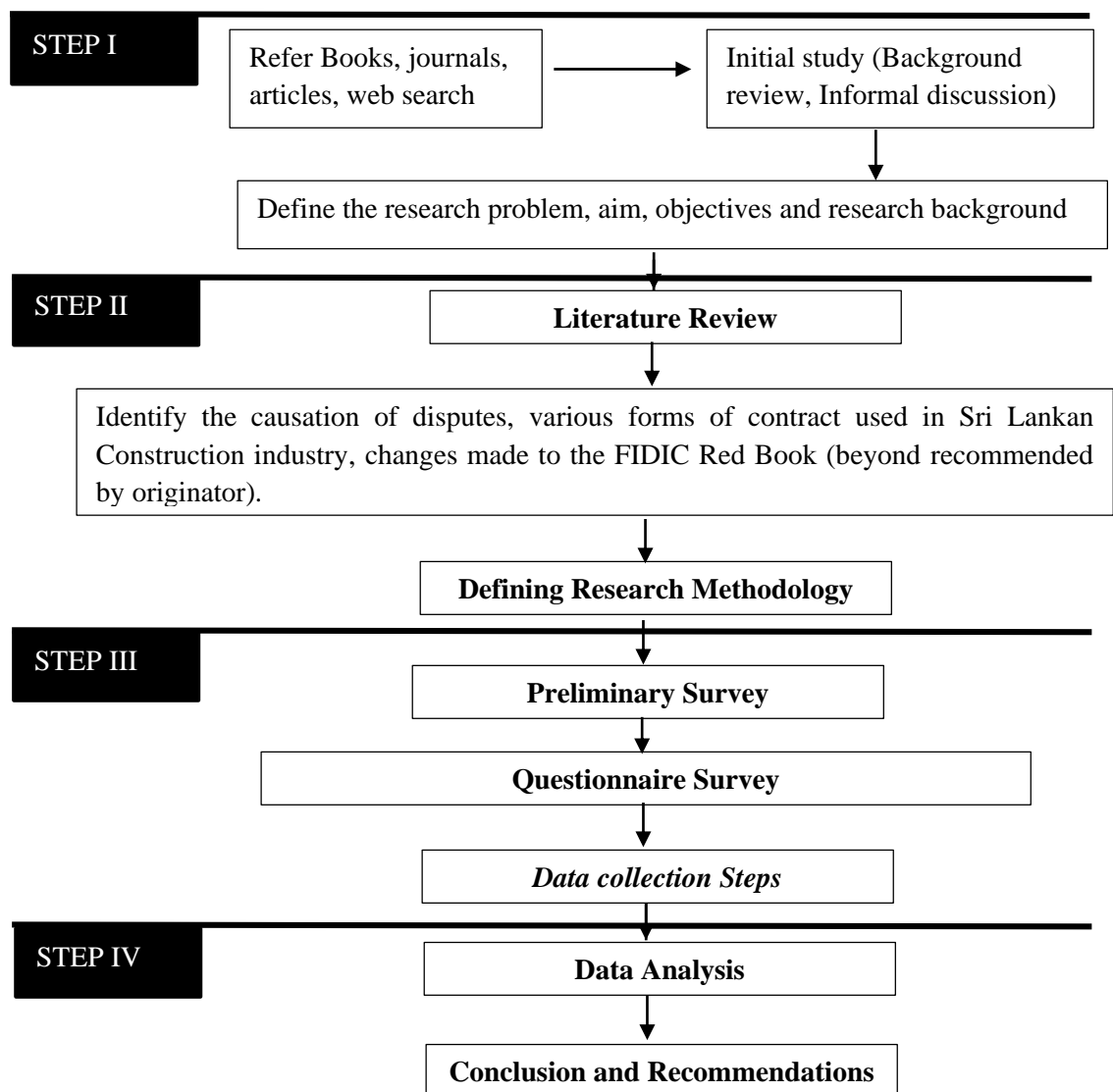


Figure 3.1: Research Design

Research methods are concerned with the techniques available and which are actually employed in research assignment. In order to form a solid structure for the research, initially background study was conducted followed by literature review and conducted a preliminary survey based on a selected cluster of completed construction projects. Results obtained from these steps were verified by conducting expert opinion surveys using semi structured interviews with industry professionals such as Arbitrators, Adjudicators, and Counselors.

3.4. Data collection phases

The data collection in attaining the research aim was completed through a procedure. According to Sukomolson (n.d.), data collection techniques under survey research can be recognized as interviews, document surveys, questionnaires, observations, participation and simulation which concern sampling, questionnaire design and questionnaire administration.

3.4.1 Initial Study

As mentioned in chapter I, an initial study was carried out focusing on the research identification, background study, research problem establishment, aim and objectives, scope and limitations. Accordingly, initial study was undertaken to identify the research problem by referring books, journals, web search etc. it was helpful for conducting a comprehensive background analysis of the research and literature synthesis was undertaken in order to conduct an in depth analysis of these findings.

3.4.2 Literature Review

Yin (2011) highlights that methodological part is initiated by a thorough literature survey. Chapter II of this research contains the literature review which was conducted by referring books, journals, web search, conference papers. Accordingly, the importance of specific attention for preparing specific provisions and particular conditions of contract based on FIDIC Red Book 1999 was clearly identified.

3.4.3 Preliminary Survey

In order to conduct a comprehensive study on the amendments of the standard forms of contract, initially it was suggested to select completed projects in Sri Lanka which were based on FIDIC Red Book 1999 and other latest editions, to review the changes made to the standard Conditions of Contract beyond the guidelines provided by the originator. Thus, it was identified that amendments to the standard forms of Contract that leads to the dispute occurrence and questionnaire was prepared based on those results aiming to verify the said result and the degree of amendments to the standard Conditions of Contract.

3.4.4 Questionnaire Design

Results obtained through a preliminary survey were used to develop the detailed questionnaire to gather relevant information to successfully achieve the research objectives. Hence, the questionnaire was comprised with open ended and structured closed questions focused on industry professionals such as Arbitrators, Adjudicators, Contract Administrators and counselors, who are dealing with dispute resolution.

Several Likert scales of 1-5 were provided for the structured-closed questionnaires

A Likert scale is used to analyze the ‘disputes occurrence due to amendments of the standard forms of Contract based on FIDIC 1999 Red Book’, ‘number of disputes arisen (FIDIC Red Book forms of Contract) due to changes made to the standard clauses (beyond recommended by the Originator) but those have been resolved without referring to formal dispute resolution process’ and ‘compared to the standard forms of Contract, the amendments made increased or decreased tendency of occurring disputes and other consequences’.

Another Likert scale is used to analyze the ‘driving factors to amend the standard forms’.

Another Likert scale is used to study the observations and agreement of the respondents for the statement of ‘*The Sri Lankan construction industry needs to practice standard forms of contract [FIDIC Red Book 1999] without amendment beyond recommended by the originator*’.

3.4.5 Sampling

A population is a set of persons (or objects) having a common observable characteristic (Kuzma, J., D and Bohnenblust, S, E, 2001). For apparent reasons it is impossible to survey those large populations. A sample is a selection of respondents selected in such a way that they represent the total population almost possible.

There are two main sampling techniques namely; probability sampling and non-probability sampling method. Accordingly, for this research, convenience sampling was applied in the questionnaire survey focused on the industry professionals who are dealing with disputes resolution to comply with a preliminary objective that it ensures sample accuracy by selecting the respondents at random while considering all elements in the population.

Questionnaires were distributed by handing over hard copies of questionnaires among professionals such as Arbitrators, Adjudicators, Consultants, Contractors, counselors and some of them were addressed via email conversations. Where the questionnaires were sent via emails, averagely two times reminders were sent.

3.5 Data Analysis

The degree of impact of the changes to the standard forms of Contract beyond the recommended changes by the originator were analyzed by means of visual comparison and the arithmetical mean. Data analysis commonly initiates with the calculation of a number of summary statistics such as the mean, median, standard deviation and by creating informative graphical displays of the data such as histograms, box plots, and stem-and-leaf plots. The following techniques were used under this study.

- **t-test**

Considering the first objective of the research which intends to find out the significant changes to the clauses of the standard forms of contract, significant driving factors to amend the standard forms, by analyzing the data using t-test.

The independent samples t-test is used to test the null hypothesis that the means of two populations are the same. $H_0: \mu_1 = \mu_2$, when a sample of observations from each population is available. The observations made on the sample members must all be independent of each other. So, for example, individuals from one population must not be individually matched with those from the other population, nor should the individuals within each group be related to each other.

Further, in hypothesis testing, the calculated t-value is compared with the critical t-value at the appropriate degrees of freedom and α value. Where the calculated t-value is greater than the critical t-value, the null hypothesis is rejected and alternate hypothesis is accepted.

$$H_0: m_1 = m_2$$

$$H_1: m_1 \neq m_2$$

On the basis of the foregoing overview, the hypothesis are formulated as follows;

H0- Null Hypothesis

H1-Alternate Hypothesis

m_1 - Population mean 1

m_2 - Population mean 2

For calculations α is set as 0.05 and the degree of freedom is calculated as $n-1$, where there are n number of observations in the sample.

Further to above, Tendency for increase and decrease of disputes were tested using Relative Important Index (RII).

$$RII = \frac{\sum W}{A * N}$$

Where, W —weighting given to each statement by the respondents and ranges from 1 to 5;

A —Higher response integer (5);

and N—total number of respondents.

In addition to the above, rest of the questions were analyzed through a visual comparison.

3.6 Chapter Summary

This chapter discussed about the methodology of the research which can be described under research design, research techniques and data collection and data analysis.

Research design included with the research process, research techniques and data analysis. Research techniques described the data collection steps.

Collected data to be analyzed through software program called SPSS, RII, MS Excel and Visual comparison.

DATA COLLECTION AND ANALYSIS

4.1 Introduction

As described in previous chapters, the principle aim of this research was to study whether there is a relationship to emerge disputes due to the changes made to the standard forms of contracts and where those changes have been done beyond the recommended by the originator. Initial study, theoretical frame work for the study and research methodology were described in ‘Chapter I, Chapter II and Chapter III’ respectively. Accordingly, this chapter aims to present the data collection and analyze collected data to achieve the research objectives. Hence, presents the final findings of the research.

4.2 Preliminary Study

As suggested in previous chapter III, a preliminary study was carried out on the purpose of finding ways to develop a detailed questionnaire. Throughout the literature review, basic theoretical frame work was developed and draft questionnaire was developed. Thereafter, a study was undertaken regarding completed 15 number of projects in order to identify the changes that have been done beyond the guidance provided by the originator.

Thus, significantly and commonly changed clauses of the conditions of contract were identified. This has been taken into consideration in the questionnaire and to gather response whether those changes have resulted in generating disputes.

After developing the draft questionnaire, it was authenticated by selected industry experts who are currently engaged in disputes resolution as well as those who are having experience in disputes resolution more than 10 years. The questionnaire was included both open ended and structured closed questions.

4.3 Data Collection

Detailed questionnaire was distributed among 62 respondents who are engaged in the fields of ‘Employer, Contractor, Consultant, Contract Administrator, Adjudicator, Arbitrator and counselor’. These questionnaires were distributed by directly handing over them and via email. Among them, 54 questionnaires were received from the respondents. Nevertheless, among distributed questionnaires, successfully 50 completed questionnaires were considered for the data analysis. Because rest of the questionnaires could not study since they were not complete and defects due to negligence and mistakes due to human errors were appeared.

4.4 Profile of the survey sample

As mentioned earlier, questionnaires were distributed among 62 respondents and 50 of received questionnaires were selected for the study. Some of the respondents are currently playing their professionalism in different expertise at the same time. For instance, some of the respondents act as Arbitrators, Adjudicators and the same respondent operates own business relates to the construction industry, hence engaged as the Employer.

Following table 4.1 presents the composition of the survey sample as per their representation of each employment category and against the selected 50 respondents.

Table 4.1: Respondent Profile

Employment Category	Number of representation on the Category	Percentage of Representation
Employer	7	14.00%
Contractor	24	48.00%
Consultant	33	66.00%
Contract Administrator	18	36.00%
Adjudicator/Arbitrator	13	26.00%
Counselor	14	28.00%

It can be also presented graphically as shown below figure 4.1. It clearly shows that, majority of the respondents are engaged as the Consultants and Contracting divisions. Also a considerable representation can be seen in other categories of Contract administration, Arbitration, Adjudication, counselor and Employer categories.

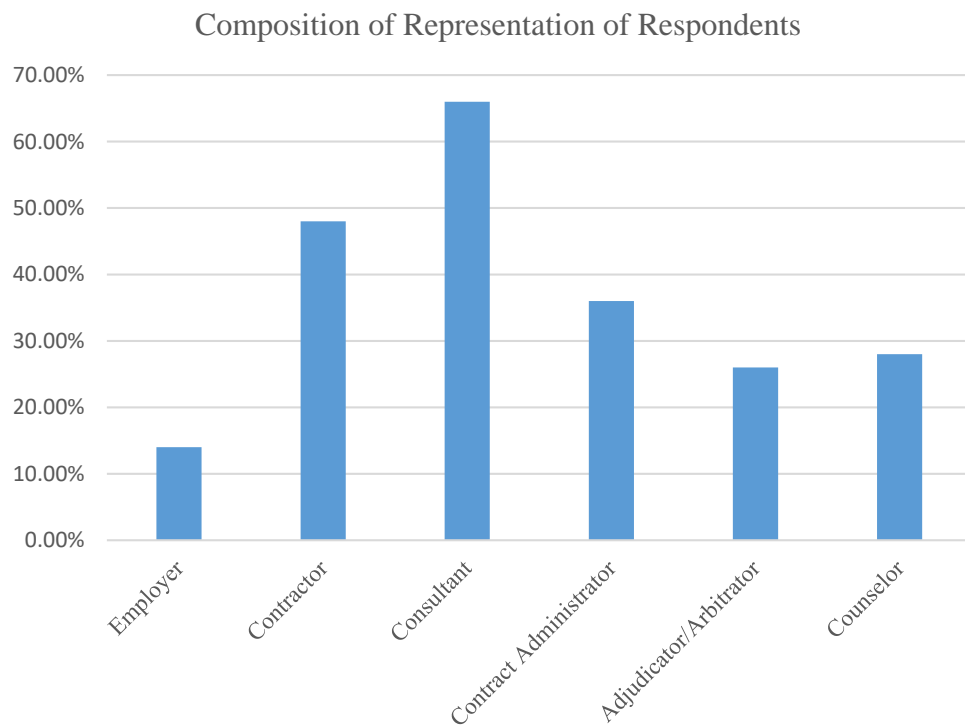


Figure 4.1: Composition of Representation of Respondents

Following table 4.2 presents the composition of the survey sample based on their experience in the Sri Lankan construction industry.

Table 4.2: Experience of the Respondents

Years of experience in SL construction industry	Number of Respondents	Response as a Percentage
<5	1	2.00%
5 to 10	12	24.00%
10 to 15	10	20.00%
Over 15	27	54.00%

Experience in the Sri Lankan construction industry

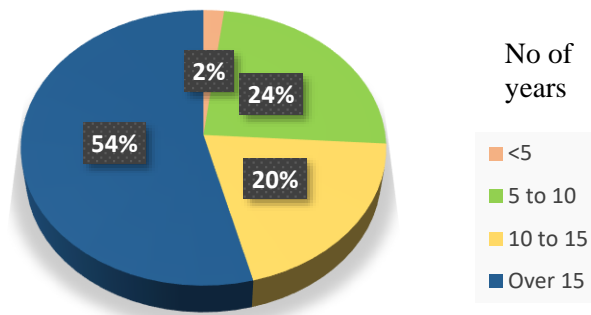


Figure 4.2: Composition of survey sample

Above figure 4.2 verifies that the Majority of the respondents from the selected sample belong to the category of having experience more than 15 years in the Sri Lankan construction industry. Further, following figure 4.3 demonstrates the experience of those respondents in disputes resolution.

Experience in Disputes resolution

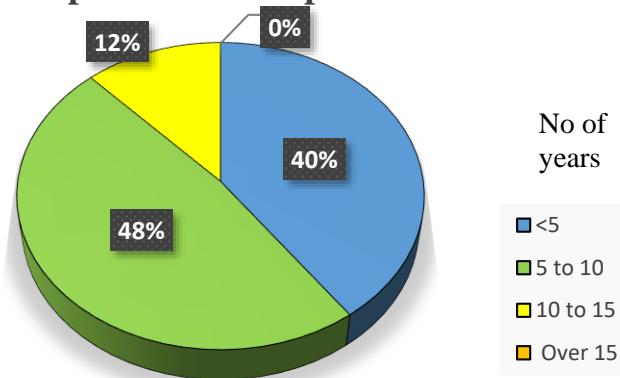


Figure 4.3: Experience of the respondents in Disputes Resolution

According to above data, it shows that majority of the respondents with regard to their involvement in disputes resolution belongs to the category of ‘years of experience 5-10’ and ‘ years of experience less than 5 years’ which denotes as a percentage 48% and 40 % respectively. None of the respondents were found in the category of ‘years of experience more than 15 years’.

In addition to the above data, respondents also have been examined with regard to their involvement in disputes resolution based on FIDIC Red Book 1999 and other latest editions. The result of the response can be shown below.

Disputes resolution based on FIDIC Red Book 1999 and other Latest Editions

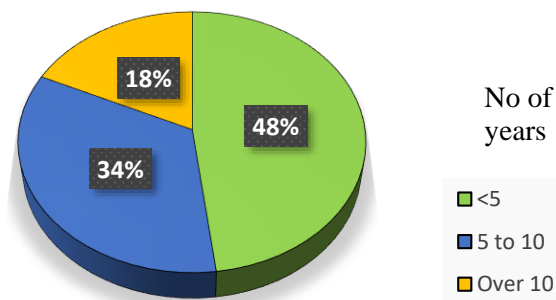


Figure 4.4: Disputes resolution based on FIDIC Red Book

As presented in above figure 4.4, majority of the respondents' involvement in disputes resolution based on FIDIC Red Book 1999 and other latest editions are belong to the category of less than 5 disputes.

As revealed by the respondents, most frequently FIDIC Red Book 1999 and other latest editions are in practice in Sri Lanka and as a percentage can be 50-60 % which was identified by looking at the responses.

4.5 Findings and Discussion

No single technique was used to analyze collected data. With respect to the nature and characteristics of the questions, different data analysis techniques were used. Hence, some of the questions could be analyzed by comparison of frequency where some of the questions were analyzed using appropriate statistical techniques.

4.5.1 Disputes occurrence due to amendments of the standard forms of Contract based on FIDIC 1999 Red Book.

Respondents were addressed to provide their experience to identify the probability of occurrence of the disputes basically due to amendments of the standard forms of Contract based on FIDIC Red Book 1999 and other latest editions. Accordingly, a Likert scale was used to test the results.

According to the responses, results can be visually expressed as following figure 4.5. Hence, majority of the respondents have commented on "sometimes". Therefore, it can be understood that, as per the respondents experience they have gained through the industry, there is a potential to generate disputes between the parties due to amendments of the standard forms of contracts based on FIDIC 1999 Red Book.

Hence, none of them have responded that amendments to the standard forms of contracts lead to occur disputes always. Through that, what can be understood is

wherever these amendments have been done adherence to the recommended changes, no opportunity can be created to generate disputes.

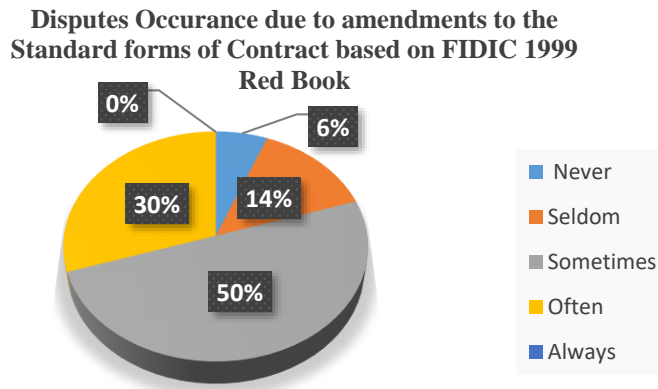


Figure 4.5: Disputes occurrence due to amendments

4.5.2 Disputes arisen (FIDIC Red Book forms of Contract) due to changes made to the standard clauses (beyond recommended by the Originator) but those have been resolved without referring to formal dispute resolution process.

Next step was to test the occurrence of the disputes due to changes to the standard conditions of contract based on FIDIC Re Book 1999 and those changes beyond the recommended by the Originator and resolved without a formal disputes resolution process. It also was tested using appropriate Likert scale.

Accordingly, the response of the industry practitioners for the above question can be visually presented via following figure 4.6.

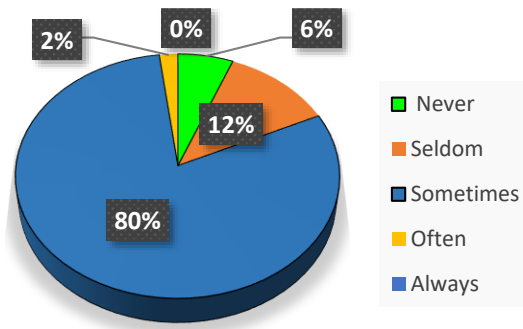


Figure 4.6: Probability of referring disputes to formal disputes resolution processes

Accordingly, it should be noted that disputes which have been occurred due to amendments as described above are not always referred to formal disputes resolution processes, hence some of them have been amicably resolved. Also can be clearly distinguished that most of the times, parties have referred to formal disputes resolution methods.

4.5.3 Mainly amended clauses of the standard Conditions of Contract

As described above, a preliminary study was conducted to find out the clauses in the standard forms of Contract FIDIC Red Book 1999 and results were further tested via questionnaire. Accordingly, mostly amended clauses were identified with regard to the frequency of responses as presented below table 4.3.

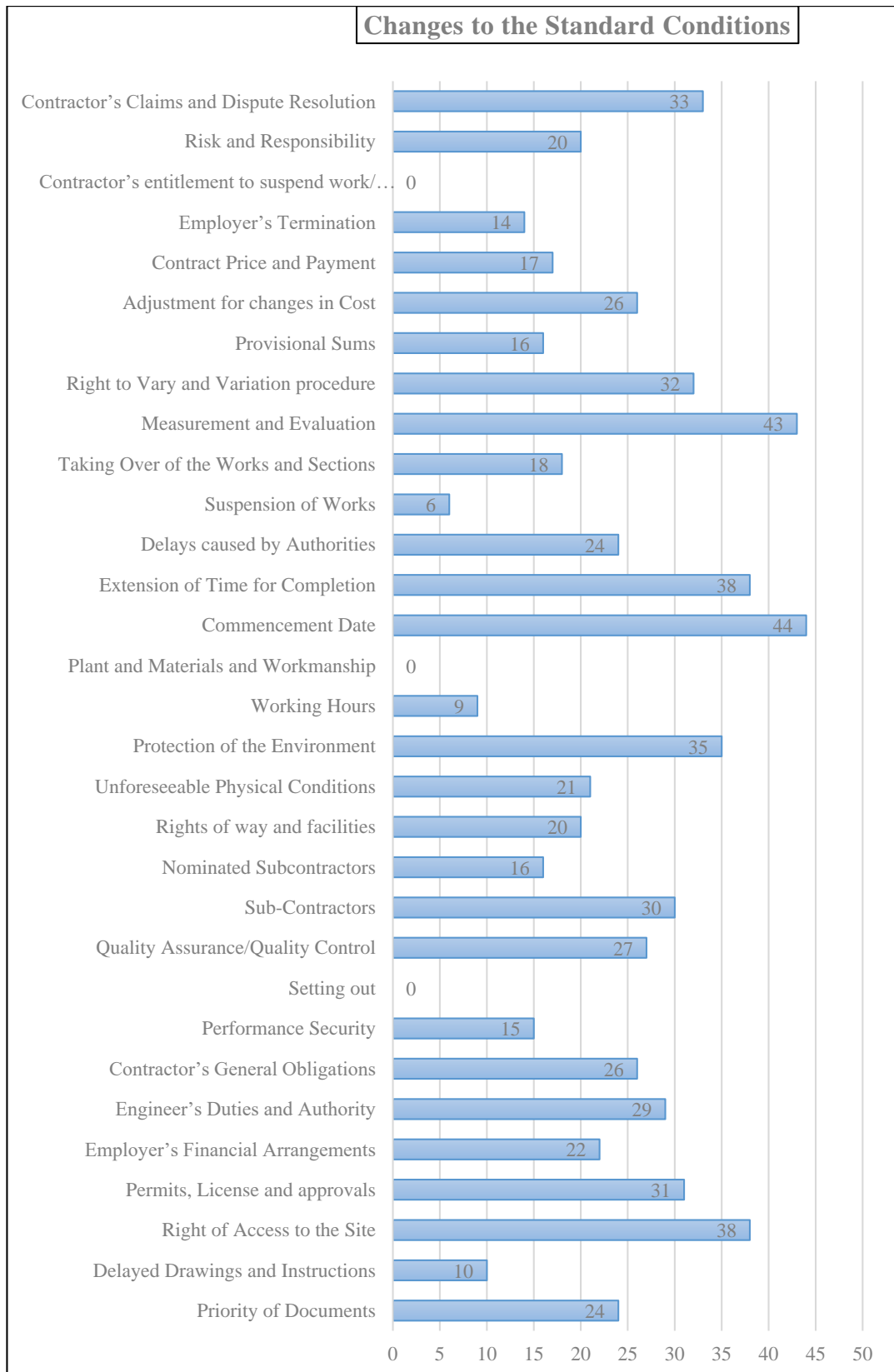


Figure 4.7: Changes to the Standard forms

With regard to the response as presented in above figure 4.7, amendments to the standard Conditions of Contract has not been effective for the following clauses, hence can be distinguished as not important to be considered.

- i. Setting out
- ii. Plant and Materials and Workmanship
- iii. Contractor’s entitlement to suspend work/ Termination by Contractor

It can also be further described that, those clauses shall have the least opportunity to deal with possible disputes since there is lesser requirements to make amendments beyond the recommended changes by the Originator.

Even though these sub clauses have been identified as modified sub clauses through the preliminary survey, the respondents have given lesser priority/significant over these sub clauses compared to other sub clauses. It can be further explained that with the responses they have consented these sub clauses have less tendency to create disputes, issues or no driving factors in the Sri Lankan construction industry.

In addition, frequently changed Sub clauses can be placed in descending order as presented below table 4.3.

Table 4.3: commonly changed standard conditions

Sub Clause Ref:	Sub Clause	Response (Frequency)
8.1	Commencement Date	44
12.3	Measurement and Evaluation	43
2.1	Right of Access to the Site	38
8.4	Extension of Time for Completion	38
4.18	Protection of the Environment	35
20	Contractor’s Claims and Dispute Resolution	33

Sub Clause Ref:	Sub Clause	Response (Frequency)
13	Right to Vary and Variation procedure	32
2.2	Permits, License and approvals	31
4.4	Sub-Contractors	30
3.1	Engineer's Duties and Authority	33
4.9	Quality Assurance/Quality Control	27
4.1	Contractor's General Obligations	26
8.5	Delays caused by Authorities	24

Most of the respondents have commented that clause 8.1, commencement date is the frequently changed standard conditions of contract. Second place of the majority has taken place the Sub clause 12.3 that is regarding the Measurement and Evaluation. It also verified in the preliminary study that, amendments to these sub clauses have a tendency to generate disputes between the parties.

Therefore, it is evident that, wherever changes made to the standard forms of contract beyond the recommended changes by the originator shall have the potentials to create disputes.

4.5.4 Driving factors to amend the standard forms.

Through the comprehensive literature review at the initial study, it could be found several factors which can be taken as driving factors to amend the standard forms of contract. Therefore, these factors were inserted to the questionnaire in order to study the significance of the factors.

Accordingly, the responses were gathered in accordance with a suitable Likert scale.

Hence, the importance of each factor has been tested using a t-test. The results obtained from the t-test can be presented as follows table 4.4.

Table 4.4: Significant driving factors

Factor	Test value-3				
	Mean Rating	Std.dev.	t-value	Sig.	Rank
Need to reflect regulatory requirements prevailing in the country.	3.72	.784	6.498	.000	2
Form perceived to be poorly drafted.	2.38	1.615	-2.715	.009	9
Ease of contract administration.	2.66	1.394	-1.725	.091	7
Need to shift the risk to other party	3.56	1.163	3.404	.001	5
Prevent / mitigate occurrence of possible disputes	3.92	1.140	5.706	.000	3
Prevent possible Claims	4.12	.824	9.610	.000	1
More Clarity	2.46	1.717	-2.224	.031	8
Protect the Employer's specific Requirements	3.58	.928	4.420	.000	4
Project Specific Requirements	3.28	1.371	1.444	.155	6

The driving factors which have obtained critical t- value 1.990 and less than 0.05 p value are identified as significant factors and have been highlighted in above table 4.5. Hence, the most significant driving factors have been highlighted.

According to the visual comparison, it can be seen that the respondents have indicated that the most significant driving factor for these amendments to the standard conditions of contract is specially to prevent possible claims and which has become to the first and foremost place in the priority order. The next driving factor which can be seen is 'Need to reflect regulatory requirements prevailing in the country'. It also can be further clarified that, country specific regulatory requirements also have been respected where these amendments are suggested.

Third most significant driving factor is to prevent or mitigate the occurrence of possible disputes. Even though it is expected at the earlier stage, sometimes these changes also can be appeared as a causation for the disputes.

In addition, fourth place has been taken for another significant driving factor to protect the Employer's specific Requirements. At the end of the day, the Employer is the owner of the completed Works, hence always his specific requirements are being respected. Therefore, there is an opportunity to change the Sub Clauses to achieve that expectations.

Other than that, some of the changes would be done specially in order to shift the associated risks to the other party. As a consequence, this thought may effective to create imbalanced contract at the end.

These five factors can be identified as the most significant driving factors to amend the standard forms of contract.

4.5.5 Impact of the amendments to the standard forms to achieve the intended objectives.

As described in earlier chapters, amendments to the standard forms of contract have been done specially beyond the recommended changes by the originator and these changes were aimed to achieve certain objectives. Therefore, it was understood that

the outcome of these amendments should be tested via its tendency to increase or decrease those consequences. Therefore, those consequences were tested using an appropriate Likert scale.

Response gained through the completed questionnaires were tested using the calculations in the Relative Important Index (RII) technique.

$$RII = \frac{\sum W}{A * N}$$

Where, *W*—weighting given to each statement by the respondents and ranges from 1 to 5;

A—Higher response integer (5);

and *N*—total number of respondents.

Results obtained from the analyses can be displayed as follows table 4.6.

Table 4.5: Consequences of amendments

Description	1	2	3	4	5	W	RII	Rank
Understanding between the parties	15	15	8	9	3	120	0.480	7
Efficiency in contract administration	2	15	25	4	4	143	0.572	4
Project cost and time overruns	1	5	21	7	16	182	0.728	2
Need for legal advice during the project	0	9	18	21	2	166	0.664	3
Disputes	0	7	6	34	3	183	0.732	1
Work Efficiency	1	22	21	5	1	133	0.532	5

Description	1	2	3	4	5	W	RII	Rank
Strengthen the relationship between the parties	16	21	3	7	3	110	0.44	8
Successfully achieve the objectives of the parties	16	7	14	11	2	126	0.504	6

As per the results presented in above table 4.5, it should be understood that the respondents have commented that amendments to the standard forms of contract (FIDIC Red Book 1999) has caused to increase the tendency to create disputes since it has been placed at 1st in ranking. As a consequence, project time and cost overruns also have been taken effect which becomes to the second place of ranking.

As such the consequence of ‘need legal advice during the project’ has become to the third position. With regard to the general understandings and compliance with this result, it can be understood that there is a high possibility to demand for legal advice during the project basically due to amendments beyond the recommendations in the standard form. Some of the changes would have to be distinguished after signing the Contract, hence it should be adhere to the legal advice to mitigate the risk during the project. Because otherwise, project will be ended up with sever scenarios.

Another impact of these amendments can be state as the efficiency in contract administration and work efficiency. Accordingly, it can be concluded that there is a tendency to increase or decrease the efficiency in contract administration and work efficiency as highlighted by the respondents.

4.5.6 Achievement of the expected outcome of the changes

Apart from the above questions, it was aimed to receive the response whether the expected outcome of the changes made to the standard forms have been achieved at the end. It was basically tested using Likert scale as appropriate.

As per the completed questionnaires, the results were tested using simple frequency test and the results can be shown as following figure 4.8.

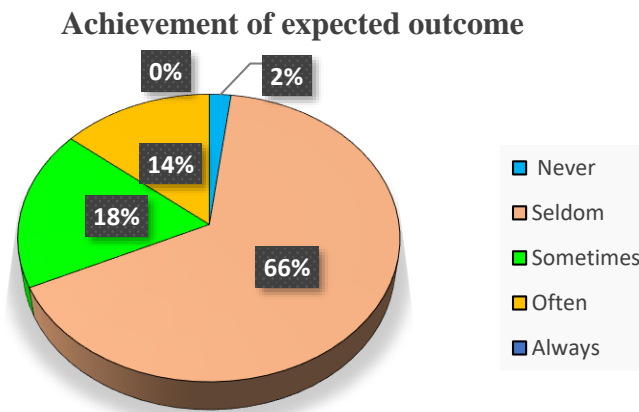


Figure 4.8: Achievement of expected outcome

As per the visual comparison, it can be seen that, majority of the respondents have commented as “seldom”. Therefore, it can be concluded that, the expected outcome of the changes have been achieved very rarely.

4.5.7 Recommendations for the amendments

The fourth objective of the research was to provide recommendations to overcome or minimize disputes due to non-recommended changes made to the standard forms of contract. Throughout the analysis as described in this Chapter, findings of the preliminary survey and the questionnaire survey were discussed.

Frequently changed sub clauses of the standard forms of contract (FIDIC Red Book) used in the Sri Lankan construction industry were identified as presented in table 4.3. The driving factors for those changes were examined in the questionnaire and the responses of the survey sample were presented in table 4.4. Accordingly, it has been suggested that changes to the standard forms have been done due to the expectation to prevent possible claims. Because, appearance of engaged with a high Cost involvement which can be finally challenging for contracting parties. Other than that, it also expected to reflect regulatory requirements prevailing in the industry/or the country, prevent or mitigate the occurrence of disputes, protect the Employer's specific requirements, need to shift the risk to the other party considered as other significant driving factors.

In table 4.5, consequences of the amendments have been presented. As per the responses, it has been recognized that the changes made to the standard forms have more tendency to create disputes. Other than that, there are other significant consequences which are not in favour of the Contract.

Even the standard forms of Contract developed throughout years, still the users tend to make amendments to the standard documents. This study reveals that there are some essential driving factors which need to be considered when entering into a contract agreement in the Sri Lankan construction Industry.

Having identified the significant driving factors to change the standard forms, it is important to see the outcome of the changes or whether the expected results/objectives achieved at the end of the project.

Further, it was decided to receive the response for the following statement in the detailed questionnaire.

'The Sri Lankan construction industry needs to practice standard forms of contract [FIDIC Red Book 1999] without amendment beyond recommended by the originator.'

Respondents were asked to place their comments the Likert scale provided as per the nature of the question.

Accordingly, respondents have left their agreement to what extent as follows figure 4.9.

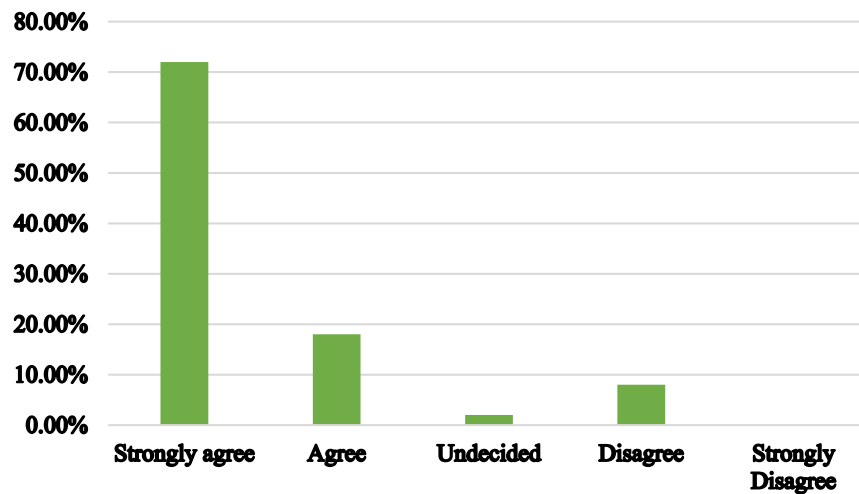


Figure 4.9: Agreement for the statement

As revealed by the above figure 4.9, majority of the respondents 72% have strongly agreed to the statement and 18% of the respondents also stated as they agree for the said statement. Further 8% have disagree for the statement and there were no responses which have strongly disagree for the statement and 2% of the respondents have undecided the response for the statement.

In order to verify the above outcomes to classify whether in a manner of a “success” or “failure”, probability of each were tested using a Binomial test. Accordingly, the responses have been categorized into “do not disagree” or “disagree” responses where the respondents have commented that they “strongly agree” or “agree” for the statement, then it was considered as ‘do not disagree’ and where the responses were given as “disagree” or “strongly disagree”, it was considered as ‘disagree’. This was tested using MS Excel.

In order to test the above outcome, following null and alternate hypothesis has been used.

p = Probability of do not disagree for the statement

$q = \text{Probability of disagreement for the statement} = 1-p$

Since 4 respondents have disagreed for the statement among 50 sample size, by conducting trials it can be decided that at 98% confidence level (i.e. 2% error level) the probability of disagreement among the Sri Lankan construction industry professionals has to be less than 20%.

Using a confidence level of 98% (i.e. $\alpha = 0.02$), calculations done as follows,

$\text{BINOM.DIST}(45, 50, 0.2, \text{TRUE}) = 1 > 0.02$

Hence, it can be confirmed that probability of disagreement among the Sri Lankan construction industry professionals has to be less than 20%.

$\text{BINOM.INV}(n, p, \alpha) = \text{BINOM.INV}(50, 0.2, 0.02) = 5$

Therefore 5 is the smallest value for which smallest value that can be achieved if probability is 20% at 2% error level. Out of 50 sample size, only 4 disagreed responses received, hence the probability of receiving “disagreed” responses among Sri Lankan construction industry professionals should be less than 20%.

Nevertheless, as shown in table 4.5 (Consequences of amendments) and figure 4.8 (achievement of expected outcome), negative aspects for the project have been increased such as occurrence of disputes, project time and cost overruns, need of legal advice during the project are the key consequences. As shown in figure 4.8, achievement of expected outcome has not been met.

Even though the expected results have not been met, still Employers require to make changes to the standard forms of contracts to protect their interest or think there are issues to resolve in the Sri Lankan construction industry. Therefore, this should be further studied in order to find appropriate methods to resolve these issues through necessary changes to the standard forms of Contract.

Chapter summary

Critical literature review was conducted on the areas such as construction contracts, contract documentation, contractual claims, causation of disputes, importance of using standard forms of contracts, guidelines for preparation of particular conditions. Initially, a preliminary survey was conducted based on completed 15 numbers of construction projects. Using the findings of the literature review together with the findings of the preliminary survey, a draft questionnaire was prepared. Thereafter, this questionnaire was tested before industry experts and detailed questionnaire was prepared.

Altogether 62 number of questionnaires were distributed and among them 54 number of questionnaires were received. Among them 50 completed questionnaires were considered for the analysis. The analysis comprised with several tests according to the nature of the questions. Hence, some of the results were analyzed using visual comparison via testing the frequency of each response. Apart from that, significant driving factors for the amendments were tested using a t-test and the impact of the changes were tested using Relative important Index.

In conclusion, majority of the respondents have strongly agreed to the statement of;

‘The Sri Lankan construction industry needs to practice standard forms of contract [FIDIC Red Book 1999] without amendment beyond recommended by the originator.’

As per the experience of the respondents, it has been commented that the changes should be strictly adhere to the recommended guidance provided in the standard form.

Even though the expected results have not been met, still Employers try to make some changes to the standard forms to protect their interest or think there are issues to resolve in the Sri Lankan construction industry. Hence, this should be further studied in order to find alternative ways to achieve the expected outcome of the changes of the standard forms without executing the same.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter aims to further summarize the work carried out in each phase of the study along with their key findings. The chapter commence with an overview of the research thereafter followed into contribution to knowledge and finally placing recommendations. Further, the new research directions emerging from this study are identified for further researches. Also the limitations of the study are discussed briefly.

5.2 Overview of the research and conclusions drawn from the study

Standard forms of contracts are practiced in the industry over years with the purpose of ease of contract administration, mitigating the occurrence of possible disputes, achieving the desired goals of the parties. In the same manner, project specific criteria shall be included into the contracts, hence involved professionals are used to prepare, amend the standard documents.

This research was formed to conduct in depth analysis to test the potentials to generate disputes due to changes made to the standard forms of contract. A dispute can be defined as a conflict or controversy between the parties where the parties fail to reach with an agreement. Disputes are therefore likely to arise under the best circumstances, even where every possibility has been potentially eliminated during the pre-contract stage.

With respect to the current context in the industry, chances are high to create a challenging and unsmooth working environment for the stakeholders in the industry. Hence, disputes can be seen as a common phenomenon which leads to incur time and cost overruns at the end. With regard to the initial study, it has been noted that according to past researches study on the occurrence of disputes due to amendments to the standard forms of contract and that are beyond the guidance provided by the originator have been rarely undertaken. Hence, according to the current context in Sri Lanka it was decided to study the matter in depth via this research.

In order to form a theoretical frame work for the research, initial study was carried out by referring books, journals, articles, research papers and electronic media. Throughout the literature review the following headings are described in detail.

- Construction procurement
- Construction contracts
- Contract documentation
- Contractual claims
- Construction contract agreement as a product of communication process
- Causation of disputes
- The importance of using standard forms of contract
- Standard forms of contract
- Standard forms used in the Sri Lankan construction industry
- Drafting amendments
- Guidance of the Preparation of the particular Conditions under FIDIC Red Book.

Accordingly, the literature review was conducted as the foundation of the research and the findings of the literature such as standard forms of contract, frequently amended clauses, need for the amendments to the standard forms, consequences of the amendments and its possibility to increase or decrease of disputes were considered in the preparation of the questionnaire. Initially, a draft questionnaire was prepared with regard to the objectives of the research and it was reviewed by selected industry experts before distribute the questionnaires among respondents. Accordingly, a detailed questionnaire was prepared and distributed among respondents. A quantitative approach was followed in this research; hence questionnaire survey was conducted accordingly.

After conducting a thorough literature review, a preliminary survey was conducted by reviewing 15 number of completed projects. Thereby, changes made to the standard conditions that are beyond the guideline provided by the originator were identified. According to the findings, it was also revealed that majority of the respondents have commented that FIDIC 1999 Red Book is mostly used in the Sri Lankan Construction

industry. The respondents have commented on “sometimes’ there can be disputes occurred due to amendments to the standard forms of contract based on FIDIC 1999 Red Book. This finding revealed that there is a potential to emerge disputes due to amendments to the standard forms of contract that are beyond the guideline provided by the originator.

It also has been commented that probability of resolving disputes due to changes made to the standard forms of contract without referring the dispute to a formal disputes resolution mechanism can be possible sometimes which denoted as 80%.

Further, it was examined the driving factors to amend the standard forms of contract by conducting a t-test using SPSS statistical software. Accordingly, 5 significant driving factors were identified. Apart from that, impact of the amendments to the standard conditions of contract which are the consequences of those amendments were ranked using Relative Important Index in order to identify its priority order.

Moreover respondents also commented that even those changes have been done to the standard forms, expected outcome was not achieved at the end.

Even though the expected results have not been met, still Employers try to make some changes to the standard forms to protect their interest or think there are issues to resolve in the Sri Lankan construction industry. Therefore, this should be further studied in order to find the alternative methods to resolve these issues through taking necessary measures not purely depending on the standard forms of Contract.

5.3 Limitations

The study was limited to the FIDIC 1999 Red Book and latest editions and the one of the cause of dispute occurrence is regarded as the amendments of the standard conditions of contract that are beyond the guidance provided by the originator.

Due to tight time constraints which are applicable to the research, number of completed construction projects considered for the preliminary study was 15 numbers. Respondent sample was also limited to 50 numbers including industry experts such as Arbitrators, Adjudicators, Contract Administrators, Counselors and Employers, Contractors and Consultants.

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QUESTIONNAIRE

ARE THE CHANGES MADE TO THE STANDARD FORMS OF CONTRACT LEAD TO DISPUTES? – THE CASE OF PROJECTS USING FIDIC RED BOOK IN THE SRI LANKAN CONSTRUCTION PROJECTS.

Section A

1. Name of the Respondent (Optional).

2. Please indicate your Experience of number of years in the Sri Lankan Construction Industry.

<5 5-10 Over 10

3. Please specify your current employment.

Employer	<input type="checkbox"/>
Contractor	<input type="checkbox"/>
Consultant	<input type="checkbox"/>
Contract Administrator	<input type="checkbox"/>
Adjudicator/Arbitrator	<input type="checkbox"/>
Counselor	<input type="checkbox"/>

4. Please state your experience (number of years) in dispute resolution of construction projects in Sri Lanka.

< 5 5-10 Over 10

5. Please specify as per your experience what are the Forms of Contracts (Conditions) used in Sri Lankan construction industry (please indicate as a percentage).

FIDIC Red Book 1999 and other latest Editions.	
ICTAD Forms of Contract	
Other	

6. Which of the following roles describes your involvement in **dispute resolution**?

Contract Administrator	<input type="checkbox"/>
Mediator, Adjudicator, Arbitrator etc.	<input type="checkbox"/>
Counselor	<input type="checkbox"/>
Legal adviser	<input type="checkbox"/>
Employer	<input type="checkbox"/>
Contractor	<input type="checkbox"/>

7. How many construction projects/disputes, you have been involved in dispute resolution based on FIDIC Red Book 1999 and other latest editions. Please choose as appropriate.

< 5 5-10 Over 10

8. Please indicate your experience of disputes occurrence due to amendments of the standard forms of Contract based on FIDIC 1999 Red Book.

-Never -Seldom - Sometimes -Often - Always

9. Based on your experience, Please state the number of disputes arisen (FIDIC Red Book forms of Contract) due to changes made to the standard clauses (beyond recommended by the Originator) but those have been resolved without referring to formal dispute resolution process.

-Never -Seldom - Sometimes -Often - Always

10. As per your experience, which of the following types of clauses in the standard form were amended? (Please select as many as apply).

1.5	Priority of Documents	<input type="checkbox"/>
1.9	Delayed Drawings and Instructions	<input type="checkbox"/>
2.1	Right of Access to the Site	<input type="checkbox"/>
2.2	Permits, License and approvals	<input type="checkbox"/>
2.4	Employer's Financial Arrangements	<input type="checkbox"/>
3.1	Engineer's Duties and Authority	<input type="checkbox"/>
4.1	Contractor's General Obligations	<input type="checkbox"/>
4.2	Performance Security	<input type="checkbox"/>
4.7	Setting out	<input type="checkbox"/>
4.9	Quality Assurance/Quality Control	<input type="checkbox"/>
4.4	Sub-Contractors	<input type="checkbox"/>
5	Nominated Subcontractors	<input type="checkbox"/>

4.13	Rights of way and facilities	<input type="checkbox"/>
4.12	Unforeseeable Physical Conditions	<input type="checkbox"/>
4.18	Protection of the Environment	<input type="checkbox"/>
6.5	Working Hours	<input type="checkbox"/>
7.7	Plant and Materials and Workmanship	<input type="checkbox"/>
8.1	Commencement Date	<input type="checkbox"/>
8.4	Extension of Time for Completion	<input type="checkbox"/>
8.5	Delays caused by Authorities	<input type="checkbox"/>
8.8	Suspension of Works	<input type="checkbox"/>
10.1/10.2	Taking Over of the Works and Sections	<input type="checkbox"/>
12.3	Measurement and Evaluation	<input type="checkbox"/>
13	Right to Vary and Variation procedure	<input type="checkbox"/>
13.5	Provisional Sums	<input type="checkbox"/>
13.8	Adjustment for changes in Cost	<input type="checkbox"/>
14	Contract Price and Payment	<input type="checkbox"/>
15	Employer's Termination	<input type="checkbox"/>
16	Contractor's entitlement to suspend work/ Termination by Contractor	<input type="checkbox"/>
17/18	Risk and Responsibility	<input type="checkbox"/>
20	Contractor's Claims and Dispute Resolution	<input type="checkbox"/>

11. Please rank the following reasons which prompted to change the clauses in the FIDIC Red Book based on the importance.

[Using scale 1-not important, 2-slightly important, 3-fairly important, 4-important, 5-very important]

Description	1	2	3	4	5
Need to reflect regulatory requirements prevailing in the country.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Form perceived to be poorly drafted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of contract administration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Need to shift the risk to other party	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prevent / mitigate occurrence of possible disputes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prevent possible Claims	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
More Clarity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protect the Employer's specific Requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Specific Requirements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. For each of the following, please state your view as to whether, compared to the standard forms of Contract, the amendments made increased tendency for the followings.

[Using scale (1-Never, 2-Seldom, 3- Sometimes, 4-Often, 5-Always)]

Description	1	2	3	4	5
Understanding between the parties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Efficiency in contract administration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project cost and time overruns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Need for legal advice during the project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Disputes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Work Efficiency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Strengthen the relationship between the parties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Successfully achieve the objectives of the parties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Based on your experience, please indicate, have the expected outcome from the changes achieved?

-Never -Seldom - Sometimes -Often - Always

14. To what extent do you agree with the following statement?

[Using scale 1-Strongly Agree, 2- Agree, 3-Undecided, 4-Disagree, 5-Strongly Disagree]

‘The Sri Lankan construction industry needs to practice standard forms of contract [FIDIC Red Book 1999] without amendment beyond recommended by the originator.’

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>