

**SUITABILITY OF THE ROLE OF THE ENGINEER TO
THE CONTRACT AS A MEDIATOR TO MITIGATE
THE DISPUTES IN CONSTRUCTION PROJECTS**

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Degree of Master of Science in Construction Law and Dispute
Resolution

Department of Building Economics

University of Moratuwa

Sri Lanka

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Dissertation submitted in partial fulfilment of the requirements for
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DECLARATION

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

Further, I acknowledge the intellectual contribution of my research supervisor Ch. QS. Prof. (Mrs.) B. A. K. S. Perera for the successful completion of this research dissertation. I affirm that I will not make any publication from this research without the name of my research supervisor as contributing author unless otherwise, I have obtained written consent from my supervisor.

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.....

Ch. QS. Prof. (Mrs.) B. A. K. S. Perera

.....

Date

Dissertation Supervisor

Suitability of the Role of the Engineer to the Contract as a Mediator to Mitigate the Disputes in Construction Projects

ABSTRACT

Disputes are widespread in construction projects. The Engineer to the Contract can avoid most of these disputes. The Engineer is identified as an impartial judicial decision-maker. However, alternative dispute resolution is the next step in resolving disputes out of the Engineers control. Mediation is the best resolving technique out of other alternative dispute resolution methods, and Mediator is the key person in the Mediation process. Past studies prove that the Engineer can play a Mediator's role and provide evidence for the industry's need for a mediator role from Engineer.

Therefore, this study aims to investigate the suitability of the Engineers role to the contract as a Mediator to mitigate disputes in construction projects. A qualitative research approach and semi-structured interviews were selected as the data collection methodology to approach the aim based on the study objectives. Collected empirical data were analysed using manual content analysis. Characteristics of the Engineer and the Mediator, enablers, and barriers were collected via the literature survey and validated through the expert interview. The interviewees identified entire barrier management strategies and disclosed new enablers and barriers. The study recommended forming a standard agreement accepted by all contracting parties when appointing the Engineer to the contract.

Keywords: Barrier Management Strategies, Disputes, Engineer to the Contract, Mediator

DEDICATION

**I dedicate
my work to my family
and respected teachers
for their commitment, love, and
encouragement**

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LIST OF ABBREVIATIONS

Abbreviation	Description
ADR	Alternative Dispute Resolution
CEDR	Centre for Effective Dispute Resolution
FIDIC	Fédération Internationale Des Ingénieurs-Conseils
GDP	Gross Domestic Product
SBD	Standard Bidding Document

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1.0 INTRODUCTION

1.1 Background

The Construction industry is considered a major component of a country's economy (Durdyev & Ismail, 2012). It may impact the world economy and help economic equilibrium (Turner & Townsend, 2019) because the enhancement of direct employment through construction can build up the Gross Domestic Product (GDP) (European Commission, 2012). Therefore, the government deploys billions (of money) on infrastructure development projects (Sri Lanka Export Development Board, 2013).

The construction industry has expanded from small housing projects to massive port and city development projects (Construction Expo, 2020). The characteristics of each of those projects vary, and the final outputs are unique (Ratnasabapathy & Rameezdeen, 2006). Every project is challenging because the project is executed based on three parameters: time, cost, and quality (Lines, Perrenoud, & Sullivan, 2013). Managing those parameters is called *project success* (Mohamad, 2010). Berggren et al. (2001) stated that the nature of project management was changing due to the complexity; many projects were managed by employers and Contractors themselves, which influenced the Employers to hire Engineers and Consultants. The Employer selects a suitable Engineer for the contract based on the contract conditions before starting the tender process. The appendix to the tender in the tender document should mention the assigned Engineers name (Krishna, 2018).

The Engineer to the contract is a natural person appointed by the Principal (Gillies & Henry, 2018). Berggren et al. (2001) stated that although the Engineers contribution begins with the establishment of the contract, in some cases, the Engineer joins the project as a consultant at the initial stages of the design concept. However, after the establishment of the contract, his position will change as the Engineer to the contract or the Employer can appoint another person as the Engineer (Berggren et al., 2001).

According to Brien (2019), the Engineer to the contract represents the Client; this relationship is called a *principal-agent relationship*. Although the Engineer represents the Employer and stands in the middle between the Employer and the Contractor, the Engineer proves his role in action by complying with the contract terms while maintaining the principal-agent relationship (Gould & Elliott, 2016). On the other hand, the Engineer is an adviser to the Employer and consequently acts as a Mediator between the Contractor and the Employer (Eldin, 1994). In addition, the Engineer is “an impartial quasi-judicial decision maker” (Prentice, 2017, p. 2). The Engineer also acts as a technical supervisor and construction manager (Saket, 2010).

Nevertheless, the Engineer can be empowered by the Employer in a dual role, such as agent of the principle and independent certifier under common law (Gillies & Henry, 2018). The duties and authorities of the Engineer are explained clearly under Clause 3.2 in the condition of contracts FIDIC (FIDIC, 2017). The Engineer to the contract utilises the authority delegated by the Employer to resolve the issues. The Engineer may display several characteristics of Mediator role when handling disputable items and finding solutions (Saket, 2010).

Saket (2010) and Prentice (2017) highlighted the Engineer as an impartial character, but Gillies and Henry (2018) defined the role of the Engineer differently, based on FIDIC red book first edition 1999. According to their interpretation, “The Engineer does not need to act impartially although arguably there is an implied obligation to make an honest, professional judgment” (Gillies & Henry, 2018, p. 4). However, according to the FIDIC 2017 red book second edition, “The Engineer shall make a fair determination of the matter or Claim, in accordance with the Contract, taking due regard of all relevant circumstances” (FIDIC, 2017, p. 19). Tyson (2016) expressed that the Engineer probably performed with his fair determination according to the sub-clause 3.7 in FIDIC red book second edition under circumstances which caused disagreement between the parties.

Disagreements between the parties are the main reason for disputes (Illankoon et al., 2019; Nabatova, 2017). Hence, an alternative dispute resolution method is necessary when disputes arise between parties (Maiti & Choi, 2021). Mediation is a proper dispute resolution system, and mediation is a “voluntary and confidential process of

dialogue and negotiation for the intervention of a neutral third party to facilitate the parties to reach a mutually acceptable resolution of the dispute” (Niraula, n.d. p. 11). Mediation facilitates further negotiation between the parties (Eshetu & Getu, 2009).

Furthermore, mediation is a process economically affordable for the parties, less time-consuming, and restoring a permanent relationship than other alternative dispute resolution techniques (Chau, 1992). Yates (2010) distinguished advantages of mediation not shown by other alternative dispute resolution methods:

- maintaining a healthy relationship between the parties,
- keeping the terms of the settlement private and confidential,
- getting practical solutions for the issues of both parties by negotiation, and
- Unlike court order, taking final solution as per the will of the parties.

Mediation and Negotiation techniques are considered as the best methods though the construction sector has many other available alternative dispute resolution methods, i.e., Arbitration, Conciliation, Early Neutral Evaluation, Rent-a-Judge, Court Annexed Arbitration, Summary of Jury Trials, and Dispute Review Board mediation (Yates, 2010). According to the Mediation Boards Act No. 72 (1988), provisions are established for appointing Mediators appropriately. A Mediator is someone enriched with experience and knowledge regarding a particular subject area (Gould & Elliott, 2016). In addition, the Mediator performs a **bridging role** between the parties with the trust, which develops during the process (Gould & Elliott, 2016).

However, the Mediator is a person interpreted as a third party who interferes in resolving disputes (Yates, 2010). In other words, he facilitates the negotiation and encourages the parties to reach a settlement. The main advantages of mediation are that it reduces the time and money spent on dispute resolution than other methods (Gould & Elliott, 2016). According to Clause 3.7 in the FIDIC red book edition of 2017, the Engineer has the authority to determine his decision. However, according to Nabatova (2017), the Mediator cannot determine his decision. The above two statements imply that the Engineer has more authority than the Mediator to determine his decision and guide parties throughout the construction process. An in-depth scrutinising of the Engineer’s and the Mediator’s roles reveals that the Engineer

frequently acts as the Mediator. Therefore, bringing both professionals into one platform may be more effective than individual practice. Further, the Mediator is no longer considered a third party, and this concept can save time and money in resolving disputes in construction projects. Thus, it is vital to study the Suitability of the Engineer's role to the contract as a Mediator to mitigate disputes in construction projects.

1.2 Problem Statement

The background study discussed that the Engineer to the contract is an impartial and neutral person (Gillies & Henry, 2018; Brien, 2019). The Engineer does not act as a Mediator in current practice, although he/she may act as a neutral person (Gould & Elliott, 2016). Under these circumstances, construction parties should seek the Mediator's assistance as a third party in case of disputes (Thailand Arbitration Center, 2022). The Engineer has a thorough knowledge of the project and is enriched with a practical understanding of the problems that may arise (Charrett, 2021). In addition, the Engineer is also "an impartial quasi-judicial decision maker" (Prentice, 2017, p. 2) and has better knowledge about contractual issues and remedies (Jayasena & Yakupitiyage, 2012).

The Engineer may work as a Mediator in times of disputes. Besides, the above issues and recommendations are build-up based on practice and practical experience. The industry community has separately identified the Engineer's and the Mediator's roles. The summary of the above studies comprehends that the Engineer can play a Mediator's role.

The need to play a Mediator role by an Engineer is apparent in the construction industry. Even though contractually defines the Engineer's role, it is highly complex to measure the extent of "Fair Determination" in the Engineer's position. Enhancing the personality and ethics of the Engineer are the industrial needs that can be highlighted.

Many past studies are based on the individual role of the Engineer (Berggren et al., 2001; Gillies & Henry, 2018; Prentice, 2017; Brien, 2019), the Mediator (Dodanwala & Shrestha, 2021; Dodanwala & Santoso, 2021), and Mediation (Gould & Elliott,

2016; Niraula, n.d; Thailand Arbitration Center, 2022; Voordijk & Vahdatikhaki, 2020).

There is a shortage of literature on mitigating disputes that merge the characteristics of both Engineer and Mediator roles. Therefore, considering this literature gap and the industry need, researching is necessary to identify the suitability of the Engineer's role as a Mediator to mitigate disputes in construction projects.

1.3 Aim and objectives

This study investigates the suitability of the role of the Engineer to the contract as a Mediator to mitigate disputes in construction projects.

The following objectives were based on achieving the research aim:

1. To identify the role of Mediator in construction projects,
2. To identify the role of the Engineer to the contract in construction projects,
3. To identify enablers and barriers of the Engineer to the contract when involved as a Mediator, and
4. To propose suitable solutions to use Engineer to the contract as a Mediator in construction projects.

1.4 Research Methodology

1.4.1 Literature Review

A comprehensive literature review was performed using journal articles, conference papers, and books to identify characteristics, duties and responsibilities, and advantages and disadvantages of the Engineer's role to the contract as a Mediator in construction projects. This literature review helped to identify the available research gap.

1.4.2 Expert Interviews

Detailed expert interviews were held among 16 qualified Contract Administrators, Commercial Managers, Claims Managers, and Individuals experienced in Dispute resolution in the Sri Lankan Construction industry to identify the Engineer's limitations when involved as a Mediator.

1.4.3 Data analysis

Interview findings were analysed using manual content analysis methods.

1.5 Scope and Limitations

The research is limited to the building projects considering SBD/02 and FIDIC second edition 2017 condition of contract for construction. FIDIC condition of the contract is limited to the projects that the Building and Engineering work designed by the Employer; this study is limited to building projects (Major Projects).

1.6 Chapter Breakdown

Chapter 01: Introduction

The introduction outlines the overall research and includes the background, problem statement, aim and objectives, scope and limitations, and research methodology.

Chapter 02: Literature Review

Literature reviews provide a theoretical review of the Engineer's role and Mediator in construction projects. Objectives 1 and 2 are discussed in the literature review. Objective 3 is also partially achieved through the literature survey.

Chapter 03: Methodology

The methodology provides the research procedure, including introduction, research design, research approach, data collection methods, and data analysis techniques.

Chapter 04: Findings and Analysis

This chapter consists of the evaluation of data collected via expert interviews. It identifies suitable strategies to use the Engineer to the contract as Mediators in construction projects. Objectives 3 and 4 are covered in this chapter.

Chapter 05: Conclusion and recommendations

The final chapter concludes the study with the proposed suitable strategies to consider the Engineer to the contract as a Mediator in construction projects. It explains the achievements of each objective, addressing limitations and further research directions in the same research field.

1.7 Synopsis Summary

The synopsis presents a brief idea of the entire research through the research topic, aim and objectives, background, and initial literature. Furthermore, the synopsis includes a chapter breakdown and presents the way of approaching aims and objectives through the methodology.

2.0 LITERATURE REVIEW

2.1 Introduction

Chapter 01 presented the research background and a brief narration of the structure of the research study. Chapter 02 aims to access the existing knowledge regarding the research field and justify the research problem. This chapter comprises previous literature relevant to the subject area and addresses the objectives mentioned in Chapter 01.

Chapter 02 begins with an introduction to the disputes in the construction industry and provides an overview of the Mediator's and the Engineer's roles. Subsequently, it reviews the characteristics of the roles common to the Engineer and the Mediator. This chapter discusses the Engineer's involvement as a Mediator and the incompatibility of both roles and expresses black-and-white impressions regarding relevant characters. The latter part of this chapter analyses the enablers and barriers of the Engineer to the contract when involved as a Mediator. The first two objectives were fulfilled in this chapter, and objective three was partially accomplished.

2.2 Disputes in Construction projects

A single construction project in the construction industry can be introduced as an individual organisation which combines many people with different knowledge, mentalities, skills and capabilities (Soni et al., 2017). The combination of too many people can hinder a project's success and lead to conflicts due to contradictory opinions and approaches to their goals (Anita, 2016). Cakmak (2021) classified three factors influencing disputes: contractual matters, cultural problems, and legal matters.

The Cambridge Dictionary (2021) defines a dispute as an argument or disagreement between two parties. Disputes are further identified as one of the events considered conflicts (Jaffar et al., 2011). Shipman et al. (2018) define conflicts as uncertainty or act of questioning, opposing, misbehaving, controversial or contradictory interactions. According to Baster et al. (2007), the parties should be encouraged through the judicial

with a definition of a dispute to exchange their views and facts related to a dispute. Accordingly, a dispute does not exist until one party asserts a disputed claim (Construction Tuts, 2017). However, disputes arise based on environmental and behavioural factors and many different causes.

Typically, construction disputes cause to drain money and damage the relationship between parties (Construction Tuts, 2017). Disputes are common in construction industry (Yiu, 2005). Disputes are not limited to one country or one sector of the world, and the value of disputes depends on the strategies used to prevent disputes from arising (Nabatova, 2017). Figure 2.1 shows the values of disputes in the world. Nabatova (2017) stated that over fifteen months might be necessary to settle a dispute and further highlighted that poor contract administration is the main cause of disputes in construction. Therefore, a good preventive mechanism is necessary to solve problems when they occur.

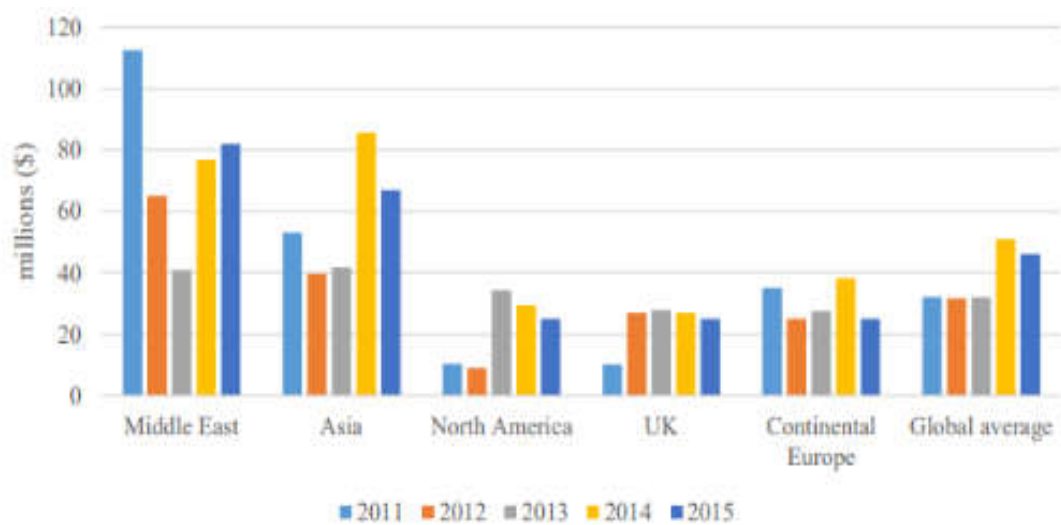


Figure 2-1: Dispute values, arranged by regions

Source: Nabatova (2017)

2.3 Causes of disputes and their impact

A construction project is a series of tasks involving many people, materials, and machinery. It can vary depending on the complexity, duration, project value, quality,

and the number of stakeholders involved (Koutsogiannis, 2019). Project cost overruns, delays, reduced productivity, loss of expected profitability and damage to business relationships are common causes of disputes (Jaffar et al., 2011). Often, a lack of information sharing and/or ideas and concerns, or not being communicated simultaneously or at any point in the project, provides the basis for a dispute (Harris, 2018).

Love et al. (2008) have found disputes which keep arising in the construction industry until today, based on issues relevant to health and safety, the adaptation of technology, cost and schedule overrun. Furthermore, cost and schedule overrun are significant factors, which are contributing to disputes (Love et al., 2008). Those two facts depend on scope changes, incorrect and incomplete design, delayed regulatory approvals, and ambiguities in contract documents (Waldron, 2006). According to Cakmak and Cakmak (2014), conflicts are inevitable until there are differences in perceptions among the parties involved in the project. If managed appropriately, they may avoid ending up in a dispute. Disputes may arise at any stage in the construction process, from the conceptual design stage, bidding, engineering, procurement and construction stage up to the post-completion stage (Harris, 2018).

Love et al. (2010) have identified poor contract documentation, scope changes, and unforeseeable ground conditions as factors for disputes. Construction Executive (2017) stated that disagreement between parties on the contract is the primary reason for disputes and classified as follows: lack of understanding of conditions in the contract document, contract delays, administration issues and errors in contract documents, and incomplete claims, made by parties (El-Sayegh et al., 2020). Therefore, it is essential to be aware of the disputes and conflicts that can occur during the project period to mitigate and take proper precautions to avoid them (Rauzana, 2016). Cakmak and Cakmak (2014) categorized the causes of disputes in the construction industry based on administrator issues, and Illankoon et al. (2019) highlight below factors which trigger disputes:

- Failure to properly administer the contract
- Errors and omissions in contract documents
- Incomplete design information or changes in Employer requirement

- Lack of understanding and compliance with the contractual obligations of both parties
- Poor management of the construction process leads to resource scarcity and quality issues
- Different interpretations of contract terms
- Insufficient risk identification and allocation
- Poor coordination and trust between parties
- Opportunistic behaviour of the project parties
- The reluctance and poor knowledge of project participants to adapt to changes
- Attempting to achieve the individual goals of each party in the same project
- Contradictory goals and the objectives of the project parties
- Lack of experience in construction parties and management
- Lack of interpersonal skills among professionals
- External uncertainties such as climate change, environmental changes and regulatory changes
- Changes in market conditions

2.4 Dispute resolution techniques

The construction industry has always struggled to find ways to resolve disputes fairly and economically (Sayed-Gharib et al., 2010). Jayasena and Yakupitiyage (2012) have identified features that parties may consider when choosing a dispute resolution method. Those features are voluntariness, neutrality, fairness, knowledge in construction, creative agreement, enforceability, the scope of remedy to satisfy interest, speed, consolidation, cost, range of issues, preservation of relationship, flexibility in issues, strategy and agreement, binding decisions and enforcement, degree of control by parties, formality, consensus agreement, privacy, relative cost, and confidentiality.

Litigation always focuses on protecting unilateral benefits or creating a win-win situation through the decision on disputes (Cheng et al., 2009). Winning all parties involved is the meaning of a win-win strategy (Cambridge dictionary, 2021). Each party in conflict aims for a win-win situation, which will be unusual in litigation (El-

Sayegh et al., 2020). Therefore, litigation has been a time-consuming and costly method of dispute resolution in the past. Andrew (2001) expressed that alternative dispute resolution (ADR) techniques can reduce cost and time waste for litigation.

ADR has different forms and common characteristics, such as non-binding, private, and voluntary (Cheng et al., 2009). It is an advanced definition incorporated with various processes which are alternatives to the general litigation process (Brooker, 2007). Alshahrani (2017) mentioned that mediation is very popular as an alternative dispute resolution technique in the USA. Yiu (2005) stated that alternative dispute resolution techniques should be implemented in the early stages of disputes. The tendency of parties to seek a solution through ADR saves 60% of management time and money over arbitration and litigation (Brooker & Lavers, 2010). However, the non-binding nature of alternative dispute resolution strategy has been considered a disadvantage.

Saving the money and time of the parties involved in the dispute has led to the popularity of ADR strategies in the construction industry (Cheung S., 1999). As per Uff (2017), ADR methods are relatively informal, but the range is vast. Many countries are tempted to use different ADR methods, such as mediation, conciliation, and adjudication, to solve disputes. All dispute resolution methods are based on these three processes, representing a wide range (RICS, 2012). These ADR methods are as follows:

- **Negotiation** – Attempts to solve the parties' problems themselves (RICS, 2012).
- **Mediation or Conciliation** – Attempts to solve the problems with third-party intervention and facilitate the negotiation (RICS, 2012).
- **Adjudication** – The final decision determined by the third party and the decision will be binding (RICS, 2012).

Mackie et al. (2007) refer to these as the 'three pillars' of dispute resolution and explains the connectivity of different techniques based on these three pillars. The interrelationship of these techniques is known as the dispute resolution landscape and is illustrated by Figure 2.2.

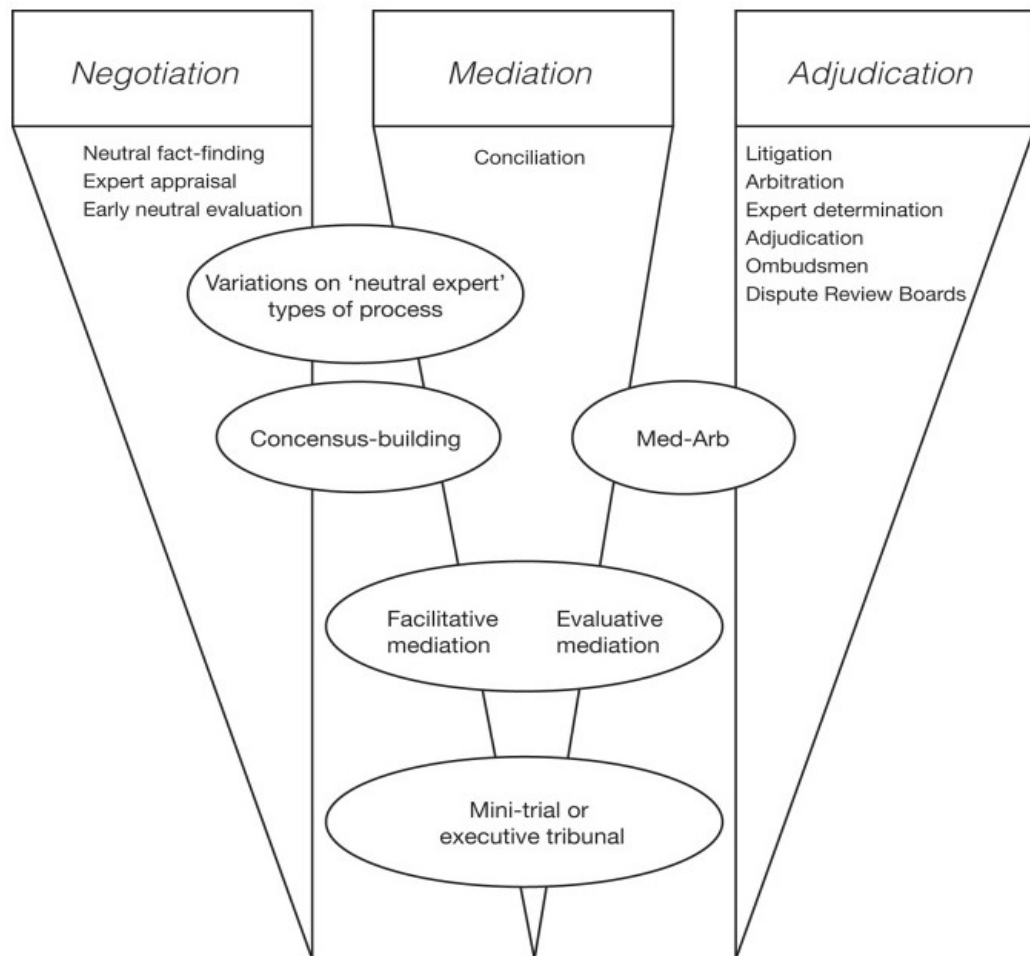


Figure 2-2: The Dispute Resolution Landscape

Source: Mackie et al. (2007)

Through their research data, Jayasena and Yakupitiyage (2012) have outlined that negotiation is the most popular alternative dispute resolution method in the Sri Lankan construction industry. However, parties should strategically select appropriate dispute resolution methods considering the end result (Anggraeni, 2020). For example, the parties usually focus on the binding and enforceability of the decisions made by the dispute resolution method (Jayasena & Yakupitiyage, 2012). Therefore, dispute resolution methods applicable to disputes are outlined in the standard forms relevant to the project in advance (Rahmat & Rahim, 2018). Jayasena and Yakupitiya (2012) substantiated the above argument based on factual measurements in Figure 2.3. It demonstrates that most parties have chosen negotiation as the best dispute resolution method and mediation as the second most popular method.

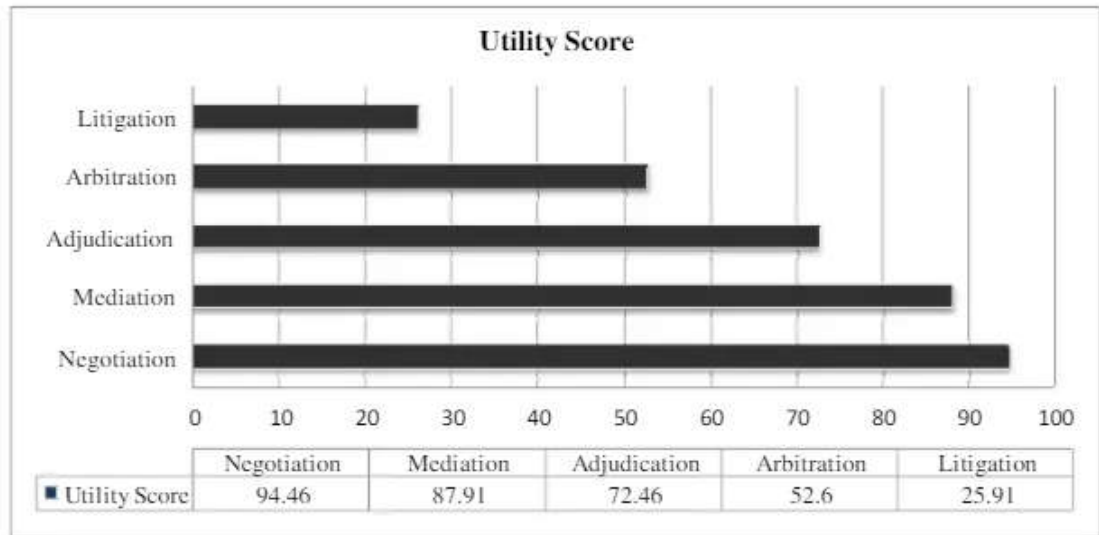


Figure 2-3: Utility Score of Dispute Resolution Methods

Source: Jayasena & Yakupitiyage (2012)

According to Figure 2-3, Mediation is the first and most popular alternative dispute resolution method involving a third party.

2.5 Mediation

Mediation is very popular in the construction industry and society as a suitable dispute-resolution method (Fellows, 2011). Rahmat and Rahim (2018) confirmed that mediation is a popular alternative dispute resolution method in the Middle East, Europe, and Asian countries.

According to the Ministry of Justice Sri Lanka (2021), the Sri Lankan mediation board commenced in 1988 through the parliament act. It established mediation boards throughout the country covering all Divisional Secretariats. The formation of the Mediation board has provided a unique opportunity for the speedy settlement of minor disputes. It has functioned as a robust dispute resolution mechanism alternative to litigation (Ministry of Justice Sri Lanka, 2021).

Chau (2007) stated that mediation is the most important alternative dispute resolution technique and settles nearly 82% of disputes in the construction industry. Mediation is a non-binding process in which an impartial third party facilitates negotiations without the parties declaring their determination (Cheung, 2010). Furthermore, parties get assistance from independent third parties to recognize the issues in disputes and to find

alternatives for resolving solutions (Smith & Elliott, 2014). In other words, it is a friendly method that helps the parties to resolve their issues (Ismail et al., 2020). Smith and Elliott (2014) highlighted that the Mediator directs and influences the parties to find solutions by themselves.

2.5.1 Advantages of Mediation

The final determination of disputes associated with litigation clearly depends on evidence and precedents; in other words, contractual terms and decisions of previous cases (Lee et al., 2021). Therefore, the cost of legal fees, court charges, and lawyer fees are higher in other comparative alternative dispute resolution methods (Rahmat & Rahim, 2018). In addition, parties involved in the dispute can express their views about the conflict and how they wish to resolve it (Gould & Elliott, 2016). The parties may consider solutions that a court cannot order and agree on practical solutions (Rahmat & Rahim, 2018). An advantage of this method is the capability to deal with underlying issues, such as the desire to forgive or admit wrongdoing. Unlike litigation, relationships can continue after the mediation settlement, and the settlement terms can be kept confidential (Gould & Elliott, 2016).

2.5.2 The role of the Mediator

The manager of the mediation process is the Mediator (Gould & Elliott, 2016). Therefore, the Mediator must control the process and assist the parties in settling (Cheung, 2010). According to the CEDR, the Mediator plays several critical roles in mediation. The literature has identified various interpretations of the role of the Mediator (The CEDR mediator Handbook, 2015). After considering all interpretations, Table 2-1 is designed to determine the role of the Mediator.

Table 2-1: Role of the Mediator identified by past researchers

Role of the Mediator	A	B	C	D	E	F	G	H
Sensitively and firmly manage the process.	✓	✓		✓				
Facilitating parties to overcome deadlock and towards settlement.	✓	✓	✓				✓	
Identification of common goals based on gathered information.	✓	✓		✓	✓	✓	✓	
Assist the parties in understanding the reality of the dispute by being a reality tester.	✓	✓	✓					
Directing the parties to construct an outcome that meets their needs.	✓	✓	✓		✓			
Broadening the parties' vision of the problem and developing positive approaches to the problem.	✓	✓		✓	✓	✓	✓	
Assist the parties in writing the agreement.	✓	✓						
Act as a settlement supervisor and check whether the settlement agreement has been implemented and Help the parties to avoid further problems.	✓	✓		✓				
Encourage parties to a settlement.	✓	✓	✓	✓	✓	✓	✓	✓
A- Gould & Elliott (2016); B - The CEDR mediator Handbook (2015); C- Chau (2007); D- Harmon (2006); E- Imperati (2021); F-Wilson & Bryan (2017); G- Cheung & Yiu (2007); H- Lee et al. (2021)								

The parties' confidence in the Mediator is essential; it encourages them to have honest discussions (Dickinson, 2019). The Mediator can guide the parties to generate alternatives for settlement by uncovering all issues. A Mediator utilises various strategies to approach a settlement (Cheung, 2010). In other words, obtaining information by investigation, understanding the situation, convincing, building solutions, and directing the parties to look at the problem from a broader perspective (Gould & Elliott, 2016). The Mediator should reach the depth of the issue and

investigate and question the parties to find the cause without merely looking at the surface of the problem (Cheung & Yiu, 2007).

In other words, a Mediator may fail to settle the parties without knowing the hidden intentions of the parties. A Mediator must avoid biases and sympathy to build trust and maintain the relationship between the client and the Mediator (Gould & Elliott, 2016). Persuasion is important to proceed with the mediation by heading the parties towards inventiveness to distract from their perception to which they are attached. In this context, distraction is the ability to move parties to another relevant subject to explore settlement possibilities from a different angle (Harmon, 2006).

According to Harmon (2006), these tactics can help prevent the polarisation of positions, often followed by many, during the conflict. During the mediatory process, mediators act as a coach and advisors, giving them all the opportunity to participate as fully and effectively as possible while strictly protecting neutrality and confidentiality (The CEDR mediator Handbook, 2015).

2.5.3 Responsibility of the Mediator

The Mediator is liable to the parties for any action or omission committed by him/her during his/her role of intervention, and liabilities are stated in the mediation agreement. In other words, “Mediator is his/her credibility with each of the parties and their attorneys” (Harmon, 2006, p. 327). Another important fact of mediation is impartiality (Malta Mediation Centre, n.d.). Confidentiality is the primary responsibility of the Mediator; according to the mediation act, all statements given by the parties, including all communications between parties and the Mediator during the whole Mediator process, are confidential, and evidence presented during the Mediator process is not admissible in litigation. “Moreover, the Mediator cannot be summoned as a witness on what took place and on what came to his/her knowledge during mediation” (Malta Mediation Centre, n.d, p. 18.). However, the Mediator has the authority to disclose to the litigation the information gathered during the mediation process with the written consent of the parties.

2.5.4 Qualities of the Mediator

Integrity is a vital attribute that parties expect from a good Mediator; hence the parties can understand the honesty of the Mediator (Imperati, 2021). Honesty with the parties is a fundamental quality of the Mediator, and it builds trust between the Mediator and the parties to share the details relevant to the disputes. Parties believe that confidence will not be breached (Wilson & Bryan, 2017). A Mediator should avoid misrepresentation during the mediation process. The Mediator must be well-qualified and have expertise in a particular area. In this regard, the Mediator should manage the mediation process and collect information from the parties before the appraisal and examination to facilitate the negotiations between the parties, thus leading to a settlement (Gould & Elliott, 2016).

2.6 Engineer to the Contract

An Engineer is a natural person appointed by the Employer; he/she administers the contract on behalf of the Employer and assists in completing the project correctly and on time (Gillies & Henry, 2018). Prentice (2017) interprets the Engineer as an impartial judicial decision-maker. Their duties and roles are clearly mentioned in standard forms to avoid generating possible complications (Saket, 2010).

The duties and authorities of the Engineer are described under Section 3.1 in the condition of contracts FIDIC (FIDIC, 2017). “If the Engineer is a legal entity, a natural person employed by the Engineer shall be appointed and authorised to act on behalf of the Engineer under the Contract” (FIDIC, 2017, p.16). Saket (2010) explains the Engineer as two consultants; the technical supervisor and the construction manager.

According to Gillies and Henry (2018), this profession was recognised during the 1700s and developed with industry growth. The industry evolution has created the background for Engineers to enhance their skills and involvement in projects in several stages (Civil Engineering Lectures, 2021). Engineers often contributed to the project tasks, including procurement, planning, feasibility studies, designing, supervising, and administrating. According to Berggren et al. (2001), the same person involved in the design stage was later appointed by the Employer as the Engineer to the contract. Therefore, the Engineer’s contribution starts from the initial phase of the design

concept. Experience and knowledge of the projects made them indispensable professionals in construction projects. At the same time, the Engineer became a prominent agent for the Employer to administer the contracts and the site work (Gillies & Henry, 2018).

Initially, the Engineer acts as an agent representing the Employer, issuing instructions and making decisions at the Employer's discretion (Ndekugri et al., 2007). The Engineer's duties later changed in line with the court decisions against the cases, which helped him/her be reborn as an impartial and independent engineer (Ranger v Great Western Railway Company, 1838). It is a good example to illustrate the situations in which the Mediator role is expected through the Engineer. Characteristics of the Mediator role can be seen through the Engineer when handling disputes by the Engineer (Lina, 1997). It is a fine example to show the impartiality of the Engineer's role. However, if he/she cannot determine, or if their decisions go beyond the contract document, then the Engineer shall make a fair determination (FIDIC, 2017). Further, Tyson (2016) and Eldin (1994) introduced the Engineer as a reasonable decision-maker.

2.6.1 Role of the Engineer to the contract

Several standard forms of contracts, such as FIDIC, SBD, and NEC, explain the role of an Engineer. According to the NEC Contracts (2020), the role of the Engineer to the contract is fragmented into three sections: project manager, supervisor, and adjudicator. It further describes that the Engineer administers the contract and makes decisions as a manager, monitors the work as a supervisor, and determines disputes as an adjudicator. The FIDIC (2017) red book interprets the Engineer as a person who works in accordance with the contract, and he/she must not be a natural person. In addition, the Engineer is empowered under the contract to perform their duties (Gillies & Henry, 2018). According to the contract agreement, the Engineer should study the stability and reliability of the project's financial status and cost estimate, scrutinise drawings and design, invite tenderers and select suitable procurement systems, perform feasibility studies, supervision, and maintain quality of works, and cross-check the overall project based on time, cost, and quality (Ghaswala, 2010).

In addition, the literature identifies various interpretations of the Engineer's role. Table 2-2 is designed to identify the Engineer's role in the contract after considering all interpretations.

Table 2-2: Role of the Engineer to the Contract

Role of the Engineer to the Contract	A	B	C	D	E	F	FIDIC	SBD
Project planning and guiding the parties			√					
Managing Time, Cost, and Quality of the project	√	√	√	√			√	√
Coordinating the project works	√							
Supervision of works	√			√		√		
Advising the Employer on matters related to the cost, design, and technical details		√	√			√		
Dealing fairly with financial and business procedures					√			
Assist in interpreting the contract document and preparing agreements, reviewing bonds and guarantees		√						
Assist in maintaining the cash flow			√	√				
Issuing instructions and Fair determination	√				√		√	√
Administration of the Contract	√	√	√	√				
A- Brien (2019); B- Berggren et al. (2001); C- Saket (2010); D- Ghaswala (2010); E- Prentice (2017); F- Dymond (2013); FIDIC (2017); SBD (2007)								

According to Table 2-2, Saket (2010) highlighted project planning and guiding the parties as a role of the Engineer, which, in other words, is known as following up on whether the project is running in the given time frame. The Engineer is always strict

with the time, cost, and quality of the project and follows up on whether the Contractor is within the given cost, time, and maintaining the quality of the works (Brien, 2019; Berggren et al., 2001; Saket, 2010; Ghaswala, 2010). Furthermore, the Engineer coordinates project works and communicates clear information about the project between the Contractor and the Employer (Brien, 2019). Dymond (2013) states that the Engineer advises the Employer on matters related to the cost, design, and technical details.

The Engineer is a person who deals fairly with financial and business procedures (Prentice, 2017). In addition, the Engineer assists the Employer by interpreting the contract document and preparing agreements, reviewing bonds and guarantees for direct contracts, which are the works done by the Employer separately (Berggren et al., 2001). The Engineer assists in maintaining the cash flow by certifying monthly interim payment certificates with fair evaluation (Ghaswala, 2010). Fair determination and providing instructions are some of the most important duties of an Engineer to the contract (Prentice, 2017).

2.6.2 FIDICs Interpretation of the Engineer

The “Engineer means the person named in the Contract Data appointed by the Employer to act as the Engineer for (the purposes of) the Contract, or any replacement appointed under Sub-Clause 3.6” (FIDIC, 2017, p.4). An Engineer is a contractual role who works following common law but with some differences (Gillies & Henry, 2018). According to Clause 3.7, “agreement or determination” in FIDIC, the Engineer shall neutrally act when making an agreement or determining between the parties and should not think that they have to act on behalf of the employer.

Furthermore, the Engineer should negotiate jointly and/or separately with both parties and encourage negotiation between the parties to reach an agreement under Clause 3.7.1: “Consultation to reach agreement” (FIDIC, 2017). Pursuant to Clause 3.7.2 in FIDIC (2017), the Engineer should consider all relevant circumstances when determining the matter fairly as per the contract. The terms and conditions of the contract specify the duties and authority of the Engineer and the limits of the Engineer’s role. In addition, Clause 3.2 in the FIDIC condition of the contract explains

that the Engineer have no authority to amend the contract or, except for conditions stated as otherwise, to exempt the parties from any duties and delegate the authority and responsibility. The Engineer must obtain the Employer's consent under particular conditions before exercising the authority. However, he/she is not required to obtain the consent of the Employer to exercise the authority under Sub-Clause 3.7, agreement and determination (FIDIC, 2017).

As explained under Clause 3.2, the Engineer has authority for “any acceptance, agreement, approval, check, certificate, comment, consent, disapproval, examination, inspection, instruction, Notice, No-objection, record(s) of meeting, permission, proposal, record, reply, report, request, Review, test, valuation, or similar act (including the absence of any such act) by the Engineer” (FIDIC, 2017, p.17). However, the Engineer has two approaches as a contract administrator under FIDIC standard forms. In the red book and yellow book, he is referred to as *Engineer*, and in the golden book, he is referred to as the *Employer's representative* (Dymond, 2013).

Regarding payments under Sub-Clause 14.6, the contractor shall submit the statement to the Engineer. The Engineer should submit the payment certificate “stating the amount that the Engineer fairly considers to be due.” He has full authority to evaluate the payment application submitted by the Contractor (Zoppis, 2018).

2.6.3 SBDs Interpretation of the Engineer

The Engineer's duty and authority are stated in Sub-Clause 3.1 under Clause 3.0, Engineers' Duties and Authority (Institute for Construction Training and Development, 2007). The Engineer is appointed by the Employer who carries out the work on behalf of the Employer. As described under the FIDIC interpretation regarding the Engineer, he/she has no authority to amend the contract (Institute for Construction Training and Development, 2007).

According to Clause 3.1 in SBD 02, the Engineer shall obtain the Employer's consent following the particular conditions before exercising the authority. The Engineer has the authority to issue instructions to the Contractor and remedies for the defects as per the contract, and the Contractor is obliged to follow the instructions given by the Engineer under Sub-Clause 3.3: “Engineers instructions” (Institute for Construction

Training and Development, 2007). Making fair determination by the Engineer is important when parties do not reach an agreement, and the “Engineer shall consult with each party in an endeavour to reach agreement” (Institute for Construction Training and Development, 2007). Furthermore, the impartiality of the Engineer is stated in SBD 02 under Clause No. 3.5, “Engineers impartiality.” The Engineer must exercise discretion impartially within the contract terms by giving his opinion and determination, stating his approval and decision.

2.6.4 Common Law interpretation of the Engineer

The Engineer’s action that autocrats who make final and binding decisions in commercial works have been changed slowly as fair decisions maker by both standard forms and Common Law (Zoppis, 2018). According to the case *Hickman & Co. v. Roberts* (1913), the Engineer must execute his own judgment without taking instructions from the Employer when valuing, measuring, and certifying the work. An Engineer is a person who stands between the Contractor and the Employer, and he/she has a responsibility to act fairly (*Shui On Construction Ltd v. Shui Kay Co Ltd*, 1985).

The Engineer, as a supervisor, must monitor the work progress and maintain the quality in case of failure to do the work (*Sutcliffe v. Chippendale and Edmondson*, 1971). The Engineer shall act impartially and discreetly in terms of the contract by giving his opinion and determination since he/she has the authority to evaluate payment, certification, and own judgment (*Costain v. Bechtel*, 2005).

As a decision-maker, the Engineer should be able to play an impartial role and not take instructions from the Employer when making decisions. Judgement of the case, *Scheldebouw BV v. St. James Homes (Grosvenor Dock) Ltd* (2006) states that even though the Engineer has the authority to certify the payment independently, the decisions will be biased to the Employer, called the *Armageddon Scenario* (Zoppis, 2018).

2.6.5 Duties of the Engineer to the contract

The roles to be played by the Engineer as a result of terms included in the standard forms and the contract are extensive (FIDIC, 2017). Judgement of the Engineer will need to be exercised in case of an issue between the Contractor and the Employer, and

a good Engineer must prevent such conflicts between the parties before they arise (Dymond, 2013). Certification, valuing and promptly deciding on time extension, and involvement before arbitration are the Engineer's duties in preventing conflicts between the parties, as discussed above (Zoppis, 2018). On the other hand, the Engineer acts as the Employer's agent associated with advising the Employer, identifying and issuing variations, but not deciding any matter between the Employer and the Contractor (Thompson, 2019).

As a Manager: Dymond (2013) explained that supervision of the work, approval and instructions for the variation are the managerial duties of an Engineer. It is further highlighted that FIDIC books have no specific reference for the supervision role but with reference to Clause 3.2 in red and yellow books, the Engineer delegates authority to his assistants. The English courts held that, to the extent possible, the Employer has the right to expect the Engineer to administer the contract and to supervise the work, ensuring that the quality of the work meets the required standards (Sutcliffe v. Chippendale and Edmondson, 1971). His duty is not strict and does not assure that definite results will be obtained or that all deficiencies are detected (Dymond, 2013). Furthermore, the Engineer has the authority to issue additional works, changes, and modified drawings under Clause 3.2 in FIDIC red book (FIDIC, 2017). According to the FIDIC forms, these instructions should be issued in writing whenever practicable or verbal instructions should be verified in writing afterwards. The Contractor is bound to execute various instructions given by the Engineer, and he must provide the notice to initiate the work promptly.

Value engineering is a value-adding process to the project, focusing on improving the functionality and eliminating unnecessary costs (Churcher, 2017). As Churcher (2017) discussed, the Contractor should submit the proposal to the Engineer in writing, illustrating the benefit to the Employer. The Engineer's duty is to approve or reject the Contractor's proposal after scrutinising it. The Contractor is responsible for designing and executing the work after approval under conditions imposed by the Engineer (FIDIC, 2017).

For the Mediatory role: Dymond (2013) explains that the duality of the Engineer's duties is based on English case law. According to the judgement of the case *Frederick Leyland & Company Ltd v Panamena Europea Navigacion* (1943), the Engineer's duty is to inspect the work and make independent decisions and opinions. It further describes that the Engineer cannot play an independent role since he is appointed by the Employer, unlike an arbitrator whom both parties hire. However, the court held that the Engineer must keep his impartiality when exercising his judgments (*London Borough of Hounslow v Twickenham Garden Developments Ltd*, 1971).

2.6.6 Engineer's involvement in Disputes

The duties and responsibilities of the Engineer mentioned in the standard forms show that the Engineer plays a vital role in the administration of solving the day-to-day problems according to the contract (Dymond, 2013). An Engineer's determination of disputes can be enforced by the arbitral award or court order under a mechanism intended to provide an enforceable decision. Determination of the Engineer is not final and binding unless parties subsequently agree to it. However, FIDIC has provided alternative wording about subsections 20.2 and 20.3, which allows the Engineer to act as a DAB. At that point, his decision has the same effect as the DAB's decision and can be enforced. According to FIDIC, independent and experienced professionals are qualified for the Engineer role and should administer every aspect of the contract. It further states that the Employer should not prejudice the Engineer's impartiality.

2.6.7 Liabilities of the Engineer to the contract

According to the FIDIC (2017), under Sub Clause 3, the Engineer is appointed by the Employer, and an agreement exists between the Engineer and the Employer as principal and agent. Although there is no contractual agreement between the Contractor and the Engineer, he must comply with the terms of the contract due to the Employer's representation, and there is an agreement between the Contractor and the Employer. Dymond (2013) describes that the Contractor cannot claim against the Engineer in case of failure to perform, like negligent certification or instruction to variations.

The author further explains that the Contractor cannot bring the claim in tort since there are many factors to quote against the existence of a duty of care, such as the contractual structure, which generally applies and also indicates that a duty of care would not arise (Dymond, 2013). However, the Contractor's claim was raised against the Employer under the contractual structure, and the Engineer is not liable for acts or obligations under the contract when it was not included under the arbitration clause in the contract (Pacific Associates Inc v Baxter, 1990). Liability of the Engineer on errors in contract documents exists, although there is no contract between the Contractor and the Engineer (Edgeworth Construction Ltd. v N. D. Lea & Associates Ltd., 1993).

2.6.8 Who can be the Engineer

The Engineer's role is specified, but there is no clear definition of the Engineer, and specific qualifications and experiences are not mentioned in the standard forms and the common law (Gillies & Henry, 2018). According to Clause 3.1 (a), the Engineer is defined as "a professional engineer having suitable qualifications, experience, and competence to act as the Engineer under the Contract" (FIDIC, 2017). Lina (1997) highlighted that many professionals are appointed to the role of Engineer. At first glance, they qualify because they are considered the independent role of the Employer (Gillies & Henry, 2018).

2.7 Enablers of the Engineer to the contract when involved as a Mediator

The author of this study identified enablers the Engineer to the contract must have to act as a Mediator. The enablers of the Engineer to the contract are discussed based on Table 2-3.

Table 2-3: Enablers of using Engineer as a Mediator

Enablers	Authors								
	A	B	C	D	E	F	G	H	I
Sound knowledge about the contract	√						√		
Work as an intermediate person between the Employer and the Contractor		√				√	√	√	√
Sound knowledge about the project		√			√				
Authority delegated by the Employer through the contract terms								√	√
Comply with the terms of the contract						√		√	√
The Engineer is not a single person and acts as a team					√				
Administration of the contract			√	√	√	√		√	√
Well-experienced in construction and disputes	√								
A- Gillies & Henry (2018); B- Dymond (2013); C-Prentice (2017); D- Brien (2019); E- Ghaswala (2010); F- Saket (2010); G- Jayasena & Yakupitiyage (2012); H- FIDIC (2017); I- SBD (2007)									

According to Table 2-3, the Engineer to the contract is a professional with experience and sound knowledge about the contract (Gillies & Henry, 2018). Ghaswala (2010) confirmed that the Engineer to the contract is well versed in the contract and the project. Gillies and Henry (2018) further discussed that it might cause issuing a correct decision at the correct time to avoid unnecessary disputes between the parties. In cases where disputes arise, good determination of the Engineer is vital to lead the parties to an absolute solution, and a good Engineer must prevent such conflicts between the parties before they arise (Dymond, 2013). According to the FIDIC (2017), the Engineer must comply with the contract terms and have an agreement between the Contractor and the Employer. The Engineer shall act impartially and discreetly in terms of the contract by giving his opinion and determination since the Engineer has

the authority to evaluate payment, certification, and own judgment (Costain v. Bechtel, 2005).

The Engineer's role has three major characteristics: project manager, supervisor, and adjudicator (NEC Contracts, 2020). Furthermore, the Engineer act as a contract administrator, supervisor, and making decision as an adjudicator (Saket, 2010).

2.8 Barriers of the Engineer to the contract when Involved as a Mediator

The author has summarised the features and factors that may hinder the Engineer when acting as a Mediator in Table 2-4. These factors, collected from the literature, will be validated by the experts' interviews.

Table 2-4: Barriers to using Engineer as a Mediator

Barriers	Authors								
	A	B	C	D	E	F	G	H	I
Appointing by the Employer	√							√	√
There is no direct agreement between the Engineer and the Contractor		√							
Authority to instruction and determination			√			√		√	√
Authority to approval and disapproval			√					√	√
There is an agreement between the Engineer and the Employer		√						√	√
“Principle – Agent” relationship				√	√				
Loyalty to the Employer				√			√		
A- Gould & Elliott (2018); B- Dymond (2013); C- Prentice (2017); D- Brien (2019); E- Gillies & Henry (2018); F- Nabatova (2017); G- Ranger v Great Western Railway Company (1838); H- FIDIC (2017); I- SBD (2007)									

According to Table 2-4, the Engineer appointed by the Employer indicates the idea that the Engineer is a person representing the Employer (Gould & Elliott, 2018). Dymond (2013) highlights that there is no direct agreement between the Contractor and the Engineer. However, it means that the contractual bond between the Engineer and the Contractor is executed based on the contract document. As per the standard

forms FIDIC (2017) and SBD (2007), the authority to instruction, determination, approval, and disapproval have been delegated by the Employer (Dymond, 2013; FIDIC, 2017; SBD, 2007).

Brien (2019) defines the relationship between the Engineer and the Employer as a principle-agent relationship. The principle-agent relationship is described as a relationship between someone hired by the business and the person who is hired to act on behalf (Murray, 2020). Furthermore, this relationship implies loyalty to the Employer by the Engineer (Nabatova, 2017; *Ranger v Great Western Railway Company*, 1838). The above factors demonstrate a problematic condition in absorbing the Mediators' characteristics by the Engineer to the contract.

2.9 The Importance of investigating the Suitability of the Role of Engineer as a Mediator to Mitigate Disputes in Construction Projects

The construction industry is a complex and massive part of the national economy (Deloitte, 2018). A construction project's complexity depends on the project's value, design, quality, location, and stakeholders involved (Maiti & Choi, 2021). Several parties contribute to these projects in various manners, and thus, the possibility of disputes arising is higher than in other industries (El-Sayegh et al., 2020).

The Engineer is an important character in construction projects; he/she is the person who executes the project to the contract (Zoppis, 2018). However, Love et al. (2008) highlighted that many disputes are noted in construction projects until today, even when discussing finding solutions to reduce the conflicts.

Illankoon et al. (2019) discussed the factors that trigger disputes, such as contract administrating failures, errors in contract documents, incomplete design details, unclear documentation, and poor coordination. The Engineer can handle some of these problems; hence, the Engineer is identified as a critical figure in construction projects (Dymond, 2013). However, Rahmat and Rahim (2018) stated that Mediation is a popular alternative dispute resolution method worldwide. A mediator is defined as a third party involved in resolving disputes (Yates, 2010). There are numerous benefits in Mediation which are not found in other alternative dispute resolution methods (Yates, 2010). Therefore, it is essential to investigate the suitability of the Engineer's

role to the contract as a Mediator to mitigate the disputes in construction projects by absorbing the Mediator's characteristics into the Engineer's role.

2.10 Summary

Disputes are identified as disagreements between parties working towards the same goal. Numerous factors can cause disputes between parties in a project where many parties work collectively. Disputes may drive the project toward adverse conditions. This chapter provides a detailed discussion of the two main characters involved in avoiding or minimising these conflicts and situations. Furthermore, merging both characteristics and finding solutions before disputes arise in projects is the aim of this study.

The Mediator role's characteristics could be seen in the Engineer's role in the contract. The person involved in the project full-time is the Engineer, who has a great deal of knowledge about the project. The Mediator joins the project as soon as the dispute arises. Therefore, the role of the Mediator is seen through the Engineer in this chapter. It is more successful in allowing the project to flow smoothly without conflicts rather than seeking a solution after a dispute arises. The literature review gathered many details regarding the Mediator and the Engineer to the contract. All data collected from the literature review will help to analyse the data collected from the interviews.

3.0 RESEARCH METHODOLOGY

3.1 Introduction

The literature review under Chapter 02 reviews the areas and problems that have already been identified concerning the research topic and the ability to find solutions using existing literature. Chapter 03, the methodology chapter, describes the methodological way of achieving the aim and objectives according to the study. This chapter consists of the research design, research approach, research strategy, and data analysing techniques.

3.2 Research Design

Akhtar (2016) describes that the research design is the research structure that brings together all research elements. In other words, it can be interpreted as the proposed plan of research works. Kothari (2004) confirmed the above statement and further stated that the research design is the conceptual framework in which research is conducted (Kothari, 2004). It is declared that “a very significant decision in the research design process is the choice to be made regarding research approach since it determines how relevant information for a study will be obtained” (Sileyew, 2019, p. 3). It identifies the research approach and techniques needed to achieve research objectives (Maxwell, 2004).

3.3 Research Approaches

Research approaches are planning and research procedures that range from broad hypotheses to detailed methods of data collection and analysis (Creswell, 2014). It has been interpreted that the research approaches are “the underpinning rationale for the way the research is being carried out” (Johnston, 2014, p. 208).

3.3.1 Available Approaches

The three basic and general categories of research approaches are qualitative, quantitative, and mixed methods (Parylo, 2012). These three approaches are categorised based on the extent of flexibility permitted to the researcher (Kumar,

2014). Everything that sets out the research process that you intend to ask your respondents is pre-determined in the quantitative research approach. However, the qualitative approach gives the researcher full flexibility in all these aspects of the process, and the mixed method has attributes of both quantitative and qualitative approaches (Kumar, 2014). Qualitative studies are based primarily on words, and quantitative studies are based on numbers (Creswell, 2014). In other words, closed-ended questions are used for quantitative studies, and open-ended questions are used for qualitative studies (Creswell, 2014).

The approaches vary with the study requirement and based on the characteristics. Table 3-1 demonstrates the characteristics of each approach.

Table 3-1: Characteristics of the approaches

Author Name	Characteristics of Approaches	Approaches		
		Quantitative	Qualitative	Mixed
(Kumar, 2014)	Research Problems	The extent of the issue	Nature, the attitude of the issue	Both
(Gunnell, 2016)	Data Type	Numerical data	Non-Numerical data	Both
(Creswell, 2014)	Data Collection	Closed-ended Questions	Open-ended Questions	Both
(Creswell, 2014)	Data Analysis	Statistical Analysis	Descriptive Analysis	Both
(Creswell, 2014)	Interpretation	Statistical Interpretation	Patterns	Interpretation through databases

Table 3-1 describes the fundamental features of research approaches. Statistical interpretation of research data is provided through quantitative research approaches, and factual interpretation of research data is provided through the qualitative research

approach. The mixed method provides interpretation based on a combination of research data from both quantitative and qualitative approaches.

3.3.2 Selected Research Approach for this Study

The suitability of the Engineer's role as a Mediator to mitigate disputes is a debatable topic in the construction industry. Therefore, the experiences and knowledge of the professionals in the industry are essential for approaching the research aim. The role of the Engineer to the contract and the role of the Mediator is widespread topics in the construction industry discussions. However, finding the characteristics of both roles in one research paper or article is difficult. Therefore, this study attempts to determine the effectiveness of dispute resolution by following the characteristics of the Mediator in the role of the Engineer to the contract. As a result, the suitability of the Engineer's role to the contract as a Mediator to mitigate disputes in construction projects will become a preliminary research activity that should be assessed based on the opinions, attitudes, and behaviours of well-experienced professionals. Therefore, this study should be based on words, not numbers.

A qualitative study provides an opportunity to ask questions flexibly of the interviewer and obtain real answers to research problems (Nayak & Singh, 2021). On the other hand, a qualitative approach provides solutions based on personal perspectives and experience (Hammarberg et al., 2016). Therefore, a qualitative research approach is used in this study to find the opinions and experience of experts in approaching the objectives.

3.4 Research Strategy

The research strategy is a complete proposal for conducting a comprehensive research study (Johannesson & Perjons, 2014). Research strategies are applied to enhance the research in strategic management, analytical concepts, theory building, analytical techniques, and operational procedures (Hernández et al., 2016).

Surveys provided extensive coverage of the relevant study and were the best way to gather data on narrow and well-defined topics (Johannesson & Perjons, 2014). Quantitative research strategies (data collecting through questionnaire), qualitative research strategies (data collecting using interviews), and both (data collecting using a

mixed method) can be used for the survey research (Ponto, 2015). This study can be identified as a well-defined topic and a narrow area—hence, a qualitative research strategy is chosen for this study.

3.5 Research Method

The research method covers data collection, analysis, and interpretation (Creswell, 2014). In other words, it collects relevant data for the research (Hammond & Wellington, 2013). A research method is gathering accurate information by answering questions precisely (Walliman, 2010). Taylor et al. (2006) considered well-organized questionnaires, structured and semi-structured interviews, observations, and analysis as key research methods. Bryman (2006) discussed several other research methods, such as quantifying qualitative interview questions, content analysis, focus groups, and language-based analysis. This study selected semi-structured expert interviews as the primary data collection method.

3.5.1 Selected Research Method for this Study

The expert interview is considered the most popular research method (Gill et al., 2008). MacDonald and Headlam (2011) describe the interview styles as follows:

- *Structured* - Follows a series of specific questions that work systematically. This type of interview is used when the researcher wants to get information where responses can be compared directly.
- *Semi-Structured* - It reduces flexibility to respond to the interviewers' answers, so they develop themes and issues when they arise.
- *Unstructured* - There are no pre-determined questions or themes in this type of interview. Interviewers address the issues when it arises during the interview. This method is proper when the interviewer wants to explore a topic deeply.

A semi-structured interview is “a more commonly used interview technique that follows a framework in order to address key themes rather than specific questions” (MacDonald & Headlam, 2011, p.40).

Interviews can be held through emails, over the phone, and face-to-face interviews (Harrell & Bradley, 2009). Interviews were conducted to validate the data obtained

through the literature synthesis in this analysis. Time restrictions can be managed through structured interviews, unlike unstructured interviews and semi-structured interviews. However, structured interviews cannot be moderated during the interview, unlike semi-structured interviews. Thus, a semi-structured interview guideline was followed to gather professional feedback through qualitative questioning and a systematic approach.

When determining the sample size for data collection in qualitative research, it is somewhat effective to consider data saturation as the principal concept (Mason, 2010). Data saturation is reached at the point where the collected data is sufficient to achieve the research aim (Fusch & Ness, 2015). Therefore, sixteen (16) structured interviews were conducted to collect experts' opinions, experiences, and perspectives relevant to the subject until data were saturated for the research.

3.5.2 Data Analysis techniques

Data analysis is the next step of the sequence after data collection and is considered the most vital research step (Saunders et al., 2015). Further, qualitative data analysis can be defined as “the classification and interpretation of linguistic (or visual) material to make statements about implicit and explicit dimensions and structures of meaning-making in the material and what is represented in it” (Flick, 2013, p. 5). Content analysis is used as a data analysis technique based on the collected data. Content analysis is a tool applied to determine the words, concepts, and themes included in collected qualitative data (Hsieh & Shannon, 2005). Most expert responses are in words, and the content analysis technique was helpful in summarising and data analysing.

3.6 Research Process

The research process consists of a series of steps organized to conduct effective research (Saunders et al., 2015). All research steps in the research process are briefly implied, and Figure 3.1 illustrates the research process of this study.

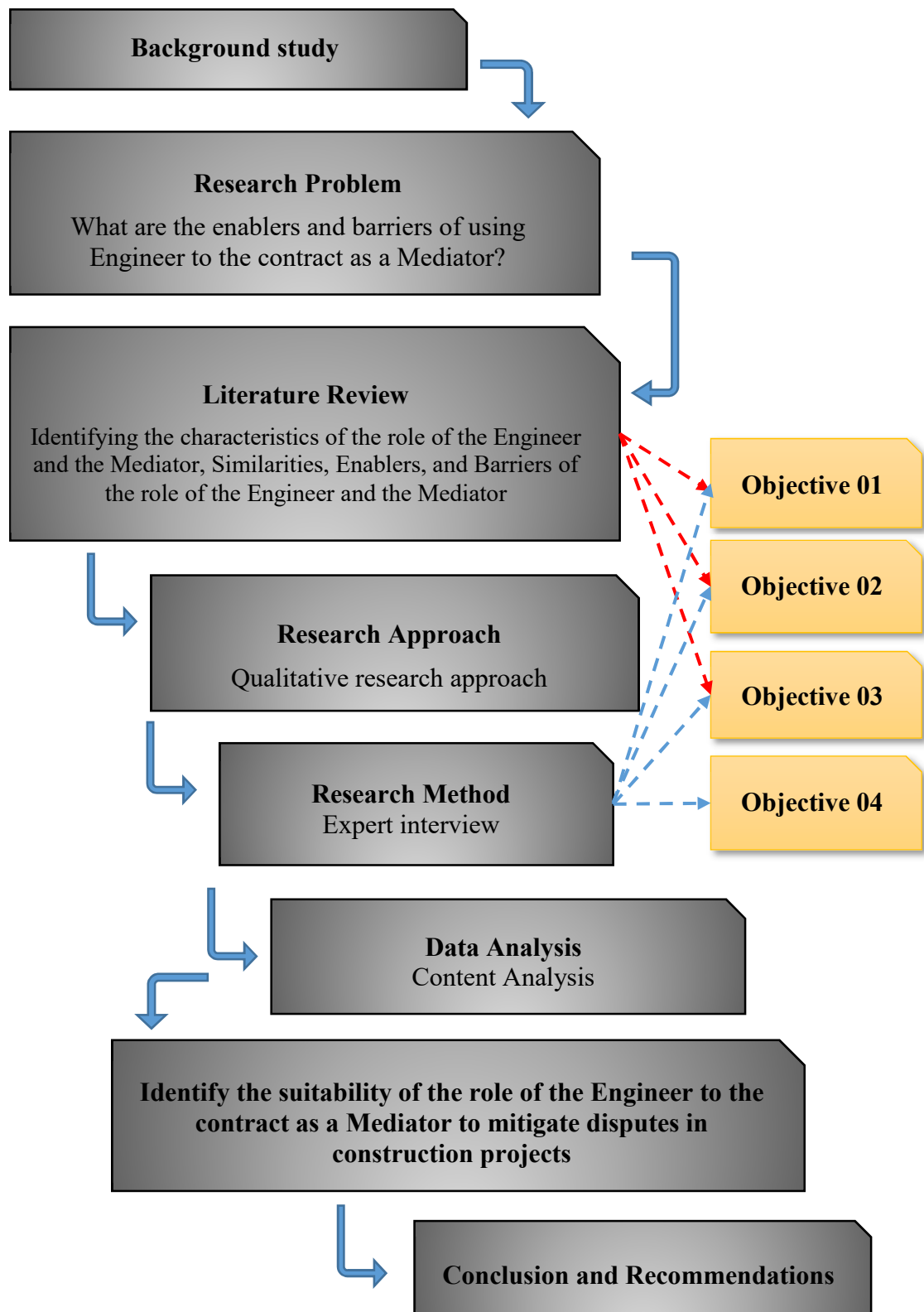


Figure 3-1: Research process

Figure 3-1 shows the relevant research steps and the flow of achieving the desired objectives during the research period. It summarises all methods, approaches, and techniques used in this study. Fundamental information relevant to the objectives and information which needs to be validated through the expert interview is collected from the literature review. Expert opinions and advice on the suitability of the Engineer's role as a Mediator to mitigate the disputes in construction projects were gathered through the expert survey. Subsequently, the research was conducted by analysing the data collected from expert interviews. Ultimately, the aim and the objectives of the study were achieved while arriving at conclusions and providing recommendations.

3.7 Summary

Chapter 03 discussed the research design, available research approaches, research strategy, research process, and data analysis techniques. The qualitative research approach was selected as a suitable research approach for this study, and the expert interview method was the research method. Further, this chapter discussed the data analysis techniques, and content analysis was chosen as a suitable data analysis technique for this study. The research process diagram illustrates the research plan.

4.0 RESEARCH FINDINGS AND ANALYSIS

4.1 Introduction

Chapter 02 in this study illustrates the literature background concerning the topic, and Chapter 03 elaborates on conducting research findings with appropriate techniques. Chapter 04 focuses primarily on results obtained from expert interviews regarding the topic “suitability of the role of the Engineer to the contract as a Mediator to mitigate the disputes in construction projects.” This chapter provides detailed information on data collection and analysis, and the collected data are demonstrated using proper data analysis techniques in this chapter. Furthermore, all literature reviews concerning each objective in this study are compared using the pattern-matching method. The barriers found when utilising the Engineer as a Mediator and barrier management strategies are discussed in the final section of this chapter.

4.2 Semi-Structured Interviews

The semi-structured interview method was chosen as the core data collection method in this study. Accordingly, sixteen (16) semi-structured interviews were conducted among the professionals who are experts in the research area and construction field. Online interviews were held via Zoom technology and were limited to approximately 45 - 60 minutes. Findings with different views and opinions were analysed using content analysis on the suitability of the Engineer’s role as a Mediator to mitigate disputes in construction projects.

4.2.1 Objectives of Semi-Structured Interviews

Four objectives had to be fulfilled to reach the aim of this study. Therefore, the study objectives were accomplished using a literature review and semi-structured interviews. Literature reviews were based on books, articles, previous studies, journals, newspapers, and internet sources. Semi-structured interviews were based on expert professionals in the field of construction relevant to the research area. The participants’ opinions in the semi-structured interview varied and were based on their experience and knowledge. The “Interview Guide” was the basis for the successful completion of

the data collected through the interview; it was prepared using the data collected from the literature review. Objectives covered under literature reviews were validated by semi-structured interviews. The subject causes found in the literature review were checked with the interviewers to identify whether the characteristics of the Engineer and the Mediator are present in the construction industry.

The primary objectives, i.e., enablers and barriers when the Engineer adapt the characteristics of the Mediator, were found through the literature review, and the solutions were found through the semi-structured interview. Discussions with the participants identified the strategies against barriers, and their opinions on adapting the Mediator's role to the Engineer's role for the contract of future projects were collected.

4.2.2 Details of the respondents in the interview

According to the semi-structured interview guideline, sixteen (16) respondents were successfully interviewed. All interviews were held with professionals in the construction industry. Since this study aimed to investigate the suitability of the Engineer's role as a Mediator to mitigate disputes, the sample of the experts was a heterogeneous purposive sample. It helped select experts with experience and knowledge in the research field in diverse contexts and different age groups. Interview respondents were selected using purposive samples with over seven years of experience in the construction industry. Samples were chosen to represent different age groups, which helped to get different opinions based on their experience level. Also, many interviewers were selected from the quantity surveying sector since a significant population of quantity surveyors perform the Engineer role to the contract and quantity surveyors have more experience in contract administration. The samples have variant exposure levels concerning the study area. Table 4-1 provides a summary of the details of the participants for the semi-structured interview.

Table 4-1: Summary of Details of Interview Respondents

Interviewee	Designation	Profession	Type of Organisation	Experience (Number of Years)	Key Expertise Areas Related
I01	Managing Director	Chartered Quantity Surveyor	Consultant	45 Years	Engineer to the Contract
I02	Managing Director	Chartered Quantity Surveyor	Contractor	25 Years	Project Management, Contract Administration
I03	Deputy Manager of Maintainers and Controls	Quantity Surveyor	Contractor	7 Years	Contract Administration, Project Management
I04	Senior Quantity Surveyor	Chartered Quantity Surveyor	Contractor	15 Years	Contract Administration
I05	Contract Administrator	Chartered Quantity Surveyor	Consultant	16 Years	Contract Administration
I06	Managing Director	Chartered Civil Engineer	Consultant	35 Years	Project Management
I07	General Manager	Civil Engineer	Consultant	18 Years	Contract Administration and Mediator
I08	Senior Quantity Surveyor	Quantity Surveyor	Consultant	45 Years	Contract Administration
I09	Senior Quantity Surveyor	Quantity Surveyor	Contractor	15 Years	Contract Administration
I10	Senior Quantity Surveyor	Chartered Quantity Surveyor	Contractor	15 Years	Contract Administration
I11	Senior Quantity Surveyor	Quantity Surveyor	Contractor	12 Years	Contract Administration
I12	Project Quantity Surveyor	Quantity Surveyor	Consultant	10 Years	Contract Administration

Interviewee	Designation	Profession	Type of Organisation	Experience (Number of Years)	Key Expertise Areas Related
I13	Senior Lecturer	Chartered Quantity Surveyor	Consultant & Lecturer	16 Years	QS related competences under Engineer to the Contract
I14	Senior Quantity Surveyor	Quantity Surveyor	Consultant	17 Years	Experience of DAB documents in Oman
I15	Senior Quantity Surveyor	Chartered Quantity Surveyor	Consultant	12 Years	Contract Administration
I16	Senior Quantity Surveyor	Quantity Surveyor	Client	12 Years	Contract Administration

The sample represents the construction industry in Sri Lanka and the World. Therefore, the respondents in the construction industry were selected from Contractor and Consultancy organisations. The selected sample provides answers in a wide range for the research gap based on their experience and knowledge in the construction industry. The samples covering countries other than Sri Lanka helped to identify the effectiveness of absorbing the role of the Mediator into the Engineers role from a global perspective. Additionally, many quantity surveyors are selected because they have more experience in contract administrator and as an Engineer to the contract experience.

4.3 Findings of Semi-structured interview

4.3.1 Role of Mediator in the Construction industry

The initial part of the interview discussed the role of the Mediator in the Construction industry. The key role identified with the literature review was validated using semi-structured interviews. Table 4-2 presents the respondents' opinions on the Mediator's role. Current practices of the Mediator's role could be identified during the interview. Most respondents emphasised that the role of the Mediator is impartial and motivates the parties to a settlement without moving to the next step, i.e., arbitration or litigation. The list in Table 4-2 is arranged in descending order based on respondents' opinions. In Table 4-2, respondents' consent to the given characteristics of the Mediator is marked as "✓", and their disagreement is presented with an "x" mark.

According to the data collected based on the characteristics of the Mediator shown in Table 4-2, the highest number of respondents agreed with the attributes of the Mediator as *broadening the parties' vision of the problem and developing positive approaches to the problem*. The next majority of the respondents selected *Mediator encouraging parties to a settlement* as one of the Mediator's main characteristics. **102** stated that "at present, the Mediator does not know how to firmly and sensitively manage the mediation process" and "facilitating parties to overcome deadlock and towards a settlement" either.

Table 4-2: Role of the Mediator in the Construction Industry

Role of the Mediator		LR	I01	I02	I03	I04	I05	I06	I07	I08	I09	I10	I11	I12	I13	I14	I15	I16
1.	Encourage parties to a settlement	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2.	Broadening the parties' vision of the problem and developing positive approaches to the problem	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3.	Facilitating parties to overcome deadlock and towards settlement	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4.	Directing the parties to construct an outcome that meets their needs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	✓
5.	Identification of common goals based on gathered information	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓	✓	✓	✓
6.	Assist the parties in understanding the reality of the dispute by being a reality tester	✓	✓	x	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7.	Sensitively and firmly manage the process	✓	✓	x	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	x	✓	✓
8.	Act as a settlement supervisor and check whether the settlement agreement has been implemented and help the parties to avoid further problems	✓	✓	x	x	✓	✓	x	✓	x	✓	✓	✓	x	✓	x	✓	✓
9.	Assist parties in writing the agreement	✓	✓	✓	x	✓	✓	x	✓	x	x	✓	x	x	✓	x	✓	✓

However, most respondents agreed with the role that the Mediator can *manage the process sensitively and firmly*. Secondly, most respondents agreed with the statement in Table 4-2 that *facilitating parties to overcome deadlock and move towards a settlement*. Furthermore, **I03** stated that “*the Mediator provides a platform for the parties to negotiate*”.

Respondents’ consent is presented positively on *directing the parties to construct an outcome that meets their needs*, except for **I11**. *Identification of common goals based on gathered information* and *directing the parties to resolve the disputes* were the next popular characteristics of respondents. However, **I01** stated that the “*involvement of the Mediator is important due to the lack of knowledge of the parties regarding contract administration*”.

Opinion of **I02** regarding the involvement of the Mediator is different. **I02** stated that “*the impact of the involvement of the Mediator for resolving disputes is very low in the Sri Lankan construction industry compared to other countries*”. **I02** and **I11** disagreed with the characteristic of *identification of common goals based on gathered information* due to the parties had already found their goal before meeting the Mediator. However, other respondents’ opinion was that the different goals of each party led them into a critical situation. Therefore, most respondents stated that “*the Mediator assists the parties to understand the reality of the dispute by being a reality tester*”. Only a few respondents tread characterises of the Mediator as *assisting the parties in writing the agreement* and *acting as a settlement supervisor and checking whether the settlement agreement has been implemented* and *helping the parties to avoid further problems*.

The roles of the Mediator have been identified from the literature reviews and validated through the semi-structured interview. According to Table 4-2, all respondents agreed with the statements that *Encourage parties to settle* and *Broaden the parties’ vision of the problem and develop positive approaches to the problem*. Respectively, respondents agreed with the statements, *Facilitating parties to overcome deadlock and towards a settlement* and *Directing the parties to construct an outcome that meets their needs*, *Identification of common goals based on gathered information*, *Assisting the parties to understand the reality of the dispute by being a reality tester*,

Sensitively and firmly manage the process, Act as a settlement supervisor and check whether the settlement agreement has been implemented and Help the parties to avoid further problems. A few respondents agreed with the statement, *Assist parties in writing the agreement.*

4.3.2 Role of the Engineer to the Contract

This section consists of interviewers' feedback on the Engineer's role. The characteristics of the Engineer's role, identified through the literature review, were validated through semi-structured interviews. In other words, the interview confirmed the extent to which these features could be found in the Engineer to the contract in current practice. Most respondents commented on their consent based on the details provided in the interview guideline. Table 4-3 demonstrates the respondents' opinion on the role of the Engineer to the contract.

Table 4-3: Role of the Engineer to the Contract in the Construction Industry

Role of the Engineer to the Contract		LR	I01	I02	I03	I04	I05	I06	I07	08	I09	I10	I11	I12	I13	I14	I15	I16
1.	Issuing instruction and Fair determination	√	√	x	√	√	√	√	√	√	√	√	√	√	√	√	√	√
2.	Managing Time, Cost, and Quality of the project	√	√	x	√	√	√	√	x	√	√	√	√	√	√	√	√	√
3.	Administration of the Contract	√	√	√	x	√	√	x	√	√	√	√	√	√	√	√	√	√
4.	Project planning and guiding the parties	√	√	x	x	√	√	√	√	√	x	√	√	√	√	√	√	√
5.	Supervision of works	√	x	√	√	√	√	√	x	√	√	√	√	x	√	√	√	√
6.	Advising the Employer on matters related to the cost, design, and technical details	√	x	x	√	√	√	√	x	√	√	√	√	√	√	√	√	√
7.	Coordinating the project works	√	x	x	√	√	√	x	√	√	√	√	√	x	√	√	√	√
8.	Dealing fairly with financial and business procedures	√	x	x	√	√	√	√	x	√	√	√	x	x	√	√	√	√
9.	Assist in interpreting the contract document and preparing agreements, reviewing bonds and guarantees	√	x	√	x	√	√	x	√	√	x	√	x	x	√	√	√	√
10.	Assist in maintaining the cash flow	√	x	x	x	√	√	√	x	√	x	√	x	x	√	√	√	√

According to Table 4-3, **I01** is a Chartered Quantity Surveyor with over 35 years of working experience as an Engineer to the contract. In the interview, he highlighted that *“the Engineer to the contract is the person who stands between the two parties and handles the Employer’s money. Therefore, the Engineer to the contract has a huge role to play to deliver a quality product without destroying the Contractor and saving the Clients money”*. The statement of **I01** has a deep meaning, which explains the Engineer’s responsibility. The role of the Engineer has been explained under standard forms of contracts, and *“Issuing instruction and Fair determination”* is one of them. All respondents agreed with the above statement except **I02**.

I02 is a chartered-qualified Quantity surveyor with more than 25 years of experience as a Contractor. **I02** highlighted that *“half of the disputes are arising based on the Engineer, and the other half based on the Employer, the Contractor, and the remaining, and were based on unforeseen circumstances, respectively”*. The statement of **I02** re-explains the position/responsibility of the Engineer to the contract.

According to **I04**, the Engineer is the person who follows up on the project plan and guides the parties. In addition, most respondents agreed with the characteristic of the Engineer as the one who manages the time, cost, and quality of the project. Their explanation of managing time, cost, and quality was that the Engineer could observe the actual progress relative to the given programme and assist in maintaining the cash flow by avoiding interruptions via quick and correct determination and evaluation. In addition, the contract Engineer oversees the work to ensure it stays within the specifications. The next common characteristic of the Engineer to the Contract is contract administration. **I11** stated that *“the role of contract administration has begun since the call for tenders. However, the role of the Engineer is to act in accordance with the contract and keep the project within the contract”*.

The respondents responded to the question regarding the supervision of work. The answers varied. Several answered that *“work supervision is not the duty of the Engineer”*. In contrast, the others agreed with the statement of work supervision as a role of the Engineer to the Contract. Other than that, the employer seeks advice from the Engineer on cost, design, and technical details. According to **I08**, the Engineer should keep records of the current behaviour of the money.

For example, the Engineer maintains monthly cash flow records against the anticipated cash flow records. Only a very few respondents agreed with the statement *the Engineer is coordinating the project works*. **I02** stated that “*coordination is very important, but unfortunately, in practice, no proper coordination can be seen from the present Engineers*”. **I16** highlighted that “*the Engineer can communicate with the contracting parties regarding contractual issues*”. The Engineer to the contract is dealing fairly with financial and business procedures. According to respondents’ answers to the above statement, “*the Engineer must understand the business process and the end result to complete the project without fail. Hence, the word ‘fair thinking’ is very important to project success*”.

Some respondents accepted the statement that “*the Engineer assists in interpreting the contract document and preparing agreements, reviewing bonds, and guarantees*” as a role of the Engineer. Most discrepancies arise based on wrong interpretations of the terms of the contract. Therefore, the Engineer can solve problems with his determination on a particular issue. Before the final endorsement of the bank, the Engineer to the contract reviews the draft of the guarantees and bonds. However, **I01** and **I03** strictly stated that “*the preparation of agreements does not include the role of the Engineer*”. The final question was whether the Engineer would help maintain the cash flow. However, the majority disagreed with this statement.

According to Table 4-3, most respondents agreed with the statement in the interview guideline under the role of the Engineer to the contract *Issuing instruction and Fair determination* and secondly agreed with the statements *Managing Time, Cost, and Quality of the project* and *Administration of the Contract*. Respectively, the respondents agreed with the statements *Project planning and guiding the parties*, *Supervision of works*, *Advising the Employer on matters related to the cost, design and technical details*, *Coordinating the project works*, *Dealing fairly with financial and business procedures*, *Assist to interpreting the contract document and preparing agreements, reviewing bonds and guarantees*, and *Assist to maintaining the cash flow*.

4.3.3 Comparison of the roles of the Engineer to the contract and the Mediator

This study focuses on reducing disputes arising based on the Engineer's role. Comparatively, after negotiation, Mediation is the next level and the perfect way of dispute resolution method. As discussed in the previous chapters, Mediation is a better settlement process, with cost and time-effectiveness, and better privacy for the parties than other alternative dispute resolution methods. Therefore, identifying the similarity of the roles of both the Mediator and the Engineer to the contract is timely. Even though the Mediator cannot play the Engineer role in the contract, the Engineer can play the Mediator role. It is difficult to make a one-to-one comparison of the characteristics or roles of these professionals. Table 4-4 compares the roles of the Engineer and the Mediator.

Table 4-4: Comparison of the roles of the Engineer to the Contract and the Mediator

Roles	Role of the Mediator	Role of the Engineer to the contract	Similarities of Both roles
Encourage parties to a settlement	√	x	x
Broadening the parties' vision of the problem and developing positive approaches to the problem	√	√	√
Facilitating parties to overcome deadlock and toward settlement	√	√	√
Directing the parties to construct an outcome that meets their needs	√	√	√
Identification of common goals based on gathered information	√	√	√
Assist the parties in understanding the reality of the dispute by being a reality tester	√	√	√
Sensitively and firmly manage the process	√	x	x

Roles	Role of the Mediator	Role of the Engineer to the contract	Similarities of Both roles
Act as a settlement supervisor and check whether the settlement agreement has been implemented and Help the parties to avoid further problems	√	x	x
Assist the parties in writing the agreement	√	x	x
Issuing instruction and Fair determination	x	√	x
Managing Time, Cost, and Quality of the project	x	√	x
Administration of the Contract	x	√	x
Project planning and guiding the parties	x	√	x
Supervision of works	x	√	x
Advising the Employer on matters related to the cost, design, and technical details	x	√	x
Coordinating the project works	x	√	x
Dealing fairly with financial and business procedures	x	√	x
Assist in interpreting the contract document and preparing agreements, reviewing bonds and guarantees	x	√	x
Assist in maintaining the cash flow	x	√	x

According to Table 4-4, the Engineer to the contract can implement some Mediator roles at the initial stage to prevent disputes from arising or think as a Mediator and carry out the work to avoid conflicts. Table 4-4 demonstrates that the characteristics are noted in both the Mediator and the Engineer to the contract. Common

characteristics of both roles are indicated as “√” in the last column of Table 4.4. *Broadening the parties’ vision of the problem and developing positive approaches to the problem* is crucial due to the parties always looking at the issues based on the loss and profits. Therefore, the Engineer to the contract can act as a Mediator at the time of arising the issue and widen the vision of the parties and guide the parties to a fair solution.

Facilitating parties to overcome deadlock and towards a settlement is also discussing the mentality of the parties. In this case, the Engineer to the contract plays a more important role than the Mediator in finding a solution by overcoming the deadlocks since the Engineer constantly deals with all parties during the construction period. Therefore, the Engineer can foresee disputable issues and avoid them as an expert.

Directing the parties to construct an outcome that meets their needs can be interpreted as a fair determination on the Engineer’s part. It can be further explained as the “*identification of common goals based on gathered information*”. Identifying the common goals is the Engineer’s responsibility, but the goal will ultimately be a successful project. *Assisting the parties to understand the reality of the dispute by being a reality tester* is a common role of the Engineer to the contract and the Mediator. It is a responsibility and part of the role of the Engineer and the Mediator to prevent undue profit-making and loss-transferring through the dispute. In addition, the Engineer is the person who *sensitively and firmly manages the process* of handling disputes. The Engineer’s role is to identify the loose points where disputes can commonly arise and implement remedial actions.

Table 4-4 shows some roles are unique and cannot be merged. However, the characteristics of each role are critical to both professionals in resolving disputes in the construction industry. Knowledge of the Mediators role is vital for the Engineer to avoid disputes at the initial stage by implementing suitable remedies.

4.3.4 Enablers of using Engineer as a Mediator

This study focuses primarily on minimising disputes in the construction industry by bringing together the characteristics of the Engineer's and the Mediator's roles. This phenomenon can get affected by different kinds of enablers and barriers. Those enablers provide positive feedback to develop the available role of the Engineer as a Mediator. The literature review identified the below-listed enablers, which were validated through the interview series. According to this scenario, eight enablers were identified through the literature review and five enablers through the semi-structured interview. The enablers identified through the interview are highlighted in bold letters. Table 4-5 presents the respondents' opinions on enablers of using the Engineer as a Mediator.

Table 4-5: Enablers of using Engineer as a Mediator

Enablers of using Engineer as a Mediator		L R	I01	I02	I03	I04	I05	I06	I07	I08	I09	I10	I11	I12	I13	I14	I15	I16
1.	Administration of the Contract	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2.	Sound knowledge about the Contract	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓
3.	Sound knowledge about the project	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓
4.	Well-experienced in construction and disputes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x	✓
5.	Work as an intermediate person between Employer and Contractor	✓	✓	✓	x	✓	x	x	✓	✓	✓	✓	✓	✓	✓	✓	x	✓
6.	Complying with the terms of the contract	✓	✓	✓	x	x	✓	x	✓	✓	✓	✓	✓	x	✓	✓	✓	x
7.	Authority delegated by Employer through the Contract terms	✓	x	✓	x	x	✓	x	✓	✓	✓	✓	✓	x	✓	✓	x	x
8.	The Engineer is not a single person and acts as a team.	✓	x	✓	x	✓	✓	x	x	✓	x	✓	x	✓	✓	x	x	✓
9.	Well Understanding of business cases and business aspects		-	✓	-	-	-	-	-	✓	-	-	-	-	✓	-	-	-
10.	Close association with the Employer		-	-	✓	-	-	✓	-	-	-	-	-	✓	-	-	-	-
11.	Knowledge about all positive and negative details on both parties		-	-	✓	-	-	✓	-	-	-	-	-	✓	-	-	-	-
12.	Knowledge about the real barrier to the project		-	-	-	✓	-	-	-	-	✓	-	-	-	-	✓	-	-
13.	Lessons learned from previous contracts can be applied to the new projects		-	-	-	✓	-	-	-	-	-	✓	-	-	✓	-	-	-

Table 4-5 indicates that all respondents agreed with the statement that the Engineer to the contract has a sound knowledge and proper understanding of the contract and the project. Hence, contract administration is considered the primary duty of the Engineer. All respondents agreed with the above statements, confirming that the Engineer can act as a mediator because he has *good experience in construction and disputes*.

Most respondents agreed with the statement *Work as an intermediate person between the Employer and the Contractor* because the Engineer had been delegated the authority. **I13** validated that the Engineer is an impartial character by quoting Sub-Clause 3.5 in SBD 02 and Sub-Clause 3.7 in FIDIC 2017 Red book. Respondents' opinion on the statement *complying with the terms of the contract* is not a sharp answer, as some said it does not affect the role of the Mediator while others agree. In the opinion of many respondents on the *delegation of authority by the Employer through the Contract terms*, the Engineer is not considered an enabler to act as a Mediator. Only a few respondents agreed with the statement that *the Engineer is not a single person and acts as a team*.

Respondents suggested other enablers not mentioned in the interview guideline. Participants believe that additional enablers may also help Engineer to act as a Mediator. **I02** sees a *well understanding of business cases and business aspects* as an enabler and describes that the idea about the business can be a positive encouragement for the Engineer to work with minimum disputes.

According to **I03**, *close association with the Employer and Engineer* help to well communication and identify the Employer's real objective. Unnecessary changes and variations can be avoided by good communication with the parties. **I03** mentioned as a new enabler, "*Knowledge about the all positive and negative details on both parties*". The Engineer to the contract acts as an intermediate person between the Contractor and the Employer. Therefore, the Engineer communicates with both parties and conveys his opinion to the parties in case inconsistencies arise. The Engineer always lives in the project and knows the current situation. Therefore, **I04** stated that "*the Engineer has well knowledge about the real barriers available in the project and is considered as an enabler*", which was not included in the guideline. In addition to that, **I10** highlighted a positive point that can act as a Mediator: "*Lessons learned from*

previous contracts can be applied to new projects". A further explanation is that past experience could be used better for future projects. Ultimately, **I16** stated that "*I believe, in most circumstances, the involvement of the Engineer as a Mediator may cause positive impacts on construction contracts*".

Agreement and disagreement of the respondents for the statements mentioned in the interview guideline under the topic of *Enablers of using the Engineer as a Mediator* can be summarized as follows; most respondents agreed with the statement of *Administration of the Contract*, decided (by the respondents) and expressed their consent to the following statements respectively; *Sound knowledge about the Contract* and *Sound knowledge about the project*, *Well experienced in construction and disputes*, *Work as an intermediate person between the Employer and the Contractor*, *Complying with the terms of the contract*, *Authority delegated by the Employer through the Contract terms*, and *The Engineer is not a single person and acts as a team*.

4.3.5 Barriers to using the Engineer as a Mediator

The literature review revealed the barriers that may affect the Engineer to the contract when following the characteristics of the Mediator. According to this scenario, the literature review identified seven (07) barriers, and the semi-structured interview revealed four (04) barriers. The new barriers not included in the interview guideline are highlighted in bold letters.

Table 4-6 demonstrates the respondents' opinions as follows:

According to literary findings, barriers to the Engineer arise based on certain terms, conditions, and the delegation of powers and payments. Some barriers can be considered enablers, depending on the existing conditions. For example, the barrier of *authority to approval and disapproval* is delegating power to the Engineer through the contract. Therefore, the Engineer can use this power appropriately to avoid problems arising between the parties.

I02 provided an excellent answer for *authority to approval and disapproval*: "*a few Engineers attempt to protect the Employer due to their expectation of another project from the Employer. On that basis, the Engineer utilizes his authority to approval and*

disapproval as inappropriate". Table 4-6 illustrates more opinions (mentioned above) regarding barriers that the Engineer encounters when acting as a Mediator. Most respondents agreed with the statement, *"appointed by the Employer is a barrier to the Engineer to act as a Mediator"*. **I01** stated that on some occasions, the Engineer to the contract has to follow the instructions given by the Employer. **I16** highlights that *"the Engineer to the contract is generally appointed by the Client and paid by the Client. Accordingly, in practice, Contractors generally complain that the Engineer to the contract makes decisions much more favourable to the Client"*. For example, **I01** presented that *"in case of the Contractor request to the Employer to defer the deduction of recovering advances from the current payment certificate, the Employer may instruct the Engineer to proceed the payment certificate without deduction of recovering the advance for the current payment certificate"*.

Table 4-6: Barriers to using Engineer as a Mediator

Barriers to using Engineer as a Mediator		LR	I01	I02	I03	I04	I05	I06	I07	I08	I09	I10	I11	I12	I13	I14	I15	I16
1.	Appointing by the Employer	✓	x	x	✓	✓	✓	x	✓	✓	✓	x	✓	✓	x	✓	✓	✓
2.	“Principle – Agent” relationship	✓	x	x	✓	✓	✓	x	✓	✓	✓	x	✓	✓	x	✓	✓	✓
3.	Loyalty to the Employer	✓	x	x	x	✓	✓	x	✓	✓	✓	✓	x	✓	✓	✓	✓	✓
4.	There is an agreement between the Engineer and the Employer	✓	x	x	✓	✓	✓	x	✓	x	✓	x	✓	✓	x	✓	✓	✓
5.	Authority to instruction and determination	✓	x	x	✓	x	✓	x	x	✓	x	x	✓	x	x	✓	✓	✓
6.	Authority to approval and disapproval	✓	x	x	✓	x	✓	x	x	✓	x	x	✓	x	x	✓	✓	✓
7.	There is no direct agreement between the Engineer and the Contractor	✓	x	x	x	x	✓	x	✓	✓	x	x	x	x	x	✓	✓	x
8.	Lack of Personal Quality/ Ethics		-	✓	-	-	-	✓	-	-	-	-	✓	-	-	-	-	-
9.	Provisions that were given in the contract		-	-	✓	-	-	-	✓	-	-	-	-	-	✓	-	-	-
10.	The Engineer is unable to work beyond the contract terms and conditions		-	-	✓	-	-	✓	-	-	-	-	-	✓	-	-	-	-
11.	Having to follow the Employers instructions in practice		-	-	-	✓	-	-	-	-	✓	-	-	-	✓	-	-	-

However, deferring recovering of advance may cause issues for the future payment certificate, and it can overlap the contract terms. Further, most respondents agreed with the statement of *Principle – Agent relationship between the Engineer and the Employer*. This argument emerges with the statement “*there is an agreement between the Engineer and the Employer*”. The Employer appoints the Engineer, and they enter into an agreement. Therefore, most respondents’ opinions automatically build up the principle-agent relationship. This relationship and agreement convince the Engineer that he is biased. However, **I13** stated that “*duties of the Engineer are clearly mentioned in the contract and decision-making of the Engineer to be fair and reasonable*”. **I01** highlighted that “*the Engineer has authority to instruction and determination under contract and it will not be a barrier to the Engineer to absorb characteristics of the Mediator. Since the role of the Engineer is further polished with absorbing qualities of the Mediator*”. According to **I13**, “*the authority of approval and disapproval will not be a barrier to the Engineer to act as a Mediator*”. The statement of “*there is no direct agreement between the Engineer and the Contractor*” makes most respondents believe that the agreement between the Engineer and the Employer will not affect the contract. The contract clearly specifies the duties and responsibilities of the Engineer. **I02** stated that “*there is no necessity in signing a direct contract, and duties are properly defined in the contract*”.

Based on their experiences, the respondents highlighted some barriers during the interview. According to **I02**, “*personal qualities of the Engineer to the contract is very important. Because of the pattern of thinking, the ability to take responsibility, ability to make impartial decisions, foresight, and obey to the decisions of the other depends on the personality of the person*”. Thus, qualities are based on the person. It could be a barrier to act as a Mediator. According to **I13**, “*the provisions given in the contract can be a barrier to merge their both characteristics. Therefore, it is necessary to amend some of the terms of the contract to bring those features of the Mediator into the characteristics of the Engineer*”. **I03** and **I06** agreed with the opinion of the **I13**, stating that “*the Engineer is unable to work beyond the contract terms and conditions*”. However, **I09** highlighted a different view in a different angle; the Engineer to the Contractor “*have to follow the Employer’s instructions in practice*”, and he explained

that the Engineer had to agree with the Employer's decisions if the Employer accepted Contractor's requests.

Agreement and disagreement of respondents are summarised as follows: Most respondents agreed with the statement of *Appointing by the Employer, Principle – Agent relationship and Loyalty to the Employer; there is an agreement between the Engineer and the Employer, Authority to instruction and determination, and Authority to approval and disapproval*. Very few agreed with the statement, *“There is no direct agreement between the Engineer and the Contractor”*.

4.3.6 Barrier management strategies

Several barriers may occur when introducing new characteristics to an existing role. In that case, barriers which arise need to be managed with suitable solutions. Solutions for the barriers found through the literature review and the semi-structured interview were identified by the interview. The reason was that practice and experience base provide suitable solutions to the barriers.

Eight (08) barrier management strategies were identified through the semi-structured interview. In the series of interviews, construction professionals presented different views on barriers and introduced barrier management strategies for relevant barriers. Table 4.7 demonstrates the solutions collected from the semi-structured interview, highlighted in bold letters. Those barrier management strategies are based on the experience and practical issues confronted by the respondents.

According to Table 4-7, respondents shared their experience and knowledge about the Mediation and the Engineer of the contract. In this scenario, **I02** emphasised that *“the Engineer to the contract should develop his ethical background, and it will guide him to work as a Mediator such as a guide who guides the parties to reduce and eliminate the disputes from the project”*. Further, **I02** and **I15** pointed out the personal qualities to be improved as an Engineer because the Engineer plays the Mediator role to some extent under contract conditions. The issues beyond the Engineer's control will move to an alternative dispute resolution method to find a better solution.

Table 4-7: Barrier management strategies

Barrier Management Strategies		I01	I02	I04	I05	I06	I09	I10	I11	I13	I15	I16
1.	Improvement of Ethics of the Engineer to the Contract	✓	✓	-	-		-	-	-	-	-	-
2.	Improvement of Personal Qualities of the Engineer to the Contract	✓	✓	-	-	-	-	-	-	-	✓	-
3.	Characteristics of the Mediator role should be included in the role of the Engineer to the contract	✓	-	✓	✓	-	-	-	-	-	-	-
4.	Good professional relationship with the parties to the contract to be maintained by the Engineer	✓	-	-	-	-	-	✓	-	✓	-	-
5.	Competencies as an Engineer must be examined before selecting an Engineer	✓	✓	-	-	-	-	-	-	✓	-	-
6.	Mediation should be included in the contract as an alternative dispute resolution method before the approach to the Arbitration or DAB	✓	-	-	-	-	✓	-	-	-	-	-
7.	The payment procedure for the Engineer should be changed	✓	-	-	-	-	-	-	✓	✓	✓	✓
8.	The procedure for selecting the Engineer should be changed	✓	-	-	-	-	-	-	✓	✓	✓	✓
9.	The authority to work independently should be given to the Engineer through the contract	✓	-	-	-	✓	-	-	-	-	-	-
10.	Form a common agreement accepted by contracting parties when appointing the Engineer to the contract	✓	-	-	-	-	-	-	-	-	-	✓

The Engineer is the best person to find the solutions for the issues before arising within the contract conditions. Hence, **I02** stated that the Engineer's role should be further developed. According to **I04** and **I05**, a "*Mediator is a third party who facilitates the*

negotiation and guides the parties to a settlement". In this scenario, the Mediator seeks the error and rationale for the issue. **I04** stated that *"the Mediator has good qualities such as listening to both parties who prejudiced, impartiality. Therefore, these qualities should be there with the Engineer to the contract when determining"*. Good communication paves the way for a good relationship. Good relationships and a better understanding of the parties provide absolute solutions for more issues. **I10** and **I13** emphasised in their interviews, *"a good professional relationship with the parties to the contract to be maintained by the Engineer. Always the Engineer to the contract should be a professional person to maintaining impartiality"*. In addition, **I02** and **I13** stated that *"competencies as an Engineer should be examined before selecting an Engineer"*. Because the skills of handling issues tactically are very important for an Engineer. The Mediator is the person who uses his skills in handling issues to resolve disputes.

I09 suggested that *"each contract must include Mediation as an alternative dispute resolution method"*. Mediation is a better dispute resolution method than other methods when comparing cost, time, and privacy. **I09**'s statement indicates that the Mediator characteristics and the techniques used to resolve disputes are satisfactory. Further, **I09** stated, *"some characteristics of the Mediator can be seen through the Engineer, but some of the qualities need to be developed"*. **I15** expressed that *"the payment procedure of the Engineer to the contract should be changed"*. **I16** proposed *"payments to the Engineer to the contract through an agreed payment method (Equal contribution from contracting parties)"*. **I11** highlighted that the payments of the alternative dispute resolution system are made by the parties collectively, and it may benefit the parties to get the absolute answer due to there being no bias based on the money.

Therefore, **I11** proposed the biases arising based on the payments can be avoided by applying the same method used for alternative dispute resolution methods. They suggest another step as an extension: *"The procedure for selecting the Engineer should be changed"*. The procedure of selecting a suitable Engineer for the contract intended by the **I13** was for both parties to have consent on the person who is going to be selected as an Engineer. The opinion of **I16** was *"appoint the Engineer to the contract*

by a process agreeable to the contracting parties". Furthermore, **I16** proposed that *"form a common agreement accepted by contracting parties when appointing the Engineer to the contract"*. The Engineer has been delegated the authority through the contract, and he should be a fair and reasonable decision-maker. However, the Engineer have to follow the instructions of the Employer on some occasions. **I06** shared his experience regarding the consequence of groundless decision-making of the Employer even though explained by the Engineer. It was *"incomplete design, unnecessary ex-gratia payment, and deferring of advance payment recovery were impacted to interim payments"*. The opinion of **I06** was the authority to work independently should be given to the Engineer through the contract.

4.4 Pattern Matching for the Research Study

This section compares data collected from the literature review and research findings. Two patterns are attempted to combine in pattern matching, one a theoretical pattern and the other an observable one (William, 2022). Past literature is considered a theoretical pattern, and research findings are considered an observed pattern. Discrepancies between the literature and the study results and how the results of this research can bridge the research gap were discussed.

4.4.1 Role of the Mediator in the Construction industry

Many past researchers have identified the key characteristics of the Mediator in the construction industry. Table 4.8 compares the main characteristics identified from literature reviews and the findings of this study.

Table 4-8: Comparison of key characteristics of the Mediator and research findings

Role of the Mediator	Past Researchers							
	A	B	C	D	E	F	G	H
Sensitively and firmly manage the process	✓	✓		✓				
Facilitating parties to overcome deadlock and toward settlement	✓	✓	✓				✓	
Identification of common goals based on gathered information	✓	✓		✓	✓	✓	✓	
Assist the parties in understanding the reality of the dispute by being a reality tester	✓	✓	✓					
Directing the parties to construct an outcome that meets their needs	✓	✓	✓		✓			
Broadening the parties' vision of the problem and developing positive approaches to the problem	✓	✓		✓	✓	✓	✓	
Assist the parties in writing the agreement	✓	✓						
Act as a settlement supervisor and check whether the settlement agreement has been implemented and Help the parties to avoid further problems	✓	✓		✓				
Encourage parties to a settlement	✓	✓	✓	✓	✓	✓	✓	✓
A- Gould & Elliott (2016); B - CEDR (2015); C- Chau (1992); D- Harmon (2006); E- Imperati (2021); F- Wilson & Bryan (2017); G- Cheung & Yiu (2007); H- Lee et al. (2021)								

According to Gould and Elliott (2016), CEDR (2015), and Harmon (2006), the Mediator is an empathetic character and firmly handles issues. Further, the Mediator facilitates parties to overcome deadlock and towards settlement (Gould & Elliott, 2016; CEDR, 2015; Chau, 1992; Cheung & Yiu, 2007). He/she always focuses on the issues and identification of common goals based on gathered information (Gould & Elliott, 2016; CEDR, 2015; Harmon, 2006; Imperati, 2021; Wilson & Bryan, 2017; Cheung & Yiu, 2007; CEDR, 2015). Hence, the Mediator assists the parties in

understanding the authenticity of the dispute by being a reality tester (Gould & Elliott, 2016; CEDR, 2015; Chau, 1992).

Identifying the gist of the disputes and directing the parties to construct an outcome that meets their needs is the Mediator's duty (Gould & Elliott, 2016; CEDR, 2015; Chau, 1992; Imperati, 2021). The personality of the parties depends on their knowledge, experience, and skills. Some disputes arise based on the parties' vision. Therefore, Mediator always tries to broaden the vision of the parties regarding the problem and develop positive approaches to the problem (Gould & Elliott, 2016; CEDR, 2015; Harmon, 2006; Imperati, 2021; Wilson & Bryan, 2017; Cheung & Yiu, 2007; CEDR, 2015).

Only a few respondents agreed with the statement that "*the Mediator assists the parties in writing the agreement*" (Gould & Elliott, 2016; CEDR, 2015). According to Gould and Elliott (2016), CEDR (2015), and Harmon (2006), the Mediator act as a settlement supervisor and checks whether the settlement agreement has been implemented and help the parties to avoid further problems. Hence, the Mediator encourages parties to settle (Gould & Elliott, 2016; CEDR, 2015; Chau, 1992; Harmon, 2006; Imperati, 2021; Wilson & Bryan, 2017; Cheung & Yiu, 2007; CEDR, 2015). Most of the respondents agreed with the statement that the "*Mediator encourage the parties to settlement*".

4.4.2 Role of the Engineer to the Contract

Many past studies have discussed the characteristics of the Engineer to the contract. Table 4.9 illustrates the comparison of the key characteristics identified from literature reviews and findings of this study.

Saket (2010) highlighted that the Engineer to the contract guides the parties and follows up on the project plan. However, most respondents agreed with Saket's statement. Managing the Time, Cost, and Quality of the project is the Engineer's role (Brien, 2019; Berggren et al., 2001; Saket, 2010; Ghaswala, 2010; FIDIC, 2017; SBD, 2007). Brien (2019) detailed that the Engineer to the contract coordinates the project works. **I02** stated that "*coordination is very important, but unfortunately, in practice,*

no proper coordination can be seen from the present Engineer, and it may directly impact the project disputes”.

Table 4-9: Comparison of key characteristics of the Engineer and research findings

Role of the Engineer to the Contract	Past Researchers							
	A	B	C	D	E	F	FIDIC	SBD
Project planning and guiding the parties			✓					
Managing Time, Cost, and Quality of the project	✓	✓	✓	✓			✓	✓
Coordinating the project works	✓							
Supervision of works	✓			✓		✓		
Advising the Employer on matters related to the cost, design, and technical details		✓	✓			✓		
Dealing fairly with financial and business procedures.					✓			
Assist in interpreting the contract document and preparing agreements, reviewing bonds and guarantees		✓						
Assist in maintaining the cash flow			✓	✓				
Issuing instruction and Fair determination	✓				✓		✓	✓
Administration of the Contract	✓	✓	✓	✓				
A- Brien (2019); B- Berggren et al. (2001); C- Saket (2010); D- Ghaswala (2010); E- Prentice (2017); F- Dymond (2013); FIDIC (2017); SBD (2007)								

Supervising the work is the Engineer’s role (Brien, 2019; Ghaswala, 2010; Dymond, 2013). However, respondents’ answers varied, and some disagreed with the statement—their opinion was that work supervision is the Contractor’s responsibility. In addition, the Engineer to the contract is the person who advises the Employer on matters related to the cost, design, and technical details (Berggren et al., 2001; Saket,

2010; Dymond, 2013). Most respondents agreed with the statement of the Engineer advising the Employer. The Engineer deals fairly with financial and business procedures (Prentice, 2017). Respondents' opinion was that "*the Engineer should have a proper understanding of the end result of the project and the business procedure. Then the Engineer can be able to get the idea about the entire project orientation*". Other identified responsibilities of the Engineer are assisting in interpreting the contract document, preparing agreements, and reviewing bonds and guarantees (Berggren et al., 2001). Few respondents agreed with the above statement. Even though Saket (2010) and Ghaswala (2010) have considered maintaining the cash flow as a duty of the Engineer, most respondents disagreed with the statement. They argued that maintaining the cash flow was the Contractor's responsibility.

Issuing instructions and Fair determination is considered an essential duty of the Engineer (Brien, 2019; Prentice, 2017; FIDIC, 2017; SBD, 2007), and many of the respondents validated it. The Engineer administrates the contract (Brien, 2019; Berggren et al., 2001; Saket, 2010; Ghaswala, 2010).

4.4.3 Enablers of using Engineer as a Mediator

When considering the most significant enablers of using the Engineer as a Mediator in construction projects, the literature review had not discovered some enablers. Table 4-10 demonstrates the gap between the literature survey results and the research outcomes.

Table 4-10: Research gap between the research findings and literature findings on key enablers of using the Engineer as a Mediator

Enables	Authors (Literature findings)									Expert interview findings
	A	B	C	D	E	F	G	H	I	
Sound knowledge about the Contract	√						√			
Work as an intermediate person between the Employer and the Contractor		√				√	√	√	√	
Sound knowledge about the project		√			√					
Authority delegated by the Employer through the Contract terms								√	√	
Comply with the terms of the contract						√		√	√	
The Engineer is not a single person and acts as a team					√					
Administration of the Contract			√	√	√	√		√	√	
Well-experienced in construction and disputes	√									
Well Understanding of business cases and business aspects										√
Close association with the Employer										√
Knowledge about all the positive and negative details of both parties										√
Knowledge about the real barrier to the project										√
Lessons learned from previous contracts can be applied to the new projects										√
A- Gillies & Henry (2018); B- Dymond (2013); C- Prentice (2017); D- Brien (2019); E- Ghaswala (2010); F- Saket (2010); G- Jayasena & Yakupitiyage (2012); H- FIDIC (2017); I- SBD (2007)										

Gillies and Henry (2018) and Jayasena and Yakupitiyage (2012) identified that the Engineer having *sound knowledge of the Contract* is an enabler of using the Engineer as a Mediator. The Engineer *works as an intermediate person between the Employer and the Contractor* (Dymond, 2013; Saket, 2010; Jayasena & Yakupitiyage, 2012); FIDIC, 2017; SBD, 2007). Dymond (2013) and Ghaswala (2010) identified that the Engineer has *sound knowledge of the project*. However, this study's results validated that the literature and study findings are similar.

FIDIC (2017) and SBD (2007) include the terms and conditions describing *authority delegation by the Employer through the Contract terms* to the Engineer in a contract designed by the Employer. Similarly, in this study, *authority delegation by the Employer through the Contract terms* is identified as one of the enablers to the Engineer to the contract to act as a Mediator. Saket (2010) stated that the Engineer must *comply with the terms of the Contract*.

Similarly, respondents in this study agreed with the above statement and considered enablers. Ghaswala (2010) describes that *the Engineer is not a single person and acts as a team* due to various groups working collectively, calling an Engineer to the contract. This study's findings confirm that the Engineer is not a single person and is treated as an enabler of using the Engineer as a Mediator. *Administration of the Contract* is the Engineer's main duty (Prentice, 2017; Brien, 2019; Ghaswala, 2010; Saket, 2010; FIDIC, 2017; SBD, 2007). The Engineer administrating the contract is considered an enabler by the respondents in this study. Gillies and Henry (2018) stated that the Engineer is *well-experienced in construction and disputes*. Such experience could eradicate the dispute-causing factors.

The existing characteristics found in construction projects, determined based on research outcomes, are well understanding of business cases and business aspects, close association with the employer, knowledge about all positive and negative details on both parties, and lessons learned from previous contracts; they can be applied to the new projects.

4.4.4 Barriers to using the Engineer as a Mediator

Compared with the enablers in the literature, a gap is present in key barriers to using the Engineer as a Mediator. However, the research finding of this study bridged the gap and Table 4.11 demonstrates the literature findings and research outcomes.

Table 4-11: Research gap between the research findings and literature findings on key barriers to using the Engineer as a Mediator

Barriers	Authors (Literature findings)									Expert interview findings
	A	B	C	D	E	F	G	H	I	
Appointing by the Employer	√							√	√	
Authority to instruction and determination			√			√		√	√	
Authority to approval and disapproval			√					√	√	
There is an agreement between the Engineer and the Employer		√						√	√	
“Principle – Agent” relationship				√	√					
Loyalty to the Employer				√			√			
Personal Quality										√
Provisions given in the contract										√
The Engineer is unable to work beyond the contract terms and conditions										√
Having to follow the Employers instructions in practice										√
A- Gould & Elliott (2018); B- Dymond (2013); C- Prentice (2017); D- Brien (2019); E- Gillies & Henry (2018); F- Nabatova (2017); G- Ranger v Great Western Railway Company (1838); H- FIDIC (2017); I- SBD (2007)										

Dymond (2013) identified *no direct agreement between the Engineer and the Contractor*. According to the research findings, most respondents believed that direct agreement between the Engineer and the Contractor would not be a barrier to adopting the role of the Mediator into that of the Engineer.

The Engineer to the contract is *appointed by the Employer* (Gould & Elliott, 2018; FIDIC, 2017; SBD, 2007). The Engineer has the *authority to instruct and determination* (Prentice, 2017; Nabatova, 2017; FIDIC, 2017; SBD, 2007). The Engineer also has the *authority to approve and disapprove* (Prentice, 2017; FIDIC, 2017; SBD, 2007). However, the findings of this study validated that the above authorities will be a barrier to the Engineer working as a Mediator. Dymond (2013) highlighted *an agreement between the Engineer and the Employer*. According to the literature, the agreement between the Engineer and the Employer is common in contracts in any country. This factor could be a barrier to the Engineer absorbing the Mediator's characteristics under contract conditions.

Brien (2019) and Gillies and Henry (2018) interpreted the connection between the Engineer and the Employer as a "*Principle – Agent*" relationship. Moreover, Brien (2019) and *Ranger v Great Western Railway Company* (1838) have identified that the Engineer is *loyal to the Employer*. The above factors collected from the literature survey can be considered a barrier to using the Engineer as a Mediator.

Four new barriers were derived from the research findings: *personal quality, provisions given in the contract, the Engineer being unable to work beyond the contract terms and conditions, and the Engineer having to follow the Employers instructions in practice*. The literature findings did not reveal these barriers.

4.4.5 Barrier management strategies

There is a gap in the literature findings on barrier management strategies. All barrier management strategies were based on research findings, filling the research gap.

Ten barrier management strategies were identified from the research findings: Improvement of ethics of the Engineer to the Contract, Improvement of personal qualities of the Engineer to the contract, Characteristics of the Mediatory role should

be included in the role of the Engineer to the contract, Good professional relationship with the parties to the contract to be maintained by the Engineer, competencies as an Engineer should be examined before selecting an Engineer, Mediation should be included in the contract as alternative dispute resolution method before the approach to the Arbitration or DAB, The payment procedure for the Engineer should be changed, The procedure for selecting the Engineer should be changed, Authority to work independently should be given to the Engineer through the contract, and Form a common agreement accepted by contracting parties when appointing the Engineer to the contract. These strategies were absent in the literature survey results.

4.5 Chapter Summary

This chapter demonstrates the analysis of data collected from the semi-structured interview. The interview findings were analysed using manual content analysis methods. The results from the literature survey were validated through the expert interview to apply them to the investigation. The questions were structured to help achieve the objectives.

Pattern-matching techniques helped elaborate on the relationship between research and literature findings. It assisted explain the research gap and how to bridge the research gap. New attributes were also identified through semi-structured interviews. Under each section, the final results of this study were compared and discussed in detail concerning the literature. The next chapter summarises the survey results and makes recommendations.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

Disputes are a widespread problem in the construction industry; they are not limited to Sri Lanka but are prevalent worldwide. Numerous factors, such as the complexity of construction projects, the number of stakeholders involved, government regulations, society, and nature, determine the number of disputes. In addition, the construction industry greatly contributes to the country's economy. Therefore, the construction industry needs to be strengthened economically and financially.

The purpose of this study is to reduce the number of disputes in the construction industry and provide suitable solutions by investigating the suitability of the Engineer's role to the contract as a Mediator. A qualitative research approach was used to achieve the aim and objectives of this research study. Accordingly, semi-structured interviews were conducted for data collection. This chapter provides a detailed conclusion for each objective examined in the study, and the final section of this chapter discusses the research limitations. Finally, it identifies the areas suitable for further investigation.

5.2 Conclusions

Characteristics of the roles of the Engineer to the contract and the Mediator, and enablers and barriers when using the Engineer as a Mediator were collected through the literature, and literature gaps were clarified. The research aim and objectives were attained based on the analysis of data collected through semi-structured interviews. Every chapter discussed the achievement of each objective. Accordingly, this chapter demonstrates the overall summary of the study findings and explains the achievements of each objective.

Objective I - Identify the role of Mediator in construction projects

This objective was achieved through the literature survey and validated through the expert interview. Sixteen (16) semi-structured interviews were conducted in addition

to the literature survey. Nine (09) characteristics of the roles relevant to the Mediator were identified through the literature review. The applicability of the above Mediator roles in current projects was tested through the literature survey. In addition, the benefits of having a Mediator in dispute resolution and the reason for this being a popular method among construction professionals were identified.

Objective II - Identify the role of the Engineer to the contract in construction projects

Characteristics of the Engineer to the contract were identified through the literature. In addition, sixteen (16) expert interviews were conducted based on the literature findings. Ten (10) characteristics were identified through the literature survey, and their applicability was tested based on the semi-structured interviews. Comparing both roles, six (6) common characteristics were identified. The Mediator's role can already be seen in the Engineer's role; Therefore, the Engineer can act as a Mediator in his position.

Objective III - Identify enablers and barriers to the Engineer to the contract when involved as a mediator

Enablers and barriers of the Engineer to the contract when involved as a Mediator were identified through the literature survey. Eight (08) enablers and seven (07) barriers were identified. An additional five (05) enablers and four (04) barriers were identified through the semi-structured interviews. Respondents suggested new enablers such as a good understanding of business cases and business aspects, close association with the Employer, knowledge about all positive and negative details on both parties, knowledge about the real barriers of the projects, and lessons learned from previous contracts applicable to new projects. In addition, respondents introduced new barriers such as the personal qualities of the Engineer, provisions given in the contract, the Engineer being unable to work beyond the contract terms and conditions, and having to follow the Employers instructions in practice.

Objective IV - Propose suitable solutions to use the Engineer to the contract as a Mediator in construction projects

Management strategies for all barriers were identified through the semi-structured interviews. Respondents' opinions were utilized to bridge the gap in the literature findings. This objective positively discusses the possibility of using the Mediator characteristics for the Engineer to the contract.

The respondents suggested ten (10) barrier management strategies: Improvement of Ethics of the Engineer to the Contract, Improvement of personal qualities of the Engineer to the Contract, Characteristics of the Mediator role to be included in the role of the Engineer to the Contract, Good professional relationship with the parties to the contract to be maintained by the Engineer, Competencies as an Engineer to be examined before selecting an Engineer, Mediation to be included in the contract as alternative dispute resolution method before the approach to the Arbitration or DAB, Payment procedure for the Engineer to be changed, Procedure for selecting the Engineer to be changed, Authority to work independently to be given to the Engineer through the contract and Forming a standard agreement accepted by contracting parties when appointing the Engineer to the contract.

5.3 Recommendations

The construction industry is massive worldwide and directly supports the country's economy. Hence, it can affect the world economy and help to keep the economic balance. The complexity and the challenging nature of the construction industry have been significant causes of controversy. Therefore, disputes arising in the construction industry are expected, but such disputes cause a setback in the construction industry.

Minimising and avoiding disputes is essential for the elevation of the construction industry. This study discussed minimising and preventing disputes before arising by changing the Engineer's characteristics. The Engineer is the professional person who acts as an intermediate party. However, the Engineer's role should be further improved to accommodate the responsibilities of a Mediator in a dispute.

Mediation is an alternative dispute resolution mechanism that is better for parties with money, time, and privacy than other methods. This study aims to identify solutions for the practically questionable issues found by the Engineer by absorbing the characteristics of the Mediator.

Therefore, to avoid disputes in the construction industry, this research provides sound guidance and clearly outlines the possible appropriate changes to be made. In addition, this research assists in finding the solution for the disputes themselves. Therefore, the parties' time, cost, and privacy could be saved, providing a quality project.

This study provides the following recommendations:

- The ethics of the Engineer to the Contract can be developed in detail. This will enable the construction professionals to have a proper understanding of the ethics that must be adhered to by an Engineer when acting as an impartial party in construction disputes.
- The limitations of the scope of decisions that can be taken by the Engineer as a Mediator can be defined in detail to avoid any party from challenging the outcome of a mediation handled by the Engineer to the Contract.
- Based on the ambiguities that can arise when the Engineer acts as a Mediator, a proper contract can be developed defining the duties and other aspects of the Mediator by both parties to the contract. Both parties must accept these aspects before taking the Engineer as the Mediator in the project.
- Proper procedures to be followed if the outcome of a mediation is not satisfactory by a party need to be defined and agreed upon before engaging in a contract.

5.4 Limitations

This study was performed under a few limitations. The main limitation of this study is that it was limited to the building projects considering SBD/02 and FIDIC second edition 2017 condition of contract for construction. Therefore, this research outcome does not apply to infrastructure projects and projects prepared based on another type of condition of contracts. Moreover, the selected sample was limited to sixteen (16) experts in the construction industry.

5.5 Further Research

As a guide for researchers on the subject, several other research areas can be identified to minimise disputes in the construction industry.

- Identification of disputes arises based on the determination of the Engineer to the contract.
- Suitability of the role of the Engineer to the contract as an Adjudicator to mitigate disputes in construction projects.
- Impact of the disputes for the construction project delay.

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APPENDICES

APPENDIX I - EXPERT INTERVIEW GUIDELINE

EXPERT INTERVIEW GUIDELINE

MSc/PG Dip. in Construction Law and Dispute Resolution,
Department of Building Economics,
University of Moratuwa.

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Dear Sir/Madam,

Conducting an Interview for a Dissertation

I am an M.Sc. student in Construction Law and Dispute Resolution at the Department of Building Economics, University of Moratuwa. I am currently conducting research under the module of “**Dissertation**” on the topic of “**Suitability of the role of the Engineer to the contract as a Mediator to mitigate the disputes in construction projects**”. The mode of data collection is deemed as a one-to-one interview.

The interviews will be conducted with experienced quantity surveyors and other professionals in the construction industry. I have identified you as a potential participant who could provide me with valuable information for this research. Therefore, I would like to interview you for **approximately 30-40 minutes** on my research literature findings and your expert opinion. The medium of collecting data will be **voice recording (with the interviewee’s permission)** to gather data more precisely.

The information collected through this interview will not be disclosed to any other party, and confidentiality will be retained. It should be used only for the purpose of the dissertation. I solicit you to facilitate my research by providing your valuable knowledge and opinion regarding this research topic.

Thank you.

Yours faithfully,

.....

Bandara U. G. D.I

Dissertation Supervisor:

CH. QS Prof. (Mrs.) Perera B.A.K.S

INTERVIEW GUIDELINES

Research Topic -

Suitability of the role of the Engineer to the contract as a Mediator to mitigate disputes in construction projects.

Aim of the study -

This study aims to identify the suitability of the role of the Engineer to the contract as a Mediator to mitigate disputes in construction projects.

Objectives of the study -

1. To identify the role of mediator in construction projects
2. To identify the role of the Engineer to the contract in construction projects
3. To identify enablers and barriers of the Engineer to the contract when involved as a mediator
4. To propose suitable solutions to use Engineers to contracts as mediators in construction projects

Designation

Profession

Type of company Contractor Consultant Client or any other

Experience –
(number of years)

Date - /...../.....

Key expertise areas related to the topic –

1) General Questions

1.1) What do you think about the importance of Mediators' involvement in construction projects?

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1.2) Do you think that the Mediatory characteristics can be found through the role of the Engineer to the contract?

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1.3) What do you think about the impact of the Engineer's involvement as a Mediator in the construction projects?

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1.4) To what extent do you think the Engineer can act as a Mediator in the contract?

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1.5) What are the key characteristics seen through the Mediator in the construction industry

NO	Characteristics	Yes	No	Comments
1	Sensitively and firmly manage the process			
2	Facilitating parties to overcome deadlock and towards settlement			
3	Identification of common goals based on gathered information			
4	Assist parties in understanding the reality of the dispute by being a reality tester.			
5	Directing the parties to construct an outcome that meets their needs			
6	Broadening the parties' vision of the problem and developing positive approaches to the problem.			
7	Assist the parties in writing the agreement.			
8	Act as a settlement supervisor and check whether the settlement			

NO	Characteristics	Yes	No	Comments
	agreement has been implemented; help parties to avoid further problems.			
9	Encourage parties to a settlement.			

1.6) What are the key characteristics that can be seen through the Engineer in the construction industry

NO	Characteristics	Yes	No	Comments
1	Project planning and guiding the parties			
2	Managing Time, Cost, and Quality of the project			
3	Coordinating the project works			
4	Supervision of works			
5	Advising the Employer on matters related to the cost, design, and technical details			
6	Dealing fairly with financial and business procedures.			

NO	Characteristics	Yes	No	Comments
7	Assist in interpreting the contract document and preparing agreements, reviewing bonds and guarantees			
8	Assist in maintaining the cash flow			
9	Issuing instructions and Fair determination			
10	Administration of the Contract			

1.7) What are the enablers of using an Engineer as a Mediator?

NO	Enablers	Agree	Disagree	Modification or Comments
1	Sound knowledge about the Contract			
2	Work as an intermediate person between the Employer and the Contractor			
3	Sound knowledge about the project			

NO	Enablers	Agree	Disagree	Modification or Comments
4	Authority delegated by the Employer through the Contract terms			
5	Comply with the terms of the contract			
6	The Engineer is not a single person and acts as a team.			
7	Administration of the Contract			
8	Well-experienced in construction and disputes			
	New Enablers specify below			

1.8) What are the Barriers to using an Engineer as a Mediator?

NO	Barriers	Agree	Disagree	Modification or Comments
1	Appointing by the Employer			
2	There is no direct agreement between the Engineer and the Contractor			
3	Authority to instruction and determination			
4	Authority to approval and disapproval			
5	There is an agreement between the Engineer and the Employer			
6	“Principle – Agent” relationship			
7	Loyalty to the Employer			
	New Barrier; specify below...			

1.9) What are the barrier management strategies for using an engineer as a mediator?

NO	Strategies	Agree	Disagree	Modification or Comments
1				
2				
3				
4				
5				
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7				

1.10) Opinion of the suitability of the role of the Engineer to the contract as a Mediator to mitigate disputes in construction projects?

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2. Any other Comments?

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Thank You,

U. G. D. I. Bandara

M.Sc. Construction Law and Dispute Resolution,
Department of Building Economics,
University of Moratuwa,
Sri Lanka.

APPENDIX II - EXPERT INTERVIEW GUIDELINES (Filled)

EXPERT INTERVIEW GUIDELINES

MSc/PG Dip. in Construction Law and Dispute Resolution,
Department of Building Economics,
University of Moratuwa.

.....

Dear Sir/Madam,

Conducting an Interview for a Dissertation

I am an M.Sc student in Construction Law and Dispute Resolution at the Department of Building Economics, University of Moratuwa. I am currently researching under the module of “**Dissertation**” on the topic of “**Suitability of the role of the Engineer to the contract as a Mediator to mitigate the disputes in construction projects**”. The mode of data collection is deemed as a one-to-one interview.

The interviews will be conducted with experienced Quantity Surveyors and other professionals in the construction industry. I have identified you as a potential participant who could provide me with valuable information for this research. Therefore, I would like to interview you for **approximately 30-40 minutes** on my research literature findings and your expert opinion. The medium of collecting data will be **voice recording (with the interviewee's permission)** to collect data more precisely.

The information collected through this interview will not be disclosed to any other party, and confidentiality will be retained. It should be used only for the purpose of the dissertation. I solicit you to facilitate my research by providing your valuable knowledge and opinion regarding this research topic.

Thank you.

Yours faithfully,

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Bandara U. G. D. I.

Dissertation Supervisor:

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INTERVIEW GUIDELINES

Research Topic -

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Aim of the study -

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Objectives of the study -

1. To identify the role of mediator in construction projects
2. To identify the role of the Engineer to the contract in construction projects
3. To identify enablers and barriers of the Engineer to the contract when involved as a mediator
4. To propose suitable solutions to use Engineers to contracts as mediators in construction projects

Key expertise areas related to the topic – *The Engineer to the contract*

Designation	<i>Chartered Quantity Surveyor</i>
Profession	<i>Quantity Surveyor</i>
Type of company	Contractor Consultant Client or any other
Experience (number of years)	<i>25 Years</i>
Date -	<i>22/12/2021</i>

1) General Questions

1.1) What do you think about the importance of Mediators' involvement in construction projects?

As a construction professional, I believe the Mediators' role within construction contracts is very important where the contracting parties cannot resolve any dispute amicably or with the involvement of the "Engineer to the Contract".

1.2) Do you think that the Mediator characteristics can be found through the role of the Engineer to the contract?

I believe the Engineer to the contract shall be the best-suited person to have the mediatory characteristics within a construction contract. However, the Engineer to the contract is contractually obliged to make decisions on contractual matters under construction contracts. Further, the Engineer to the contract is generally appointed and paid by the Client. Accordingly, in practice, Contractors typically complain that the Engineer to the contract makes decisions much more favourable to Clients.

1.3) What do you think about the impact of the Engineer's involvement as a Mediator to the construction projects?

I believe, in most circumstances, the involvement of the Engineer as a Mediator may cause positive impacts on construction contracts.

1.4) Do you think to what extent the Engineer can act as a Mediator in the contract?

The Engineer can communicate with the contracting parties regarding contractual issues as a Mediator. However, he shall make decisions based on the available information (which is legally binding). Therefore, the Engineer's role is beyond the role of a Mediator within a construction contract.

1.5) What are the key characteristics that can be seen through the Mediator in the construction industry

NO	Characteristics	Yes	No	Comments
	Sensitively and firmly manage the process.			
	Facilitating parties to overcome deadlock and towards settlement.			
	Identification of common goals based on gathered information			
	Assist the parties in understanding the reality of the dispute by being a reality tester.			
	Directing the parties to construct an outcome that meets their needs			
	Broadening the parties' vision of the problem and developing positive approaches to the problem.			
	Assist the parties in writing the agreement.			
	Act as a settlement supervisor and check whether the settlement			

NO	Characteristics	Yes	No	Comments
	agreement has been implemented; help the parties to avoid further problems			
	Encourage parties to a settlement			

1.6) What are the key characteristics seen by the Engineer in the construction industry?

NO	Characteristics	Yes	No	Comments
	Project planning and guiding the parties			
	Managing Time, Cost, and Quality of the project			
	Coordinating the project works			
	Supervision of works			
	Advising the Employer on matters related to the cost, design, and technical details			
	Dealing fairly with financial and business procedures.			

NO	Characteristics	Yes	No	Comments
	Assist in interpreting the contract document and preparing agreements, reviewing bonds and guarantees			
	Assist in maintaining the cash flow			
	Issuing instruction and Fair determination			
	Administration of the Contract			

1.7) What are the enablers of using an Engineer as a Mediator?

NO	Enablers	Agree	Disagree	Modification or Comments
	Sound knowledge about the Contract			
	Work as an intermediate person between the Employer and the Contractor			
	Sound knowledge about the project			

NO	Enablers	Agree	Disagree	Modification or Comments
	Authority delegated by the Employer through the Contract terms			
	Comply with the terms of the contract			
	The Engineer is not a single person and acts as a team.			
	Administration of the Contract			
	Well-experienced in construction and disputes			
	<i>Lessons learned from previous contracts can be applied to the new projects</i>			

1.8) What are the Barriers to using an Engineer as a Mediator?

NO	Barriers	Agree	Disagree	Modification or Comments
	Appointed by the Employer			<i>Engineers' duties are adequately defined in the contract. Therefore, the decision-making of the Engineer is fair and reasonable.</i>
	There is no direct agreement between the Engineer and the Contractor			<i>There's no necessity to sign a direct agreement. Engineers' duties are appropriately defined in the contract.</i>
	Authority to instruction and determination			
	Authority to approval and disapproval			
	There is an agreement between the Engineer and the Employer			
	“Principle – Agent” relationship			
	Loyalty to the Employer			
	<i>Some of the provisions given in the contract may be affected due to the actual complexities and difficulties of the projects. The</i>			

NO	Barriers	Agree	Disagree	Modification or Comments
	<i>mediation process cannot be properly applied to that kind of situations</i>			

1.9) What are the barrier management strategies for using an engineer as a mediator?

NO	Strategies	Agree	Disagree	Modification or Comments
	<i>Professionally qualified, well-experienced person/team with interpersonal skills, negotiation skills, proper decision-making ability, and good PR, to be selected as the Engineer to the Contract</i>			
	<i>Good professional relationship with the parties to the contract to be maintained by the Engineer</i>			

1.10) Opinion of the suitability of the Engineer's role to the contract as a Mediator to mitigate disputes in construction projects

As per the above explanations, the Engineer to the contract as a Mediator to mitigate the disputes in construction projects is suitable.

2. Any other comments?

This process is to be further enhanced for the future betterment of the contracts. Knowledge-sharing sessions of Engineers to the contracts can be organized to develop this concept.

Thanking You,

U. G. D. I. Bandara

M.Sc. Construction Law and Dispute Resolution,

Department of Building Economics,

University of Moratuwa,

Sri Lanka.