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AN EVALUATION OF FACTORS CONTRIBUTING TO CONSTRUCTION DISPUTES IN HIGH-RISE BUILDING PROJECTS SRI LANKA: PROJECT MANAGER'S PERSPECTIVE

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ABSTRACT

This study evaluates the critical factors contributing to construction disputes and depicts the importance of dispute mitigation practices especially within the Sri Lankan context and the importance of Project Manager's role towards dispute mitigation process. The study was conducted through exploring the existing literature encircling with construction disputes and mitigation practices. Secondary data were reviewed in order to gather general factors which are directly contributing to construction disputes in different contexts. This step was strengthened by 10 semi structured interviews with industry professionals. Identification of critical factors at their initial stage could be more beneficial than focusing on dispute resolution was the main key finding of this study. Therefore it is essential to administer dispute factors subsequently analyzing their impact and cause towards the project completion. This study systematically interprets the Project Manager's contribution towards dispute mitigation align with the project phases. It is essential to adopt CPM schedule while implementing change management strategies are concluded on behalf of preventing overlapped construction schedules. Adequate risk Management and well-structured documentation management are also potential mitigation practices that could be utilized with

project execution phase. This study recommended to adhere alternative project delivery methods such as IPD, ILD, PPP and the usage of modern innovative applications such as BIM, and RFID. The implications of this study are that the industry should adopt innovative procedures as dispute mitigation remedies by comprehensively analyzing their benefits and challenges according to project's level of complexity. Therefore proper planning and scheduling should be embarked at the project initial stage. However better improvements to this perception can be prompted only if there is a methodical mechanism within the cultural and ethical practices of the Industry.

Keywords: Construction Disputes, impacts, project Manager, Sri Lanka

INTRODUCTION

The Construction Industry commonly considered as an immense portion of global economy. The overall performance of the construction industry reckoned as a barometer of total economic development of a country. (Wijeratne, 2019). Generally Construction industry is recognized as a high hazard industry which consist a distinct range of complicated activities such as conceptualization, designs, alterations, civil structuring works,

mechanical, electrical and plumbing works etc. Therefore a large number of parties are involved in project execution. This complex nature of a construction project eventually leads to complex conflicts and disputes among involved parties. Accordingly these disputes have a potential tend to transform into more rigorous and multilayered with the scale and type of construction. Hence Disputes are a common aspect at any phase of a construction project (Ashworth, 2005). The accomplishment of a construction project relies on better ascendance of involved parties. This study is mainly focusing to investigate the crucial factors affecting construction disputes in project manager's perspective.

Research Problem and Justification of Research

Construction disputes are delineated as a disagreement or contradiction between two or more parties who are engaged in a construction project. Disputes are accomplice with adversarial and justiciable consequences. The issues related with construction disputes are a global phenomenon and the costs affiliated with dispute resolution processes are considerably large. It is evidently proved that there are plenty of factors contributing to construction disputes in numerous researches. But there is lack of studies have been conducted through project manager's perspective. During recent decade, several studies have captured most of dispute trends but yet there are plenty of loop holes remaining. (Cooper, et al., 2018) This study is intended to highlight those loop holes which are contributing adversarial construction disputes in project manager's perspective.

Research Aim

The aim of this research is to provide an evaluation for factors contributing towards

construction disputes and to offer recommendations for dispute mitigation practices.

Research Objectives

1. Identify most critical factors contributing towards construction disputes.
2. Investigate the cause and impact of those factors
3. Evaluate possible remedial practices in project manager's perspective and provide recommendations for better dispute mitigation.

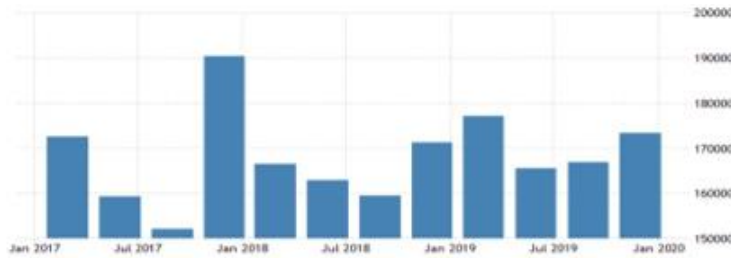
Scope and Limitations

This study is limited to evaluate the major factors jeopardizing construction disputes based on project manager's perspective. Accordingly, the primary data collection procedure would be available to the limited knowledge of industry professionals who are actively involved in core subject. This study will be restrained to high rise building construction projects which are located in western province of Sri Lanka.

LITERATURE REVIEW

The construction industry performs an important role of human civilization. Generally, performance of construction industry interprets as a specific parameter in a country's economy (Wijeratne, 2019). The growth rate of expansion in Global construction market of 2019 is considered as the slowest rate in a decade. (Global-Insight, 2019). Following figure 1 indicates the growth of GDP (Gross Domestic Product) from Sri Lankan Construction Industry. (TradingEconomics, 2020)

Figure 1 - GDP value of Sri Lankan Construction Industry. (TradingEconomics, 2020)



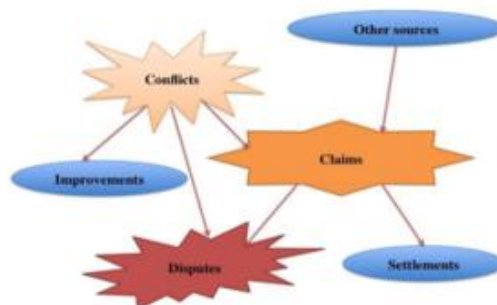
Sri Lankan construction industry have attracted several international contractors and investors due to its contrasting GDP growth. There are multiple large-scale ongoing construction projects which directly impact on this GDP growth. (Illankoon, et al., 2019). However, these massive development projects are under pressure of arising disputes at any time due to their complex stakeholder relationships and multiple perspectives. Internal Project Management mechanism should be crystalized to gain a better performance of the project.

Construction Disputes

Dispute is known as a disagreement or an argument between 2 or more parties. The construction industry has a complicated and competing nature due to the involvement of participants from different occupations and different

perspectives. (Blackaby, et al., 2009) defines dispute as a conflict or a controversy regarding an insistence of a claim, right or demand by a single party which is convened by claims or allegations by another. Furthermore, (Yates & Hardcastle, 2003) defines the term of dispute as a claim which is not settled between 2 or more parties and hence intensified for a severe conflict. (Hibberd & Newman, 1999) and. (Tharim, et al., 2011) emphasize that if internal conflicts are not well administered, disputes among participants may encounter promptly. In additionally disputes jeopardize an amicable and formative affiliation between parties. However (Reid & Ellis, 2007) evokes that the gap in fundamental perceptive of the concept is mainly due to the lack of ideal definition for the term of “dispute”. Following figure 2 indicates the combination between conflicts, claims and disputes.

Figure 2 - Relationship between conflicts, claims and disputes (Koutsogiannis, 2017, p. 28)



History and Evolution of Construction Dispute Trends

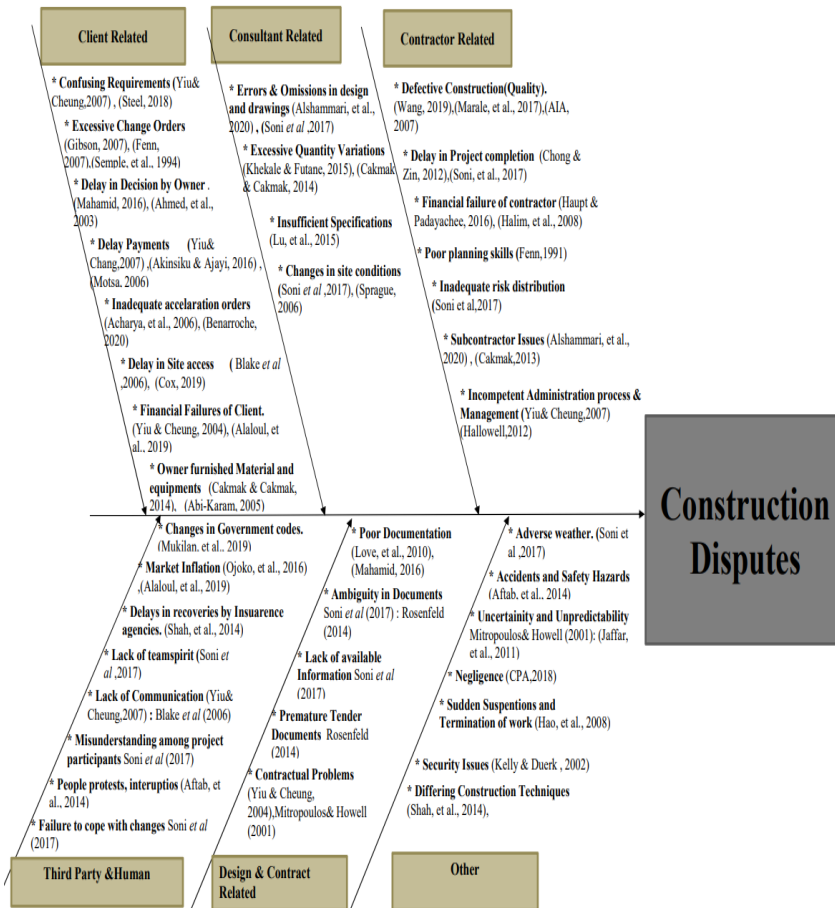
Construction has remained as a trademark of the enhancement human civilization from primitive Mesopotamian brick to the tremendous structures of the modernized built environment. (Bruner, 2007). Since the first declared fundamental law to regularized obligations and human rights, the law dictating the built environment have existed. (UKEssays, 2018). Therefore construction industry has been complex and fragmented for centuries. Construction dispute is an inherent aspect since the evolution of construction due to this fragmented nature and extreme complexity. Settling construction disputes exemplify immense cost, time and often creating futile relationships among parties. Global construction disputes report 2019 manifests the statistical data of construction disputes. This recent data suggests that Middle East and North America had an increase in disputes since 2010. As per the report Europe is the only region which have a reduction of disputes. Inadequate administration of contract was the most popular cause for disputes among all regions. (Cooper, et al., 2018). Loopholes in contract document, failure to

provide interim payments on time, delusive risk allocation among contractors and employers and variations imposed by the employer are the remaining popular dispute trends across the regions.

Causes for Construction Disputes

Construction disputes can be originated through a mixture of environmental and behavioral factors. It is inconceivable to predict each uncertainty in a complex project flow. (Illankoon, et al., 2019). Furthermore, this specific study focuses on both environmental and behavioral factors to reveal the impact on construction disputes. Nevertheless, this study would have been more compelling if it had discussed about their interrelationship as well. Enhancement of cost preserving and time efficiency are typically important to all involving parties of a construction project. (Bassiony, et al., 2017). Project delays and cost failures are the leading causes for typical disputes construction projects. (Park, et al., 2006). Those both studies emphasize significance of dispute prevention by enhancing characteristics of time and cost. Following figure 3 summarizes the literature findings of construction dispute factors.

Figure 3 - Summary of factors contributing to construction Disputes (Researcher's own work)



Potential mitigation practices

A proper formation and an understanding regarding the definition of dispute facilitates in ascertaining the most effective and probable selection of method to prevent the growth of a dispute. (Birr, 2017) emphasizes that impelling mechanisms are needed to explore and identify the most possible conflicts at premature stages in order to enhance the dispute management. Accordingly (Ndekugri & Russell, 2006) suggest that such mechanisms and techniques frequently keep focus on assuring the relevant documentation which are related

to the pertaining conflicts and revealing the costs and quality management schedules clearly to maintain the relationship between parties.

When considering main mitigation practices which are implementing in prevailing construction industry can be identified as proper understanding about the critical atmosphere of contract administration, convenient awareness about project team fragmentation and avoidance of possible major risk factors (Koutsogiannis, 2017). Variations and changes in existing work scope is common

due to current practices and technological new trends.

Project Manager's contribution towards dispute mitigation

Receptive surveys were conducted to grasp the capability and the efficiency of project management contribution towards dispute prevention and mitigation. According to (Wang, 2019) the potential

gap between aid and assistance by project and that acquired by contactor and employer was discovered to be critical for formulating management frameworks. Project Manager should act as the transparent portal between parties in order to mitigate disputes. Following table 1 summarizes important project manager skills in mitigating disputes obtained from literature.

Table 1 - Summary of Project Manager Skills towards dispute mitigation (Researcher's own work)

Category	Project Management Skills	Sources
Communication	Ability in negotiating	(Mouchi, et al., 2011), (Patanakul & Milosevic, 2009)
	Ability to provide constructive comments	(Turner & Muller, 2005)
	Ability to maintain communicate subsequently among parties	(Dao, et al., 2017), (Reich & Wee, 2006)
Teamwork	Ability to develop stronger relationships among parties	(Mouchi, et al., 2011), (Turner & Muller, 2005)
	Ability in prompt planning	(Sense & Kiridena, 2014)
Problem Solving	Ability in recognizing dispute sources	(Patanakul & Milosevic, 2009), (Fisher, 2011)
	Ability in transforming risks	(Sense & Kiridena, 2014)
	Ability in resolving conflicts	(Khamaksorn, 2016)
Interpersonal skills	Flexibility in adopting	(Sense & Kiridena, 2014)
	Having higher technical knowledge	(Khamaksorn, 2016)
	Ability in focusing	(Sense & Kiridena, 2014)

Beside these skills, Project Manager should have a proper action framework when remedying construction disputes at the early stage. Following table 2

summarize general benchmarking action towards dispute mitigation.

Table 2 - Summary of Bench marking Actions (Researcher's own work)

Bench Marking actions	Sources
Adequate project monitoring throughout all phases	(Aibinu, 2009), (Akinsiku & Ajayi, 2016)
Establishment of comprehensive project master plan	(Ashworth, 2005)
Establishment of budgeting and estimating plan	(Dao, et al., 2017)
Application of change Management strategies	(Ayodeji, et al., 2017)
Develop and Maintain Risk Matrix	(Lianying, 2013), (Khamaksorn, 2016)
Implementation of BIM	(Mouchi, et al., 2011)
Maintain payment schedule	(Aibinu, 2009), (Dao, et al., 2017)
Use resource based planning techniques	(Love, et al., 2010)
Maintain proper documentation	(Khamaksorn, 2016)

Many literature sources have established basic pragmatic factors which are directly associated with the occurrence of construction disputes. This literature survey initiates the major factors affecting construction disputes by examining their impact towards the major crisis. By understanding the affinity and disparity between all the findings, it is clear that dispute mitigation process should be materialized according to the possible outcome of the occurrence. Digital transformation strategies leverage in enhancing the collaboration among parties by reducing transparency issues in communication and project management. Integrated Project delivery approach is an example for the utilization of digital transformation strategies. Adequate contract administration and project management skills are effectively benefited in construction dispute mitigation practices.

METHODOLOGY

Research methodology depicts the systemized procedure of research process which facilitates the identification and the analysis of data. This systematic process starts with a panoptic literature survey and a primary data collection survey. Previously published studies were reviewed and analyzed to ascertain applicability and efficacy in Sri Lankan context. Secondly semi structured interviews were carried to examine the perspective of industry professionals regarding the construction dispute factors.

Justification to the Research Strategy

Research strategy is delineated as the system in which objectives of the research can be queried. Choosing the type of research strategy largely rely on the research problem, accessibility of data and the type of data. When conducting a research related to construction disputes,

which is highly subjective field largely based on opinions, behaviors and attitudes of the professional personals. Although there are only limited personals who are having wide knowledge and experience about Construction law related issues. Nevertheless the term of “construction disputes” is spanning to a wide range of industry matters, there are only few personnel who are effectively dealing with them due to the shortage of professional practitioners. When exploring the factors contributing to construction disputes, it is significant to reach higher management level which is directly influence on the main occurrences. Eventually these probable tendencies yielded to a limited number of sample which is consisting higher reliability as well. While the quantitative data focusing on proving hypothesized data, Qualitative data can capture varying perceptions and opinions of a targeted number of respondents. Hence the qualitative research does not bound to constraint answers, but it may allow the respondents to present their actual state of mind and better explanations as well. Therefore qualitative approach is more flexible and speculative which is encouraging the respondents to suggest better recommendations in accordance with their instinctive knowledge. Thus this study has conducted through qualitative approach, which is mainly including semi structured interviews.

RESEARCH DESIGN

The Research Design emphasizes the comprehensive strategy that preferred to assemble the multiple elements of the study in a logical mode. According to (Saunders, et al., 2016) the main purpose of research design is to illustrate the precise profiles of stages and events of the overall research process. Furthermore, it helps to identify the characteristics of possible events and stages as well.

Figure 4 - Research Onion by (Saunders, et al, 2016)

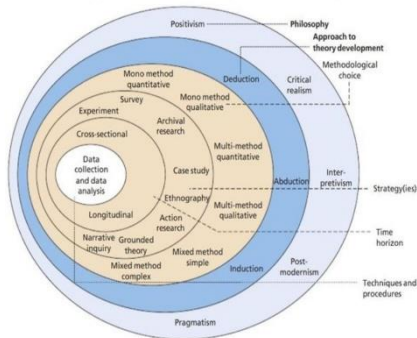


Figure 4 implies the research onion by (Saunders, et al., 2016). This figure highlights the consequences underlying the preference of data collection procedure. This conceptual figure assists the reader to ensure transparency of overall research process in logically by proving the findings and evidences gathered. Thus the research onion exemplifies the stages entailed with the research development which demonstrates a comprehensive explanation for each stage.

Ontology

Ontology is renowned as the study of reality. Ontology philosophy assists to clear the barrier between reality and how the reality perceived. The research philosophy of this particular study is ontology idealism. This is more relevant rather than other philosophies because there is a limited number of professionals who are involving in this field. Hence the core reality of the research problem is existing independently and the researcher develop the hypothesis by critically evaluating an existing theory.

Epistemology

Epistemology promotes the researcher to find a general and acceptable theory/ knowledge and explain the details

accordingly. The most relevant epistemology philosophy for this particular study is interpretivism. The primary data collection procedure conducted through face to face semi structured interviews in the context of Sri Lankan Construction Industry.

Axiology

The final philosophy feature is Axiology which is concerned on how respondent's opinions influence on the collection of data. In this particular study, the overall research focuses on valuable opinions, experiences and perspectives of industry professionals who are directly involved with construction disputes in Sri Lankan construction industry, the "value laden" axiology philosophy is more relevant in accomplishing research objectives.

Research Approach

In this particular research, the deductive approach is used in order to proceed the research. At first an initial hypothesis is developed by reviewing previously published data through a literature survey. Then the primary survey is conducted in order to prove, compare and contrast the hypothesis.

Strategy

The 3rd layer is Research strategy in the research onion. This stage involves in demonstrating how the researcher gathered data for the thesis. There are mainly 05 types of strategies in this stage. They are known as experimental, survey, case study, and Action researches, Grounded Theory, Ethnography and Archival Researches. The research strategy of this particular research mainly involves in grounded theory mechanism which is collecting data to build the theory itself.

Research Choice

There are 3 basic categories for methodology choices of a research. They are qualitative, Quantitative and Mixed approach. Quantitative research approaches involves with statistical standards in order to prove the validity while qualitative methods interpret respondent's perspectives and experiences in order to attain the research objectives. This research adopts a qualitative analysis because it focuses to interpret professional opinions and concepts to develop an in depth inside regarding the research problem.

Time Horizons

The time horizon of a research defined as the timescale are time framework which is destined to be completed. There are 2 categories of time horizons in generally: Cross sectional and Longitudinal (Saunders, et al., 2016). The preferred time horizon of this study is cross sectional which demonstrates the single opinion of a particular time and restrain duration of overall data collection procedure.

Research Techniques

The final layer of the research onion model is Research Techniques. Research techniques are defined as the procedures which are used in data collection process. Mainly secondary data collection was

undertaken to reveal the fundamental theories and develop hypothesis for the research. Primary data collection was conducted through qualitative method which is accustomed by semi structured series of interviews.

Population

There are over 2600 construction companies are registered under several construction fields as Building, Road and Highway, water supply/sewerage , Irrigation and drainage, Bridge, Maritime etc. (CIDA, 2020) Construction disputes are general to all those sub categories. This study focuses high rise building constructions that are over 600 construction projects under this category. Therefore, the population can be defined as the total high rise building construction projects in Sri Lanka.

Sample and Sampling method

The extraction of sample from the population is the elemental requirement in attaining the intended upshot from a data gathering survey. The sample comprises both senior and junior management level, directors, operational officers, chartered Quantity Surveyors and few construction law practitioners. Data collection will be commencing through conducting semi structured interviews and specialized group discussions. The sample is limited to 15 respondents.

Data Collection procedure

Primary Data is gathered through conducting basic semi structured interviews and specialized group discussions. Secondary data is gathered by undertaking a literature review. Mainly the primary data is analyzed in order to support, challenge or deviate the findings from secondary data analysis.

Data analyzing techniques

This research has adopted qualitative method in primary data collection procedure. Qualitative data assigns with non-numerical details such as notes from group discussions, observations, interview transcripts, audio/video recordings, documentations and images, etc. Data preparation is the former step before applying data analyzing techniques.

After completing the data preparation procedure, data analysis will be carried out in accordance with following main analysis techniques.

1. Content Analysis – In this method the researcher analyzed documented data

sources when formulating interview questions and reviewing their responses.

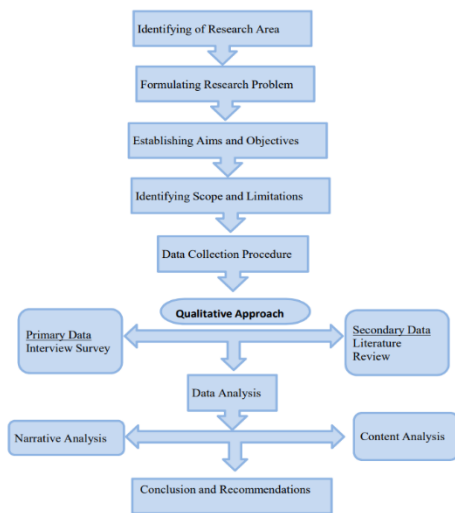
2. Narrative Analysis – The researcher is used this method to analyze feedbacks from the respondents with their perspective regarding the research problem.

The research is undertaken according to the above techniques when commencing the data analysis procedure.

Research Process

Research Process defined as the systematic sequence of research process. Following Figure 6 indicates the methodology model developed for this study.

Figure 5 Methodology Model (Researcher's own work)



DATA ANALYSIS AND DISCUSSION

This chapter includes the summary of primary and secondary data gathered in order to demonstrate the conclusion of the research. Subsequently the fundamental purpose of this research is to review the factors contributing to construction disputes, the following data analysis

emphasizes the overall findings of the research. In addition to that this chapter will link back with literature review chapter in order to compare and contrast while confirming the basic aim of the research.

The purpose and main benefit in conducting interviews that semi structured open ended questions combine with inquiry method grants the researcher to

investigate and compare the potency of different perspectives of those who are integrally engaged in the Sri Lankan construction industry. When considering published literature focused on construction dispute factors, Sri Lankan context have a limited number of studies which considered similar range. Despite most of these published studies focused on quantitative method rather than qualitative approach. Therefore the literature survey of this particular study includes studies which are published in similar ranges but in various contexts around the globe. Meanwhile the literature survey not much rendered the all knowledge gaps, semi structured interviews were carried out to furnish all the objectives in order to ascertain the fundamental aim of the research. In total 10 interviews were undertaken from several expertise levels. Basically 15 interviews were intended to carry out, but 02 persons had to cancel their appointments at the last minute due to coordination issues with prevailing Covid-19 Pandemic situation. Therefore proper replacements could not be found due to lack of remained time period. The remaining 03 interviews could not organized especially due to lack of professional practitioners who are

currently involved with the industry. Moreover this study was conducted in a limited geographical location and a limited timescale as well.

All the organized interviews proceeded as expected but it was varied by the amount of data gathered. Before the commencement of interviews, a set of interview questions were sent to interviewees for further preparations. Each interview spanned between 35-45 minutes. The sample of interviewees consisting of 05 Project Managers, 01 Site Managers, 01 Chartered Quantity Surveyor, 01 Arbitrator and 02 Chartered Project Engineer. In the set of Project Managers, 01 interviewee was an associate directors of the company and 01 was Chief Operating Director at the same time. The design of interview questions were aligned to gain the influence of both professional and organization impact towards the core problem. All the basic structure of the questions were same at every interview, but some questions were accompanied by sub questions in accordance with their level of information provided. Following table 3 shows the summary of interviewee's profiles.

Table 3 - General Summary of the sample (Researcher's own work)

Respondent Reference	Type of Organization	Designation	Years of Experience	Duties Assigned										
				Project Monitoring & Controlling	Activity planning and sequencing	Implementing Business Operations	Tendering evaluation	Resource Management	Cost Estimation	Financial Management	Contract Documentation	Site Coordination	Reviewing and Managing scope with Judicial standards	Conducting Arbitration Hearings
PM#1	Contractor	Project Manager / Chief Operating Director	35	✓	✓	✓	✓	✓			✓			
PM#2	Contractor	Project Manager/ Associate Director	28	✓	✓	✓	✓	✓						
PM#3	Consultant	Project Manager	25	✓	✓		✓	✓						
PM#4	Contractor	Project Manager	22	✓	✓		✓	✓		✓				
PM#5	Employer	Project Manager	20	✓	✓		✓	✓		✓	✓			
SM#6	Contractor	Site Manager	15					✓				✓		
QS#7	Contractor	Chartered Quantity Surveyor/ Estimation Engineer	25	✓			✓		✓	✓	✓			
QS#8	Consultant	Chartered Quantity Surveyor	20				✓		✓	✓	✓			
PE#9	Contractor	Chartered Project Engineer	18	✓				✓				✓		
A#10	N/A	Arbitrator	15										✓	✓

Interviewees presented diversity of causes contributing to construction disputes. When considering all the responses of interviewees, all the factors contributing to construction disputes can

be categorized under to 6 fundamental topics. They are Client related, Consultant related, Contractor related, Third party and human behavioral related, Design and Contract related and other external factors.

Client related factors

Table 4 - Interview Analysis Client Related (Researcher's own work)

Factors contributing to construction Disputes - Client Related					
Code	Main Category Heading	Sub Category	Frequency	Summary of Interview findings	Literature Source
C1	Confusing and Unrealistic requirements	Requirement	5	Unrealistic Requirements are mainly due to inexperienced clients. When these occurs total project will be affected by not only time & cost overruns, but these issues will create adversarial business relationships as well. Therefore, it is better to assist the client to conduct an initial discussion with a consultant.	(Yiu & Cheung, 2007), has identified this factor and it is essential to ensure client's exact expectations at initial stage. (Steel, 2018) has considered that it is better to cope with this factor at initial stage
C2	Excessive Change Orders	Variation	7	Excessive change orders mainly due to inappropriate initial planning. This will emerge time and cost overruns and low work progression rates. It is better to apply change management strategies regarding this issue	(Gibson, 2007) has identified the importance of this factor by revealing its contribution towards overall performance. Uncertainty of project scope mainly affected this type of occurrences. (Fenn, 2007). Furthermore (Semple, et al., 1994) has recommended to maintain proper documentations to prevent the occurrences
C3	Delay in Decision by Owner	Decision	1	Delay decisions by owner mainly due to unclear contract terms. This will directly impact on critical path which may lead to time overruns. therefore it is better to develop and distribute Critical Path Method(CPM) schedule for each stakeholder - To alert all parties about their responsibilities in a timely manner.	(Mahamid, 2016) has identified the importance of this factor. furthermore (Ahmed, et al., 2003) emphasized the impact of this factor towards overall project completion.
C4	Delay Payments	Payments	3	incompetency of handling cashflow may emerge delay Payments. Project delays and even terminations would be happen due to this factor. It is better to maintain a payment schedule to overcome this issues.	(Yiu & Chang, 2007) & (Akinkiku & Ajayi, 2016) has hindered the chaotic outcome regarding this issue. Accordingly (Motsa, 2006) has suggested that the contractor should agree with client to maintain a fixed payment schedule.
C5	Inadequate acceleration orders	Acceleration orders	0	Not raised	(Acharya, et al., 2006) identified that these type of issues mainly occur because of delays. (Benarroche, 2020) has manifested the chaotic nature after happening this.
C6	Delay in Site access	Delay access	0	Not raised	This factor also identified by (Blake et al., 2006). This is mainly happens because of client's negligence. (Cox, 2019) has identified this happens to contractors failure to decide the next step after receiving the letter of award.
C7	Financial Failures of Client	Bankruptcy	1	Financial failures of clients mainly occur due to incapability of client regarding his financial status. This will lead to project terminations. Therefore it is better to submit capacity confirmation before stating the project.	Yiu & Cheung, (2004) has identified the impact of this factor towards successful project completions. Furthermore (Alaloul, et al., 2019) has suggested that clients should keen to assist co investors
C8	Owner furnished Material and equipment	material at site	1	when considering client's involvement towards disputes, owner furnished material and equipment also creating conflicts between parties even though this practice perceive financial benefits for owner this may create both contractual and technical risks which can lead to severe conflicts and disputes	(Cakmak & Cakmak, 2014) & (Abi-Karam, 2005) both have identified this issue and manifested that the client should understand both benefits and drawbacks of providing owner furnished material and equipment.

When analyzing the most concluded answers by respondents, unrealistic requirements, excessive change orders, Delay decisions, delay payments and financial failure of client and owner furnished material and equipment as the factors contributing to disputes. When summarizing the answers by the respondents, Confusing and unrealistic requirements by the client mostly occur due to the inexperienced clients. These type of issues may directly impacted on budget exceeds and project delays. In

addition to that adversarial business relationships can also emerged by fragmenting all involved parties. This impact can be minimized by assisting the client to conduct an initial discussions with consultants. But previous studies did not focused to provide recommendations regarding this matter. Henceforth the interviewees recommended to develop a critical path method schedule which can alert all parties about their responsibilities. Furthermore inadequate acceleration orders and delay in site access are also

considered as crucial factors when considering literature. Despite those studies does not provide proper mitigation practices, interviewees have proposed to assist the client regarding both benefits

and drawbacks of this factor before construction. Above mentioned table 4 interprets the relationship of interview findings with Literature sources.

Contractor related factors

Table 5 - Interview Analysis Contractor Related (Researcher's own work)

Factors contributing to construction Disputes -Contractor Related					
Code	Main Category Heading	Sub Category Heading	Frequency	Summary of Interview findings	Literature Source
CO1	Defective construction (quality)	Defects	7	Defective Construction is mainly due to contractor's incapability and poor construction techniques. Major structural failures and time consuming defect rectifications may involved. Therefore contractor should adhere quality maintenance process during construction	Generally deficiency of a construction occurs due to faulty designs, material and workmanship. (Wang, 2019) Contractor is obliged to perform quality standards in conditions of contracts.(AIA, 2007)
CO2	Delay in project completion	Delays	6	Delays in project completion mainly occurs due to inadequate time management. This can be resulted in major cost overruns and the company reputation also be affected. It is better to Maintain a project schedule (Visualuze through graphical stage) along with project progress.	Delay completions are the most litigated dispute in construction industry. (Chong & Zin, 2012). Imposing EOT claims is the most popular practice by contractors (Soni, et al., 2017)
CO3	Financial failure of contractor	Bankruptcy - Con	1	Financial failures mainly due to contractors incapability to utilize cash flows. This will create contract terminations and company reputation also get affected. The contractor should review their mobilization capacity before submitting tenders.	Financial failures occur due to poor cost estimation practices.(Haupt & Padayachee, 2016), therefore (Halim, et al., 2008) recommended to adopt adequate site administration procedure
CO4	Poor planning skills	Planning	0	Not Raised	according to (Fenn & Gameson, 1992)poor planning skills may resulted in project failures. Project Planning is the venture of time management and the result is project schedule.
CO5	Inadequate risk distribution	Risk allocation	0	Not Raised	Soni et al (2017) hindered that allocating risk contingencies at the begining of project is vital.
CO6	Subcontractor Issues	Subcontractor	1	Subcontractor issues occur mainly around contracts, unreasonable claims and quality. This will affect overall project performance. It is essential to occupy well established subcontractors	(Alshammari, et al., 2020)concluded that subcontractor issues will affect project timeline and cost. although (Cakmak,2013)recommended negotiation is the most effective practice
CO7	Incompetent Administration process and Management	Administration	3	Poor administration process mainly due to project manager's incapability in managing site procedures. This will lead not only time/ cost overruns but this will resulted suspensions as well. Establish comprehensive planning to ensure all the resources deployed effectively.	(Yiu & Cheung,2007) & (Hallowell, 2012)have identified the significance of this by analysing it with project performance
CO8	Labour Disputes/ Strikes	Labour strikes	1	Labour disputes majorly occur when top level management neglected labour rights. Projects will delay until they settled. Adopt refreshing and promotional system to keep them satisfied.	Not Identified

When generalizing the most concluded answers submitted by the respondents, defective construction and delay completions are the most concluded answers among others. Defective constructions are mainly occur due to contractor's technical incapability. Accordingly this may cause major structural failures. Moreover one interviewee has experienced a structural collapse also due to defective construction. When considering the related secondary data, most of the studies have identified the defective constructions mostly emerged due to faulty designs,

material and workmanship. But when analyzing the interviewee responses, all the related responses mostly focused on poor construction techniques rather than undermine workmanship and faulty design. Therefore the primary data have a slight contradiction regarding the basic occurrence. Subsequently there is lack of mitigation practices identified by literature, but when deriving the opinions of respondents, the contractor should review their mobilization capacity before submitting tenders. Above mentioned table 5 interprets the relationship of interview findings with Literature sources.

Consultant related factors

Table 6 - Interview Analysis Consultant Related (Researcher's own work)

Factors contributing to construction Disputes -Consultant Related					
Code	Main Category Heading	Sub Category Heading	Frequency	Summary of Interview findings	Literature Source
CN1	Errors and Omissions in design & drawings	Errors	10	This is mainly due to human errors. This will create time and cost overruns and low progression rate as well. It is better to coordinate with design team at initial stage to prevent this errors.	(Alshammari, et al., 2020) identified this issue as a major problem. Furthermore (Soni et al,2017) suggested to maintain proper coordination with design team.
CN2	Excessive Quantity Variations	Quantity Variation	2	This is also a human error. This will impact on cost overruns and it is better to maintain adequate design detailing and cost estimation from initial stage.	(Choi et al,2016) & (Cakmak & Cakmak, 2014) identified the significance of this issue towards successful completions.
CN3	Insufficient Specifications	Specifications	0	Not Raised	(Lu, et al., 2015) manifested that insufficient specifications will lead to emerge design defects. Therefore it is essential to ensure the availability of all specification before construction
CN4	Changes in site conditions	Site Conditions	5	Differing site conditions mainly occur due to client's incapability in providing exact site conditions at the beginning. It is better to conduct adequate site investigation before entering into contracts	(Soni et al, 2017) identified this factor and its occurrence due to ambiguity. Accordingly (Sprague, 2006) suggested it is essential to undertake proper feasible study at the beginning
CN5	Procurement Delays	Procurement	1	Procurement delays may possibly happen due to late decisions from the Consultants this will mainly affect to the project duration and it is better to assist client to decide the most suitable method at the initial stage	Not Identified

When summarizing the responses related to consultant related factors, errors and omissions in design and drawings is considered as the most weighed answer rather than other factors. There are 2 different perspectives which can be derived from the answers related to this matter. Firstly most of the respondents believed that omissions in design and drawings mainly emerged due to lack of coordination with the design team. Therefore maintaining a proper coordination with design team from initial

to handover stage is more effective rather than enduring series of variation orders. In addition to that respondents have recommended to implement integrated project delivery method as a dispute mitigation practice which is related to this core factor as well. The other perspective is that the human errors are the cause of these type of design and drawing omissions. Consequently there is no single literature hindered this perspective. Above mentioned table 6 interprets the relationship of interview findings with Literature sources.

Third party and human behavioral related factors

Table 7 - Interview Analysis Third party & Human Behavioral Related (Researcher's own work)

Factors contributing to construction Disputes -Third party and Human Behavioural Related					
Code	Main Category Headline	Sub Category	Frequency	Summary of Interview findings	Literature Source
HB1	Changes in Government Codes	Government Codes	1	changes in Government codes mostly occur due to Government alterations Project delays may cause and it is better to obtain all governmental permissions and permits before starting works and refer all relating law codes	(Mukilan, et al., 2019) has identified this issue and its impact by analyzing project performance.
HB2	Market Inflation	Inflation	1	Government changes and unpredictable pandemics may cause this issue. market inflation mainly affect to material prices. Manpower also become demand. The Contractor must keep an allowance for inflation (to possible items),	(Ojoko et al.2017) hindered that tax exalations and surge demand for product and services may cause market inflation. Therefore sudden cost esalations mat ocure (Alaloui, et al., 2019)
HB3	Delays in recoveries by Insuarence agencies	Insuarence	0	Not Raised	(Shah, et al., 2014) has emphasized the importance of insuarence liabilities toward project performance.
HB4	Lack of Team spirit	Team Spirit	0	Not Raised	According to (Soni et al.,2017) fragmented relationships among team members will reduce team spirit. It is better to closely manage team members to prevent this.
HB5	Lack of Communication	Communication	7	communication loopholes occur due to inadequate stakeholder management. This may impact on project delays and contractual conflicts. Application of IPD with BIM will reduce this issue	Yiu& Cheung,2007) has identified this issue which may cause fragmented nature among parties and misinterpretations may occur, therefore (Blake et al ,2006) has recommended to establish proper communication strategy
HB6	Misunderstanding among project participants	Misunderstanding	6	this is the one of mostly affecting factor towards mixinterpretations and adversarial relationships among the. Cost, time overrun also would happen due to this matter.it is better to monitor team members closely	(Soni et al.,2017)has hindered that misunderstandings will occur due to ambiguity and misinterpretations.
HB7	Failure in coping with changes	Adopting to Change	0	Not Raised	(Soni et al.,2017) emphasized the importance of coping with changes to prevent project suspensions and terminations. Application of change management strategies would be beneficial regarding this matter
HB8	People protests, interruptions	Interruptions	1	people protests will occur due to cultural and environmental affecting barriers. Therefore it is vital to conduct feasible study at the beging to prevent these issues	(Aftab, et al., 2014) identified this issue as a barrier to project performance will cause project terminations as well.

When analyzing the responses related to Third party & Human behavioral related factors, lack of communication and misunderstanding among project participants are the most weighed factors. There are 2 different perspectives can be derived from the responses regarding these factors. One party believed that communication loopholes mainly occur due to inadequate stakeholder management. Misunderstandings and misinterpretations can be considered as the impact of this factor. When

considering the responses, the interviewees have suggested to adopt integrated project delivery in accordance with application of BIM to overcome this issue. Despite providing a general recommendation, nobody in literature sources has recommended this innovative practice towards the core problem. The respondents have recommended to conduct feasible study which may cover regional cultural and environmental barriers to mitigate this issue. Above mentioned table 7 interprets the

relationship of interview findings with Literature sources

Design and contract related factors

Table 8 - Interview Analysis Design & Contract Related (Researcher's own work)

Factors contributing to construction Disputes -Design and Contract Related					
Code	Main Category Heading	Sub Category	Frequency	Summary of Interview findings	Literature Source
DC1	Poor Documentation	Documentation	4	Slipage of material orders, time and cost overruns will occur due to this factor. Contractors incapability in document handling will cause these type of factors. It is better to apply proper document control management regarding this issue.	Love, et al., 2010), has interprets emphasized that project will easily jeopardized by amendments to project scope and designs. Therefore (Mahamid, 2016) has hindered that it is vital to be prepared to impose or endure claims.
DC2	Ambiguity in documents	Ambiguity	3	Ambiguity of parties mainly due to parties lack of transparency and this will cause for change orders, adversarial business relationships. Defining key terms by using in order of precedence clauses and standard forms will help to mitigate this issue	(Soni et al.2017) has emphasized the significance of this factor by analysing its influence towards successful completions. Furthermore (Rosenfeld,2014) recommended to have simpl, clear and transparent terms.
DC3	Lack of available information	available information	0	Not Raised	unavailability of information mainly occur due to lack of technical specifications. This will impact on project delays. (Soni et al,2017)
DC4	Premature tender documents	tender documents	8	tender documents should be adhere to all the possible issues and each person should aware for this.this will impact on cost overruns and time overruns.all the possibilities should consider when preparing tender documents	(Rosenfeld,2014)has identified and analysed the importance of submitting well prepared tender documents for better contract fomation. Unless project delays, cost overruns and terminations will emerge
DC5	Contractual conflicts	contractual	8	this is the most highlighted factor which having a significant impact towards better completions. Better understanding about terms and clauses will reduce this issue. Unless contract terminations and disorted business relationships will occur. Consulting a lawyer, and clarify potential misinterpretations help to mitigate this issue.	Yiu & Cheung, 2004)& (Mitropoulos& Howell,2001) emphasized that incapability of parties to define all their expectations is mainly cause for premature contracts and arise contractual conflicts.
HB6	Project Indemnity	indemnity	1	it is beneficial to indemnify the project rather than enduring losses and damages. It is better to assist other parties also to involve in adding indemnity clause to share liability of risks occurrences	Not Identified

When analyzing the responses related to design and contract related factors, premature tender documentation and contractual conflicts are the most weighed factors among others. When summarizing the responses, premature tender documents mainly emerged due to the incapability of contractor. Hence tender documents should be adhere to all the possible issues rather than enduring not only both cost, time overruns, but this will

create adversarial business relationships as well. Contractual conflicts are also weighed similar as premature tender documents towards disputes. When deriving their responses, Better understanding about terms and clauses will reduce this issue. Unless contract terminations and distorted business relationships will occur. . When considering the literature survey, most studies have emphasized that incapability

of parties to define all their expectations is mainly cause for premature contracts and arise contractual conflicts. Despite depicting the significant nobody has recommended to prevent these issues. Amicably the interviewees have suggested to Consult a lawyer, and clarify potential misinterpretations help to mitigate this

issue. Therefore it is beneficial to conduct an introductory session to comprehend all advantages and drawbacks of this terms before forging contracts. Above mentioned table 8 interprets the relationship of interview findings with Literature sources

Other external factors

Table 9 - Interview Analysis Other External Factors (Researcher's own work)

Factors contributing to construction Disputes -Other external factors					
Code	Main Category Heading	Sub Category	Frequency	Summary of Interview findings	Literature Source
E1	Adverse Weather conditions	Weather	1	For the experience Contractor's certain weather conditions could have been taken into the account when the Contractor prepare his plan. Delay the Completion & Final Cost may overrun	Soni et al (2017) also hindered the significant of this factor regarding core problem. Therefore it is essential to maintain weather report to evidently request for EOT claims
E2	Accidents and safety hazards	Accidents	1	Accidents may delay the progress of the Project.therefore Always use PPP to avoid accidents. Also take the correct insurance to protect labour and staff. Appoint well qualified safety officer will be benefited.	(Aftab, et al., 2014) emphasized that lack of concentration on health and safety issues may also cause disputes.
E3	Uncertainty and unpredictability	Uncertainty	8	Unclear scope of Works may cause the disputes among parties. Delay the Completion & Final Cost may overrun. It is vital to clarify the project scope along with client's requirements.	According to Mitropoulos& Howell (2001) Uncertainty is the most important factor as this will occur as a root cause for many disputes. furthermore (Jaffar, et al., 2011) suggested to define all uncertainties at the initial phase.
E4	Negligence	Negligence	0	Not Raised	(CPA,2018) A reasonable care should be adhered by all involved parties toward others. Breaches of contracts will cause negligence claims.
E5	Sudden Suspensions and Terminations of work	Suspensions	3	Sudden suspensions may due to client or contractors' dissatisfaction towards the behavior of involved parties. Currently covid 19 pandemic also affect for project suspensions. Adversarial business relationships will emerge due to this factor.	according to (Hao, et al., 2008) breaching contract terms will resulted in suspensions or terminations. Contractors can suspend or terminate by evidently proving that the client's incapability of maintaing a fixed payment schedule. Clients can impose suspensions of terminations due to contractors' breaches of contract terms
E6	Security Issues	Security	1	incapability of tracking project plant and equipment will lead to theft and burglary. Although fraud activities also emerge. It is better to use RFID system and cctv system to minimize this issue.	if the contractor was unable to maintain proper records about material and equipment, theft and burglary may happen.(Kelly & Duerk , 2002) employment of security guards and preserve properties including staff records, pay rolls, project details are also important to prevent theft.
E7	Differing construction techniques	Differing techniques	1	this issue is also due to lack of understanding regarding project scope. Both client and contractors lack of knowledge about technical aspects will also cause these disputes. it is better to assist the client or contractor about selected construction techniques before entering into contracts.	according to (Shah, et al., 2014) this factor may cause due to lack of specifications and unclear work scope. Therefore it is important to clarify all the technical suggestions at the initial stage.

When summarizing the responses related to uncertainty and unpredictably, most of the respondents expatiated its significance and impact towards successful project completions. Meanwhile the involvement unclear project scope, the capriciousness of stakeholders and resources are also considered as project uncertainties. According to the responses, it is illogical to define all uncertainties as they are unpredictable at the initial stage. Hence

they advised to cope with uncertainties whenever they aroused. When considering the authenticity, this practice is more productive than literature recommendations. Above mentioned table 9 interprets the relationship of interview findings with Literature sources

Project Manager's contribution towards dispute mitigation practices

Evaluating the significance of dispute identification in project Manager's

perspective and provide dispute mitigation practices related with project phase is the second and the third objective of this study. All the mitigation practices identified by both primary and secondary data collection procedures are analyzed according to their project phase.

Pre-construction stage

When considering the submitted answers, Clear clarification of project scope has weighed by several respondents.

It is essential to gain a clear statement of overall project scope at the initial stage, unless several dispute factors may arise without any hesitance. The development of project performance indicator along with project performance, budget and quality was an impressive remedy towards dispute mitigations. But there were lack of literature sources hindered about this idea. Following Table 10 visually illustrates the diversity of responses along with literature findings

Table 10 - Diversity of responses – Remedial practices in pre-construction stage Vs Existing Literature

Remedial practices	Literature	Interviewees										Total Responses
		PM#1	PM#2	PM#3	PM#4	PM#5	SM#6	QS#7	QS#8	PE#9	A#10	
Pre Construction stage												
Clearly define project scope, services and deliverables along with client's requirements	(Yiu & Cheung, 2007), (Jaffar, et al., 2011), (Albinu, 2009)	✓	✓		✓	✓		✓			✓	6
Ensure the client's requirements are coordinate with developed design	(Seifert, 2005)	✓				✓			✓	✓		4
Undertake Design Reviews with client and project stakeholders	Not identified			✓			✓			✓	✓	4
Adequately review drawings and specifications for obvious deficiencies	(Lu, et al., 2015)		✓	✓	✓		✓			✓		5
Develop project performance indicator related to performance against budget or deadline	Not identified			✓		✓	✓	✓				4
Develop WBS in task by task basis	Not identified	✓					✓					2
Establish and Maintain a project schedule (Visualize through graphical stage)	(Ashworth, 2005)	✓	✓				✓	✓	✓	✓		6
Establish comprehensive budget plan	(Haupt & Padayachee, 2016), (Dao, et al., 2017)							✓	✓			2
Develop a strategy for measuring quality of works	Not identified		✓	✓		✓	✓				✓	5
Ensure the efficiency of mobilize capital towards completion	Not identified	✓						✓			✓	3
Establish comprehensive planning to ensure all the resources deployed effectively	Not identified	✓	✓		✓	✓	✓			✓	✓	7
Identify strategies for recruiting, training, developing, managing project delivery team members	Not identified	✓										1
Develop Project Stakeholder list with their interests and concerns	Not identified			✓	✓	✓					✓	4
Develop a communication plan	Yiu & Cheung, 2007), (Blake et al., 2006)		✓		✓				✓		✓	4
Establish Initial Risk Assessment to identify risk sources along with occurrence probability, impact and priority	(Lianying, 2013), (Khamaksorn, 2016)	✓		✓						✓		3
Prepare contingency plan to implement anticipated risks materialize	Not identified			✓	✓			✓		✓	✓	5
Establishing a procurement plan to define materials, services, along with providers	Not identified	✓										1
Establish project budget accordance with Intergrating project scheduling with cost forecasting.	Not identified							✓	✓			2
Develop and distribute Critical Path Method(CPM) schedule for each stakeholder To alert all parties about their responsibilities in a timely manne	Not identified	✓									✓	2
Application Intergrated project delivery with cost forecasting & BIM	(Mouchi, et al., 2011), (Connor, et al., 2009)	✓						✓				2

When considering the submitted answers, Clear clarification of project scope has weighed by several respondents. It is essential to gain a clear statement of overall project scope at the initial stage, unless several dispute factors may arise without any hesitance. The development

of project performance indicator along with project performance, budget and quality was an impressive remedy towards dispute mitigations. But there were lack of literature sources hindered about this idea. Above mentioned Table 10 visually illustrates the diversity of responses along with literature findings

Construction Stage

Table 11 - Diversity of responses – Remedial practices in construction stage Vs Existing Literature

Remedial practices	Literature	Interviewees										Total Responses
		PM#1	PM#2	PM#3	PM#4	PM#5	SM#6	QS#7	QS#8	PE#9	A#10	
Construction stage												
Monitoring activities and checking project performance against with objectives	(Akinsiku & Ajayi, 2016)	✓	✓		✓	✓	✓		✓			6
Procurement Management	Not identified	✓						✓				2
Utilize Project scheduling methodologies	(Love, et al., 2010)		✓	✓		✓				✓		4
Utilization of Change Management	(Ayodeji, et al., 2017)	✓				✓				✓	✓	4
Tracking work progress	Not identified		✓	✓	✓	✓	✓			✓		6
Document control and Management	(Khamakorn, 2016)				✓			✓	✓		✓	4
Anticipated completion cost forecast at intervals	Not identified	✓			✓			✓	✓	✓		5
Select most competent and well established contractors/ Sub contractors	Not identified		✓				✓			✓		3
Evaluating and mitigating risks associated with changes	Not identified	✓			✓						✓	3
Regularly conduct progress review meetings	Not identified	✓	✓			✓	✓	✓	✓	✓		7
Monitor labour productivity	Not identified	✓		✓	✓		✓			✓		5
Maintaining daily progress reports	Not identified		✓		✓	✓	✓	✓	✓			6
Ensure legal requirements and permits are obtained	Not identified	✓				✓					✓	3
Utilize PPP to minimize accidents and safety hazards	Not identified	✓	✓				✓			✓		4
Maintain regular budget reports	(Dao, et al., 2017)					✓		✓	✓		✓	4
Maintain the schedule of quality	Not identified	✓		✓	✓	✓	✓		✓	✓	✓	8
Conduct sessions to appraise and motivate team members.	(Turner & Muller, 2005)	✓				✓						2
Use Graphical methods to Enlighten stakeholders the cost performance regularly	Not identified	✓							✓		✓	3

When considering the responses, proper project monitoring and cost control were the most suggested remedies by industry professionals. There were lack of details about the change management in published literature but the respondent's empirically review the effectiveness of change management strategies along with their projects for better explanations. Therefore the Project Manager should

apply change management strategies at construction phase to reduce the aftermaths of variation orders and quality issues. Usage of graphical methods to enlighten stakeholders and anticipation of cost forecast at several intervals were remedies which were only suggested by respondents. Above mentioned Table 11 visually illustrates the diversity of responses along with literature findings

Post construction stage

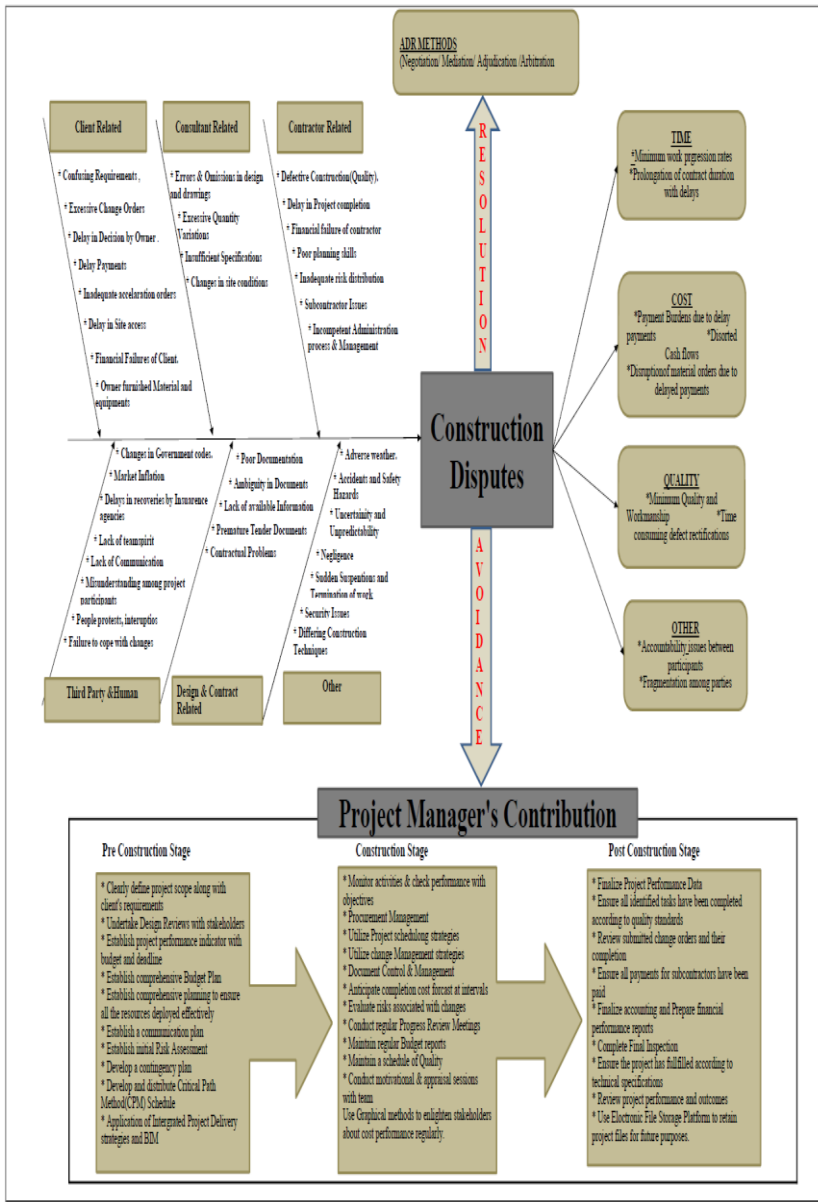
Table 12 - Diversity of responses – Remedial practices in post construction stage Vs Existing Literature

Remedial practices	Literature	Interviewees										Total Responses
		PM#1	PM#2	PM#3	PM#4	PM#5	SM#6	QS#7	QS#8	PE#9	A#10	
Post Construction stage												
Finalizing project performance data	(Aibinu, 2009)	✓	✓		✓	✓	✓	✓				6
Ensure all identified tasks have been completed according to quality standards	Not identified			✓			✓			✓	✓	4
Review submitted change orders and their completion	Not identified	✓	✓			✓	✓	✓			✓	6
Ensure all payments for subcontracting parties have been paid	(Alshammari, et al., 2020)							✓	✓		✓	3
Finalize accounting and prepare financial performance reports	(Dao, et al., 2017)		✓			✓		✓	✓			4
Complete final inspection	(Wang, 2019)	✓		✓	✓	✓	✓			✓		6
Ensure the project has fulfilled according to technical specifications	Not identified	✓		✓						✓		3
Review project performance and outcomes	Not identified	✓	✓	✓	✓			✓		✓		6
Use electronic file storage platform to retain project files for future purposes	Not identified	✓						✓			✓	3

When summarizing the submitted answers, finalizing project performance data including financial and quality performance reports was the most highlighted remedy by the respondents. This practice also hindered in several literature sources by evaluating their significance. But the respondents provided more details in this practice by combining their knowledge and experiences with this issue. They were suggested to maintain an adequate fixed schedule of payments with all parties in minimizing aftermaths of this

issue. . Reviewing the completion of submitted variation orders adhering to quality standards also raised by the respondents as a novel practice which could not be found in existing literature. It is highly beneficial in utilizing an electronic file storage platform to retain all the project performance files rather than using hardcopy preservation. This idea was also only raised by respondents. Above mentioned Table 12 visually illustrates the diversity of responses along with literature findings

Figure 6 – Conceptual Framework (Researcher’s own work)



While the literature survey captured most critical factors in worldwide context, interview survey had rendered those factors in Sri Lankan context comprehensively. Identified factors were categorized under 6 sub topics such as

client related. Contractor related, Consultant related, Third Party and human behavioral related, Design and Contract related and other external. Design and Contract Related Factors were most weighed rather than others. Contractual

conflicts and premature tender documentations are having higher influence while ambiguity and poor document controls, unavailability of information and project indemnity terms are performing greater influence towards construction disputes. Project Manager is possessing a considerable influence towards both dispute occurrences and Dispute mitigation. Adherent of proper planning and scheduling at the project initial stage is the most important practice rather than enduring adverse consequences. Hence it is beneficial to utilize project Manager's role towards dispute mitigation rather than application of Dispute Resolution processes after the emergence of disputes. Therefore adoption and maintenance of CPM schedule, Implementation of change management and risk management strategies are considered as diligent remedies on behalf of preventing adversarial disputes. In addition, utilization of alternative project delivery methods such as IPD, ILD, and PPP, usage of modern innovative applications such as BIM, RFID, Virtual Reality (VR) in Construction and maintenance of well-structured documentation management are also potential mitigation practices that could be utilized in accordance with project execution phase. All these findings are restrained to the literature survey and the sample composition. Hence the major factors and the mitigation practices are limited to high rise building construction projects in western province Sri Lanka while the overall study conducted through the Project Manager's perspective as well.

CONCLUSION

The purpose of this research is to provide an evaluation for factors contributing towards construction disputes and to offer recommendations for dispute mitigation practices. This chapter represents the conclusion of overall

research findings by recommending effective dispute mitigation practices in project Manager's perspective.

The accomplishment of objectives of this research were gained through both primary and secondary data collection procedures.

Objective 01- Over 40 factors were identified from reviewing existing findings categorized under 6 sub topics and each factor were reviewed critically by referring to multiple literature sources. Design and contract related factors had the higher impact rather than other factors.

Objective 02- This objective was fulfilled by receiving the answers of expertise group while referring to existing literature findings. Severe time and cost overruns, fragmented business relationships, distorted cash flows, reduced project progressions, Minimum quality and workmanship, structural failures and collapses, negative attitudes towards company reputation were the general impact of those factors

Objective 03- This area of study didn't highlighted in literature broadly. Therefore the opinions of industry professionals were truly facilitative in achieving this objective. Finally the mitigation practices were manifested under preconstruction, construction and post construction stages for better implication.

RECOMMENDATIONS

This particular study has explored the most critical factors contributing towards construction disputes in Sri Lankan context. Following recommendations have obtained after integrating both primary and secondary findings.

- Allocation of proper time period for project initial stage and define all the project characteristics with the client's expectations.

- Establishment of project performance indicator along with budget, time and quality.
- Establishment of risk assessment and preparation of contingency plan.
- Development of Critical Path Method schedule for stakeholders which can alert all the involved parties about their upcoming decisions and responsibilities.
- Application of change management strategies.
- Encourage the use of progressive ICT applications such as BIM, RFID and VR construction for enhanced project completions.
- Encourage to adopt Alternative Project Delivery methods such as IPD, ILD, PPP approaches for better performance enhancement.

Limitations of the study

There were several limitations whereas finding expertise industry professionals as the respondents were difficult due to the prevailing Covid-19 pandemic situation. Moreover this study was conducted in a limited geographical location and a limited timescale as well. Meanwhile this particular research only focused to project manager's perspective. Moreover this study only limited to High-rise building projects and this also can be developed to capture all the remaining construction project types.

Future research directions

Meanwhile this particular research only focused to project manager's perspective, it would be more comprehensive by expanding this singular perspective to other roles as well. Moreover this study only limited to High-rise building projects and this also can be developed to capture all the remaining construction project types such as infrastructure, Roads and Highway, Residential etc. in addition to that it would be better to expand the

context of the research from Sri Lankan to global. The primary data were gathered only through qualitative approach, this could be upgraded to mix method hence the quantitative study would also be beneficial in magnifying the research sample. However this study establishes amicable remedial mainly practices based industry professionals but it would be more advantageous if the research considers the challenges in adoption those remedies and the selection of most convenient ADR method if those remedies does not succeeded.

Contribution to knowledge

Mainly this study depicts an unfathomed perceptible towards the construction dispute related factors aligned with the cause and the impact of them towards project execution. Secondly this study demonstrates the remedies which are using in current Sri Lankan construction industry. Thirdly this study unveils the significance of Project Manager's contribution towards dispute mitigation. This perceptible enable the enhancement of a broad discernment about critical success factors for better dispute mitigation in Sri Lankan context. Moreover this study caters remedial practices aligned with the project stages which would highly convenient in choosing the most appropriate remedies for projects based on their level of complexity.

This study contributes in identifying the types and root causes for various dispute factors based on the nature and the mode of their occurrences. This outcome is beneficial in prioritizing the dispute factors based on their level of involvement towards the core problem. Adequate implementation of alternative project delivery methods and modern ICT applications are also encouraged in this study to adopt towards better project performance. This study mainly conducted through evaluating dispute

factors and remedies by considering their level of performance in accordance with both theoretical and practical perceptives. Most of the remedies are novel opinions and recommendations by experienced industry practitioners which is highly facilitates in rendering the most innovative practices to construction industry specifically in Sri Lankan context.

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