DISPUTE AVOIDANCE OF DELAY CLAIMS BY IMPROVING DELAY NOTIFICATION PROCESS OF CONTRACTORS IN SRI LANKA

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Master of Science in Construction Law and Dispute Resolution

Department of Buidling Economics

University of Moratuwa
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April, 2017

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Dissertation submitted in partial fulfillment of the requirement for the
Master of Science in Construction Law and Dispute Resolution

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DECLARATION

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

Dissertation Supervisor

ABSTRACT

Dispute Avoidance of Delay Claims by Improving Delay Notification Process of Contractors in Sri Lanka

Most of the delay claims submitted by Sri Lankan Contractors were either rejected or under certified purely due to contractor's inefficiency of supportive documents mainly delay notices. Due to this lack of notices to prove the entitlement, contractors lose their power to bargain. Hence, generally lose their genuine entitlement for an extension of time for the actual delays as well as lose the entitlement for reimbursement of actual costs incurred by the contractors as a result of project delay. Hence, it is important to identify the reasons for this shortfall and to propose method to overcome this situation of Sri Lankan contractors. This study is aiming to identify most practical and useful delay notification process for Sri Lankan contractors in order to strengthen their contractual entitlement for compensation in the event of excused and compensable delay events. This study was carried out through a literature survey, questionnaire survey and interviews among the experts in the industry. The collected data was analyzed using percentages on frequencies, relative importance index and mean ratings.

This study revealed that 71% of Sri Lankan construction projects which were completed during last 10 years were impacted with delays. Despite the scale of the project, delay has mainly impacted on all scales without much variance. In 94% of the delayed projects, contractors have successfully requested for an extension of time but only 83% of them were managed to serve notices. However, in most of the situations notices are served beyond the time bar and in some instances notices are not properly linked to the events. Due to this circumstance only 79% of the delay projects were granted extension of time but 50% of the instances the extension of time was not granted within the stipulated time period of 42 days. Due to these lags and failures around 41% of the delayed projects faced with disputes. Majority of the contractors believe that they hurt consultants or clients when notify delays and further they feel that they will be penalized by the consultants with other approvals if they notify any delays. Hence, most contractors prevent from notifying delays which then leads to disqualification of delay claims due to lack of notices which then leads to disputes.

Most of the respondents recommended identification of the event and identification of the delay due to that event as important factors prior to the notification. Based on the type of change and notice provisions under FIDIC 1999 edition, a notification model is proposed to facilitate notification process. Further, Changes to notice provision in FIDIC 1999 and to educate construction industry stakeholders on notices are also recommended.

Keywords: delay notice, Delay claims, disputes, notice provision, EOT, extension of time

This research dissertation is

Dedicated to

My

Mother, Wife

& Daughters

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LIST OF ABBREVIATIONS

Abbreviation	Description
AACE	Association of Advancement of Cost Engineers
FIDIC	Fedération Internationale des Ingenieurs Conseils
EOT	Extension of Time
CIOB	Chartered Institute of Building
ARCADIS	Global construction forum
GNP	Gross National Product
GDP	Gross Domestic Product
ICTAD	Construction Industry Development Authority (Now recognized as CIDA – Construction Industry Development Authority)
SBD	Standard Bidding Document
UK	United Kingdom
PM	Project Manager

CHAPTER 1

INTRODUCTION

1.1 Background

Clients of the construction industry are primarily concerned with quality, time and cost and yet the majority of construction projects are procured on the basis of only two of these parameters, namely time and cost (Bennett & Grice, 1990). *"Time is Money"* is an immemorial adage used to indicate that time is a very valuable commodity (Wetthasinghe, 2009). Bowen, Cattel, Hall, Edwards, and Pearl (2000) state that timely completion of a construction project is frequently seen as a major criterion of project success by clients, contractors and consultants alike. Newcombe (1990) noted that there has been universal criticism of the failure of the construction industry to deliver projects in a timely way.

Construction industry in Sri Lanka has a poor record with respect to completion of projects on time (Gunasekera, 2005). These delays are common both in building and civil engineering projects, inevitably resulting in contractual claims and increased project costs. Delays are an indicator in assessing the success of a project and also the efficiency of all the parties involved in a project (Jayawardane & Panditha, 2003).

Construction delays refer to the time overrun either beyond completion date specified in a contract or the date that the parties agreed upon for delivery of a project (Assaf & Al-Hejji, 2006). According to forensic schedule analysis framework 6.4 published by the Association of the Advancement of Cost Engineering International in 2011, delay is defined as neutral in terms of liability and simply means a state of extended duration of an activity, or a state of an activity not having started or finished on time, relative to its predecessor.

Most of the standard conditions of contracts provide guidance on managing delays in construction projects. Keane and Caletka (2008) have explained in their book that basically delays can be categorized as excusable, non-excusable, compensable and non-compensable delays. When a delay caused by clients or consultants which is beyond the contractors control to mitigate the delays becomes excusable and compensable delay. When demonstrating that a

delay is both excusable and compensable, the delay must be shown to be critical, by reference to a reliable critical path analysis (Keane & Caletka, 2008).

Conditions of Contracts for construction first edition in 1999 published by the Fedération Internationale des Ingenieurs Conseils commonly known as FIDIC under clause 8.4 [Extension of Time for Completion] clearly stress the importance of delay notification in line with sub clause 20.1 [Contractor's Claims]. According to sub clause 20.1, if the contractor consider himself entitled for an extension of time and additional payment for the delays, then contractor must notify his intention no later than 28 days after the contractor become aware of the event or the circumstance.

Sub clause 20.1 further state that if the contractor fails to give notice of a claim within period of 28 days, the time for completion will not be extended and not entitled to additional payments, and the employer will be discharged from all liability in connection with the delay claims which make notices condition precedent where failure to notify will waive off the contractor's entitlement for EOT and the cost claims. This argument was confirmed by house of lord in the case of *Bremer Handelsgeselschaft mbh Vs. Vanden Avenne Izegem (1978)* and by Roger Knowles in his book one hundred and fifty contractual problems and their solutions published in 2005.

Ramachandra, Rotimi and Gunaratne (2014) emphasize that notices of an EOT claim also provide the employer an opportunity to assess project circumstances to determine whether or not there is an alternative method of dealing with problems which cause delays to the project. Further, they have ranked failure to notify the intention to claim in due time as among top five reasons for contractors' delay claims failures in Sri Lanka.

In the recent research conducted by Chartered Institute of Building in 2009 identified five main reasons for not promptly notifying delays by the contractors which waive off the eligibility of EOT and prolongation cost claims (1) we might get over it, (2) we might be able to blame someone else for it, (3) we don't want to upset the contract administrator, (4) we don't want to upset the client and (5) it is not a contract obligation.

Further, Goldberg (2011) highlighted that the lack of contractors understanding of the contractual obligations spelled out in the provisions of their contracts as one of another

reason of contractors preventing from notifying delays which ultimately lose the entitlement for EOT and cost claims.

If the conditions of contract specifically stipulate the notices provision which is condition precedent to notify any delays, and if the contractor prevented from notifying delays due to negligence or lack of awareness of the conditions of contract will ultimately waive off the contractors contractual right to be compensated for the delays caused by the excusable and compensable delay events. It is therefore important to strengthen the contract administration practices in Sri Lankan contractors which ultimately benefit to both employer and contractor to avoid disputes by improving delay notification process of contractors in Sri Lanka.

1.2 Problem Statement

According the report published by ARCADIS, "Global Construction Disputes 2014" value of disputes in Asia were ranked as highest hitting an average of US$41.9 million in 2013. Failure to make interim awards on extensions of time with compensation and failure to properly administer the contract were top ranked reasons for causing disputes. Construction industry involvement for GNP of Sri Lanka shown continues growth from 2009 to 2015 by 200% with 10% contribution to GDP in 2014. As an Industry to maintain the same momentum, construction industry sustainability is important. Financial stability of the contractors mainly depends on the profitability of the construction projects hence, timely completion of projects prevent contractor's cost overrun due to increase of time related overheads. When a contractor failed to provide adequate notices for the delays creates disputes on delay claims. Construction disputes are costly, disruptive, and too frequently lead to litigation (Pinnell & Busch, 1994). Skene and Shaban (2002) stressed that the only good construction dispute is one that is avoided and also described that communication of potential claims at the earliest opportunity as one of the seven strategies that can be used to avoid disputes. Most of the conditions of contract provides the requirement of the delay notices for claims however available knowledge on how these notices are to be managed are lacking on the available literature. Many authors have discussed the issues of disputes which relate to delay claims but delay notices are not analysed deeply. Therefore, this research emphasizes to identify shortfall of existing practices of delay notifications in construction industry and to propose methodology to improve the situation which then minimize the disputes related to delay claims.

1.3 Aim of the Study

The aim of the research is to improve the delay notification process of contractors to avoid disputes in delay claims.

1.4 Objectives of the Study

a) Review the use of delay notices when analysing construction delays.
b) Identify contract provisions, legal requirement in delay notifications.
c) Identify the shortfall in the delay notification process.
d) Identify the significant steps to improve delay notification process.
e) Propose improvements to current delay notification process in Sri Lanka.

1.5 Research Methodology

a) A comprehensive literature survey was carried out in order to identify major requirement of notices as per the conditions of contract and to find out challenges and reasons for the shortfall of notices.
b) Preliminary interviews were carried out with four industry experts to structure the research in order to achieve the objectives.
c) Questionnaire was circulated among industry practitioners and data collected.
d) Structured interviews were conducted with selected respondents to get clarifications and confirmations for their response to the questionnaire survey.
e) Based on the expert advices and literature survey framework to improve the delay notification process was developed in order to strengthen the contractor's contractual entitlement for the delay claims and to avoid disputes with relation to the delay claims.

1.6 Scope and Limitations of the Research

Scope of this project is limited to building construction projects in Sri Lanka which follows general conditions of contract for construction published by the FIDIC in 1999 commonly known as red book. This limitation is proposed due to the time constrains for this research.

1.7 Chapter Breakdown

a) Chapter One - Introduction

This presents a general overview of the research consisting of the research background, the research aim and objectives and the methodology to be adopted. It also gives a general guide to the contents of the study.

b) Chapter Two – Literature review

This chapter reviews literature on delay claims, delay notifications, claim analyzing methods to identify the theoretical and contractual requirements of delay notifications.

c) Chapter Three - Research Process and Methodology

It explains the process or the methodology adopted in carrying out the research, the reasons for adopting it and how it facilitates the achievement of the research objectives.

d) Chapter Four - Analysis of Research Findings

Under this chapter research findings were analyzed to identify the reasons behind lack of delay notifications in Sri Lankan construction industry and also to identify impact due to lack of notices when evaluating delay claims.

e) Chapter Five - Conclusions and Recommendations

The conclusions derived from the research findings and recommendations for promoting good practice are presented in this chapter. Also included suggested recommendations for further researches.

CHAPTER 2

LITERATURE SYNTHESIS

2.1 Introduction

Notices and project delays has been a topic which was heavily researched by many researches in around the globe. Under this literature study, it was intended to deeply investigate the existing knowledge of the research area which has been recorded with respect to notices and project delays. Further, this study also aimed to analyze whether the identified research problem is suitable for further research. Main focus of this literature survey is to identify the trend of disputes due to project delay and also to identify the role of notices in line with FIDIC conditions of contract 1999 edition as a dispute avoidance factor manly for delay claims.

2.2 Trends of Project Delay

Successfulness of a construction project depend on three aspects namely time, cost and quality. If the project completion date is extended than the contractually agreed date of completion then it is considered as project delay. Oald (2010) defined delay as period of time that an activity has to wait because of a problem that impact the progress of that activity. Aibinu and Jagboro (2002) describe delay as a responsibility of both the parties to the contract contributed to the incompletion of the project. According to forensic schedule analysis framework 6.4 published by the Association of the Advancement of Cost Engineering International in 2011, delay is defined as a neutral event under liability which impact on the duration of the individual activities or extension of the project completion date.

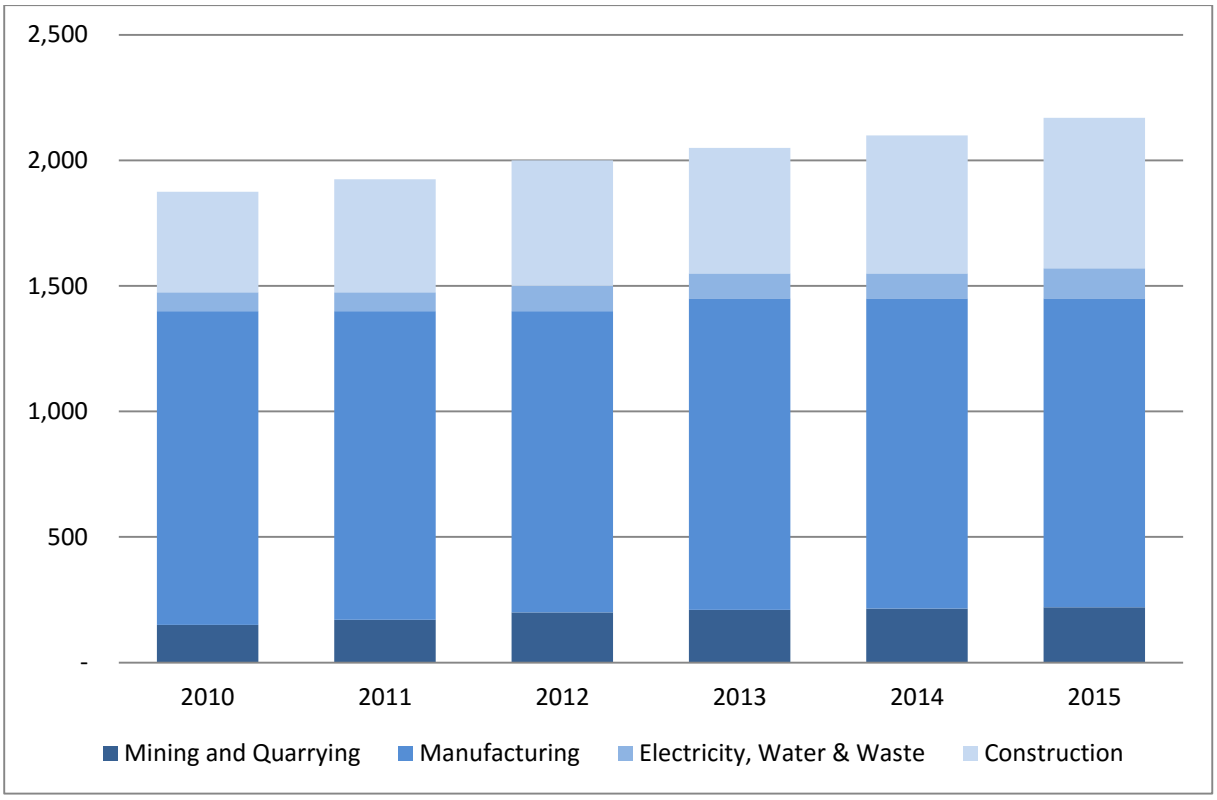
Project delays become globally recognized issue in the construction industry. Consequence of project delays varies from project to project. Any disruption to critical path activities will definitely contribute to project delay with adverse effects on objectives of the project. Based on the research done by Aibinu and Jagboro (2002); Sambasivan & Soon (2007) concluded six main effects of project delay as (1) time overrun, (2) cost overrun, (3) dispute, (4) arbitration, (5) total abandonment and (6) litigation.

Assaf and Al-Hejji (2006) based on their research in Saudi Arabia found that only thirty percent of construction projects were completed within the planned dates of completion. In Nigeria, Ajanlekoko (1997) found that timely completion of Nigerian construction projects was very rare and by confirming the same Odeyinka and Yusif (1997) found seventy percent of the surveyed projects were delayed on completion. Ogunlana and Promkuntong (1996) in Thailand, Al-Momani (2000) in Jordan, Frimpong (2003) in Ghana, Chan and Kumaraswamy (2002) in Hong Kong based on their researcher found that failure to achieve planned time, cost and required quality standards, results in various negative effects on the project objectives specially project delays leads to dissatisfaction of builders and employers due to high cost overrun and due to loss of opportunity costs.

In Sri Lankan context, Jeyakanthan and Jayawardane (2010) stated that during the planning stage, 23% of projects delay was recorded during the procurement process. The entire delay as per the record was due to, calling clarifications for the shortcomings in the contract documents submitted by the contractors and for necessary approvals from Technical Evaluation Committee and donor. During the execution stage on average, 69% of the project delays were experienced out of the 24 projects examined by the researchers. The results revealed that, variation/ extra work had significantly affected the projects contributing 56% of the total delays. The root cause for this particular delay was due to the design omissions, design errors and inadequate feasibility studies.

Annual report of Central Bank of Sri Lanka 2015 identified Construction sector as a third largest contributor for the Gross Domestic Product in Sri Lanka recording 7.2% and 6.8% in 2014 and 2015 respectively. Further, over the last six years Construction sector has proven clear improvements as illustrated in Table 2.1.

Table 2.1: Industry contribution to GDP of Sri Lanka (Amounts are in Millions)



Source: *Annual report 2015, Central Bank of Sri Lanka*

As Jeyakanthan and Jayawardane (2010) stated, if 69% of the projects delayed in the construction stage then this will create impact on the construction sector due to scares of resources due to delay project completion, which then will impact on the construction sector contribution to Sri Lankan economy. Further, minimizing disputes due to project delays will avoid project abandonment and litigation (Aibinu & Jagboro, 2002; Sambasivan & Soon, 2007)

2.3 Causes of Delay

It seems a myth to see a construction project to finish as planned without any changes or disruptions. The common prospection is that contractors look forward for changes or interruption from other parties to the contract to come up with variety of claims to make money. However, as per Molner (2007) most of the contractors who were interviewed during his survey are shown preference on completing projects without changes to secure their expected profit. However, in realty majority of construction projects get interruptions, changes which lead to project delay.

Kesavan and Gobidan (2015) highlighted seven essential various types of resources that are required to manage towards the success of the project. Those are (1) Human Resources (2) Monetary Resources, (3) Material Resources, (4) Information and Communication, (5) Methodology, (6) Land/Space and (7) Machinery and Equipment. Further, they argued that failure of any of these factors contribute to project delay.

Sambasivan and Soon (2007) in their survey identified ten main causes of project delay as (1) contractor's inappropriate planning, (2) contractor's deprived site management, (3) lack of experience of the contractor, (4) delay of client's finance arrangement and payments for completed work, (5) issues with subcontractors, (6) deficiency in material, (7) inadequate labor supply, (8) unavailability of equipment, (9) communication issues between parties, and finally (10) mistakes during construction stage.

Odeh and Battaineh (2002) identified, in consultant's perspective (1) Inadequate contractor experience, (2) Finance and Payments of completed works and (3) Subcontractors as a major factors contributing to the project delay. And, in Contractor's perspective (1) Labour Productivity (2) Owner interference and (3) Inadequate contractor experience were considered as major causes contributing to the project delays. Other factors identified by Odeh and Battaineh (2002) that cause project delays are listed in Table 2.2.

Table 2.2: Causes of Project Delay

Relative importance index and ranking of delay factors

Category	Factor	Contractors		Consultants	
		Index	Rank	Index	Rank
Client	Finance and Payment of completed works	3.3	4	3.32	2
	Owner Interference	3.51	2	3.21	4
	Slow decision making by owner	3.24	8	3.16	5
	Unrealistic imposed contract duration	3.08	13	3.11	6
Contractor	Subcontractors	3.21	9	3.26	3
	Site Management	3.29	5	2.58	13
	Construction Methods	3.29	5	2.37	17
	Improper planning	3.14	10	2.95	8
	Mistakes during construction	2.56	17	2.74	11
	inadequate construction experience	3.37	3	3.37	1
Consultant	Contract management	3.1	12	3	7
	Preparation and approval of drawings	2.32	21	2.21	19
	Quality assurance/ control	2.06	25	2.11	21
	waiting time for approval of test and inspection	2.46	18	2.47	15
Material	Quality of materials	1.75	26	2	23
	shortage in materials	3.11	11	2.79	10
Labour and equipment	Labour supply	2.63	16	2.63	12
	Labour productivity	3.6	1	2.89	9
	Equipment availability and failure	3.25	7	2.42	16
Contract	Change orders	2.4	19	1.79	26
	Mistakes and discrepancies in contract documents	3.05	14	2.05	22
Construction relationship	Major disputes and negotiations	2.94	15	2.16	20
	Inappropriate overall organizational structure linking all parties to the project	2.27	22	2.26	18
	Lack of communication between the parties	2.38	20	2.53	14
External factors	Weather condition	2.19	23	1.95	24
	Regularity change and building code	1.7	27	1.16	28
	Problem with neighbors	1.59	28	1.58	27
	Unforeseen ground conditions	2.1	24	1.84	25

Source: *Causes of construction delay: traditional contracts by Odeh and Battaineh (2002)*

Kikwasi (2012) identified 21 causes contributing to project delays and (1) design changes, (2) delay in payments to contractors and (3) information delay were considered as critical causes. Table 2.3 illustrate full list of causes identified by Kikwasi.

Table 2.3: Causes of Project Delay

S. no	Cause	Results	Rank
1	Design changes	0.91	1
2	Delay in payment to contractors	0.88	2
3	information delay	0.87	3
4	funding problem	0.86	4
5	poor project management	0.84	5
6	compensation issue	0.83	6
7	disagreement on the valuation of works	0.82	7
8	conflicts among the involved parties	0.76	8
9	project schedule change	0.72	9
10	supply/ procurement problems	0.7	10
11	bureaucracy	0.68	11
12	Multiple projects by contractor	0.63	12
13	incompetent contractors	0.61	13
14	contractual claims	0.56	14
15	unexpected ground conditions	0.53	15
16	government interference	0.49	16
17	poor understanding of the project	0.48	17
18	shortage / lack of equipment	0.46	18
19	shortage of materials	0.43	19
20	skills shortage / unavailability	0.41	20
21	Act of god	0.38	21

Source: *Causes and effects of delays and Disruptions in construction projects in Tanzania by Kikwasi (2012)*

Many researchers have analysed project delays based on the causes and as listed in Table 2.2 and 2.3 there are many causes reported around the world which impact on project completion date. Changes are the most common factor recorded as ranked one cause which impact on time. Based on the responsibility of the causes, delays are classified in to various categories in order to identify the repercussions and to evaluate contractual proceeding. These types are discussed in section 2.4.

2.4 Types of Delay

Menesi (2007) has classified delays mainly into three different categories based on the liability as excusable, inexcusable and as concurrent delays.

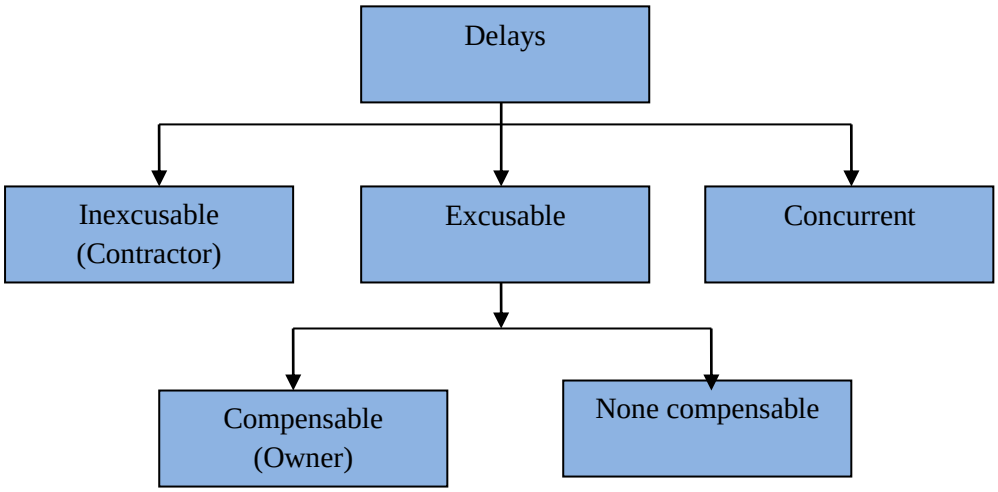


Figure 2.1: categories of delays

Delays that affect on project completion date agreed on contract are considered as critical delay events, and delays that do not affect project completion are known as non-critical delays. Activities on critical path of the master programme are basically considered as critical path activities hence, as critical path has no float to absorb any delays will definitely impact on the project completion dates.

2.4.1 Inexcusable Delays (Non-Excusable Delays)

Inexcusable delays (non-excusable delays) are mainly caused by the contractor or their agents such as subcontractors or suppliers (Fugar & Agyakwah-Baah, 2010) these delays are mainly under the contractor's responsibility hence, controllable to contractors. Contractors failure on managing his resources is considered as a failure of the contractor which mainly not complying the contractors liabilities under the conditions of contract. Contractor is solely responsible to take all required measures to avoid or to mitigate delays which impact the contractual completion of the project. Generally contractor is not eligible any relief on such delay events and he must either catch-up the delay by acceleration or should liable for liquidated damages under the conditions of contract. In the events no such liquidated damage

clause is exist in the conditions of contract then he must be liable for actual loss to the developer depending on the provisions in the conditions. Liquidated damages are generally described as a compensation that is based on a genuinely estimated and forecasted loss to the owner in likely to incur in the event of delay completion by the contractor (Soon, 2010)

These delays may be the results of an underestimation of productivity of the contractor's workforce, inappropriate project planning and scheduling, poor project management and supervision, wrong construction methods, or unreliable subcontractors or suppliers of main contractor. Non-excusable delays are common in construction projects and cause significant losses to project parties. It is broadly accepted that construction project scheduling plays a key role in project management due to its important control on project success (Luu, 2009). The common results due to delays from baseline programme includes late completion of the project, escalation of costs, disruption of work, loss of productivity, claims, disputes and termination of contracts. Therefore, delays to baseline programme in construction projects gives rise to disappointment in all the parties involved (Majid, 2006).

2.4.2 Excusable Delays

Excusable delays can be found in two forms with compensation and without compensation

2.4.2.1 Excusable and Non-compensable delays

In general, these delays are beyond the control of the parties to the contract and are result of an unforeseeable event. Unforeseeable delays mostly described in the conditions of contract and example of these type of delays are adverse weather, changes due to government decisions provided that government is not a party to the contract, war, hostilities, etc. In the event of occurrence of such delays, contractors are generally excused and extension of time will be granted. However, cost to the contractor is not granted hence, should be borne by the contractor. Principle behind this is that client as a developer loses its opportunity to earn income during the delayed period if the project is revenue generated one. Therefore, delay due to excusable events basically impact both contractor and client on financially and as no one in the breach of the contract both bear the cost due to excusable delay events.

From the literature quoted by different authors include: Ibbs (1984); Arditi (1985); and Kraiem (1987) delays that fall under this type were not compensated in financial aspects but extension of the contract period is granted. In most cases, conditions of contract specifically note the type of delays which are not compensable, for which the contractor does not get any additional financial compensations, but extension of time.

2.4.2.2 Excusable and Compensable delays

If the delay is considered to be compensable, then the contractor is eligible for additional financial compensation (Trauner, 1990). This type of delay is mainly due to client's action or inaction that impacted the contract schedule date. Compensability of delay events depends primarily on the term of the contract. The decision concerning these delays must be given within the provisions of the contract conditions. The contract should without a doubt describe the factors that justify an extension of time and compensation for extra cost associated with these delays. There are many situations in which a contractor is delayed by the client such as changes in scope, failure to provide access, delays or complete failure to make progress payment etc.

2.4.3 Concurrent Delay

Delays are considered as concurrent in the event two parallel activities are delayed due to failure of both contractor and client. Depending on the length of the delay both will be fully responsible for the delay. Leon (1987) defined concurrent delay as delays include those caused by changes in the drawings or specifications, occurrence of conflicting site conditions, suspension of work due to client initiated action or inaction, and excusable delays, all taking place with contractor-caused delays concurrently.

2.5 Cost of Delay

Project delays can impact on financially for both contractors and clients. Contractor's project costs will increase drastically due to unbudgeted prolongation costs. Clients in other hand lose intended revenue from the project, further; will incur additional costs due to finance charges, maintainers, price fluctuations, etc. Many researchers worldwide have done many

analyses to indentify costs due to project delays. In Nigeria a study by Aibinu and Jagboro (2002) found six main effects due to delay in project delivery as (1) time overrun, (2) cost overrun, (3) dispute, (4) arbitration, (5) total abandonment and (6) litigation. Sambasivan and Soon (2007) in their research on Malaysian construction industry have also confirmed the finding of Aibinu and Jagboro. In Pakistan construction industry Haseeb (2011) found main effects of project delay as (1) clash among parties, (2) claims, (3) total desertion and (4) slowing down the expansion of the construction sector. Ramabodu and Verster (2010) found that the most crucial impact to contractors cost is mainly due to project delays among other causes as (1) changes in scope of work, (2) incomplete design, (3) contractual claims (extension of time), (4) lack of cost planning and monitoring of funds, (5) delays in costing variations and additional works.

According to Hanna, Taylor, and Sullivan (2005) the main reason for the cost overrun is due to overtime payments to workers to accomplish the work which was delayed. Further, additional sum of money required for the reworks for the work fronts which were suspended or abanded during the project prolongation. According to Sun & Meng (2009) rework cost shall be around ten to fifteen percent more as compared to original estimated cost of the works. Due to these reasons cost overrun can be considered as one of most frequent effects of delay in construction projects (Smith, Pitt, & Choon, 2007). Furthermore, authors have summarized that in contractor's point of view, cost overrun is the top ranked effect in the construction industry (Memon, Rahman, & Azis, 2011). This is also confirmed by Sun and Meng (2009) who concluded that project delays and budget overrun are directly linked to each other, when there is delay in construction; project cost will also increase. Further, they stated that during their study, respondent's view was that due to delay, the construction companies have to bear more costs for labor, equipment and for tools.

One of the main purposes of conditions of contracts is to allocate risks in construction among clients and contractors to avoid unnecessary disputes towards delay claims. Based on proper risk allocation both contractor and clients become liable on certain risk items.

2.6 Risk Allocation in Construction Contracts

Risks should be clearly identifies and allocated prior to the contract and unsuccessful risk apportionment or confusions of risk apportionment may lead to contract disputes at later

stage of the construction. Contract disputes generally escalate project costs and ended up with adversarial contract relationship (Hartman & Snelgrove, 1996). Construction is uncertain and dynamic, and associated with huge risks and complex in nature. In order to avoid unexpected risks and to avoid disputes during construction, internationally recognized conditions of contracts, project characteristics and contract practices are important (Charoenngam & Yeh, 1998).

Many researchers have studied to understand the problems of risk apportionment in construction projects. Tao (1994) recommended that risks should be apportioned to the party best able to manage it and if the risks are beyond both parties control, they should be apportioned to the owner.

In most of the government contracts the owner try to apportion almost all the risks to contractor, then contractors transfer them to subcontractors or to suppliers. According to Charoenngam and Yeh (1999) designers design construction projects normally with the objectives of cost and functionality. Even, they aware of any potential construction problems in advance they normally do not reveal it to contractors by knowing that contractor will put high price for such design risks. As a result, the genuine requirement of fair construction risk apportionment is rarely mentioned prior to the contract conditions are agreed.

Casey (1979) categorized construction risks into six main groups (1) physical, (2) capability, (3) economic, (4) political /societal, (5) construction oriented, and (6) contractual/ legal. Further, each category of risk may be linked to particular types of construction to be executed by a specified party. Risks are generally appointed based on the types of work to be performed or based on the party responsible for such work.

Generally, any construction project involves with risk and there is no way to totally eliminate all the risks connected with a specific project, only way of managing risks is to control the risk by allocating to different parties to the contract and then appropriately manage the risks. This is normally can be done through the clauses of the construction contract. The decisions of risk allocation or risk transferring are done within the framework of an owner's contracting strategy (Kozek & Hebberd, 1998). One of the main objectives of the conditions of contract is to provide a framework among the parties to create which one is responsible for which risk (Zaghloul & Hartman, 2003).

One of the commonly used risk transfer technique is include disclaimer clauses commonly considered as exclusion clauses. Those clauses try to transfer one party's risk (shall be a legal liability) to the other party by contractual clauses (Hartman, 2000). In other words, these clauses are proposed to exclude client's contractual liability in contract and frequently in tort for cost incurred by a contractor (Goldsmith & Heintzman, 1995).

Applying disclaimer clauses to apportion risk has been recognized by current studies and construction industry practice as a major reason to increase the overall project costs. When a risk is transferred to the contractor then contractor has no option by which to manage the occurrence or outcome of that risk, therefore, the contractor must either get insurance against the risk events or price contingency to the tender (Jergeas & Hartman, 1994). A recent study by Zaghloul and Hartman (2003) concluded that by including disclaimer clauses in Canadian conditions of contracts carries a price impact of between eight to twenty percent of the total tender price. depending the business conditions either favourable (low technical complexity, fair contract management, negotiated and appropriate contract type, and comprehensive design work) or adverse (high technical complexity, unfair contract management, un negotiated and un appropriate contract type, and un comprehensive design work) (Khan, 1998). Contractors include these high risks pricing to each disclaimer clause in the contract to face the risk events if occurred.

For the purpose of risk study, researchers around the globe have developed diverse risk categorization frameworks. Zhi (1995) categorized construction risks into four main levels (1) Nation/ region, (2) construction industry, (3) company level and (4) project levels. Under these four levels, a further breakdown is made, such as (1) political, (2) economic, (3) market, (4) physical risks. Edwards and Bowen (1999) categorized risk first into two vital categories (1) Natural and (2) Human. The natural risks are further subdivided into weather risks and geological risks and the human risk is further subdivided into 9 categories such as (1) social, (2) political, (3) economic, (4) legal, (5) cultural. Han and Diekmann (2001) list five main categories of risk as (1) political, (2) economic, (3) cultural (4) legal and (5) technical, construction and other risks. Based on above categorization and for the simplicity of comparison, a categorization framework can be considered as illustrated in Figure 2.1

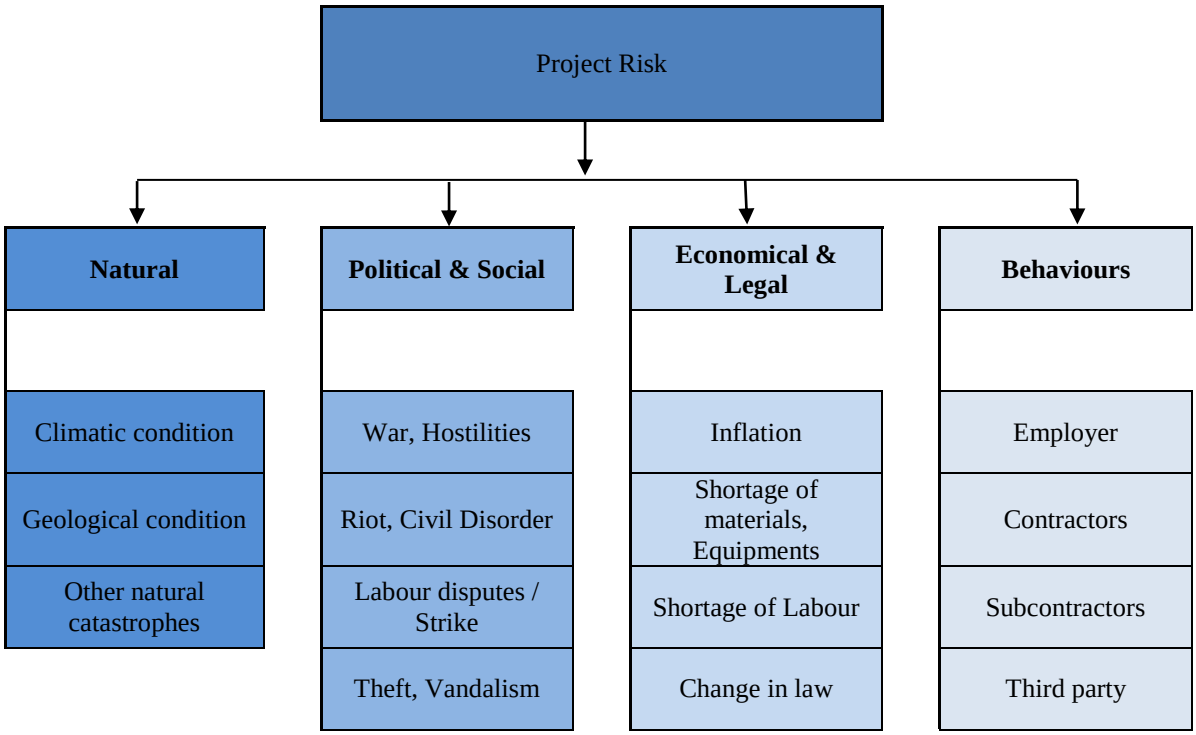


Figure 2.2: Risk categorization framework

Source: *Edwards and Bowen (1999) categorized risk*

Natural risks are uncontrollable to the stakeholders of the project but the consequences can be minimized if planned properly. Normally, natural risks are predicted based on historical records and these predications are important when preparing baseline programme. Mostly natural risks are under contractor's risk events and under general practice contractor should programme and priced for these risks if the natural risk event is usual. Political and social risks on the other hand become under employers risks. Economic, legal and behavioural risks are both under client's and contractor's risks and depend on the delay event, responsibility and repercussions will be shared based on the conditions of contract.

2.7 Contractual Provisions Which Allocate Risks of Project Delay

Contract provisions in various standard forms of contract have elaborate provisions to deal with time, particularly on delay and EOT. However, most standard forms either fail to address the issue adequately or do not consider it at all. It is because EOT clauses in construction contracts are not prescriptive and are drafted in a general manner (Farrow,

2007). The provision on EOT is described as essential but insufficient for the contract to make a legal decision (Mitkus & Trinkūnienė, 2006).

A number of major contract disputes can be mainly categorized in to for basic sources (1) from the contract documents due to errors, defects, and omissions; (2) failure to value the real cost of a project in the commencement (3) changed conditions (4) stakeholders involved in a project (Kulunanga, 2001). Easton (1989) and Kartam (1999) developed construction claim process based on the seven variables (1) Claim identification (2) Claim notification (3) Claim examination (4) Claim documentation (5) Claim presentation (6) Claim negotiation and (7) Use of total quality management tools to prevent claims.

2.7.1 Construction Claim Identification

Construction claims are becoming a way of life. They are usual, and according to Bradley and Langford (1987), predictable, and indeed vital part of current contract systems. As a result of this understanding, courses and publications on diverse aspects of claims administration are now so popular and they are almost a new industry in their own right (Vidogah & Ndekugri, 1997). Claim identification involves timely and accurate decision of construction claim. This is the first and seriously important factor of the claim process. For example, some construction claims are lost solely due to failure of proper claim identification. Thus, an alertness of job factors, which give opportunity for a construction claims, is an ability that usually has to be with both the parties. Such knowledge not only sensitizes construction managers to possible construction claims, but also exposes companywide problems contract management (Kulunanga, 2001).

2.7.2 Construction Claim Notification

Construction claim notification involves giving early warning to the other party of a possible problem of delaying the project or creating a claimable situation to the notifying party. Time period to serve notices are normally stated in the conditions of contract and commonly identify as time bar clauses. Comply with these time bar clauses are very crucial and critical. For example, a typical contract condition such as *"shall be confirmed in writing as soon as practicable and no later than twenty eight days"* (*"FIDIC Conditions of Contracts",* 1999)

means precisely that an initial notice of a claim to the other party should be served within twenty eight days from the event. Further, notice should be align with the conditions and should be descriptive, clear, simple, and cooperative. It should clearly indicate the problem and alert the other party of any potential increase in time or cost (Kulunanga, 2001).

2.7.3 Construction claim examination

Claim examination usually involves establishing the contractual and genuine grounds on which the claim is to be based. This should also include an estimation of the potential recovery. Such issues may have to be evaluated based on the correspondences and interviewing the staff who worked on the project. The basic sources for claim examination should deal with project files, letters, minute of meetings, etc., that must be used to establish the time and cost elements of the claim (Kulunanga, 2001). According to Vidogah and Ndekugri (1997) an attempt to address this situation, two main standard methods are used. First examines in detail the contractual implications of construction contract clauses, and the second focused on the appointment of risk under contract clauses, accordingly determines the occurrence of claims or disputes on construction projects.

2.7.4 Construction claim documentation

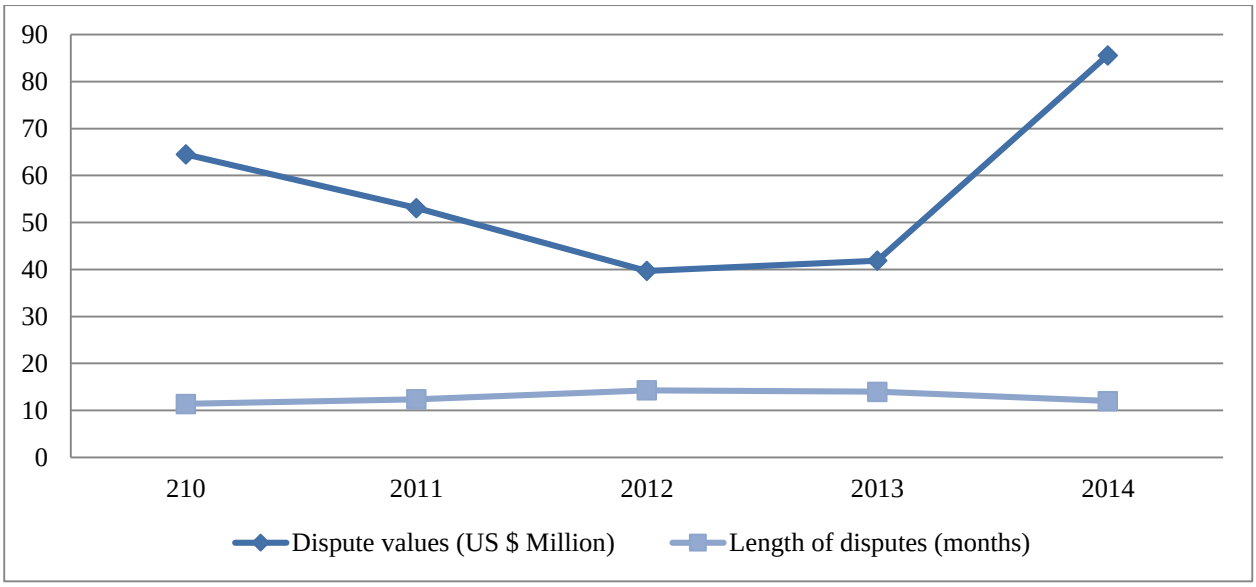
Claim documentation involve with collection of the printed facts that gives the actual history of a construction claim. A well prepared defendant easily breaks evidence and claims that are not supported by perfect records. According to Kulunanga (2001) documented facts are the glue that holds the contractual framework together. If these are inadequate then claims will not successful. Observations of Brewer (1993), a director of a leading UK construction contract consulting firm, the essence of good claim management is not just compiling a heavy document at the end of a project and call it *"request for additional cost"* while deliberately avoiding the term *"claim"*. Instead, it should be ensured that the claimant's full entitlement is identified on regular basis, with sufficient backup documents to ensure that suitable amounts are paid. This mechanism to claim management practice is the exception and not the rule.

2.8 Trends of Disputes Due To Delay Claims

As per the Global construction dispute report 2015 published by ARCADIS (Table 2.4) clearly stated that disputes in Asia were the largest in value, hitting an average of US$85.6 millions in 2014. Significantly, this is almost double that of the previous year. Meanwhile, the amount of time taken to resolve Asian-based disputes fell by two months to twelve.

Table 2.4: Dispute values and length in Asia

	Dispute values (US $ Million)					Length of disputes (months)				
	210	2011	2012	2013	2014	210	2011	2012	2013	2014
Asia	64.5	53.1	39.7	41.9	85.6	11.4	12.4	14.3	14	12



Source: *Global construction dispute report 2015 published by ARCADIS*

According to the report top five causes of disputes in Asian construction industry were recorded as (1) A failure to properly administer the contract, (2) Failure to make interim awards on extensions of time and compensation, (3) Poorly drafted or incomplete and unsubstantiated claims, (4) A biased PM or Engineer and (5) Employer imposed change.

Yates (1998) stated that the main types of construction dispute arising from the contract include (1) variations, (2) ambiguities in contract documents, (3) inclement weather, (4) late issue of design information/ drawings, (5) delayed possession of site, (6) delay by other

contractors nominated or employed by the client and (7) suspension of part of the project. Hewit (1991) found six primary types of construction dispute and these are (1) change of scope, (2) change conditions, (3) delay, (4) disruption, (5) acceleration and (6) termination. With reference to the construction disputes that reached the Supreme Courts of New South Wales and Victoria, Australia in 1989 and 1990, Watts and Scrivener (1993) assembled 59 categories of dispute with 117 sources. The 59 categories of dispute fall into the following subject matters: (1) determination of the agreement; (2) payment related; (3) the site and execution of work; (4) time related; (5) final certificate and final payment and (6) tort related. Heath (1994) also found seven main subject matters of construction dispute; (1) contract terms; (2) payments; (3) variations; (4) extensions of time; (5) nomination; (6) re-nomination and (7) availability of information. Similarly, Conlin (1996) summarized that payment, performance, delay, negligence, quality and administration are major issues of construction disputes. Kumaraswamy (1997) also found that construction disputes can be categorised as (1) variation due to site conditions; (2) variations due to client changes; (3) variations due to design errors; (4) unforeseen ground conditions; (5) ambiguities in contract documents; (6) variations due to external events; (7) interferences with utility lines; (8) exceptional inclement weather; (9) delayed design information and (10) delayed site possession. This categorisation is another demonstration of the subject matter approach. In fact, Totterdill (1991) pointed out that construction contract disputes must have a contractual base. Sykes (1996) further elaborated that construction disputes originate from two main interrelated sources; construction contracts and unexpected events. As construction works are subject to many uncertainties, exhaustive planning for the possible eventualities within the contract is daunting. This can be the result of outright failure to recognize the sources of uncertainties. More problematic though is having unintended contradicting contractual provisions to deal with them.

With reference to Sheridan (2003) data collected by the Adjudication Reporting Centre, the typical disputes settled by adjudication in the United Kingdom include: ‘valuation of variations’, ‘valuation of final account’ and ‘failure to comply with payment provisions’. Brooker (2002) examined the types of disputes where mediation had been used in U.K. and found that payment, delay, defect/quality and professional negligence as subject matters contributed 72 percent of the reported cases. A similar study on construction mediation conducted in Hong Kong also found that variation, delay in work progress, parties’ expectations and intra-parties’ problem were the significant types of dispute source (Yiu &

Cheung, 2004). Table 2.5 summarizes the studies that employ the subject matter approach to identify construction disputes.

Table 2.5: Subject matter of construction disputes

Subject matter of construction dispute	Reference
Change of scope, Change conditions**, Delay, Disruptions**, Acceleration and Termination	Hewit (1991)
Determination of the agreement, payment related, Site and execution of work, time related, final certification and final payments, tort related	Watt and Scrivener (1993)
Contract terms, Payments, **Variations, Extensions of time**, nomination, re-nomination and, availability of information's.	Heath (1994)
Payment, Performance, **delay**, negligence, quality and administration as heading of construction	Conlin (1996)
Variations due to site conditions, variation due to client change, variations due to design errors, unforeseen ground conditions, ambiguities in contract documents, variations due to external events, interference with utility lines, exceptional inclement weather, **delayed design information and delayed site possession.**	Kumaraswamy (1997)
Variations, ambiguities in contract documents, inclement weather, late issue of design information's /drawings, **delay possession of site, delay by other contractors employed by the client**, postponement of part of the project	Yates (1998)
Valuation of variations, valuation of final accounts, and failure to comply with payment provisions	Sheridan (2003)
Payment**, Delay**, Defect/quality and professional negligence	Brooker (2002)
Ambiguities in contract documents, competitive/ adversarial attitude and dissimilar perceptions of fairness by the participants	Spittler and Jentzen (1992)
Project uncertainty, Contract problems, opportunistic behaviours, contractors financial position and cost of conflict and culture	Mitropoulos and Howell (2001)

Source: *Subject matter of construction dispute by Yiu and Cheung (2004)*

As described by many researchers there are many factors which cause disputes in construction industry. Delays and Changes /variations become the common factors leads to disputes. Preplanning to face these changes is recommended to avoid or minimize disputes related to delays.

2.9 Causes of Disputes – Delay Claims

Difficulty of establishing fair and prompt settlement of claims depended on lack of notification, poor record keeping, inadequate legal and factual justification and poor presentation (Sibanyama, 2012). O'Connor (2003) suggests that four main requirements for

successful claims are (1) timely notice of the claim in accordance with the conditions of the contract, (2) effective record keeping, (3) establish entitlement and causation, (4) calculate damages in accordance with the contract and negotiate the claim. Many researchers suggested that reasons for the contractor's delay claims failures mainly due to, lack of documentation to prove the claim, lack of notifications of the intention for claim within the stated time period, delay submission of the claim details, failure to create causal link, failure to prove entitlement for the claim, inadequate breakdown of claim amount, calculations of damages not in accordance with the contract, poor presentation of the claim. Kululanga (2001) suggest that to improve the chances of success of claims, contractors require to strongly follow the steps stated in the contract conditions. The previous review recommends nine main causes which fail contractor's delay claims, 1) insufficient documentation to backup a claim 2) Failure to notify the intention within stipulated time period 3) Delay of submission of the claim and further details 4) Failure to prove causal link 5) Failure to prove entitlement to the claim 6) inadequate breakdown of claim sum 7) calculations of damages not in accordance with the contract 8) poor negotiate of the claim 9) Poor presentation of the claim.

2.10 Contractual provision of delay notices – FIDIC 1999

In FIDIC 1988 edition under clause 53.1 [notice of claims] contractors should notify his intention to the Engineer, with a copy to the Employer, within 28 days after the event giving rise to the claim has first arisen. And under clause 53.4 [Failure to Comply] If the Contractor fails to comply with any of the provisions then his entitlement to payment in respect to the claim is purely depend on the decision of the Engineer or any arbitrator or arbitrators appointed pursuant to clauses under the FIDIC 1988 based on the verified contemporary records.

However, in the 1999 edition under clause 20.1 [Contractors Claims] Employers liability to the payment or extension of time has been fully discharged if the Contractor fails to provide notices within 28 days after the Contractor became aware, or should have become aware, of the event or circumstance.

Roger Knowle's book published in 2005 *"150 Contractual Problems and their solutions"* he has clearly demonstrated the contractual position of the notices based on the case *Bremer Handelsgeselschaft mbh Vs. Vanden Avenne Izegem (1978)* that contractors entitlement for

extension of time and additional payment will purely depend on the notices if the notice requirement is condition preceded. Hence, if the notice requirement is a condition precedent requirement then, failure to comply with notices provision will definitely loose the entitlement of contractor for any extension of time or cost.

Ranathunga (2010) has established four main aims of the requirements of notices (a) To give the employer the opportunity to take all reasonable steps available to minimize the effect of the delay (b) Alert the Employer to watch out for the reasonableness of the Contractor's endeavors to prevent or minimize delays in completing the works (c) To alert the Employer to the effects of the delay as they occur, (d) To allow the Employer to advise the Lender of likely delays so that the latter can re-arrange his affairs accordingly or his own funds re-arranged. But even though, the Employer was aware of the delay event and recorded it in the site minutes of meetings, it would not constitute a good delay notice.

As per the clause 1.3 of FIDIC 1999 has clearly stated that notices shall be in writing. Therefore, there is a doubt whether site meeting minutes comprise a good delay notice. This doubt was address in the Scottish decision of *John L. Haley Ltd v. Dumfries & Galoway Regional Council (1998)*, the court decided that the minutes of meetings will not comprise as good notice unless the parties amend the contract intentionally by considering minutes of meetings as notices. In *Steria v. Sibma*, the Judge decided that the notice must originate from the Contractor, therefore minutes of meeting recorded by a third party will not be adequate. And also he has stated that the requirement of notice, in respect of delay event, did not need that the notice refer to relevant clause number, but to accomplish its purpose of giving early warning to other party.

Extension of time in line with sub clause 8.4 [Extension of Time] of FIDIC conditions of contract 1999 edition clearly identify events and circumstance in which the Contractor is entitled for a extension,

(a) a Variation (unless an adjustment to the Time for Completion has been agreed under Sub-Clause 13.3 [Variation Procedure]) or other substantial change in the quantity of an item of work included in the Contract,

(b) a cause of delay giving an entitlement to extension of time under a Sub-Clause of these Conditions,

(c) Exceptionally adverse climatic conditions,

(d) Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or governmental actions, or

(e) Any delay, impediment or prevention caused by or attributable to the Employer, the Employer's Personnel, or the Employer's other contractors on the Site.

In the above circumstances under first paragraph of the clause if the Contractor considers himself is entitled to any extension of the Time for Completion and/ or any additional payment, under any Clause or otherwise in connection with the Contract, then the Contractor should give notice to the Engineer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than twenty eight days after the Contractor became aware, or should have become aware, of the event or circumstance. For the ease of this notice can be considered as notice of the **'delay'** as when contractor notifying the delay event has already occurred and employer or Engineers have no options to avoid the delay event but to minimize it.

Under sub clause b of clause 8.4 contractors' entitlement for extension of time is further extended for other events and circumstances where other clauses or sub clauses of conditions of contract giving the provision for extension of time. On this note following clauses in FIDIC 1999 have provisions for EOT,

2.10.1 Clause 1.9 [Delayed Drawings or Instructions]

Under this clause the Contractor has to give notice to the Engineer whenever the Works are likely to be delayed or disrupted due to delay of necessary drawing or instruction from employer or Engineer within a reasonable time. This notice should include details of the necessary drawing or instruction, details of why and by when it should be issued, and details of the nature and amount of the delay or disruption likely to be suffered if it is late.

For the ease of reference this notice can be considered as notice for **'early warning'** and according to the general conditions of contract this notice should be served prior to the delay

event by giving early warning to the other party of likely delay due to absence of particular drawings or instructions. Following details should be included in the early warning notice as a fulfilment of the requirements described in the clause 1.4.

- details of the necessary drawing or instruction
- details of why and by when it should be issued
- details of the nature and amount of the delay or disruption likely to be suffered if these details are not issued on time

In second paragraph of clause 1.4 it is stated that if the Contractor suffers delay and/or incurs Cost as a result of a failure of the Engineer to issue the notified drawing or instruction within a time which is reasonable and is specified in the notice, then Contractor shall give a further notice to the Engineer. For the ease of reference this notice can be considered as **'delay notice'** but in clause 1.4 no time period is defined for the delay notice. But as it is clearly stated as *"if the contractor suffers delay"* which gives as indication that second notice is to be served after the delay has been occurred.

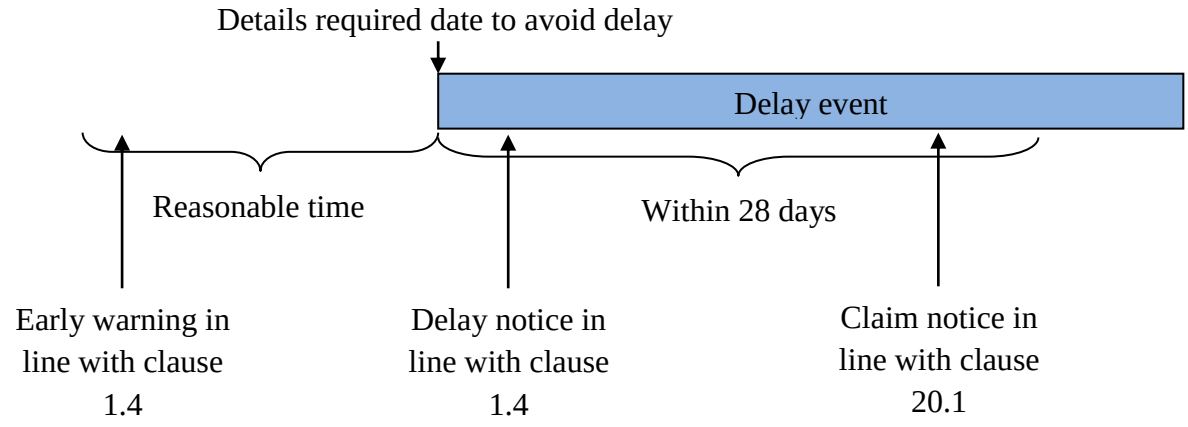


Figure 2.3 - Notices with respect to clause 20.1 and 1.4
Source: *Based on FIDIC 1999*

2.10.2 Clause 2.1 [Right of Access to the site]

In line with the clause unless contractor is not submitted performance security, The Employer should provide full right of access and possession of, all parts of the Site within the time

stated in the contract If, under the Contract, the Employer is required to give possession of any foundation, structure, plant or means of access, the Employer shall do so in the time and manner stated in the Specification. If no such time period is mentioned in the contract then the dates included in Contractors baseline (or preliminary) programme should be considered.

In line with the second paragraph of the condition if the Contractor suffers delay and/or incurs Cost as a result of a failure by the Employer to give any such right or possession within the stated time, then Contractor shall give notice to the Engineer

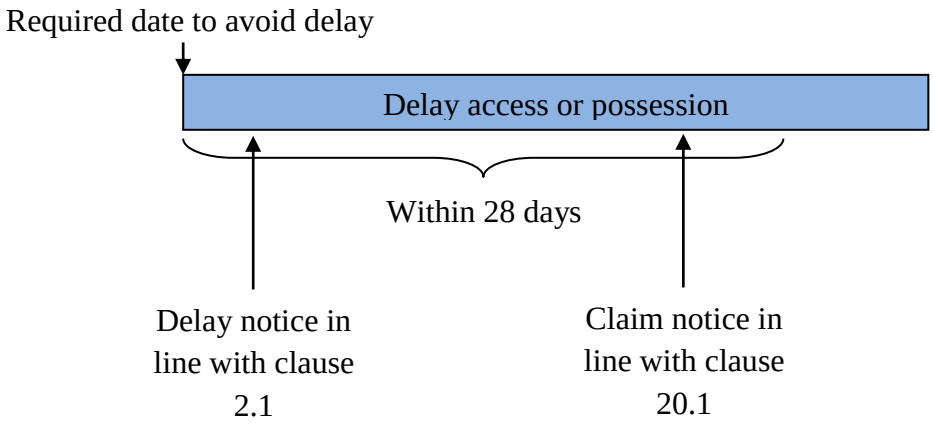


Figure 2.4 - Notices with respect to clause 20.1 and 2.1

Source: *Based on FIDIC 1999*

2.10.3 Clause 4.7 [Setting Out]

Under this clause contractor is responsible for the setting out works from the given original point, As a experience contractor he is fully responsible to check the accuracy and to avoid any delays to the project, However, contractor is given entitlement for extension of time due to delays due to error of the original reference points. And this clause required contractor to serve notices one the contractor is suffered the delay

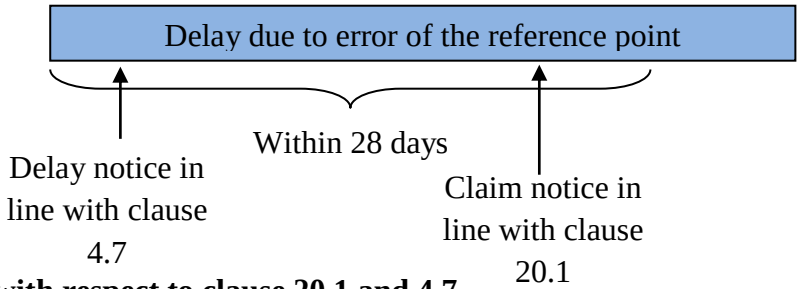


Figure 2.5 – Notices with respect to clause 20.1 and 4.7

Source: *Based on FIDIC 1999*

2.10.4 Clause 4.12 [Unforeseeable Physical conditions] and Clause 4.24 [Fossils]

Under clause 4.12 and 4.24 if contractor encounters unforeseeable physical condition of fossils then contractor have to serve a notice to make the Engineer aware of the same, for the ease of reference this notice can be identified as *'Notification to Engineer to make him aware'*. Further, if contractor suffer delay due to unforeseeable physical condition or fossils and if the contractor have notified to the Engineer then he is entitled for an extension of time and costs in line with clause 20.1.

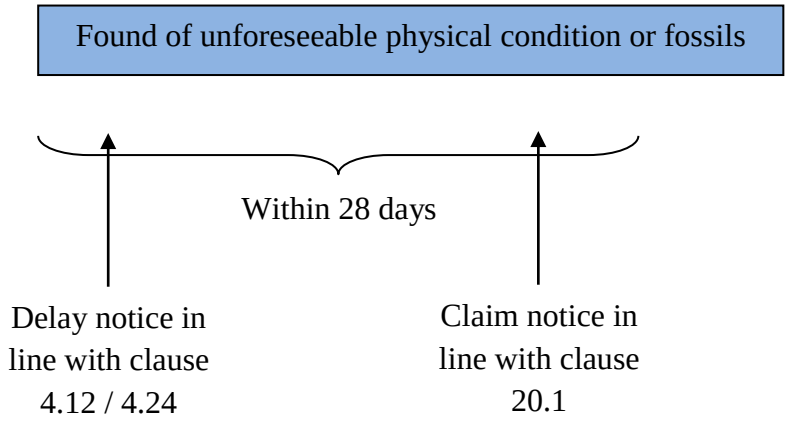


Figure 2.6 - Notices with respect to clause 20.1 and 4.12 and 4.24
Source: *Based on FIDIC 1999*

2.10.5 Clause 7.4 [testing] and clause 10.3[Interference with tests on completion]

In line with clause 7.4 and 10.3, testing should be carried out by the contractor with the presence of Engineer or his appointed representative in a pre-agreed location and time. The Engineer under clause 7.4 required to notify to the engineer not less than 24 hours of his intention to attend to the tests. Engineer under variation clauses shall request additional tests or change in the test methods however, if contractor suffer delay due to complying with these instructions then contractor should notify to the engineer and entitled for an extension of time under clause 20.1.

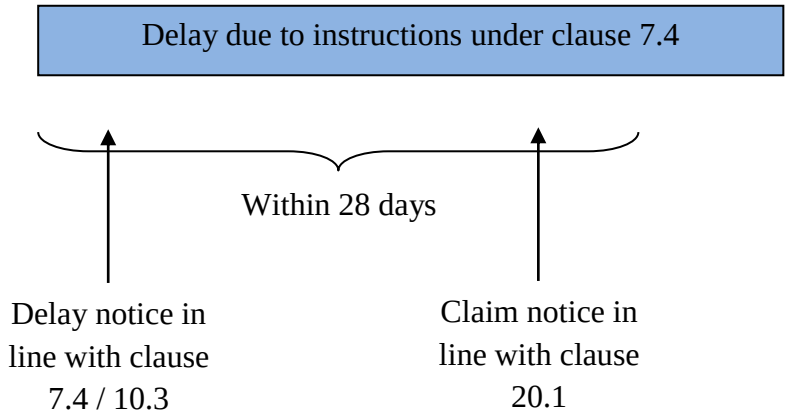


Figure 2.7 - Notices with respect to clause 20.1 and 7.4 / 10.3

Source: *Based on FIDIC 1999*

2.10.6 Clause 8.5 [Delay caused by authorities]

Under clause 8.5 if contractor suffer delay due to delay of any Authority then contractor is entitled for an extension of time in line with clause 20.1 however, contractor should comply with the conditions set in the clause 8.5 as follows,

(a) The Contractor has diligently followed the procedures laid down by the relevant legally constituted public authorities in the Country,

(b) These authorities delay or disrupt the Contractor's work, and

(c) The delay or disruption was Unforeseeable,

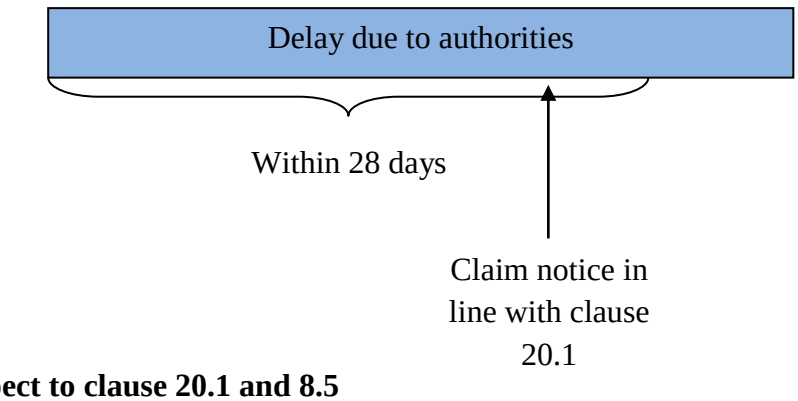


Figure 2.8 - Notices with respect to clause 20.1 and 8.5

Source: *Based on FIDIC 1999*

2.10.7 Clause 8.9 [Consequences of suspension] and clause 13.7 [Adjustment for change in legislations]

Due to suspension of change in legislations if contractor suffer delay then contractor should in line with clause 8.9 and 13.7 notify to the Engineer and then he will be entitled for an extension of time in line with clause 20.1

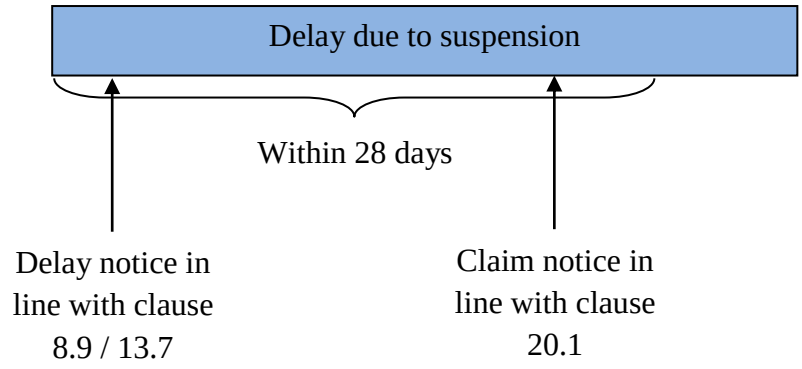


Figure 2.9 - Notices with respect to clause 20.1 and 8.9/ 13.7
Source: *Based on FIDIC 1999*

2.10.8 Clause 16.1 [Contractor's entitlement to suspend work]

Under clause 16.1 contractors has given entitlement to suspend works if the interim payment certificates are not issued or delay in payment from employer. However, Contractor has to serve a notice 21 days prior to the suspension of works. Upon receipt of the payment or evidence of payment contractor shall continue to work as usual and if contractor suffer delay due to this suspension then contractor is required to serve notice to the Engineer in line with clause 16.1 to be entitle for an extension of time in line with clause 20.1.

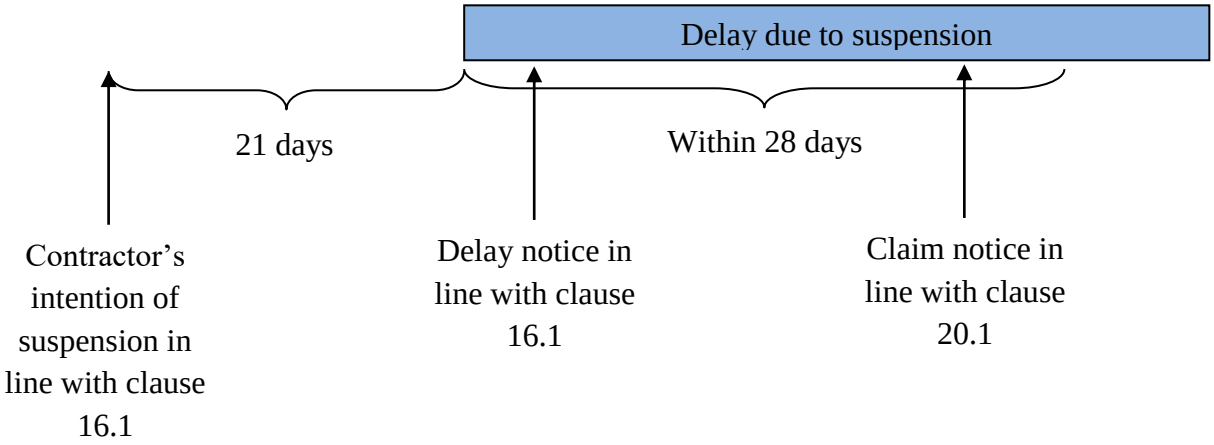


Figure 2.10 - Notices with respect to clause 20.1 and 16.1

Source: *Based on FIDIC 1999*

2.10.9 Clause 17.4 [Consequences of Employer's risks]

Under clause 17.4 the contractor is given entitlement to recover any cost or damages caused to the Works, Goods or Contractor's Documents. However, contractor need to give notice of the damaged caused due to employers risks. Further, if contractor suffer delay due to rectification of the Works, Goods or Contractor's Documents then, contractor should server another notice to Engineer notifying his intention and then contractor will be entitled for an extension of time in line with clause 21.1.

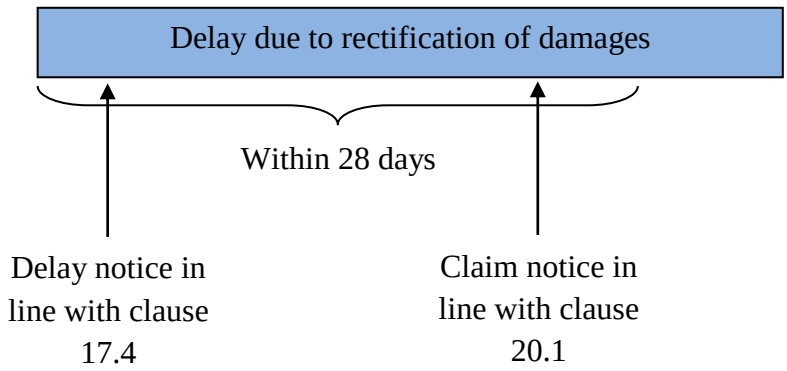


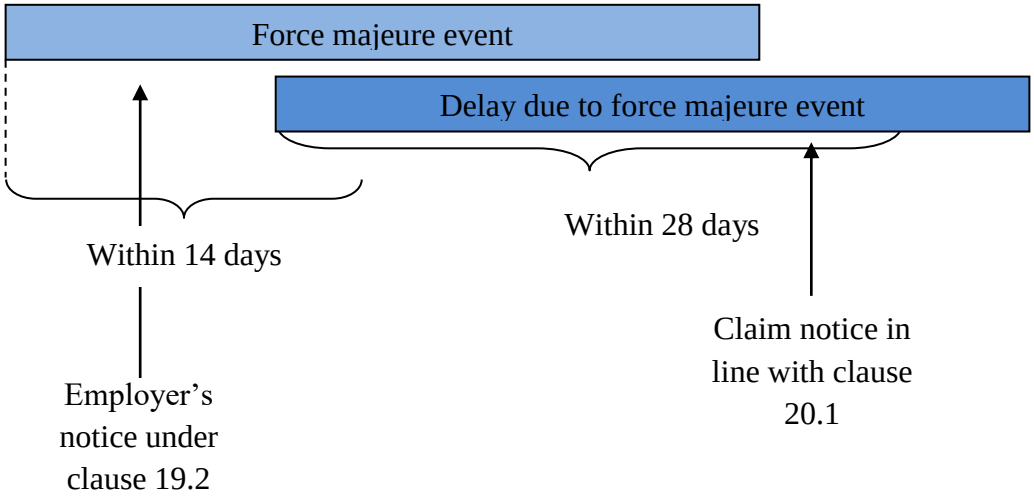
Figure 2.11 - Notices with respect to clause 20.1 and 17.4

Source: *Based on FIDIC 1999*

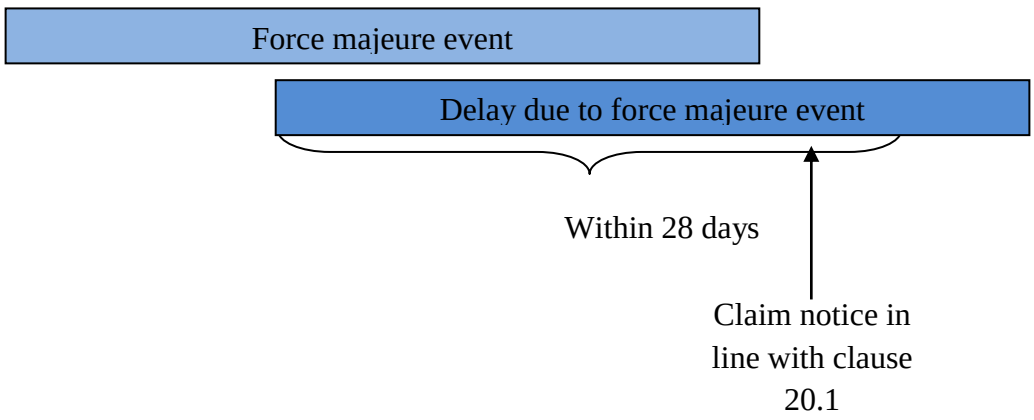
2.10.10 Clause 19.4 [Force majeure]

If a party is prevented from performing his obligations under the contract due to force majeure events listed in clause 19.1, then in line with clause 19.2 should notify to other party with the details of the obligations which is prevented by the force majeure event. This notice is required to sever within 14 days after the Party became aware. The main difference of notice requirement under this clause is that both parties are liable to provide notice in the event of force majeure events.

Scenario 1 – Employer is prevented performing his obligations due to force majeure event and employer notifies the same.



Scenario 2 – Employer is prevented performing his obligations due to force majeure event but employer not notifies the same.



Scenario 3 – Contractor is prevented performing his obligations due to force majeure event and contractor notifies the same.

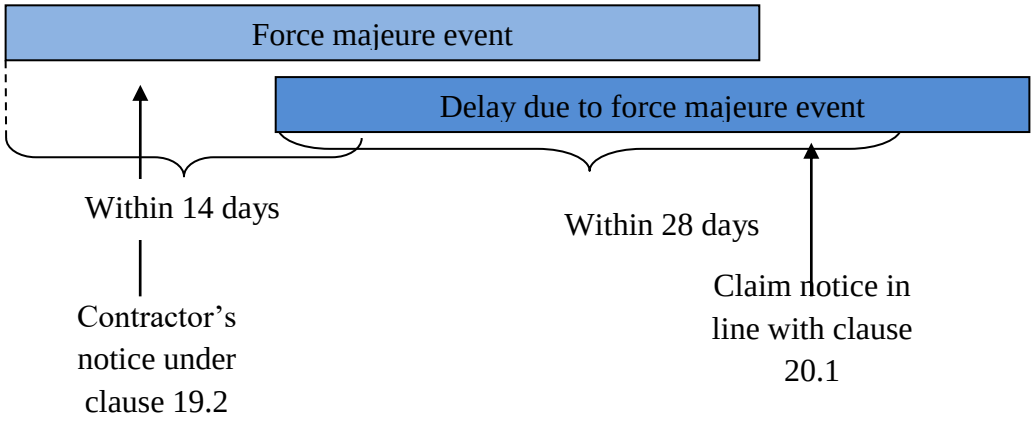


Figure 2.12 - Notices with respect to clause 20.1 and 19.4

Source: *Based on FIDIC 1999*

In summary, in line with clause 8.4 and 20.1 and based on the other provisions giving entitlement for extension of time or claim under FIDIC 1999 conditions require three types of notices depending on the delay event and those notices can be referred as (1) Early warning notices, (2) Second notice to inform the delay and (3) Notice of the intention for claim extension of time and / or cost in line with clause 20.1.

2.11 Awareness of the contractor for notices

In Sub-Clause 20.1 of FIDIC conditions of contracts clearly stated that *"considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract..."* The obligation is that the Contractor should notify to the engineer, describing the delay event or circumstance that giving rise to the claim *"as soon as practicable and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance."* If the Contractor fails to notify of a claim within the twenty eight day period, he shall not be entitled to an EOT or any additional payment and the Employer shall have no liability in respect of such claim.

The twenty eight day period referred in Sub-Clause 20.1 does not start from the occurrence of the delay event but, it runs from the date which Contractor *"became aware, or should have*

become aware, of the event or circumstance" giving rise to the claim. There can be a delay event but not necessarily delay the project (i.e. delay of a non critical activity) hence, the common problem is that whether twenty eight day notice requirement is start running from (i) the event or circumstance or (ii) the fact that the event or circumstance is to have time and/or cost consequences such that he is entitled to an EOT or additional payment.

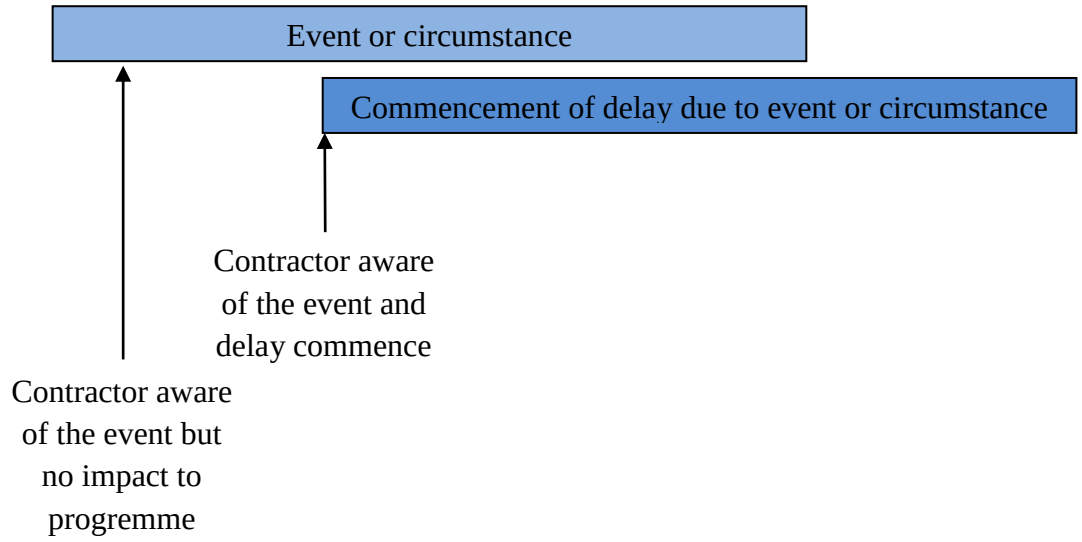


Figure 2.13 - Awareness of event and delay

Source: *Based on FIDIC 1999*

Stewart (2014) argued on the above matter based on a recent case of *Obrascon Huarte Lain SA v Her Majesty's Attorney General for Gibraltar [2014] EWHC 1028 (TCC)*. In this judgment, the judge stated that the entitlement to an extension of time clearly arises either when it is clear that there will be a delay (a prospective delay) or when the delay has at least started to be incurred (a retrospective delay). Further, he concluded that notice does not have to be given until there is actually a delay. Contractor can give notices when it reasonably believes that his programme will be delayed, but according to the judgment it is not required to do so.

In Sub clause 8.4 *'extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause 10.1 [Taking Over of the Works and Sections]* ***is or will be*** *delayed by any of the following causes'* which grants the Contractor of choice of the word "or" between "is" and "will be." If the Contractor was required to give notice on the prior to

delay event, then wording of Sub-Clause 8.4 would have read as *"is or will be delayed whichever is the earliest"*.

Based on the judgment in *Obrascon Huarte Lain SA v Her Majesty's Attorney General for Gibraltar* notice requirement in line with clause 20.1 is illustrated in figure 2.14,

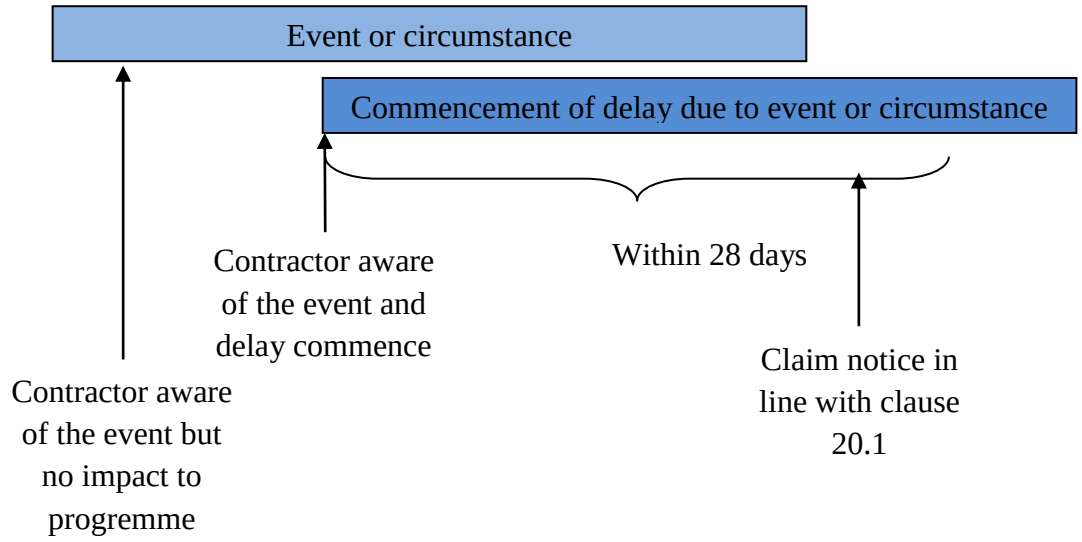


Figure 2.14 - effective date for delay notice in line with clause 20.1

Source: *Based on FIDIC 1999 and* judgment in *Obrascon Huarte Lain SA v Her Majesty's Attorney General for Gibraltar*

2.12 Is early warning notice a compulsory

Clause 1.9 is the only provision under FIDIC conditions of contract which require contractor to serve an early warning notice to the Engineer whenever the Works are likely to be delayed or disrupted if any necessary drawing or instruction is not issued to the Contractor within a particular time. In the second paragraph of the sub clause 1.9 Contractor is given clear entitlement for claim under clause 20.1 only if the early warning notice is given prior to the delay.

2.13 Summary of notice requirement under FIDIC condition of Contract 1999

Based on the FIDIC condition of contract and with the literature survey the summary of notice requirement is summarized in the Table 2.6. It is clear that depending on the clauses there are basically three types of notices need to be served mainly by the contractor to make him entitled for extension of time or cost. Early warning notices are considered in clause 1.9 [Delayed Drawings or Instructions] where contractor has to give early warning to Employer / Engineer of any likely event of delay due to delay of issuing drawings or instructions. In the event of suspension under clause 16.1 [Contractor's entitlement to suspend work] contractor is required to serve a notice 14 days prior to his decision for suspension which can also be considered as a early warning to employer or Engineer. In force majeure events (sub clause 19.4) either party who face with an uncontrollable event should serve notice which is the third provision under FIDIC condition where contractor is required to give early warning notices.

Except for Sub clause 8.4 and 19.4 contractor has to give further notice to Engineer in the event contractor suffers delay. And this notice is in addition to the 28 day notice required in sub clause 20.1. There are no much literature available confirming the exact requirement of the delay notice. Most of the researches stress the notice under sub clause 20.1 as a compulsory notice rather than other notices.

Table 2.6 – Summary of notice requirement under FIDIC conditions of Contract 1999 edition

Clause #	Clause description	Early warning	Delay notice	Claim notice under clause 20.1
1.9	Delayed Drawings or Instructions	within reasonable time	Upon commencement of delay	Within 28 days after contractor become aware of the delay
2.1	Right of Access to the site	N/A	Upon commencement of delay	Within 28 days after contractor become aware of the delay
4.7	Setting Out	N/A	Upon commencement of delay	Within 28 days after contractor become aware of the delay
4.12	Unforeseeable Physical condition	N/A	Upon commencement of delay	Within 28 days after contractor become aware of the delay
4.24	Fossils	N/A	Upon commencement of delay	Within 28 days after contractor become aware of the delay
7.4	testing and clause	N/A	Upon commencement of delay	Within 28 days after contractor become aware of the delay
8.5	Delay caused by authorities	N/A	N/A	Within 28 days after contractor become aware of the delay
8.9	Consequences of suspension	N/A	Upon commencement of delay	Within 28 days after contractor become aware of the delay
10.3	Interference with tests on completion	N/A	Upon commencement of delay	Within 28 days after contractor become aware of the delay
13.7	Adjustment for change in legislations	N/A	Upon commencement of delay	Within 28 days after contractor become aware of the delay
16.1	Contractor's entitlement to suspend work	within 21 days prior to suspension	Upon commencement of delay	Within 28 days after contractor become aware of the delay
17.4	Consequences of Employer's risks	N/A	Upon commencement of delay	Within 28 days after contractor become aware of the delay
19.4	Force majeure	Employer to notify within 14 days of the force majeure event	N/A	Within 28 days after contractor become aware of the delay
		Employer failure to notify	N/A	Within 28 days after contractor become aware of the delay
		Contractor to notify within 14 days of the force majeure event	N/A	Within 28 days after contractor become aware of the delay

Based on the Table 2.6, Notices under FIDIC 1999 can be basically divided in to three different types such as (1) Early warning, (2) Delay notice under each clause and (3) notice for EOT and cost claim under clause 20.1. Under FIDIC 1999 there are 15 clauses which require contractor to serve notices to become entitled for an extension of time or cost claims. All three notices are only applicable in clause 1.9 and 16.1 and in other clauses only two notices are required.

2.14 Important factors to be considered when creating delay notification system

As discussed in literature survey notices become paramount important when claiming for an extension of time. As per FIDIC conditions of contract changes are the main cause of deviation to time and cost. Hence, it is important to identify the event which gives entitlement for an extension of time. Arain and Pheng (2006) have identified four main categories of causes of change in construction industry namely (1) Owner related changes, (2) Consultants related changes, (3) Contractor related changes and (4) Other changes. Each cause under four categories is listed in table 2.7.

Castel (2007) has categorized cause of change in to two main types as 'actual' and 'constructive' changes, Actual change directly affects the scope, schedule or conditions, or a combination and is easily identifiable as mostly instructions are issued. Constructive changes on the other hand are also can cause significant effect by means of additional work or prevent work from being undertaken as scheduled. Defective or delayed specifications or drawings furnished by the employer and consultants, Failure of the consultants or employers to fully disclose technical information and Changes in government policies can be some examples of constructive changes.

Castel further explains that actual changes are more easily identifiable, as are mostly arising in black and white as 'variation orders' or 'change orders'. Constructive changes in other hand are not so easily recognized or acknowledged, frequently creating problems for the parties. In both the cases notices are considered as the most important tool to avoid disputes even notice requirements are not stipulated in the conditions of contract.

Table 2.7 – Causes of change (Categorization)

Owner related changes	Consultant related changes	Contractor related changes	Other changes
Change of plans or scope	Change in design	Unavailability of equipments	Weather condition
Change of schedule	Technology changes	Unavailability of skills	Safety consideration
Replacement of materials / procedures	Value Engineering	financial difficulties	Change in gov. regulations
Change in specifications	Change in specifications	Profitability	Change in economic conditions
Financial problems	Errors and omissions in design	site conditions	Socio -cultural factors
Inadequate project objectives	Conflicts between contract documents	defective workmanship	Unforeseen problems
Impediment in prompt decision making	Inadequate scope of work	Unfamiliarity with local conditions	
Obstinate nature	Lack of coordination	Lack of specialized construction manager	
	Design complexity	fast track construction	
	Inadequate working drawings	Poor procurement process	
	Inadequate shop drawings	Lack of communication	
	Lack of in time judgment	Long lead procurement	
	lack of knowledge	lack of required data	
	Honest wrong belief	Lack of contractors involvement in design	
	lack of required data	lack of judgment	
	Obstinate nature	Honest wrong belief	
	Ambiguous design details	Complex design and technology	
	Design discrepancies	lack of strategic planning	
	Non compliance design with gov. regulations	obstinate nature	
	Non compliance design with owners requirement		

Source*: Arain and Pheng (2006)*

Identify the event is up most important for notices as explained in most of the conditions of contract notices shall be served within the stipulated time period for the awareness of the event. Form of the instruction depends with the cause and with the creator of the cause. In line with clause 3.3 of FIDIC conditions of contract instruction shall be in writing or oral. In the event of an oral instruction contractors have to get confirmation for the oral instruction by issuing writing confirmation to the Engineer.

By considering findings from Arain and Pheng (2006) and Castel (2007) (Table 2.8) and based on the FIDIC conditions of contract a notification model can be identified as illustrated in figure 4.1.

Table 2.8 – Causes of change (Categorization)

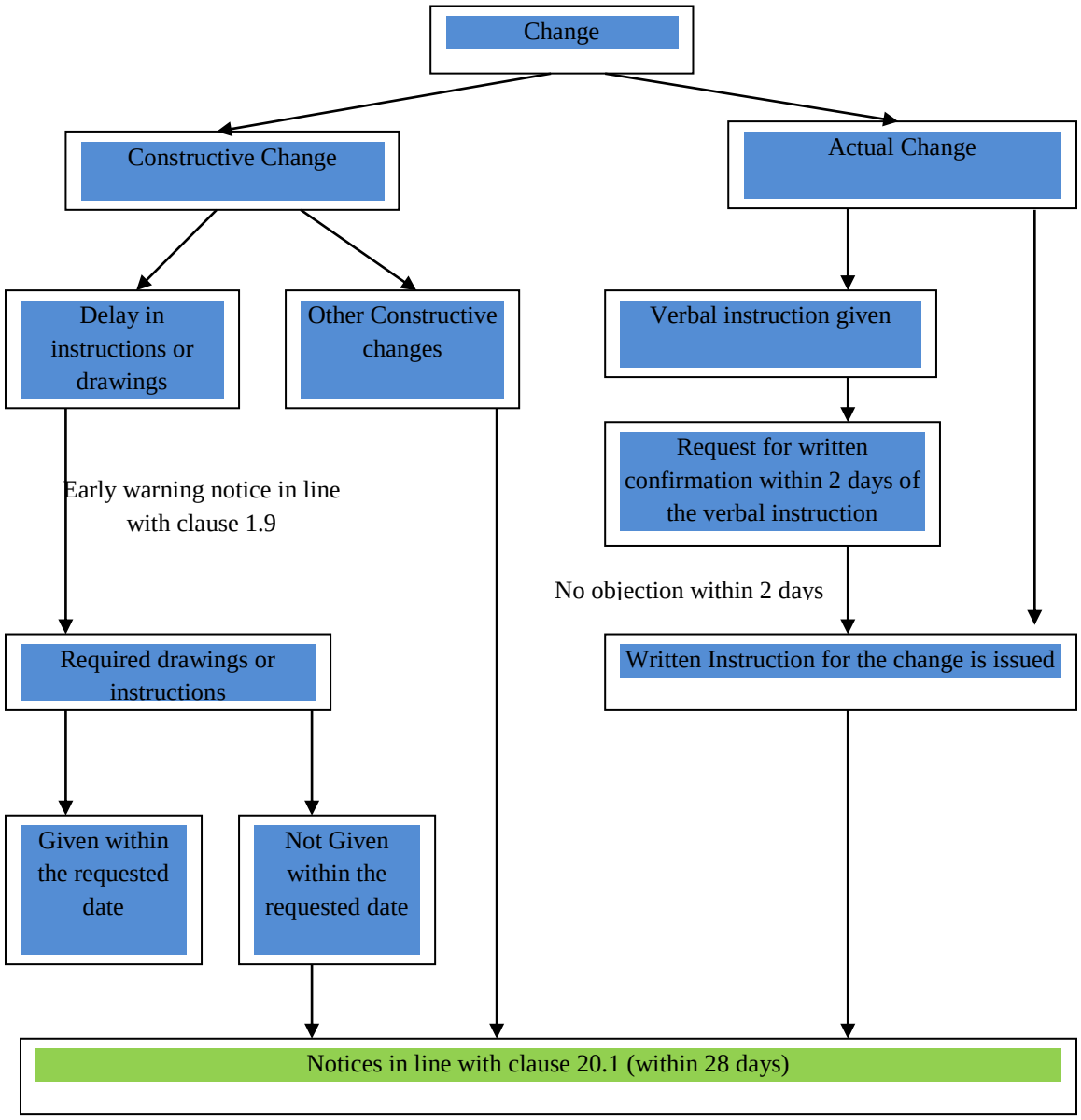
	Actual changes	Constructive changes
Owner related changes	Change of plans or scope, Change of schedule, Replacement of materials / procedures, Change in specifications	Financial problems, Inadequate project objectives, Impediment in prompt decision making, Obstinate nature
Consultant related changes	Change in design, Technology changes, Value Engineering, Change in specifications	Errors and omissions in design, Conflicts between contract documents, Inadequate scope of work, Lack of coordination, Design complexity, Inadequate working drawings, Inadequate shop drawings, Lack of in time judgment, lack of knowledge, Honest wrong belief, lack of required data, Obstinate nature , Ambiguous design details, Design discrepancies, Non compliance design with gov. regulations, Non compliance design with owners requirement
Contractor related changes	Unavailability of equipments, Unavailability of skills, financial difficulties, Profitability, site conditions, defective workmanship, Unfamiliarity with local conditions, Lack of specialized construction manager, fast track construction, Poor procurement process, Lack of communication, Long lead procurement and lack of required data	Lack of contractors involvement in design, lack of judgment, Honest wrong belief, Complex design and technology, lack of strategic planning, obstinate nature
Other changes		Weather condition, Safety consideration, Change in gov. regulations, Change in economic conditions, Socio -cultural factors, Unforeseen problems

Source*: Arain and Pheng (2006) and Castel (2007)*

In line with the FIDIC conditions of contract notices should be served by the contractors within 28 days from the awareness of the delay hence, awareness of the delay event is most important. Actual changes are mostly an identifiable changes which introduced by Employer or the consultants hence, awareness will be the date of the instruction or the date which the

delay commenced due to the change instruction. However, Constructive changes on the other hand are hard to predict or captured. This kind of events can only be identified with in-depth analysis of the delay hence, notification of delay will not be the date of the change actually occurred but the date which the delay commenced due to the constructive changes.

Figure 2.15: Notification Model



Source: *Arain and Pheng (2006); Castel (2007) and FIDIC 1999.*

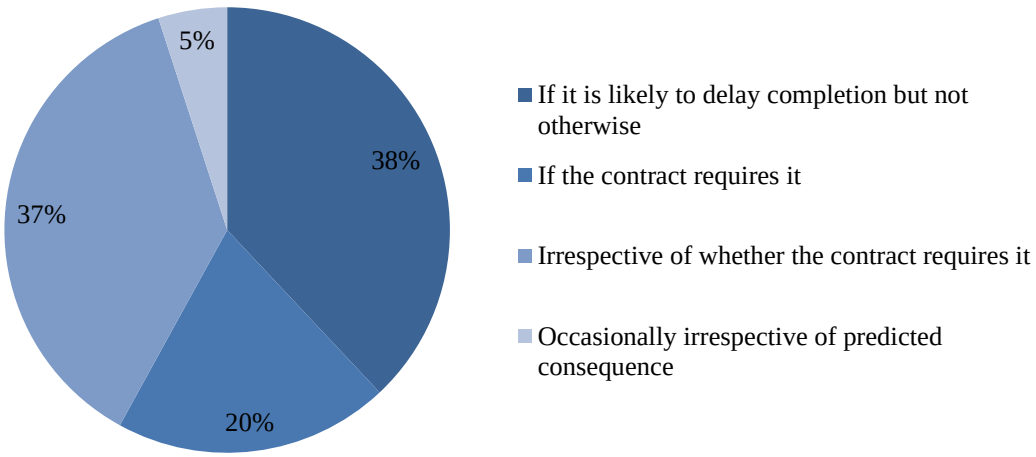
2.15 Reasons for not notifying delays

There is no much research done on the subject notices. However, between December, 2007 and January, 2008, the Chartered Institute of Building –UK has conducted an analysis of the construction industry's knowledge and experience of different methods of project control, time management, record keeping, monitoring and training. The finding under notices of this report was breakthrough.

This analysis was conducted in five different aspects of the notices such as (1) When delay to progress is notified, (2) When delay to progress is identified, (3) Reasons for not promptly notifying delay to progress, (4) The parties to whom the notice of delay to progress is given, and (5) The form of notice provided.

As illustrated in figure 2.16, 38% of respondents were answered by declaring that in their experience a delay was only notified if it was apparent to be likely to delay of completion. 5% stated that a delay to progress notified irrespective of the predictive consequences. When taken in to the context of the way progress is anticipated and its consequences predicted, only 20% were familiar with a delay to progress being declared even if the contract required it

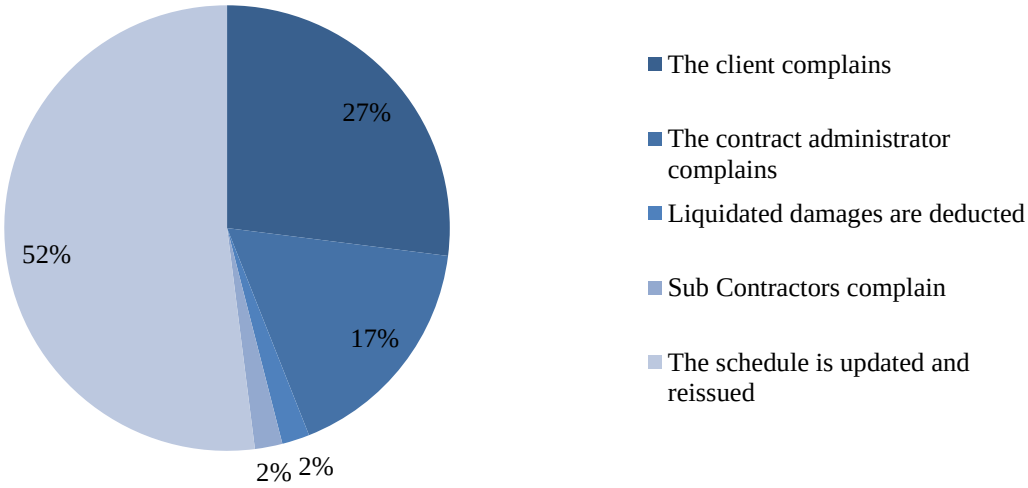
Figure 2.16: When delay to progress is notified



Source: *Managing the risk of delayed completion in the 21st century by CIOB (2008)*

As illustrated in figure 2.17, with respect to the identification of the delay event found that around 50% of respondents admitted that they were generally unaware of delay to progress until delay actually occurred. 52% of the responded confirmed that delay to progress is identified when updating the schedule prior to re-issues. Surprisingly, in 2% of respondents, was not aware of delay event until liquidated damages were deducted or until subcontractor's complaints on delay. 27% and 17% were not aware of delay until the client or contract administrator complains.

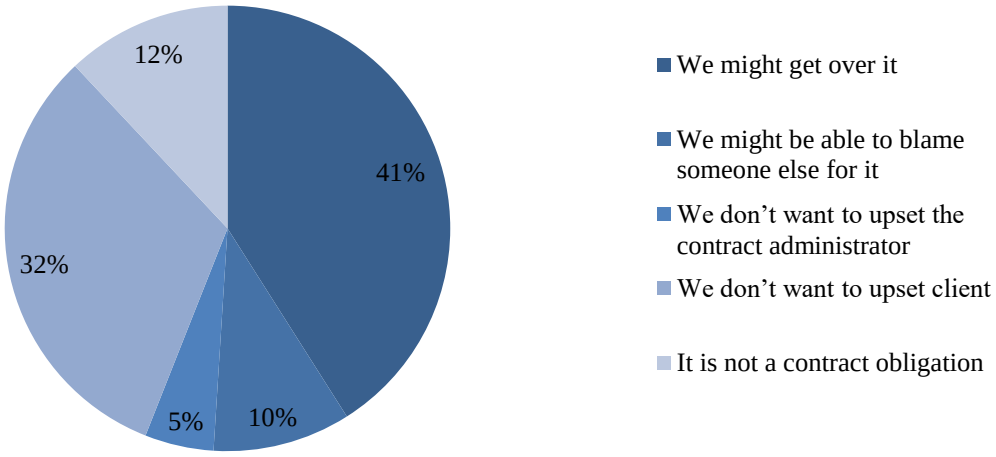
Figure 2.17: When delay to progress is identified



Source: *Managing the risk of delayed completion in the 21st century by CIOB (2008)*

With respect to the reasons of not promptly notifying delays indicates that (as illustrated in figure 2.18) 41% of the respondents was not notified delay because they assumed that they will be able to 'catch up' the delay. 10% not notified by assuming that they can blame another party for the delay. In 12% of cases, delay was not notified because the conditions of contract have no provision for delay notifications. 32% failed to notify the delay because they didn't want to upset the client and 5% didn't want to upset the contract administrator.

Figure 2.18: Reasons for not promptly notifying delay to progress



Source: *Managing the risk of delayed completion in the 21st century by CIOB (2008)*

2.16 Need for improvement of delay notification process

Importance of notices will only be realised when a dispute arisen and if contractors have not followed the procedure agreed in the contract will omit their genuine contract entitlement for a claim. Even though, dispute is referred to Adjudication or Arbitration still the contractors will lose the case purely due to lack of notices. As stated by Skene and Shaban (2002) the only good construction dispute is one that is avoided hence, avoiding disputes are important than finding solutions once a dispute is occurred. Despite, contractor's intention to go for a claim, notifying the delay or any circumstances in line with the conditions of contracts will improve the health of the project and always minimize the dispute occurrence.

2.17 Summary

The purpose of this chapter was to identify the types of disputes of delay claims mainly faced by the contractor and the contractual link with notifications to avoid these disputes in Sri Lankan construction industry by reviewing the available literature. It is a condition precedent requirement of notices under FIDIC Conditions of contract for contractor to be entitling for extension of time and or cost. Many researchers have concluded that the failure of notification of the intention for claim is the most common reason to failure of contractors delay claims. Due to rejection of delay claims create unnecessary dispute among parties which then lead to litigation.

Skene and Shaban (2002) stressed that the only good construction dispute is one that is avoided and also described that communication of potential claims at the earliest opportunity as one of the seven strategies that can be used to avoid disputes. As per the report published by CIOB the main reasons of contractors failure for notification is due to their assumption that they can get over it or contractors consider it as a offence to notify against clients or consultants hence, most of the contractors preventing from notifications even if it is a contractual requirement to do so Hence, research on to the practical difficulty in notifying delays in line with the contract and to propose method to improve the process will enhance the contractor's genuine entitlement for the extension of and / or Costs which will then support construction industry as a whole.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The main purpose of chapter three is to ascertain the methodological issues and the research design and processes accompanying with the survey strategy. At this point reasons for choose survey strategy as a suitable strategy by the researcher are discussed and that focus is vital for several phases of the research process. The importance of this chapter relies on the need to develop the research strategy and process flow research, because it identifies the steps and the attention to be given while gathering, analyzing and discussing relevant data and results. Haron (2013) describes methodology as an overall strategy carry out in scientific study that comprises factors of philosophy, approach and techniques. To understand the research modules precisely, research onion approach initiated by Saunders, Lewis, and Thornhill (2016) is considered. In par with that approaches commencing from research philosophy until data collection and analysis approaches are linked. As shown in figure 3.1 philosophy is the outer layer which directs and invigorates the inner procedures. Research approaches encompass theory generation or theory testing; methodology can be categorized as quantitative, qualitative or mixed methods. Research strategies are illustrated by the fourth layer and data collection and analysis techniques and procedures are illustrated by the sixth layer.

3.2 Statement of research aim

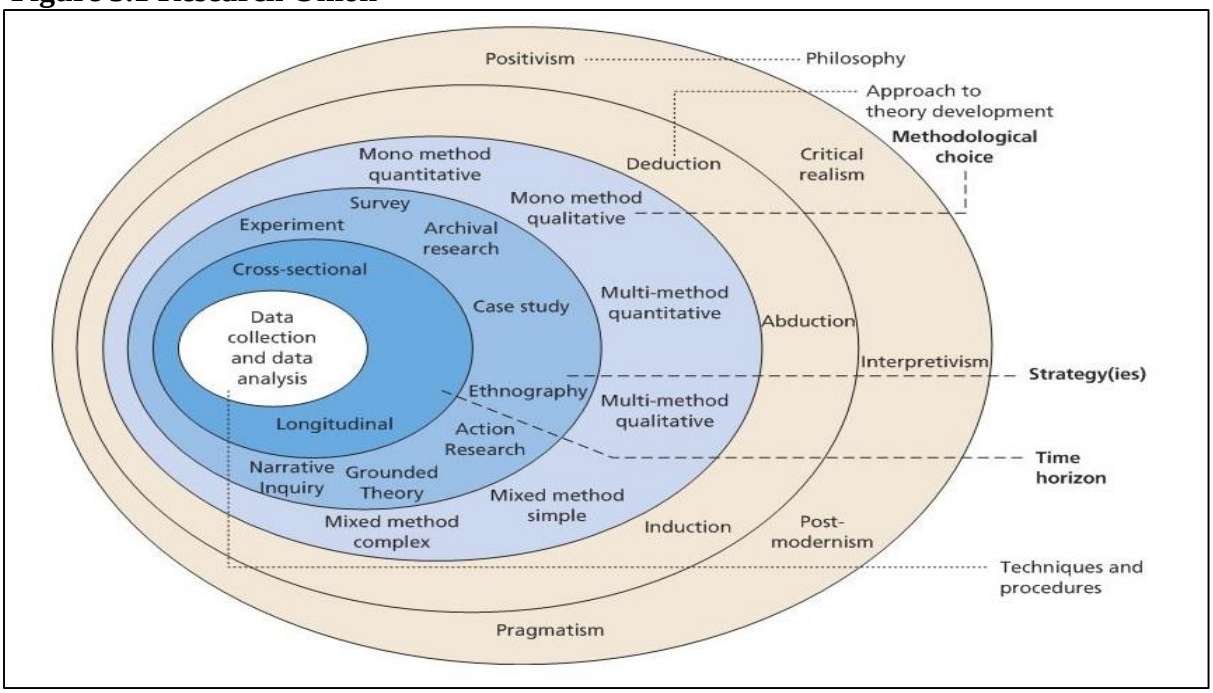
The aim of the research is to improve the delay notification process of Sri Lankan contractors to avoid disputes in delay claims.

3.3 Research Approach

Consistent with Saunders 2016 deduction, induction and abduction are the research approaches. Deduction approach can be used to test the hypothesis, and inductive approach can be used to develop a theory through the collected data. Whereas, in the application of deductive approach, develop of a hypothesis or theory is executed by referring the relevant

literature review for the relative subject matter. Afterwards most suitable research strategy is designed to test the developed hypothesis. Initially in the inductive approach the data is collected and after that using the data analysis the theory is developed.

Figure 3.1 Research Onion



Source: *Saunders et al., 2016*

Despite everything if there is dissimilarity between deduction and induction approaches, through the abduction approach induction and deduction approaches can be combined which successively can be used in an advantageous way to the research.

According to Saunders et al. 2016, deductive approach is most suitable if there is ability to create the hypothesis correlated to the research topic and if substantial literature is available for the relevant topic. As well, if the research is based on a fresh topic and if literature is inaccessible, inductive approach is suitable. Further they depict, if an area is wealthier by literature and other area is poor with literature, as a remedy abductive approach can be make use of.

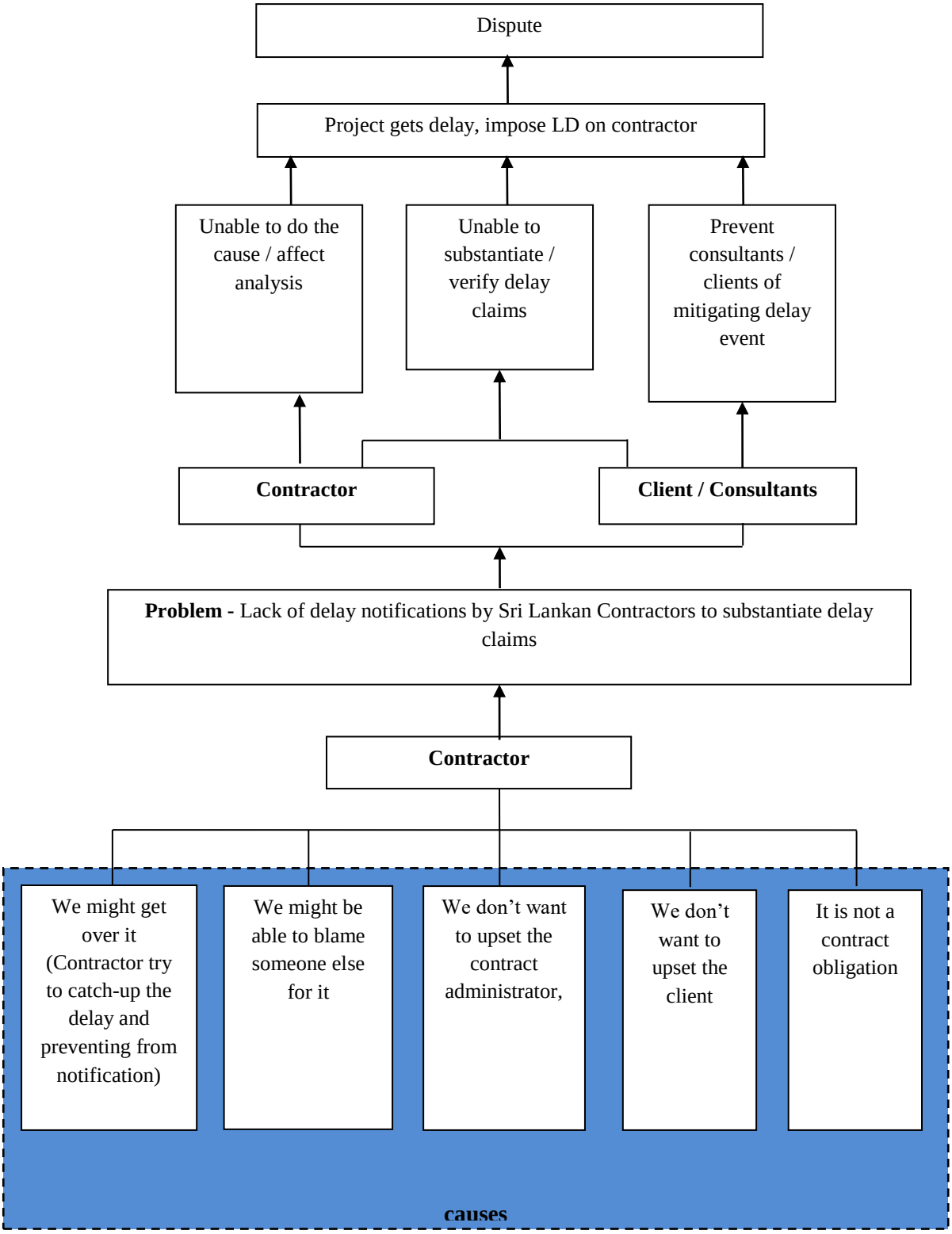
3.4 Methodological choice

There are three types of research methodologies; Quantitative, Qualitative and mixed methods. Saunders et al. 2016 *"quantitative is every so often making use of as an alternative expression for any data collection technique or data analysis procedure which produces or make use of numeric data". Similarly, qualitative every so often making use of as an alternative expression for any data collection technique or data analysis procedure that produces or make use of non- numeric data".* Mixed method approach comprises of quantitative and qualitative data collection techniques and analytical procedures. Also mixed method can be applied for deductive, inductive or abductive approaches.

Qualitative research is bringing into play to figure out the discernments of individuals with regard to world rests on wide-ranging knowledgeable study and analysis (Haron, 2013; Bell, 2010). According to Haron (2013) to foster a theory, if the researcher is thorough with reference to the phenomenon and the aims of the study, qualitative is most suitable in an attempt to discover the factors' persuading phenomenon and settings. Quantitative approach concerns on questions as "how much" and "how many", and strive to support the facts submissively (Bell, 2005; Haron, 2013). Quantitative data are worthwhile in evaluating the established theories and hypothesis. Despite the fact that qualitative approaches being used as inductive, in certain circumstances exercise to review an existing theory (Yin, 2004; Saunders et al., 2016; Gray, 2014). According to Naoum (2013) methodology type hinges on the purpose of the study and type and on approachability of the de rigueur facts.

To accomplish research aim and objective of this particular study an exploration should be executed to understand current industry practice with relates to delay notices and claims. Based on the approaches identified from literature reviews, respondents from interviews a suitable mechanism and procedure will be identified. Gray (2014) states exploratory research can be conducted by conversing with experts in the field. In addition, if respondents suggest a different approach instead of researcher suggested procedure, reasons for that is queried from the respondents. Through Sri Lankan construction experts' experience, thought belief and understanding, the delay notification practice and its short comings will be evaluated. Figure 3.2 indicates research framework which was developed based on the literature reviews and experts comments.

Figure 3.2: Research Framework



3.5 Research strategy

Quantitative methodology was practiced for the purpose of request for information for this research. With the intention to improve the delay notification process of Contractors to avoid disputes in delay claims, survey strategy was practiced as a primary data collection technique. Under this subchapter two most important subject matters being discussed (1) justification of survey strategy and (2) sampling method are discussed.

3.5.1 Justification of survey strategy

Among many research strategies, surveys, Archrivals and Case studies are being commonly used. Survey strategy is a deductive approach and has the potential of producing quantitative and qualitative data. Moreover, this approach is utilized to obtain answers for the question as what, who, where, how much and how many to some extent (Saunders et al., 2016). And so this approach can be employed for descriptive and exploratory researches. People perceive this as an exceptional strategy; on the whole more or less this strategy is straightforward to grasp and to put in plain words. Benefit of non-probability sample technique is that the outcomes obtained can be made known to entire population with less cost. On the other hand, the drawback is consuming considerable time to confirm the sample is archetypal, planning and steering data collection method and attempt to validate satisfactory rate of response. Noteworthy consumption of time is noticed while formulation of data and analyzing them. This strategy consists of questionnaires, structured observations and structured interviews. Moreover, this approach is called mixed approach where salient features of quantitative and qualitative approaches are used.

3.5.2 Research sample

Naoum (2013) point out sample is a case in point or segment of a population and that describe how the remnants is like. In any research the most important factor is wide-awake sampling of participants' and data sources. In qualitative research the selection of samples will give rise to a considerable influence on the eventual quality of the research (Gray, 2014; Naoum, 2013). In quantitative designs one main objective is to produce substantial results that can make a generalizing statement to large population.

Aside from many sampling approaches Snowball sampling which is non-probability sampling was selected. Snowball sampling method is the most suitable for unseen population where there are complications as tracing and recruiting members in view of the fact that practical sampling frame is unobtainable (Saunders et al., 2016; Gray, 2014).

Purposive Sampling of 80 respondents were selected from different professions such as Quantity Surveyors, Planning Engineers, Engineers, Architects, Project Managers and few company Directors. Online questionnaire survey were emailed expecting 50 respondents and planned to intervie 27 interviewees as well. Among them 42 respondents had effectively completed the online questionnaire survey and collected data by means of 20 structured interviews. Accordingly, the response rate of the online questionnaire was 84%.

3.6 Research techniques

Eventually questionnaire types been a quantitative research techniques have been employed to collect the ideas of professionals within the industry. In this research data collection and analyzing were performed with regard to the survey strategy and quantitative methodology. As well secondary data was collected through the literature review and this section describes the research techniques used.

3.6.1 Literature review

In order to widen the collective knowledge of the researcher it is vital to run through what have been said and done before pertaining to the research matter. In line with Gray (2014) *"the literature review gives details about the chronicle of the subject matter and the important sources of literature, demonstrating main issues and improving the sense of purpose of research in a way that can produce one or more research queries."* When executing the literature review, the researcher himself has to rummage around for the preceding researches carried out on the subject of the relevant research area. This review of literature provides a profound rough guide regarding the relevant topic to the person who reads and findings and analysis of the preceding researches. Contemporary researchers' make use of these findings to construct research questions and hypothesis with regard to the

relevant research topic. Ensuing contemporary research findings can be judged against the previous research findings and this can be used as a takeoff point in future researches.

The literature review performed in this research attempts to succeed the knowledge gap in delay notifications and delay claims which lead to disputes in construction industry and to collect required secondary data for this research. This literature review includes various literatures on delay claims and disputes and their benefits and drawbacks for contractors. The literature review was developed employing online articles, books, websites as well as local and foreign university thesis.

3.6.2 Online Questionnaire Survey

In order to collect data within a short time period around three months, it is crucial to find a method of data collection which consumes less time. As a better solution for this, online questionnaires were executed. This research takes a descriptive nature as it concerns about the respondents' opinions as well as the practices. Also, there is a considerable control offered by Internet- and intranet-facilitated questionnaires and specifically those managed with email because many users read and answer back to their personal mails using their own computers. The researcher has developed the questionnaires with the help of "Survey Monkey" web tool and that particular link was sent by e-mail to the participants.

Questionnaire is a research tool that comprise of a sequence of questions in order to obtain responses from the respondents. Here, predetermined uniform set of questions were asked from all the respondents and the advantage is that this can be supervised individually and can be distributed among the respondents. In addition, time consumption is less when collecting data by means of questionnaires. And also by sending same set of questions for each respondent to answer, it gives an effective method to collect data from a sizeable section prior to the quantitative analysis. In a situation where there is time constraint, the questionnaire helps to save time as well as to collect data quickly. Questionnaires are suitable for descriptive or explanatory types of researches but aren't suitable for fact-finding and other researches that have need of large number of open-ended questions (Saunders et al., 2016).

The drawback in questionnaires is the low rate of responses due to busy schedules of the respondents; few actions were taken to reduce the drawbacks of the online questionnaire survey such as, all the questions were developed in the way of closed-end (forced choice questions / closed questions) which accommodate a number of substitute answers and the respondent are instructed to pick out of them. This method increases the response rate compared to open-ended questions. When analyzing open-ended questions, time consumption in coding can be minimized by the use of close-ended questions (Saunders et al., 2016). Moreover, with the aim of increasing the response rate, every so often communicated with the locators through phone calls and it assisted to increase their motivation towards the survey. Before going with the main questionnaire survey, a pilot questionnaire survey was executed involving few staff members and this facilitated to identify the chances of survey results becoming contaminated. For a good study design, pilot studies are a vital building block. Performing a pilot study will not assure the success of the main study however it sees to increase the chances of success story.

Purpose of undertaking this online questionnaire survey is to obtain general opinions, views from expertise in Sri Lankan industry concerning delay notifications and delay claims and disputes due to delay claims. It's anticipated to achieve third, fourth and fifth objectives through this questionnaire survey. First three questions were asked to understand the experience and the scope of the respondents which to be used to analyze contractors and consultants perspectives. Fourth question was set out to get historical details of the completed projects within last 10 years to analyze its completion status, delay projects, status of delay notification and grant of extension of time. Then fifth and sixth questions were asked from contractors and non contractor's respondents respectively to understand their perspective on delay notices. Final three questions were arranged to get respondents opinions on the improving the delay notification system to facilitate smooth delay claim finalization by avoiding or minimizing disputes.

3.6.3 Structured Interviews

As a solution for the decline in response rate of the online questionnaire, concurrently structured interviews were also conducted. A structured interview is an interviewer-administered questionnaires type of interview and interviewer records the answers. Here

researcher met the respondents in person and asked the questions from interviewees. For the interview the same set of questions used for the online questionnaire was utilized and the locators (initial contacts) were interviewed using this method. The interviewer administered questionnaires have higher response rate compared with the self-administered questionnaires. Apart from the online questionnaire, this technique was employed as a primary data collection technique as well. Here the locators were interviewed for about 20 minutes at a venue chosen by the interviewer.

3.7 Data analysis

Data analysis plays a major role in this research which provides the anticipated results of the research process with the awareness of appropriate data collection techniques. Subsequently data collection from the questionnaires and interviews, analysis of data will begin. As this is a pure quantitative study, mode and mean analysis techniques are employed. The responses relating to the closed-ended questions are coded and those results were presented using bar charts and pie charts.

3.7.1 Relative importance index (RII)

The Relative Importance Index (RII) was used to rank the problems encountered in delay notification process in Sri Lanka. Further, it was used to rank the criteria that are importance in selection of a suitable delay notification system. Method of calculation of RII is; sum of weightings divided by the multiplication of highest weight and total number of respondents. This method has been earlier used by Sivaramalingam and Perera, 2014; Ahamed, Perera, and Ilankoon, 2013; Sumithiran, 2009; El-Sayegh, 2008; Kamarazaly, 2007; Jeyamathan and Rameezdeen, 2006 as a data analysis method in this kind of studies.

RII facilitates evaluation of nonparametric sample by giving a RII value for each factor.

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

Where: RII= Relative Importance Index; w= weighting given to each factor by the respondents, A= Highest weight and N= Total number of respondents.

3.8 Scope and limitations of the research

The scope of this research is limited to the building construction projects where form of conditions of contract was FIDIC 1999 edition.

3.9 Administrative and ethical issues

Only the data relevant to the personal experience of the professionals in this subject area was collected for this research. Therefore the necessity to obtain approvals from the respective organization was not arisen.

3.10 Summary

The main purpose of this chapter was to identify the research approach and research techniques which support to achieve the aim of the research. The research framework developed through the literature review is tested within the Sri Lankan construction industry which follows deductive nature. Also, corresponding researches and literatures cites that the suitable methodology for this research is quantitative method. It is identified that survey strategy as the most suitable strategy for this research because of its nature. Here, online questionnaire surveys and interviews were exercised as primary data collection techniques and simple quantitative techniques were used to analyze the collected data. Following chapter explains the findings and analysis from this research.

CHAPTER 4
ANALYSIS AND RESEARCH FINDINGS

4.1. Introduction

Based on the methodology described in the previous chapter data was collected mainly based on questioners and with interviews of experts on the field. This chapter describes the findings of this study under general details of the respondents to the questionnaire survey and interviews, general details of delay disputes and delay notices status of completed projects, Respondents perception towards delay notices and their opinion for improvements.

4.2 Preliminary interviews

Four industry professionals were interviewed in two occasions. Preliminary discussion was carried out prior to selection of the research objectives to understand the actual need. Second interview was carried out with two of them during data collection stage to get expert view of the issue and also to get their recommendations. These experts were selected based on their extensive expertise on the quantity surveying and claim management in both consultants and contractors background. Table 4.1 indicate brief description about the experts. All of these industry experts have more than 25 years of experience. Their inputs provided better platform to build the structure of this research.

Table 4.1: Details of interviewers

	Industry expert 1	**Industry expert 2**	**Industry expert 3**	**Industry expert 4**
Profession	Quantity Survey	Quantity Survey	Project Manager	Engineer
Designation	Director	Director	General Manager	Director
Experience (Years)	30	25	25	40

4.2.1 Objectives of preliminary interviews

During the preliminary survey following objectives were aimed to be fulfilled

01. Identify the expert view on delay notifications
02. Determine research objectives and to structure the research
03. Identify the reasons which prevent contractors of notifying delays
04. Identify ways of improving delay notification process

4.2.2 Findings from preliminary interviews

Generally all experts believe that notices as an important aspect when it comes to delay claims. However, they experience lag from contractor's side of notifying delays timely. According to the majority of these experts view was that the lack of industry experienced professionals is the culprit to this lag. Some identify that complex nature of the conditions of contract which prevent contractors of notifying the delays.

During the preliminary interviews with the experts it was discussed that one of the main reason for the shortfall of notices are due to lack of knowledge on contractual aspects. Contract administration is a dedicated role in other developed countries where contract administrator's main duty is to notify delays on delay events. Conditions of contract used by Sri Lankan construction industry has no change to the conditions of contract used by other developed countries but we as a developing country unable to assign dedicated person as a contract administrator due to financial aspects. Few leading contractors in the country were able to identify the requirement of a contract administrator and by appointing contracts manager they expect these administration works to be covered by them. However, medium and small level contractors still have not identified such requirement and in the event of delays suffered by them will try to mutually agree on extension of time based on the relationship with the clients. However, in the event of disagreements will lead to major disputes where contractors lose their entitlement due to lack of notices.

Traditionally, most consultants expects more power against contractor to have a better control at projects hence, by conditions in the contract consultants are given decisional power to manage construction projects. Even though, notices are allowed in the conditions of

contracts, contractors reluctant to serve notices as considering notices as an offence against consultants. Because, contractors need many on sit approvals for materials and work executed from the consultants and mostly at site both party negotiate on quality maters as are subjective. Hence, contractors mostly feel that the consultants will penalized them at site if the consultant is offended by a delay notification.

Conditions of contract on the other hand make an impact on the delay notification process. FIDIC conditions of contracts are originated from English countries based on their practice and behaviours which they thought are suitable for them. However, when applying the same clauses in Asian or any other countries may have impacts when functioning. Similarly interviewed experts see these cultural impacts when FIDIC is adopted as a domestic condition for contracts especially with the notice provision. Notices under FIDIC are required to highlight the breach or possible breach of the other party to whom the notice is been served. This breach is the fault of the other party who has not acted as required in the contract which is a fault. By culturally the attitudes of the Sri Lankan people are egoistic hence, feels offensive when another highlight a fault hence, create grudges which then lead to major disputes. Due to this reason contractors prevent from notifying to safeguard against any consequences from consultants.

Contractors on the other hand over estimate about their capabilities and capacities and assume that they can catch-up any delay events hence, prevent from notifying delays but when they realized that the delay cannot be caught up the notification time period is elapsed hence, lose the entitlement. Some contractors prevent from notifying delays by assuming that they can blame some other party for the delay. This is also a considerable factor for the failure of delay notices from contractors. Based on the view of the experts research was structured and questionnaire was prepared to capture the feedback from practitioners based on the points highlighted by the experts.

4.3 Questionnaire survey

Comprehensive questionnaire was developed based on the inputs received during the preliminary survey and literature reviews (Appendix B). This was used as a primary data collection method to identify and analyse current industry situation.

4.3.1 Objectives of questionnaire survey

Main objective of this survey was to understand current industry practice and different perspectives of contractors, Consultants and the Clients on delay notification and claims. Further, to get different views and opinions on developing a method to improve the delay notification process.

4.3.2 Method of respondents

As discussed in the previous chapter questionnaire was conducted in online as well as in manual via interviews. Online questioner was developed in the www.surveymonkey.com web site and circulated among professionals in construction industry in Sri Lanka. Also, printed questioner was manually filled while interviews with the experts and also circulated mainly among quantity surveys who work with general contractors. Altogether 62 out of planned 80 were responded where 42 (68%) online and 20 (32%) manual (Table 4.2).

Table 4.2: Method of respondents

Description	Respondents	Expected	Success rate	%
Online	42	50	84%	68%
Manual	20	30	67%	32%
Total	62	80		

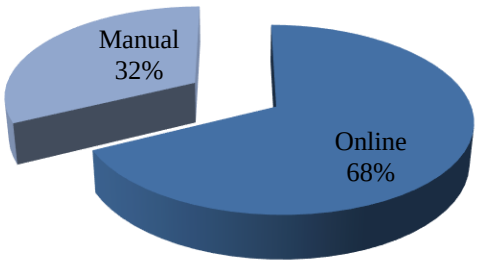


Figure 4.1: Method of respondents

4.3.3 Employment status of the respondents

Stakeholders in the construction industry can mainly be divided in to four categories namely client side, contractor's side, consultant side and freelance. Out of 62 respondents, 50 (81%) respondents were from contractor's side and 8 (13%) is from Consultant's side and 3 (5%)

and 1 (2%) from employer side and from freelance respectively (refer table 4.3). The main reason to consider large number of respondents from contractor's side is due to the main issue of this research. As delay claims, delay notices are mainly originate by the contractor and remain as a responsibility of contractor hence, it is important to get their perception about the issue in order to identify any shortfall.

Table 4.3: Employment status

Description	Respondents	%
Employer	3	5%
Consultant	8	13%
Contractor	50	81%
Freelance	1	2%
Total	62	

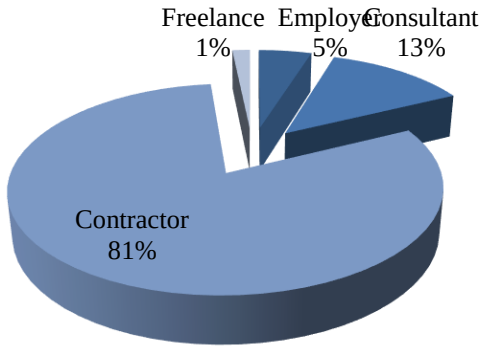


Figure 4.2: Employment status

4.3.4 Work experience of the respondents

As illustrated in table 4.3, out of 62 respondents 19 (31%) had experience less than 5 years and 18 (29%) had experience between 5 to 10 years. Third largest group of respondents of 15 (24%) had experience between 10 to 15 years and 10 (16%) respondents had most extensive years of experience more than 15 years. When considering experience of the respondents it has perfect blend as in four experience groups i.e. less than 5 years, between 5 to 10, between 10 to 15 and more than 15 years show roughly the same quantity.

As 81% of the respondents are from contractor background there experience ranges are also further analyzed in Table 4.4. Accordingly, 31% of respondents have experience less than 5 years and around 69% of the respondents have experience more than 5 years.

Table 4.4: Experience of the respondents

Description	Respondents	%
Less than 5 Years	19	31%
Between 5 to 10 years	18	29%
Between 10 to 15 years	15	24%
Between 15 to 20 years	8	13%
More than 20 years	2	3%

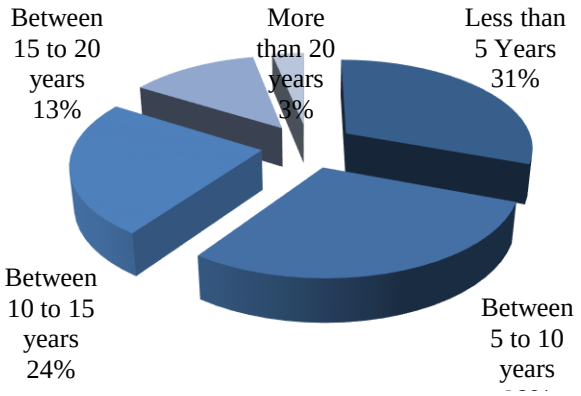


Figure 4.3: Experience of the respondents

Table 4.5: Experience of the respondents (Contractor's)

Description	Respondents	%
Less than 5 Years	16	32%
Between 5 to 10 years	15	30%
Between 10 to 15 years	12	24%
Between 15 to 20 years	6	12%
More than 20 years	1	2%

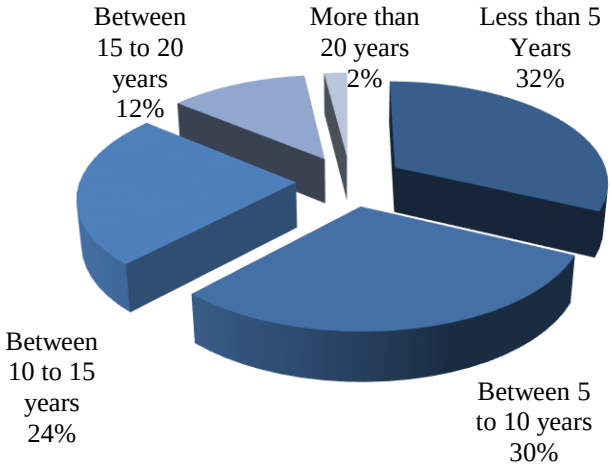


Figure 4.4: Experience of the respondents

4.3.5 Scope of work of the respondents

Out of 62 respondents 77% is from quantity surveying and cost engineering background. Others designations such as Director, Project manager, Engineer, Planning engineer, Contract administration and Commercial management had almost same number of respondents.

Table 4.6: Designations of the respondents

Description	Respondents	%
Director	2	3.23%
PM	2	3.23%
Engineer	4	6.45%
Planning Engineer	1	1.61%
Cost Engineer / QS	48	77.42%
Contract Administrator	3	4.84%
Commercial Manager	2	3.23%

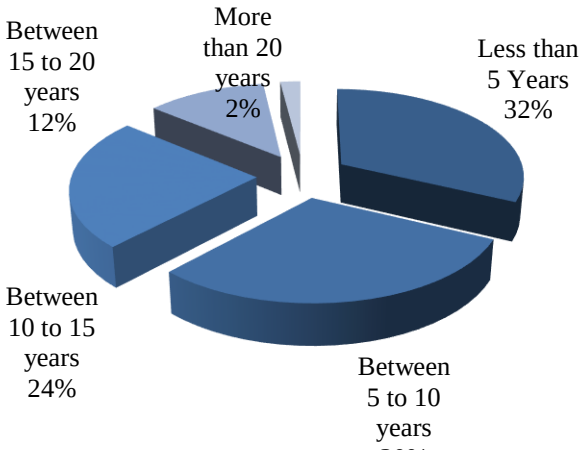


Figure 4.5: Designations of the respondents

4.4 Findings from Questionnaire survey

Summary of the data received from the questionnaire survey was prepared against each objective of the research and are described further in details with the illustrations in under following headings.

4.4.1 Details of projects completed by the respondents

The first part of the research questionnaire was aimed to collect (1) present status of construction projects, (2) their status of completing within the contractual completion date and (3) present practice of delay notification, extension of time claims and disputes. Based on the collected data it reveals that 62 respondents were involved with 208 numbers of projects during last 10 years. As illustrated in table 4.7, out of 218 project 64 (29%) of the projects were minor contracts with the contract sum below Rs. 300 Mn. There were 35 (16%) projects with Contract sum between Rs. 300 Mn and Rs. 500 Mn. Quantity of medium scale projects with contract sum between Rs. 500 Mn to Rs. 1 Bn were 37 with 17%. Contract sum of the balance 82 projects were more than Rs. 1 Bn which can be considered as large scale projects.

Table 4.7: project portfolio

Contract sum	Qty	%
Less than 300 Mn	64	29%
Between 300 and 500 Mn	35	16%
Between 500 Mn and 1 Bn	37	17%
Between 1 and 5 Bn	46	21%
More than 5 Bn	36	17%
Total	218	

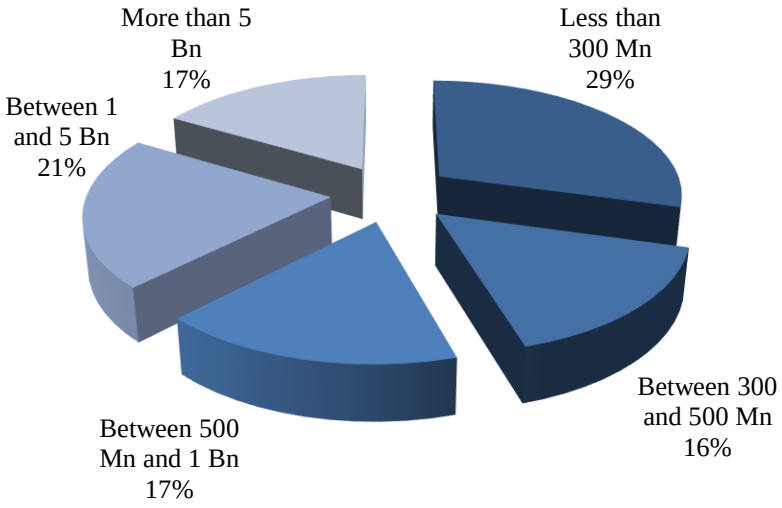


Figure 4.6: project portfolio

Out of 218 projects 155 (71%) of the projects were delayed to complete and only 63 (29%) of projects were able to complete within the contractual completion date (table 4.8). This revealed that majority of construction projects in Sri Lankan construction industry were not achieved their contractual completion due to numerous reasons.

Table 4.8: Project completion status

Status of project completion	Qty	%
Project completion delayed	155	71%
Project completed within contractual date	63	29%

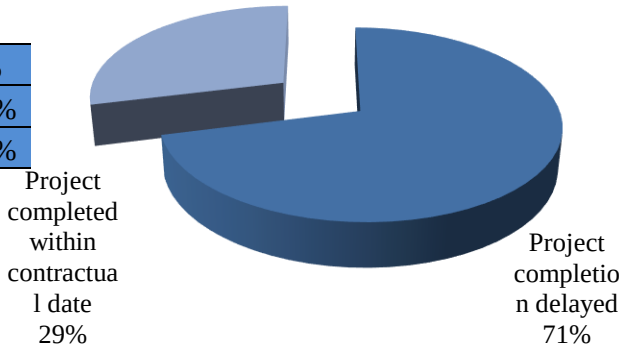


Figure 4.7: Project completion status

Table 4.9: Delay status based on scale

Contract sum	Total	Delay	%		Scale
Less than 300 Mn	64	42	66%	66%	Small scale
Between 300 and 500 Mn	35	21	60%	68%	Medium scale
Between 500 Mn and 1 Bn	37	28	76%		
Between 1 and 5 Bn	46	39	85%	78%	Large scale
More than 5 Bn	36	25	69%		

Further, Table 4.9 illustrates that 66% of small scale projects and 68% of medium scale projects were delayed to complete. In large scale project the percentage of delayed project were 78%, which demonstrate that large scale projects show high potential for delay it completion rather than small scale and medium scale projects.

According to construction industry development authority grading, companies with projects turnover more than Rs. 600 Mn are considered as tier one contractor with grading of C1, CS1 and CS2. Hence, based on the data in table 4.9 most of the large contractors should foresee delay in there project completion at tendering stage itself to price accurately. This shows the significance of delay claims and prompt delay notices to safeguard contractor's financial stability if the project delay is purely due to excusable and compensable delay events.

Table 4.10 illustrate that 145 out of 155 projects which were delayed to complete have successfully requested for an EOT and only 8 (5%) projects failed to request. This implies that majority of contractors have requested for an extension of time despite the responsibility of the delay event. However, during interviews it was revealed that most contractors request for an extension irrespective of the responsibility of the delay event this is mainly to avoid liquidated damages.

Table 4.10: Contractor's request for EOT

Description	Total	%
Contractor request for EOT	145	94%
Contractor not request for EOT	8	5%
Not answered the question	2	1%

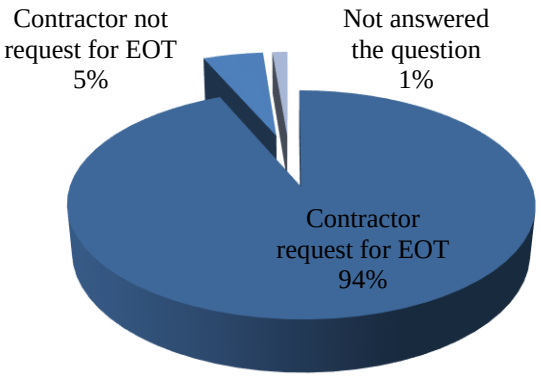


Figure 4.8: Contractor's request for EOT

Even though 145 out of 155 projects have requested for an extension proper delay notices have only been served by only 128 (83%) projects out of 155 delay projects (Table 4.11). This indicates that approximately 17% of delay projects have not submitted proper delay notices and approximately 12% of delay projects who requested for an extension of time were not provided appropriate delay notices.

Table 4.11: Contractor's delay notices

Description	Total	%
Contractor served notices	128	83%
Contractor not served notices	25	16%
Not answered the question	2	1%

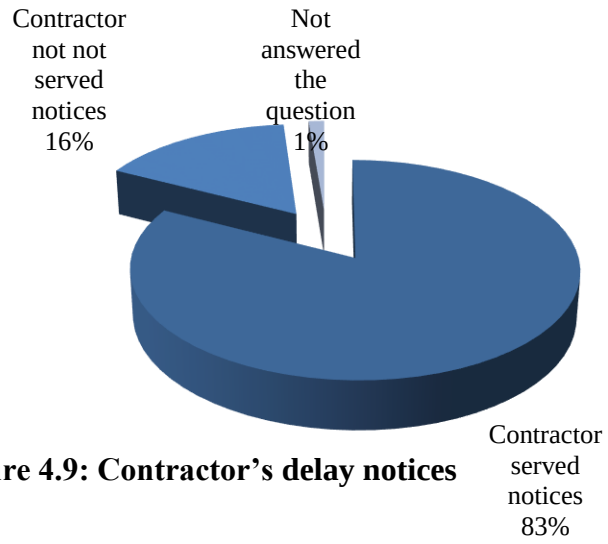


Figure 4.9: Contractor's delay notices

As discussed in literature reviews one of the main reasons for contractors EOT failure is due to inadequate delay notices. Hence, if 17% of the projects prevented from notifying delays will definitely lead for a dispute due to disapproval of EOT.

Table 4.12 illustrate that out of 155 delayed projects in 123 (79%) projects EOT were granted and in 27 (17%) projects EOT was not granted. Reason for not granting EOT were be due to

two main reasons (1) Employer / consultant's failure which is a breach of contract and (2) Contractor is not entitled due to none excusable delay events.

Table 4.12: EOT grant status

Description	Total	%
EOT granted	123	79%
EOT not granted	27	17%
Not answered the question	5	3%

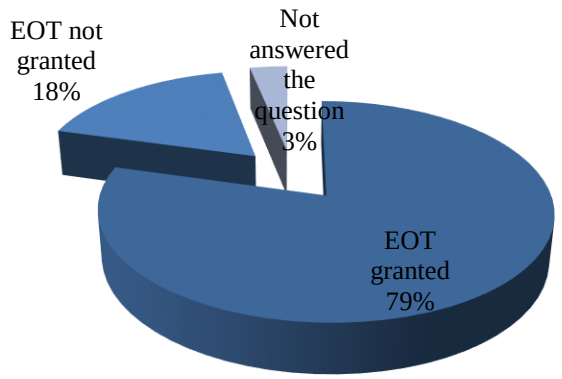


Figure 4.10: EOT grant status

Based on above data analysis it appeared that out of 155 delayed projects contractors have notified delay to consultants in 128 (82%) occasions. And EOT was requested in 145 (93%) occasions. Extension of time was granted in 123 (80%) occasions. This implies that a better rate of delay notification, request for extension and granting extension in the selected projects. As selected projects represent a wide range of projects in all small, medium and large scale, it can be conclude that delay disputes are not mainly due to contractor's faults.

However, the question remains for discussion whether the notices are served within the time bar, or whether format of the notices are in order with the contract. This is the main issue with consultants or clients when approving extension of time. Table 4.13 illustrate that in 50% of the EOT granted projects were granted within the contractual time period but 50% were not granted within the contractual time period.

Table 4.13: EOT grant within contractual time period

Description	Total	%
EOT granted within stipulated time	62	50%
EOT not granted within stipulated time	61	50%

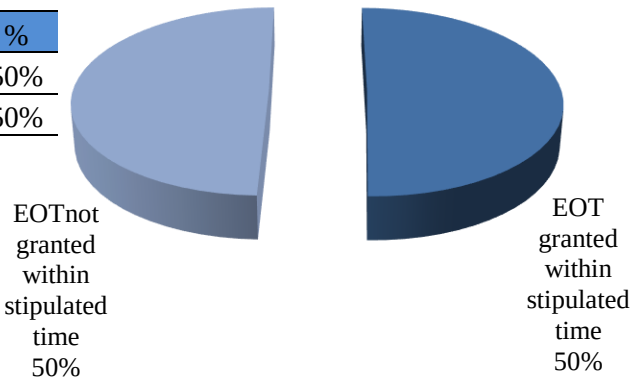


Figure 4.11: EOT grant within contractual time period

As illustrated in table 4.14, out of 155 delay projects in 64 (41%) were involved with disputes due to delay claims which are a high rate when comparing other disputes in construction industry of Sri Lanka. In order analyse the issue related to these disputes a further questions were asked and their responses are discussed further.

Table 4.14: Disputes due to delay claims

Description	Total	%
Disputes due to delay claims	64	41%
No disputes	84	54%
Prevented from responding	7	5%

Source: *Author*

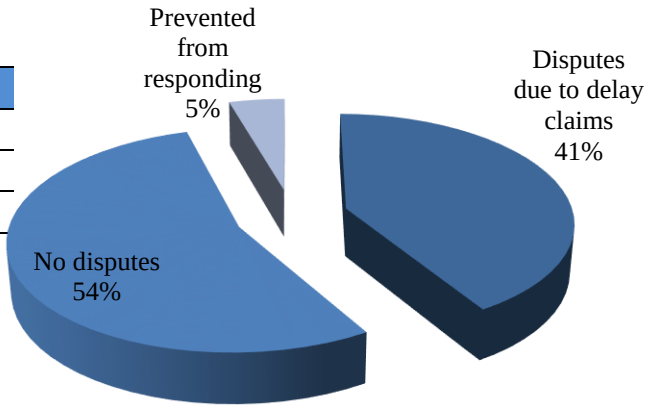


Figure 4.12: Disputes due to delay claims

Based on the data gathered from 62 respondents it was revealed that 38% of the projects completed by the respondents are large scale projects which had contract sum more than Rs. 1 Bn and others are minor contracts. Out of 218 projects 71% were delayed to complete due to many reasons. Surprisingly, 78% of the major projects were late in completion as indicated in Table 4.9. Out of 155 delayed projects in 94% were successfully requested for an extension of time as illustrated in Table 4.10. However, as shown in Table 4.11 only 83% of delayed projects were able to serve delay notice. In 79% projects contractor were able to get extension of time but in 50% occasions this extension was not granted within the time stipulated in the contract. Due to these circumstances in 41% delayed projects were ended with disputes due to delay claims.

4.5 Shortfalls in delay notification process

Data analysis discussed above clearly indicates a cause of disputes due to delay claims mainly due to delay in approval. During the interviews consultants / clients have raised many reasons which make them delay response to contractor's extension of time claims which are listed in Table 4.15. The main point raised by both the parties is lack of early warning notices from contractors which notifies any future delay event. Most of the contractor's raise delay notices once delay has commenced hence, there is only limited opportunity to minimize or

prevent the delay. Due to this reason consultants / clients delay to response to contractor's extension claims which then create disputes.

Table 4.15: Consultant's / Client's view on delay notices and claims

Consultants view	Client's view
Delay notices are not served within the time period	Lack of early warning notices prevent clients perform without delay
Delay notices are not with the required details about the delay event	Delay is requested only when delay has already happened
Extension of time requests are not analysed properly with the cause and effect	
Delay notices are merely severed via emails just requesting additional time	
Float is not analysed prior to sending delay notices	
Early warning notices are never raised by giving consultants / clients a fair amount of time to act	
Mostly contractors request for an extension of time at the end of the project when they realized that they cannot comply with the contractual completion date	

4.5.1 Contractor's perception on delay notices

Table 4.16 illustrates responses of contractors against their perception of the delay notices. As discussed in the literature review based on the analysis conducted by Chartered Institute of Building (CIOB) they found five main reasons of contractor's failure for delay notices as (1) that contractor consider himself that he can catch up the delay hence, preventing from notifying, (2) Contractor consider that he can blame someone else for the delay. (3) Contractor doesn't want to upset consultants, (4) Contractor doesn't want to upset client and (5) Contractor does not consider notices as contractual obligation. During the questionnaire contractors were questioned based on same findings of CIOB research to analyze the Sri Lankan perception on the matter, Graph 4.1 compare the findings.

Table 4.16: Reasons of shortfall of delay notices by contractors

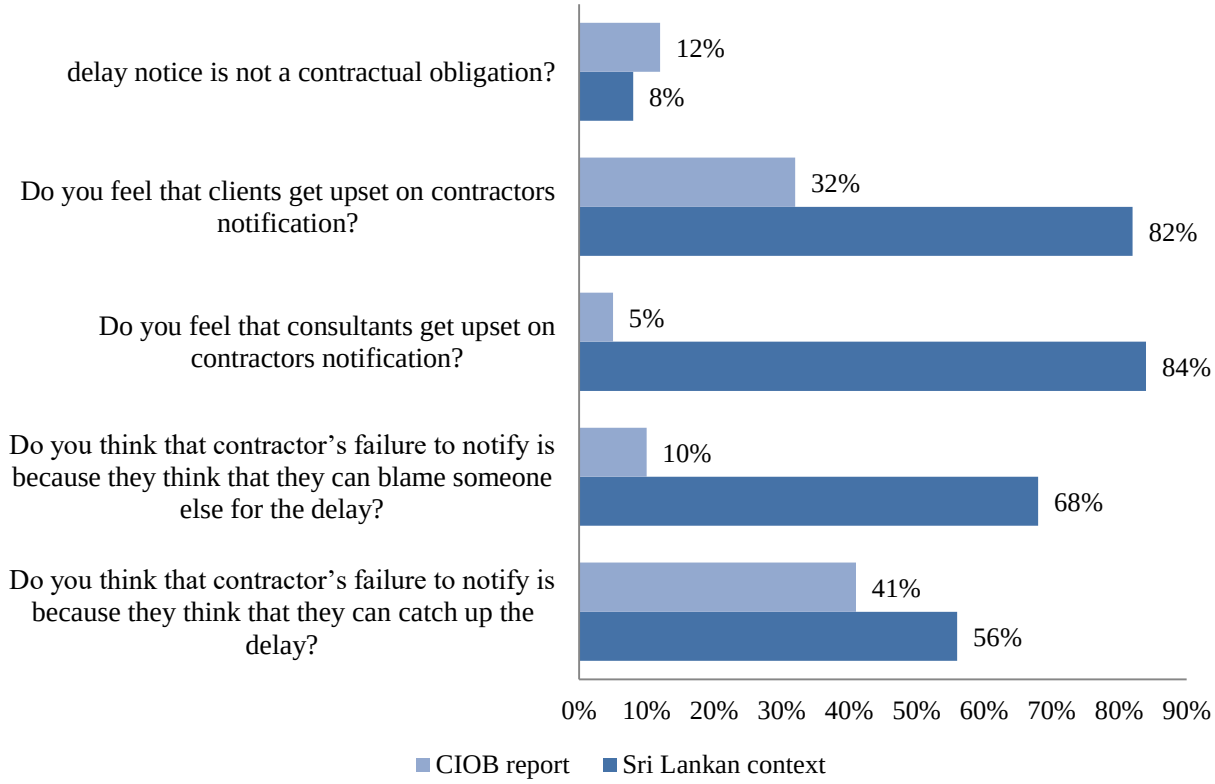
Description	Respondents	% out of 50
Higher management of your company encourages you to notify delays?	49 – Yes	98.00%
Do you believe delay notice as contractual obligation?	46 – Yes	92.00%
Do you feel that Sri Lankan consultants get upset on contractors notification?	42 – Yes	84.00%
Do you feel that Sri Lankan clients get upset on contractors notification?	41 – Yes	82.00%
If the contractor has notified a delay of the consultants, do you feel that, Contractors are penalized by the consultant when request for a test or drawing approval?	39 - Yes	78.00%
Do you think that contractor's failure to notify is because they think that they can blame someone else for the delay?	34 - Yes	68.00%
Do you think that contractor's failure to notify is because they think that they can catch up the delay?	28 - Yes	56.00%

Table 4.16 illustrate that from contractor's perspective they highly concern on (1) Higher management encouragement on delay notices, (2) Believe delay notices as a contractual obligation, (3) Consider that consultants get upset when delay is notified and (4) Consider that clients get upset when delay is notified. Further, they moderately consider that they are penalized by the consultants when a delay is notified. However, with low response rate they declined that no contractor prevented from notifying delay by assuming that they can catch-up the delay or to blame someone else. Further, Table 4.16 show 98% of the contractor's higher management encourages site management to notify any delays. But 78% of them are preventing form notifying purely assuming that they will be penalized by the consultants with other site approvals.

According to graph 4.1 it shows clear deviation from the CIOB report where in Sri Lankan context only 8% of the respondents consider delay notices as a none contractual obligation which is far low rating when comparing result shown in CIOB report. In the CIOB report only 32% of the respondents believe that clients get upset when notifying delays but in Sri Lankan context rating is 82% which is extraordinary when comparing CIOB report findings.

When CIOB report finds 5% of the respondents were believe that they upset clients by notifying delay, in Sri Lankan context it hit up to 84% which is again an extraordinary finding.

Graph 4.1: Comparison with CIOB report



Source: *Author based on CIOB report and data analysis*

Furthermore, 10% of the respondents to the CIOB research had confirmed that they prevent from notifying delay because that they think that they can blame someone else for the delay but in Sri Lankan context the rating is 68%. Finally, when 41% of CIOB respondents prevents from notifying by consider that they can catch up the delay, where in Sri Lankan context 56% of the respondents believe the same.

CIOB report is purely based on respondents from United Kingdom where the origin of most of the conditions of contracts. As per the findings in graph 4.1 shows clear deviation which in my view is due to difference in culture. FIDIC conditions of contracts are mainly based on English laws with English culture where all provisions in the conditions are intend to be for English countries. However, when applying same conditions in Asian or any other part of the

world shows some implications due to cultural differences. This is the main reason that indicate in graph 4.1 that majority of the Sri Lankan contractors believe they hurt consultants or clients when notifying delays where as in UK this is very less.

4.5.2 Consultants / Clients perception on delay notices (significant factors)

As per table 4.17, 33.33% of the respondents from none contractor background consider contractors notify delays unnecessarily to get extension without valid reason which in other way majority accept contractors delay notice as genuine request. Further, 75% of them encourage contractors to send early warning notices which in their view allow them to act fast to avoid potential delays. However, only 8.33% of respondents said that they get upset when contractors notify delays mainly with reference to consultants faults. This is completely opposite to the contractor's perception, as 84% of contractor's feel that they hurt consultants by notifying delays. With 58.33% rating consultants and clients accepts that they encourage contractors for delay notifications and also they accept that they failed to certify extension of time within the time stipulated in the contract.

As illustrated in table 4.3 only 11 respondents were provided their feedback on none contractor perspective which a low rate of respond to generalize the revealed facts. Moreover, based on the interviews it was revealed that consultants and clients are not exposed the truth as even they were hurt by the contractor's delay notices they prevented from exposing the fact due to cultural factors. Hence, low empathises on the findings from consultant and clients perception were considered when compiling this research.

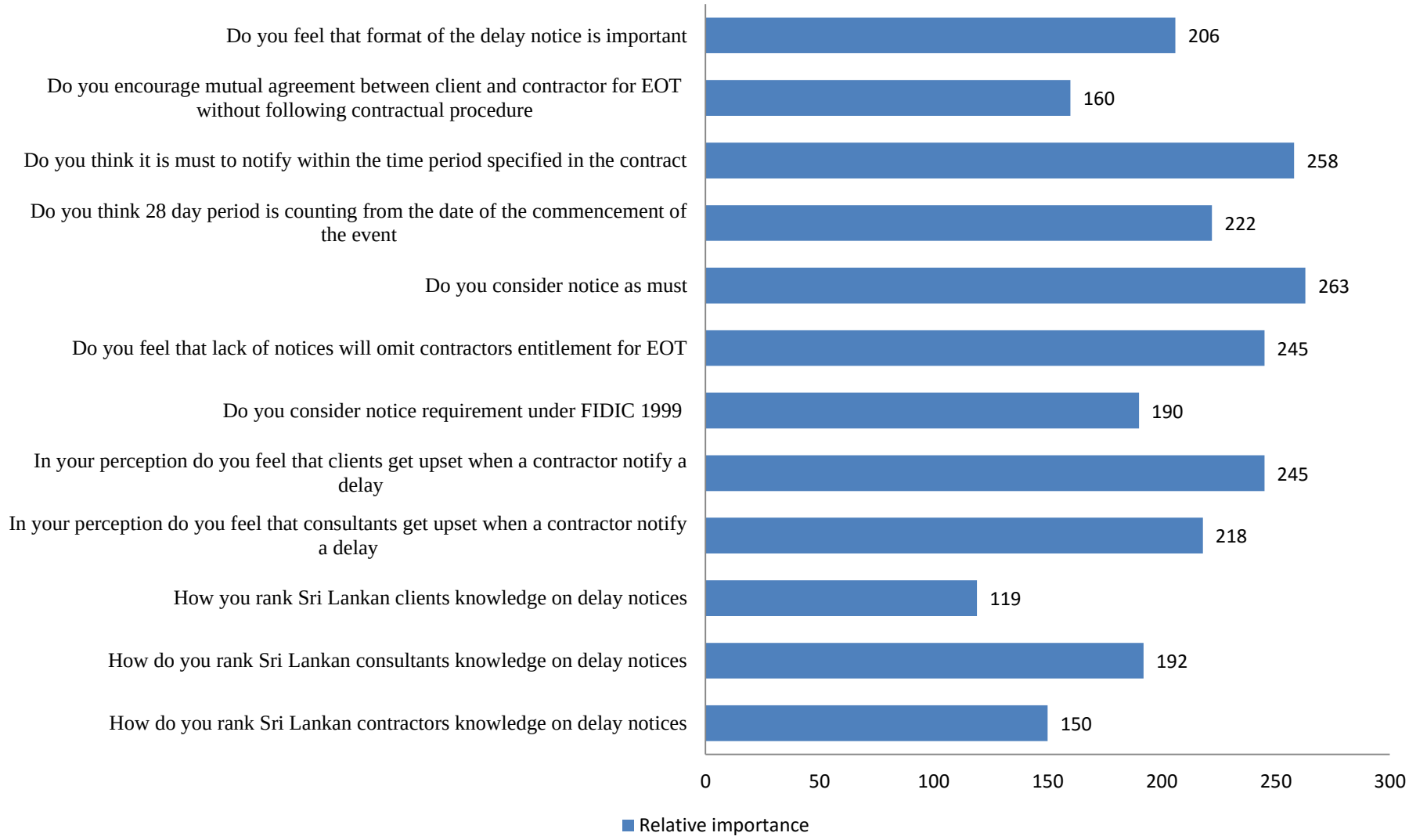
Table 4.17: Consultants and clients view on notices

Description	Respondents	%
Do you encourage early warning notices from the contractor?	9	75.00%
Do you encourage contractors to notify any delay events	7	58.33%
In your past projects, Once contractor notify any delay, have you certify EOT within the time stipulated in the contract	7	58.33%
Do you expect delay notifications from the contractors to mitigate any delay of your obligations under the contract	6	50.00%
In your previous projects, did you have any concerns of the format of the notice?	5	41.67%
Do you feel that Contractor notify delay unnecessarily to get claims?	4	33.33%
In your previous projects will you get upset when a contractor notify any delay	1	8.33%

4.5.3 Respondent's opinion on significant steps for improve delay notification process

According to graph 4.2 when comparing Sri Lankan contractor's knowledge on delay notices respondents valued 150/300 (50%) this is an average level where 300 is the maximum score based on the scores as per the questionnaire. During the interviews it was revealed that most of the top level contractors are more knowledgeable on construction delay and delay claims but most of the medium and small scale contractor's knowledge on delay claims is comparatively low. When comparing Sri Lankan consultant's knowledge it revealed that 192/300 (64%) this is comparatively at higher level than contractor's knowledge on delay claims and notices. However, client's knowledge on these aspects shows very less score which is 119/300 (39%). In overall view 218/300 (72%) of the respondents scored that they feel consultants get upset when a delay notice is served. And show further high score of 245/300 (81%) which feel that Sri Lankan clients get upset when a delay is notified.

Graph 4.2: Relative importance of delay notices



When considering contractual requirement FIDIC 1999 edition conditions of contracts score of 190/300 (63%) respondents said that the notice requirement in these conditions of contracts as complex. However, 245/300 (81%) respondents score that they understand lack of notices omits contractual entitlement for extension of time claims. And high score of 263/300 (87%) consider notices as must. Whereas score of 258/300 (86%) said it is must to notify delay within the time period mentioned in the conditions of contracts.

As illustrated in table 4.18 relative importance factors for a delay notice were questioned among respondents and identification of the event were ranked 1with RII = 0.90. Improve knowledge of consultants and clients were ranked 2 with RII = 0.89 and improve contractors knowledge were ranked 5 with RII =0.86. Knowledge wise it is imported to educate all stakeholders in construction industry in order to understand the real meaning of the notices.

As discussed in literature review entitlement to an extension of time clearly arises either when it is clear that there will be a delay (a prospective delay) or when the delay has at least started to be incurred (a retrospective delay). Further, Stewart (2014) concluded that notice does not have to be given until there is actually a delay. Contractor can give notices when it reasonably believes that his programme will be delayed, but according to the judgment *Obrascon Huarte Lain SA v Her Majesty's Attorney General for Gibraltar [2014] EWHC 1028 (TCC)* it is not required to do so.

Respondents ranked third position with RII score of 0.88 for the identification of delay due to delay events. Hence, in a delay notification system the most important aspect is to identify the event and the delay caused or commenced due to delay event.

Identification of the correct notify party were the fourth important factor with RII score of 0.87 as in line with FIDIC condition of contract notification should be served to Engineer to the contract in writing. During the interviews with experts most of them encouraged to copy all delay notices to employer as well to avoid any communication lags.

Time for notification, format of the notice and method of notification became rank six and seven with RII score of 0.83 and 0.79 respectively. Even though these factors became least in the ranking, most of the respondents score as "important" for all the factors hence, when

considering a delay notification system it is important to consider all these factors to avoid any possible lags in the notification process.

Table 4.18: Relative importance on significant factors to improve delay notification process

Description	Relative importance	Total score	RII	Rank
Identification of the event	279	310	0.90	1
Improve knowledge of the clients/ consultant staff	276	310	0.89	2
Identification of the delay due to the event identified in the above	272	310	0.88	3
Notify Party - to whom the notice is served	264	305	0.87	4
Method of the notification – i.e. electronic email, Minute of meeting, Verbal, Letter	244	310	0.79	7
Improve knowledge of the contractors staff	266	310	0.86	5
Time period – when to notify	253	305	0.83	6
Format of the notice whether clauses to be mentioned in the notice or not	245	310	0.79	7

As illustrated in table 2.5 there are many provisions in FIDIC conditions of contract relates to notices. In clause 1.9 and 16.1 contractor has to serve three notices to Engineer, failure of one notice may lead to disputes. Further, particularly in FIDIC 1999 notices are condition precedent hence, it is compulsory to serve notices within stipulated time period. During the interview many respondents have raised the concerns about the complexity of the notice provision in the FIDIC contract due to time period and number of notices. Table 4.19 illustrates the findings. Most of the respondents requested to treat minutes of meetings as a good notice with RII score of 0.72 and second highest RII score of 0.71 were recorded against copying all notices to clients. Third rank with RII score of 0.67 recommended removing notice provision from minor (Contract sum less than Rs. 100 million) contracts and to encourage mutual agreement for extension of time and related cost claims.

Table 4.19: concerns for notice provision in FIDIC

Description	Relative importance	Total score	RII	Rank
Allow minutes of meetings to constitute a valid notice	217	300	0.72	1
Make it compulsory to copy all the notices to client	217	305	0.71	2
Remove notice provision from minor contracts and encourage mutual agreement for EOT	202	300	0.67	3
Remove notice provision from all the clauses except for clause 20.1 (claims) – i.e. remain only 28day notice from the commencement of the delay relates to any clause of the contract	172	305	0.56	4
Make all notices condition precedence	162	300	0.54	5
Reduce time gap for notices	159	310	0.51	6

4.6 Improvements for current delay notification process

Most of the clients and consultants highly encourage for a early warning notices to mitigate or avoid any potential delays, Further they also moderately expect delay notices from contractor to identify any delay events or circumstances to avoid such delays. In contractors perspective they highly recognize delay notices as a contractual obligation and further higher management of contractors also encourage serving delay notices. However, there are four main factors which hinder delay notification process which then lead to disputes which contractors highly believe that they hurt consultants or clients when notifying delays and also complexity of the FIDIC conditions also cause series implications on delay notification process. Figure 4.13 indicates the summary of findings which should be considered for a proper delay notification process.

Figure 4.13: Framework for a better delay notification practice

Contractor's perspective	
Higher management encourages for delay notices	High
Understand notices as a contractual obligation	High
Feels that consultants get upset when notifying	High
Feels that clients get upset when notifying	High
Feels that consultants penalized on other approvals if delay notified	Moderate
Thinks that they can blame someone for the delay	Low
Think that they can catch-up the delay	Low

Delay notices

Factors hindering delay notices	
Contractors believe that client's get upset when delay is notified	High
Contractors believe that consultant's get upset when delay is notified	High
Contractors feel that consultant's penalize them with other approvals when delay is notified	High
notice requirement under FIDIC 1999 are complex	High

Consultant's/ client's perspective	
Encourages early warning notices from contractor	High
Expect notices from contractor to mitigate delays of consultants and clients	Moderate
Encourages for delay notices	Moderate
Feels that contractor's notify unnecessarily	Low
Get upset when contractor notify delay	Low

In the consultants perception they encourage delay notifications from the contractors for them to prevent project delay. On the other hand contractors prevent from notifying assuming that they hurt consultants and clients by notifying. Meanwhile complex contractual provisions and cultural aspects of Sri Lankan contractors hinder the delay notification process. In order to overcome this situation it is important to address all these lags.

Based on the literature reviews and the findings from the expert interviews and questionnaire, requirements of a proper delay notification model is recognized which should be simple and addressable to all notice requirement in line with FIDIC conditions of contracts. This can be summarized by the figure 4.14. Identification of the event and identification of the delay due to the event are the most important factors for a good delay notice. In order to do this first it is important to identify information sources in which an event become aware to the contractor. As discussed in the chapter two, there are mainly two types of changes which impact to contractors to disrupt progress at site and those are (1) Actual changes and (2) constructive changes. Actual changes are the changes that are either initiated by consultants, clients or by contractor itself. Normally an instruction from Engineer or by client will communicate to the contractor by one of the means described in table 4.20,

Table 4.20: Means of instructions

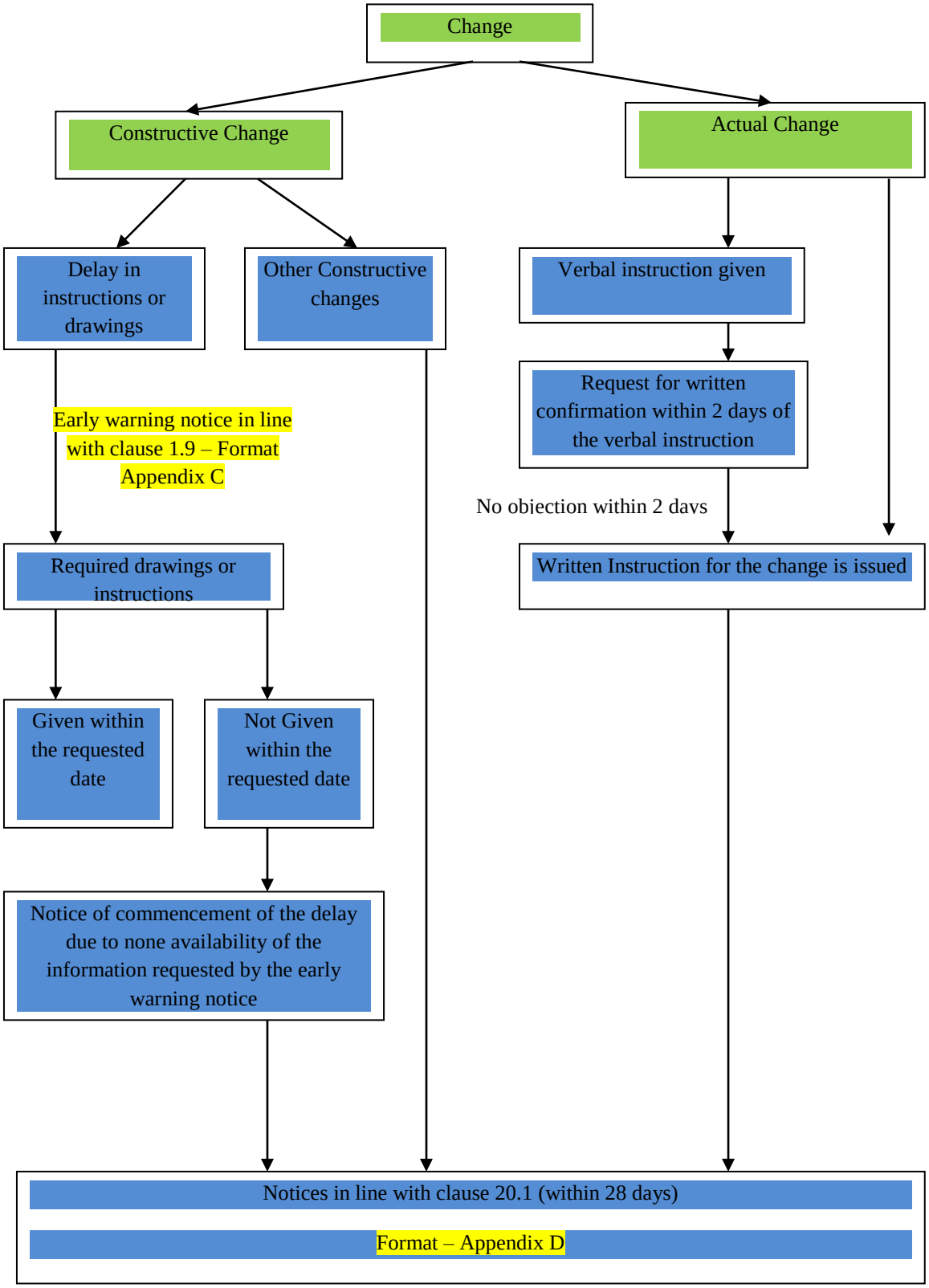
Change instruction	Awareness of the event
Written instruction	Date of the instruction received by the contractor
Verbal instruction	Date of the instruction verbally given, however, it is advisable to record the verbal instruction by CVI (Confirmation of the verbal instruction)
Revised drawing	Date of the drawing received by the contractor
As a response to RFC (Request for clarification)	Date of the responded RFC received by the contractor
As a response to RFI (Request for a inspection)	Date of the responded RFI received by the contractor

Source: *Author*

Once notice requirement is identified then it is important to understand format of the delay notice. With respect to format it can be recommended to have a fixed printed format developed by the contractor which suit to the condition of contract. Project planning engineer, quantity survey or project manager can serve the notice without much hesitation once the change instruction is received. This recommended format is annexed as Annex C (Early warning notice) and Annex D (Delay notice)

Awareness of the delay become next important factor prior to notification, this is due to the time bar in the clause 20.1. Based on the recent case of *Obrascon Huarte Lain SA v Her Majesty's Attorney General for Gibraltar [2014] EWHC 1028 (TCC)*. Notice can be served once the delay commenced and not the date of the information received. Hence it is required to analyze the base line programme to see the impact. For this reason a properly linked master programme is required and the delay can be calculated by entering the delay event to the programme. However, to prevent any disputes one can serve delay notifications within 28 days from the receipt of the information which leads to delays so, this will definitely help contractors to avoid any complex delay analysis prior to delay notifications.

Figure 4.14: Notification Model



4.7 Summary

This chapter of the research was mainly intended to analyse the data which was gathered during the data collection. The aim of the research was to identify the lags in delay notification process which leads to disputes and also to introduce proper delay notification process for future use in Sri Lankan construction industry. During the literature survey five main causes were identified which hindering delay notifications and also contractual requirements and their advantages and disadvantages are also discussed. Questionnaire and interviews were mainly used to gather data as results 42 online respondents and 20 interview respondents were involve with the research.

Based on the given responses it was revealed that 71% of Sri Lankan construction projects which were completed during last 10 years were impacted with delay. Despite the scale of the project delay has mainly impacted on all scales without much variance. In 94% of the delayed projects contractors has requested for an extension of time but only 83% of the delayed projects were managed to serve delay notices, however, most of the delay notices were given after the time bar and some of them are not in accordance with the contract specially the format. Due to this circumstance only 79% of the delayed projects were given an extension of time but 50% of the instances the extension was not granted within the time period allowed in the contract. Due to these lags 41% of the delayed projects were faced with disputes mainly due to delays.

Remarkable results were revealed with respect to the causes which hinder delay notification process where 82% to 84% of the respondents prevent form notifying because they think they hurt clients or consultants. With reference to findings of CIOB in Europe this percentages were below 32%. Later part of the chapter four discusses the findings with regards to the improvements for delay notification process.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

Project delay, claims, disputes, adjudication and arbitration due to delay disputes become common for most of the construction project in Sri Lanka due to none completion of projects within the contract period. According the report published by ARCADIS, "Global Construction Disputes 2014" value of disputes in Asia were ranked as highest hitting an average of US$41.9 million in 2013. Failure to make interim awards on extensions of time with compensation was top ranked reason for causing disputes. In Sri Lankan context, Jeyakanthan and Jayawardane (2010) stated that during the execution stage on average, 69% of the project delays were experienced. These results revealed that, variation/ extra work had significantly affected the projects contributing 56% of the total delays. The root cause for this particular delay was due to the design omissions, design errors and inadequate feasibility studies.

Depending on conditions of contract delay notifications become paramount important when claiming for an extension of time mainly due to excusable and compensable delay events. Failure of proper delay notification omits contractor's genuine entitlement for an extension of time and for claim of cost. Hence, this study mainly involve with delay notifications in Sri Lankan construction industry with the objectives of understanding its present status and to identify possible improvements for future use.

Chapter one of this report includes the background of the study, problem statement, aim, objectives, summary of the research methodology and chapter break down. Chapter two describes the literature review of the subject. Although substantial amount of publications on this subject is available from other countries, only few publications are available regarding Sri Lankan context. Both quantitative and qualitative methodologies were used in this study and comprehensive account on research methodology is described in the chapter three of the report. The chapter four is to explain the findings of the research and the conclusions and recommendations along with future studies are given in chapter five.

The first objective of this study was to review the use of delay notices when analysing construction delays. This objective mainly achieved based on a comprehensive literature review and preliminary interviews with experts on the industry. Delay notices are mainly used to do the cause and affect analysis to identify the owner of the delay event which then linked to award of an extension of time or to impose liquidated damages. Delay notices by the contractors were the main important requirement to initiate the delay claim procedure and this requirement is included in conditions of contracts depending on the form used.

Second objective was to identify contract provisions, legal requirement in delay notifications. For these tasks only FIDIC conditions of contracts 1999 edition was considered due to limitations and time constrains. According to these conditions three different types of notices were identified which to be served by the contractors. those are (1) early warning notices; which issued to Engineer to the contract providing early warning of potential delay event with respect to delay of drawings or instructions by the Engineer. (2) Delay notice with respect to several clauses of the conditions of contract, this notice is linked to the early warning notice where contractor has to notify the commencement of the delay due to the drawings or instructions which were notified to the Engineer under the early warning notices. (3) Delay notice with respect to clause 20.1 of the FIDIC conditions of contract; under this notice contractors express his intention for an extension of time and/ or cost with respect to the delay even.

Under FIDIC 1999 edition notices requirement under clause 20.1 made condition precedent where contractor clearly lose his entitlement for an extension of time or cost if he prevented from notifying. Furthermore, there is debate about the notice period whether 28 day period according to FIDIC 1999 is commenced from the date of event which leads to the project delay or the date of when the delay commenced due to this delay event. This was decided in case of *Obrascon Huarte Lain SA v Her Majesty's Attorney General for Gibraltar [2014] EWHC 1028 (TCC).* In this judgment, the judge stated that the entitlement to an extension of time clearly arises either when it is clear that there will be a delay or when the delay has at least started to be incurred. Further, judge concluded that notice does not have to be given until there is actually a delay.

Third objective of this study was to identify shortfall in delay notification process in construction projects. This objective were tested in the questionnaire and based on the given responses it was revealed that 71% of Sri Lankan construction projects which were completed during last 10 years were impacted with delay. In 94% instances contractors has successfully requested for an extension of time but only 83% of the delay projects were managed to serve delay notices. However, most of the delay notices served by the contractors was not in lined with the conditions but mere notifications, some are not served within the 28 day period and early warning notice were not mostly served. Due to this circumstance only 79% of the delay projects contractors were given extension of time but 50% of the instances the extension was not granted within the time period allowed in the contract. Due to these circumstances 41% of the delay projects faced with disputes mainly due to delay claims.

Fourth objective of the project was to identify the significant steps for improve delay notification process in construction projects. There was no much research done on the subject notices. However, Between December, 2007 and January, 2008, the Chartered Institute of Building (CIOB) conducted an analysis of the construction industry's knowledge and experience of different methods of project control, time management, record keeping, monitoring and training. The finding under notices of this report was breakthrough. This analysis was conducted in five different aspects of the notices and reasons for not promptly notifying delay to progress were one of the main objective. With respect to the reasons of not promptly notifying delays indicates that 41% of the respondents was not notified delay because they assumed that they will be able to 'catch up' the delay. 10% not notified by assuming that they can blame another party for the delay. In 12% of cases, delay was not notified because the conditions of contract have no provision for delay notifications. 32% failed to notify the delay because they didn't want to upset the client and 5% didn't want to upset the contract administrator.

These aspects were tested in the questionnaire in Sri Lankan context under this research and it shows clear deviation from the CIOB results, where in only 8% of the respondents consider delay notices as a none contractual obligation which is far low rating when comparing result shown in CIOB report which is12%. In the CIOB report only 32% of the respondents believe that clients get upset when notifying delays but in Sri Lankan context rating is 82% which is extraordinary when comparing CIOB report findings. When CIOB report finds 5% of the respondents were believe that they upset clients by notifying delay, in Sri Lankan context it

hit up to 84% which is again an extraordinary finding. 10% of the respondents to the CIOB research had confirmed that they prevent from notifying delay because that they think that they can blame someone else for the delay but in Sri Lankan context the rating is 68%. Finally, when 41% of CIOB respondents prevents from notifying by consider that they can catch up the delay, where in Sri Lankan context 56% of the respondents believe the same.

CIOB report is purely based on respondents from United Kingdom where the origin of most of the conditions of contracts. This considerable deviation is due to difference in culture. FIDIC conditions of contracts are mainly based on English laws with English culture where all provisions in the conditions are intend to be for English countries. When applying the same conditions in Asian region or any other part of the world shows some implications due to the cultural differences. This is the main reason that indicate that majority of the Sri Lankan contractors believe they hurt consultants or clients when notifying delays where as in UK this is very less.

The fifth and final objective of this study was to recommend for improvements for the current delay notification process in Sri Lankan construction projects. Based on the responses received for the questionnaire most of the clients and consultants highly encourage for a early warning notices to mitigate or avoid any potential delays, Further they also moderately expect delay notices from contractor to identify any delay events or circumstances to avoid such delays. In contractors perspective they highly recognize delay notices as a contractual obligation and further higher management of contractors also encourage serving delay notices. However, there are four main factors which hinder delay notification process which then lead to disputes which contractors highly believe that they hurt consultants or clients when notifying delays and also complexity of the FIDIC conditions also cause series implications on delay notification process. Most of the respondents requested to treat minutes of meetings as a good notice with RII score of 0.72 and second highest RII score of 0.71 were recorded against copying all notices to clients. Third rank with RII score of 0.67 recommended removing notice provision from minor contracts and to encourage mutual agreement for extension of time and related cost claims. Based on these findings a delay notification model is proposed to be adopted by Sri Lankan contractors.

5.2 Recommendations

Further to the improvements discussed in chapter four, followings recommendations can also be given in order to improve the current delay notification process of Sri Lankan contractors.

1. Remove delay notice provision from all the clauses except for clause 20.1 (claims) – i.e. remain only 28 day notice from the commencement of the delay relates to any clause of the contract. Early warning notice remains the same.
2. Remove notice provision from minor contracts and encourage mutual agreement for EOT.
3. Allow minutes of meetings to constitute a valid notice.
4. Increase time gap for notices - approximately i.e. 6 weeks.
5. Make notices none condition precedent (Already done in ICTAD/ SBD 2).
6. Educate contractor, consultants and employer to change their perception and encourage for notices.

5.3 Further Studies

This study was limited to identify the most appropriate delay notification process to minimize disputes of delay claims in construction projects in Sri Lanka with respect to FIDIC 1999 edition. Therefore further studies can be conducted to identify delay notification processers of other forms of contracts. Notification is one of the aspects to avoid disputes but further, delay analysis, calculation of the cost or time are also are factors which lead to disputes with respect to the delay claims hence, it can also be further researched.

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APPENDIX A: INTERVIEW GUIDE FOR PRELIMINARY INTERVIEWS

PERSONAL INFORMATION

a. Name of the Company: ……
b. Name of the Interviewer: ……
c. Designation: ……
d. Experience: ……
e. Date: ……

GENERAL INTRODUCTION

A). Research Title

Dispute avoidance of delay claims by improving delay notification process of contractors of Sri Lanka

B). Research Objectives

f) Review contractual procedures used to analyse construction delays.
g) Identify contract provisions, legal requirement in delay notifications
h) Identify the problems due to delay notification in construction projects
i) Identify the causes of problems due to delay notifications in construction projects
j) To develop a framework to improve the process of delay notifications in construction projects

C). Interview Questions

Q.1. under FIDIC 1999 conditions of contract delays has to be notified within the stipulated time period, otherwise contractors will lose his entitled for an Extension of time or Cost. Following questions were intended to be discussed during the interview process,

01. Clauses which are frequently used to request for an extension of time

02. Notice practice relevant to each clause giving entitlement for an EOT

03. Effective date of the Time bar

04. Improvements for the delay notification process

Q.2. the following criteria were identified as important in selecting proper delay notification system. Would you like to suggest any other criteria which are important for the same?

1. Identification of the event
2. Identification of the delay due to the event identified in the above
3. Method of the notification – i.e. electronic email, Minute of meeting, Verbal, Letter
4. Notify Party
5. Format of the notice whether clauses to be mentioned in the notice
6. Time period – when to notify
7. How many notices

Q.3. what were the problems you have faced by following the notices provisions in FIDIC 1999.

APPENDIX B: DETAILED QUESTIONNAIRE

Dispute avoidance of delay claims by improving delay notification process of contractors of Sri Lanka

Dear Sir / Madam,

Dissertation – M.Sc in Construction Law and Dispute Resolution

I am following a M.Sc. course on Construction Law and Dispute Resolution at the Department of Building Economics at University of Moratuwa. In order to fulfil the requirements of this degree program, I am required to undertake a research and produce a dissertation. The topic I have chosen is "**Dispute avoidance of delay claims by improving delay notification process of contractors of Sri Lanka"**

I would be grateful if you could complete the attached questionnaire within your busy work schedule. **The information provided by you will be treated with strict confidence, it will be used only for the purpose of fulfilling requirement for module dissertation in the above course and there would not be specific references to any individual or an organization.**

Thank you.

Yours faithfully,

P.J.A. Goonawardana
M.Sc. Student
Department of Building Economics
Telephone: 0779559812
Email: jeromepicasso@gmail.com

Supervisor
Ch. QS (Mrs) B.A.K.S. Perera
Senior Lecturer
Department of Building Economics
Faculty of Architecture
University of Moratuwa

This information given by you will be used only for the academic purposes.

Please marks “X” to your answer.

1. **Which of the followings best describe your present employment**

a. Employer ☐ b. Consultant ☐ c. Contractor ☐ d. Freelance ☐

2. **Number of experience in years** ☐

3. **What is your current Designation,**

Director ☐ Planning Engineer ☐

GM ☐ QS/ Cost Engineer ☐

PM ☐ Contract Administrator / Manager ☐ Architect ☐

Engineer ☐ Commercial Manager ☐ Other ☐

4. **Details of the projects which you have involved in during last 10 years**

project	Contract value (SL Rs. Mn)	Whether the project delayed		Did contractor requested for EOT		Did Contractor served sufficient notices		Was EOT granted		Was EOT granted within the stipulated time period		Any disputes due to EOT	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
P1													
P2													
P3													
P4													
P5													
P6													
P7													

Delay notifications practice

5. If you are working for a contractor, please answer for following question. If not please leave

Reasons for lack of notices by the contractor	Your answer	
	Yes	No
Do you think that contractor's failure to notify is because they think that they can catch up the delay?		
Do you think that contractor's failure to notify is because they think that they can blame someone else for the delay?		
Do you feel that Sri Lankan consultants get upset on contractors notification?		
Do you feel that Sri Lankan clients get upset on contractors notification?		
If the contractor has notified a delay of the consultants, do you feel that, Contractors are penalized by the consultant when request for a test or drawing approval?		
Higher management of your company encourages you to notify delays?		
Do you believe delay notice as contractual obligation?		

6. If you are not working for contractor, please answer for following question.

What is your perception on delay notifications by the contractor	Your answer	
	Yes	No
Do you feel that Contractor notify delay unnecessarily to get claims?		
Do you expect delay notifications from the contractors to mitigate any delay of your obligations under the contract		
Do you encourage contractors to notify any delay events		
In your past projects, Once contractor notify any delay, have you certify EOT within the time stipulated in the contract		
In your previous projects will you get upset when a contractor notify any delay		
In your previous projects, did you have any concerns of the format of the notice?		
Do you encourage early warning notices from the contractor?		

7. Please rank followings as per your opinion

1- Low 3 – Average 5 - High

Criteria	Relative importance				
	1	2	3	4	5
How do you rank Sri Lankan contractors knowledge on delay notices					
How do you rank Sri Lankan consultants knowledge on delay notices					
How you rank Sri Lankan clients knowledge on delay notices					
In your perception do you feel that consultants get upset when a contractor notify a delay					
In your perception do you feel that clients get upset when a contractor notify a delay					
Do you consider notice requirement under FIDIC 1999 as complex					
Do you feel that lack of notices will omit contractors entitlement for EOT					
Do you consider notice as must					
Do you think 28 day period is counting from the date of the commencement of the event					
Do you think it is must to notify within the time period specified in the contract					
Do you encourage mutual agreement between client and contractor for EOT without following contractual procedure					
Do you feel that format of the delay notice is important					

8. How you rank the importance of the following criteria when creating a delay notification system

Criteria	Relative importance				
	1	2	3	4	5
Identification of the event					
Identification of the delay due to the event identified in the above					
Method of the notification – i.e. electronic email, Minute of meeting, Verbal, Letter					
Notify Party - to whom the notice is served					
Format of the notice whether clauses to be mentioned in the notice or not					
Time period – when to notify					
Improve knowledge of the contractors staff					
Improve knowledge of the clients/ consultant staff					

9. If you were asked to amend notice provision in FIDIC 1999 what you propose?

Criteria	Relative importance				
	1	2	3	4	5
Reduce time gap for notices					
Make all notices condition precedence					
Make it compulsory to copy all the notices to client					
Allow minutes of meetings to constitute a valid notice					
Remove notice provision from minor contracts and encourage mutual agreement for EOT					
Remove notice provision from all the clauses except for clause 20.1 (claims) – i.e. remain only 28day notice from the commencement of the delay relates to any clause of the contract					

APPENDIX C: Early warning notice format

Early Warning Notice

Notified to – Engineers name and the address

Copy to - Employers name and the address

Notifying party – Contractors name and the address

Our reference – EWN/01

Date of the notice – 19th February, 2017

Dear Sir,

In compliance with sub clause 1.9 and 8.4 of the General Conditions of Contract, we hereby notify you of the following circumstances that, in our opinion, could potentially result in a delay to the time for completion of the works,

Description of the Drawing or the Instruction required	Required date to prevent any Delays to the Project Completion date	Nature of the Delay or Disruption in the event these details are not available

This also serves as notification in terms of clause 20.1 that any resultant delay occurred due to delay of the information requested above could result in us requiring extension of time and reimbursement for additional time related costs incurred with reasonable profit. We request that necessary action be taken to issue requested details in order to avoid or mitigate any delays.

Singed by the contractor

APPENDIX D: Delay notice format

Delay Notice

Notified to – Engineers name and the address

Copy to - Employers name and the address

Notifying party – Contractors name and the address

Our reference – DN/01

Date of the notice – 19th February, 2017

Dear Sir,

Due to following circumstances it has become apparent that delaying our work and we therefore give notice of commencement of delay and additional cost pursuant to Clause 20.1 [Contractor's Claim] of the conditions of contract.

Description of the Drawing or the Instruction required	Required date to prevent any Delays to the Project Completion date	Nature of the Delay or Disruption in the event these details are not available

It is considered that an extension of time also is required and we therefore give notice of our request for this pursuant to Clause 8.4 [Extension of Time for Completion] of the Conditions of Contract. We shall in support of the above keep contemporary records as may reasonably be necessary to support our claims pursuant to Clause 20.1 of the Conditions of Contract.

Singed by the contractor