The Role of Risk Allocation in Minimizing Disputes in Construction Contracts

دور توزيع المخاطر في تقليل المنازعات في عقود المقاولات

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Abstract

An increase in the litigation cases resulting from the outbreak of mismanagement in construction contracts has prompted the need to examine the cause of disputes in construction projects. This research study delved into this issue by examining the role of risk allocation to minimize disputes in construction contracts via litigated cases that are analyzed using the concept of transaction cost economics theory. By so doing, the researcher sourced for three related cases from different legal portal archives and examined the causes that led to the case being a litigation case. The three litigation cases were examined using qualitative content analysis methodology. The analysis led to the three tier categories that were identified as the causes of disputes in the cases. The clients related causes involved the approach to project management, communication problems, errors in design, and contracting details, while contractors related causes included contracting details, approach to project management, development of bid, and communication problems. Subsequently, the risks across the cases were identified as concurrent delay and differing site conditions.

The findings of the litigation cases were used to consolidate the proposition of the study. In this study, the contractors were seen to be held responsible for most of the risks within the project contract, which was as a result of misinterpretation/misrepresentation of contract agreement, acting on an implied contract and promises. It was concluded that the construction contracts can serve as a medium through which the contractual parties can co-exist and operate within a cooperative environment. Thereafter, recommendations were proffered on the need to properly allocate project risk accordingly to the party that can best handle the risk with the lowest transaction cost involvement.

Keywords: Risk Allocation, Transaction Cost Economics, Construction Contracts

ملخص البحث:

دفعت الزيادة في حالات التقاضي الناتجة عن سوء الإدارة في عقود المقاولات الحاجة لدراسة أسباب النزاعات في هذه المشاريع.
هذا البحث يناقش هذه المسألة وذلك من خلال دراسة توزيع المخاطر للحد من النزاعات في عقود المقاولات عبر حالات التقاضي التي تم تحليلها باستخدام مفهوم نظرية الاقتصاد في التكاليف.

وفي هذا الإطار، استخدم الباحث عدد ثلاث حالات قانونية لها علاقة بموضوع البحث حيث تمت دراسة الأسباب التي أدت إلى حالات التقاضي في هذه الحالات.
استخدام الباحث طريقة تحليل المحتوى النوعي لاختبار هذه الحالات ومن خلال نتائج التحليل اتضح بأن هناك ثلاثة عوامل تم اعتبارها هي أسباب النزاعات في هذه الحالات.

يتبين أن الأسباب التي لها علاقة بالملاك أو العملاء تتعلق بمنهج إدارة المشروع، مشاكل الاتصالات، أخطاء في التصميم، تفاصيل العقود، في حين الأسباب التي لها علاقة بالمقاولين تتمثل في تفاصيل العقد، منهج إدارة المشروع، تطور مراحل العطاء، مشاكل الاتصالات، بعد ذلك تم تحديد المخاطر من خلال التأخير المتزامن واختلاف ظروف الموقع.
تم استخدام نتائج حالات التقاضي لتعزيز مقترح الدراسة، ينظر للمقاولين في هذه الدراسة بأنهم هم المسؤولين عن معظم المخاطر في عقود المشاريع وذلك نتيجة لسوء تفسير / تحريف الاتفاق العقد وذلك بناءً على عقود ضمنية ووعود.

خلصت نتائج البحث أن عقود المقاولات يمكن أن تكون بمثابة وسيلة لكافة الأطراف المتعاقدة يمكن من خلالها التعايش والعمل ضمن بيئة تعاونية. وفي نهاية البحث تمت التوصية بشأن الحاجة إلى تخصيص أو توزيع صحيح للمخاطر في المشروع وفقاً لصالح الطرف الذي يستطيع التعامل الجيد معه وبأقل التكاليف.

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I would like to appreciate Professor Paul Gardiner for accepting me into the project management master programme and for his diversity in the method of teaching. My sincere appreciation goes to Professor Muhammad Dulaimi for instilling in me the depth of knowledge I gained in the course of the master programme. I really appreciate my supervisor and personal tutor, Dr Arun Bajracharya for his guidance, tutoring and the research understanding I gained from him. Also, I appreciate the entire staff of The British University in Dubai for making my stay a fruitful one. To this end, I wish to mention Professor Bassam Abu-Hijleh for his support and kindness during my study years.

Dedication

I dedicate this research work to my beloved ones who stood by me in times of difficulties. First of all, I would appreciate my mother who continues to pray to see me become a better person in life and to my wife for her patient and support. Secondly, to my lovely kids, Sofiyyah and Salma for bearing during the time they needed me most. Lastly, to my elder ones, friends and to my late dad who departed at the tail of my master programme. I pray Allah grants him eternal bliss.

Abbreviations

SCC – Supreme Court of Canada

Ex. Ct. – Exchequer Court of Canada

Rev'g – Reversing the decision

SUP – Site Utilization Plan

EFS – Engineering Feasibility Study

DOS – Department of State

OBO – Office of Building Operations

SED – Standard Embassy Operations

COR – Contractor's Officer Representative

ASBCA – Armed Services Board of Contract Appeals

IFB – Invitation For Bids

YBBA – Yellow Banks Borrow Area

MSL – Mean Sea Level

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Chapter 1.0 Introduction

1.1 Background to the study

The construction industry has been a fundamental industrial sector in the development of any nation economically. The benefit of this sector mostly serves the basic need of the people living

within such environs, and advantages could range from benefits of physical development of construction projects (i.e. roads, hospital, bridges, and infrastructures) to underground water, oil and gas construction works. It is in this regards that factors that could bring about its delay, quality of work, unduly termination of project and the like needs to be address or looked into.

In this research work, the area of focus lies in the role of risk allocation to minimize disputes in construction contracts. First of all, the term 'construction' is a complex sequence of activities needed to deliver clearly defined objectives (Cheung et al., 2000). In addition to this complexity of construction projects, achieving a success in the construction projects where mutual understanding co-exit even after it completion is in itself complex (Toor and Ogunlana, 2010). A long time issue and of great concern in this present age is the challenge between parties involve in construction project to see the completion of construction work been deliver in the most desirable state (Doloi, 2009). Construction project often encounters risk at certain stages of construction work due to different types of reasons; diversity in the goal of the contracting parties, challenges experienced in technology, and unexpected challenges encountered during execution of construction work has been a concerning issues. In order to circumvent the risk in construction projects, a risk-averse party tends to push its responsibility in an improper way to either party during contractual dealings. Thus, an improper allocated risk in contractual agreement has been a major cause of disputes in the United States (Megens 1997: Smith 1995), and this same trend is being experienced globally. According to the report by EC Harris (2013) reported a longer disputes resolution taking place in the global construction dispute over the previous years has been on the increase, a situation attributed majorly to contract administration borne out of the fact that risk are not allocated proper. Risk has defined in Merriam Webster, Inc.'s (1997) dictionary is the possible loss to either parties involve in a contractual agreement or anything that creates or implies a possible hazard, which is encounter in reality by every commercial party on a regular basis. It is however acknowledge in this research work that there is negative and positive risk that comes in form of either a threat or an opportunity, but risk as consider in this research work will focus on threat that the parties needed to bear the burden in the course of an emergent of legal issues taken place between contracting parties in construction contracts. Some basic identified cause of disputes have been linked to lack of training and understanding in apportioning risk in construction contracts has encourage receiving ends in contracts to continue their risk-averse attitudes. This is usually experienced when the lowest bid

is saddle with the risk of project inappropriately. According to Swanson (2006) states that an inappropriate risk is said to be a misallocated risk and it is a practice of not considering the party that is capable of optimizing, evaluating, controlling, handle its cost, or perhaps benefits from assuming a risk. Unfortunately, a widely spread practice in the construction industry have taken it an obligation only to transfer risk to avert it danger and unfavorable consequence in the presence of its occurrence, a fact known to the owner of the project but this is usually avoided by competent contractors, thus, allowing the lowest bidder parties to assume such risk in a contracting agreement (Jergeas and Hartman, 1996). The result of such construction project is usually not far-fetched as in most cases ended up being a litigation issues. The research study is evaluated from the point of litigation cases in North America (i.e. US and Canada) and set out to examine the role of risk allocation to minimize dispute in construction contracts. North America construction industry as at 2005 as documented in the fundamentals of construction contracts by (Bryan, 2005) is such that it is full of inherent conflict between the major construction project participants such as the owner, main contractor, and the design professionals. An age-old conflict in the North America is a fact known to major construction player that has played a part in the process over years back. Construction as it used to be years ago is likely to be the same in this present age regardless of the level of technological advancement, scheduling potentials, professionally prepared claims approach, extent of materials testing, modeling or computer simulation ability the world has become of today, the human psychological way of reasoning remains the same, and thus, factors resulting to dispute in years back in construction project still has its major stakes in the present age. Due to ever increasing level of conflicts and disputes in the construction process, it possible to assume whether it could ever be resolve or addressed. Candid enough, this research study look at the possible ways by which contracting parties could avert this situation in construction process via the need to embrace the irresistible knowledge, flexibility, creative and mutual understanding of fashioning ways of handling construction relationship in a more cordial manner to avoid the likelihood of conflict and dispute in construction process through proper risk allocation. An early risk allocation algorithm in construction contracts was proposed by (Barnes, 1983). Barnes consider looking at risk from all possible angles including low probability risk and high probability risk if risk allocation is to be consider fully. In a further explanation, total amount of risk is important as the underestimation of high probability risk will definitely increase the labor output to a project which is significantly

proportional to performance, cost, and time of the construction work. He acclaimed that probability distribution as shown in Figure 1 would be a best form of data in measuring risks.

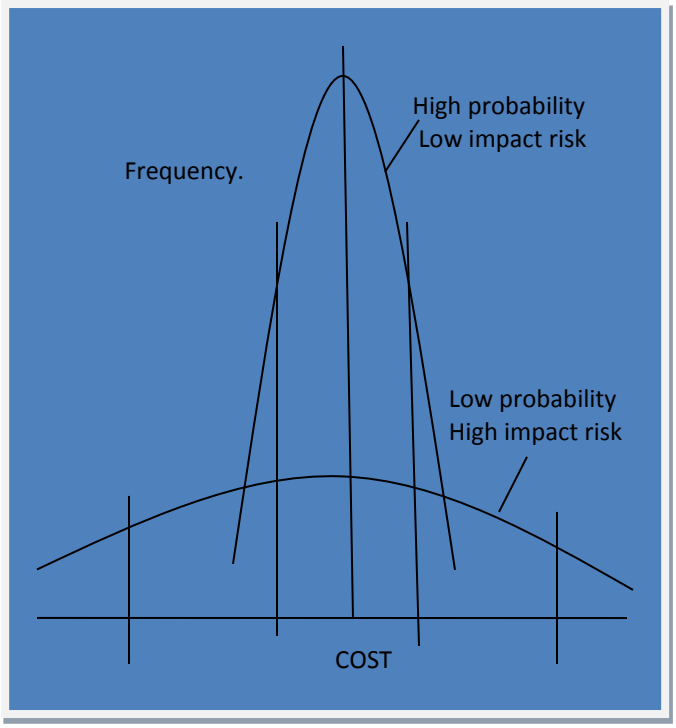


Figure 1- High and low probability risks (Barnes 1983)

According to Barnes (1983) express those risks which are related can be sum up if the risks are expressed on the same basis. The estimate of cost for each figure could have a probability of being wrong. It was later express that the cost estimate has three main components as shown in Table 1 and that the standard deviation is not the summation of the components. Porter (1981) stress that the collection of numerous risks with lower probability is not great enough, as when considering eight high impact risk that could account for over 90% of the total risk, It is on this basis that the management decision should be based and ensuring the estimate of such few larger sources of uncertainty and risk are focused on during the drafting of contracts and high impact risk are purposefully taken into consideration.

Table 1- Cost estimate components (Barnes 1983)

Component	**Cost estimate,**	**Standard Deviation**

Labor	5000	1700
Materials	6000	1100
Plant	2000	500
Total	13000	2037

Considering any form of claims, conflicts or disputes in the construction project today, it is self-evident that the major source of disputes is the construction contracts. According to Bryan (2005) stress that a minimum of 95% of all claims in construction situation is as a result of the contractual agreement both parties entered into. It is to be taken as a fact that contract serve as a legal binding document between parties, and forms bases upon which claims are generated. Unfortunately, it has become an issue of concern to researchers in the field of construction industry that a document which is of most important is given less attention only to be pulled out by construction participants when there are legal disputes (Sathy et al., 2013). However, a more proactive approach to addressing or resolving issues of this nature should be to view contracts as a planning tool that help prevents problems. It is for this reason the research study needs to answer this questions:

1.2 Research Questions

- How would the contract provide an ex ante incentivization and flexibility in governing the parties involved in construction contracts?
- Why would proper risk allocation circumvent the possible outbreak of dispute in construction contracts?

In order to be able to answer this research questions, it will be most appropriate to determine the main cause of this disputes. According to Bryan (2005) states that one of the main cause of construction contract resulting to disputes has been the clinch on a standard form of contract blindly without considering its appropriateness and suitability to the construction project at hand. Equally, this same reason has be acclaimed by CW staff (2012) stress that standard contracts is the most principal cause of legal disputes. As it has been noted that hardly could construction

risks be eliminated, it suffice to say it can only be transferred or shared among parties involved in the construction contracts (Andi, 2006). In an early study conducted by Erikson (1979) deduced that mostly risk-averse of the parties are the construction contractor, and are always cautious of the implication of assuming a risk responsibility which might be detrimental to their company goal. Traditionally, an acclaimed notion was that construction contractors were not risk-averse but interestingly enough, this might be a deceptive thought has the increase in construction management in the USA and UK has been a point of focus (Barnes, 1983). Similar research conducted by Construction Industry Institute reveals that considerable cost wastage due to unbalance apportioning of risk has been a major cause of disputes in Canada and the United States (US) (Zaghloul and Hartman, 2003). Therefore, the research as focus on risk allocation in construction contracts using litigated cases from this prominent region (i.e. North America). In the later part of this research and for the purpose of consistency, the term contractor will be referred to as main contractor that are in contractual agreement with the client/owner of the construction project.

In the next section of this research study, the aim and objectives of this research focus on those questions needed to be answer from the conclusion of the research work.

1.3 Research Aim and Objectives

The research intends to proffer a more proactive ways of administering contracts agreement through the use of risk allocation that provide flexibility in a clear, cooperative and understandable manner to parties involved, in order to avert insurgence of projects/claims that results to disputes in the construction projects.

Objectives

The objectives of the research are as follows:

1. To examine the complexity embedded in the implementation of the terms of construction contracts during execution of projects
2. To investigate the causes of disputes in the construction contracts in relation to the implementation of the terms of construction contracts.

3. To assess the role of risk allocation in construction contracts to minimize disputes in the execution of construction contracts
4. To provide recommendations on ways of proactive managing construction contracts to minimize disputes

1.4 Scope of the Research

The purpose of this study is to identify causes of dispute in construction contracts. This will be assessed using North American's (US and Canada) documented litigation cases. It is worthwhile to note that only risk related issues within the legal cases based on some research study will be examined, but no legal analysis of the cases is intended to be discussed within this study. In order to stay within this limit, the followings would be focus on in the cases:

1. The causes of risk within the legal case
2. The identification of the risk itself
3. The effect as a result of the risk
4. The limitation of the contracts to protect the allege loser
5. Assessing the contracts in such project situation

Chapter 2.0 Literature Review

2.1 Introduction

Too often than not, contracting parties underestimate the importance of construction contracts. But these contracts confer future liability on the contractual parties and as such more emphasis need to be placed on it. Appropriately, this should have been done by carefully examining the possible factors of risk and ensuring the standard contract is drafted or perhaps amended to deal

with project condition at hand and by acknowledging psychological nature of human being in responding to risk. According to Turner and Muller (2003) stress that construction project should be seen by the client as a way of bring resources together in the climate of cooperation to achieve a goal, but more often, this comes in the contrary, client enters into contract with the sole aim of achieving the lowest possible price from the main contractor. By so doing, ended up awarding the contract to main contractor who knows the risk but pretends as not or a novices who significantly underestimate the project risk (Barnes, 1983). Further explained by Barnes, there are two categories of client, habitual client and the occasional client which makes project more difficult and the possible cooperation in construction contract a gigantic task to achieve. Hartman and Snelgrove (1996) explained that contracting parties perceive risk with different understanding, thus makes risk difficult to allocate in construction contracts. As noted by Barnes (1983) states that a risk-averse person is typically not welcoming risk and such a person should be ready to pay for such risk. On the other hand, a person welcoming risk is said to be a gambler as the depth of the risk to accept is not totally clear until such risk is assumed. Usually a gambler prepares a premium to be collected in exchange for the risk.

Anecdotally, the very situations that occur in tendering and subsequently the award of contracts is the appointment of the lowest bid price main contractor, such cases are the prime cause of disputes between parties (Doloi, 2009). Further explanation by Doloi asserts that main contractor should be assessed on the bases of project complexity, organization capability, technical expertise and risk management approach. Medda (2007) stress that risk allocation should be assessed by both contracting parties through a negotiation process in response to opposing objectives in the construction contracts. It is on this basis, risk allocation is said to be affected by an agent called risk attitude (Thomas et al., 2003). Turner and Keegan (2001) showed that construction project is a joint effort; in which governance structure, project delivery and transactions should be align to achieving a common goal. This is necessary if two parties intend to deal adequately with both the foreseeable risk and unforeseeable risk (Williamson, 1996; Winch, 2001). Earlier, Levitt and March (1995) stressed the importance of organizing as a tool that brings about transformation which instill the culture of cooperativeness, thereby avoiding the conflict system which foster disjointed objectives, and thus, place one party at advantage over the other. It is believed that cooperation enable parties to behave rationally. But despite the difficulty to act rationally by either parties in the face in which project risk is bounded by

aversion due to the inability to process information of events, communicate adequately, and foresee the future (Williamson, 1996), it is much anticipated that addressing or reducing construction disputes will be a difficult task without cooperation, project incentives and safeguards to enable parties involve in construction contracts emerge with a win-win game (Turner, 2002). In the likelihood of one party embarking on opportunistic behavior, which is most likely set off mistrust and bring about other party taking irrational decisions, an alternative way of addressing this issue should be fashioned rather than to allow projects to fall-out to being a litigated one (Williamson, 1985).

The layout of this research study follows with Chapter 1 reviewing the inherent difficulty in allocating risk in construction contracts using the case of North American, in order to substantiate the need to answer the research questions. Different view with respect to risk allocation in construction contracts were reviewed in the sections as follows: Chapter 2 under the section 2.1 gives the introductory views on risk allocation in construction contracts and subsequently, explanation of construction contracts was discussed in section 2.2; discussion of risk attitude was given in section 2.3; different views of risk allocation under the section 2.4; section 2.5 reviewed the pre-legal disposition to dispute, while the need to understand the concept of transaction cost economic was dealt with in section 2.6; which has embedded certain clauses including alternative dispute resolution in the event of a likely litigation issue; Figure 2 shows the summary of the literature review in a diagrammatic representation.

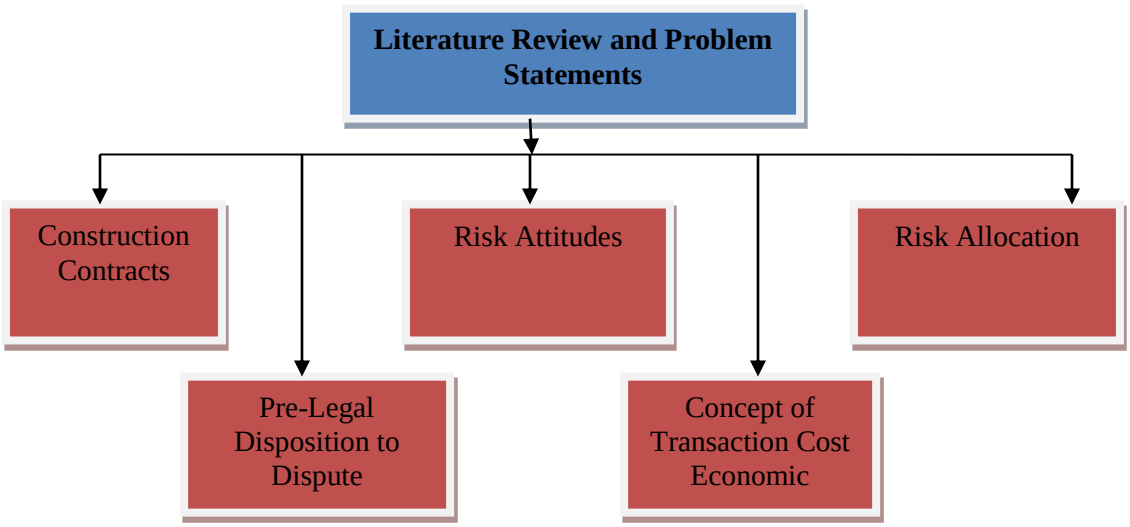


Figure 2- Shows structure of literature review

2.2 Construction Contracts

2.2.1 Overview

The term project is a process that consists of achieving a temporary endeavor within a specified time (Ye et al., 2009). The construction industry has been a major developmental sector to any nation and a prime motivator for any economic to develop rapidly (Aje et al., 2009). As much as it is a very important aspect of the growth of economic of any nation, it has not been left without its' difficult sides. According to Cheung et al. (2000) explain that construction is a complex form of activities that is needed to provide a clear objectives. The complexity of construction projects is aggravated by the diverse interest of two parties involve in the process. While a significant part of the challenge faced in construction projects has been related to the management issue in failing to understand the basic tool that governs the project which is the contract (Galloway, 2004). In explaining the cause of problem in construction contracts, Bryan (2005) describes the five "I's" of contract that has ultimately brought about conflicting differences at great cost and time between concerned parties. Bryan states the five "I's" as follows: inappropriate contracts, incomplete contracts, incomprehensible contracts, incompatible contracts and inequitable contracts.

Inappropriate contracts: Going by the name, inappropriate contracts signifies a contract which has not taken into consideration the necessary factors (such as risks) that can warrant problem that were not planned for. Using this contract in construction projects is almost certain to lead to the parties' hostility and, eventually a litigation situation will emerge.

Incomplete contracts: These are contracts that fail to address major aspect (i.e. inherent risks) of the construction work, and are said to be inadequate form of contracts. The inadequate part of it is that an unaccounted or allocated risk will not go without resulting to disputes which is difficult to address.

Incomprehensible contracts: These have been explained to be contracts that are full of ambiguities. A contract that is devoid of clear terms is most likely to breakdown the performance of contracting parties.

Incompatible contracts: These are contracts that are not compatible with the type of risks needed to be address in a construction project by either of the contracting parties. A contract should be such that party will be able to acts within the power conferred on it to execute its work set out in the contractual arrangement.

Inequitable contracts: Involves contract that lack fairness or equity to contracting parties in construction contracts. It is seen as a one-sided form of contract and a lead to distrust that makes claims inevitable.

Professional bodies within the architecture, engineering, and construction (AEC) industry have committed to the production several standardized form of contract documents. A collection of over 250 contract documents have been put together by the American Institute of Architects (AIA, 2009), the Association General Contractors of America (AGC, 2009), and the Engineers Joint Contract Document Committee (EJCDC, 2009). Invariably, this signifies the importance of contracts to organizations and that adhering to only one specific form of contracts could not solve the very challenging nature and complexity of the construction projects which parties embark on. It goes to say that the most outstanding way to understanding construction contracts is to consider it from the point of the risk involved

2.2.2The Role of Construction Contracts

The general philosophy of marketing is that there is a medium of exchange for transaction to take place. A contract is seen as an agreement for the exchange of services. There are different patterns which contracts can take: it can be explicit, legal agreement or implicit, normative agreements (Macneil, 1980); regardless, the interior motive is to create understandable sets of rules, procedures, responsibilities, and expectations (Gilson, 1984). Establishing a defined expectation is of utmost value in both the cases of simple and complex situation. In cases of simple exchange, contracts of such nature will cover the basic executor roles; the products, its price, and the time. On the other hand, delineating the price, time and the deliverable in a changing environment may be of tremendous task to accomplish. At such instance, contracts will

not only provide information like price, technical specifications or warranty but will includes agreeable rules, rights, roles and responsibilities to be played by contracting parties (Hill and King, 2004). It is observed that such an explicit (i.e. legal) form of contract with an incorporated normative clause (i.e. extralegal) helps to curb exegesis on the part of either parties or any other form of strategic behavior. Thus, it is viewed that contract is a mechanisms for which risk in project can be reduce (Lusch and Brown, 1996).

2.2.3 Types of Construction Contracts

There are different types of construction contracts. The range of which cut across the risk involved starting from cost plus contracts to a fully flesh non-risk cost-reimbursable contracts (March 2003; Smith 2003, Carty 1995; Turner 1995).

Cost plus contracts: The cost plus contracts is a contract that has four elements; cost plus percentage fee usually denoted as (c + %f), cost plus fixed fee denoted as (c + ff), cost plus incentive fee (c + if), and the alliance contracts which is a contract based on a shared gain.

As in the case of c + %f, the tendency of this contract is to allow overspend by the contractor. This happens has the client's objectives of rewarding the contractor is not aligned with the objectives of the contractors. For c + ff, the contractor is under pressure to finish the project due to the low incentive ratio which could be affected by higher cost but could ultimately attain cost saving if innovative ways can be built around the project by the contractor (Ward and Chapman, 1994). In c + if case, the incentive is moderately commensurate with the level of achievement attain by the contractor (Peeters 1996; Veld and Peter 1989). According to Turner and Simister (2001) explains that this type of contract should be use in high risks and uncertainty prevail on the project but in situations where the contractor has not gotten the power to influence the cost, so as to avoid mistrust. It was further stated that the contract may be adaptive due to its flexibility but entails high costs of monitoring and control measure need be in place. However, if the system is standardized, a fixed cost would be assured, as illustrated in Figure 3(a-c) below shows the differences in the three forms of contracts.

It has been noted that this type of contract finds it way in construction management contracts, where the design is done by client's design consultant and the construction management contractor does the procurement and site operations. This is usually a case where the

construction manager has not gotten control of the scope of the work. Turner and Simister (2001) noted that construction manager is given a fixed price for their role which is followed with an incentive. Equally, the construction manager role has been commended by New Engineering Contract (Institution of Civil Engineers 1995) stressing the need for an incentive so as to ensure the cheapest sub-contractors are select and not only those of which can be manage easily. Lastly, on this type of contract is the alliance contract. In this contract, the client and contractor are expected to work together cooperatively so as to ensure that the contractor work in favor of both parties and such the price would be reduce (Scott, 2001). Furthermore, by cooperating together, certain key performance are achieved such as working to schedule, improving the quality and safety of the work, and ensuring the work is fit for the intended purpose. As observed by (Turner and Keegan, 2001) that this kind of contract can work under conditions where the clients and contractor work cooperatively to address the risk of the project. A safeguard approach is upheld as the client bears some escalated risk but the contractor is praised for moderating the risk. In this contract, it has been criticized that the high flexibility of the contract is not commensurate with the high transaction cost paid in this contract (Turner, 2004). However, conflict that could have led to courts cases have been avoided by the risk escalation approach adopted.

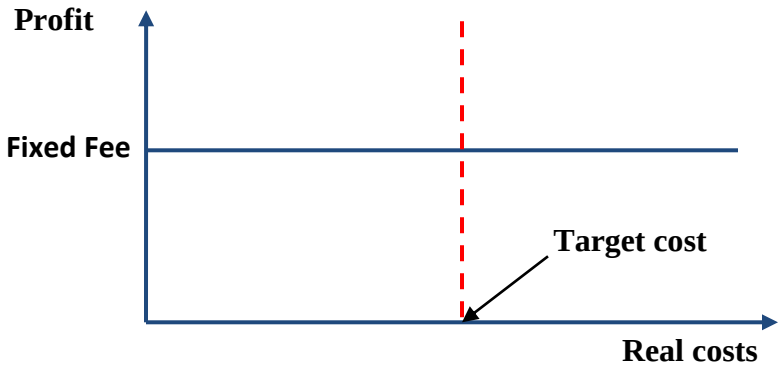
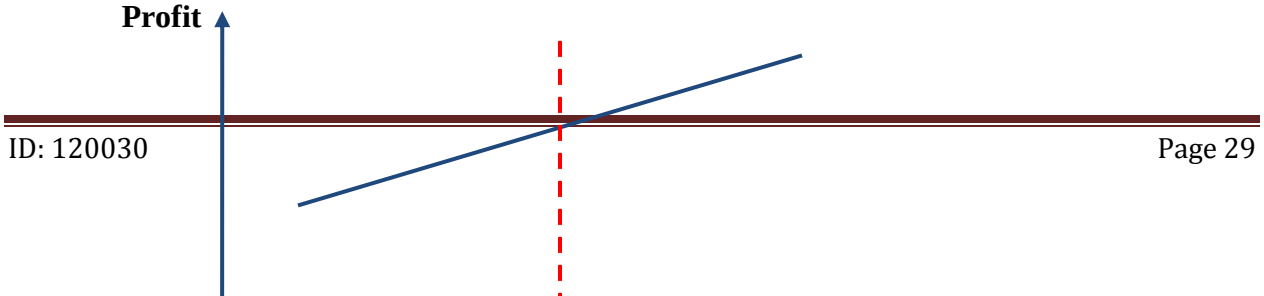


Figure 3a: Cost reimbursable plus fixed fee contracts – contractor's profit versus real costs



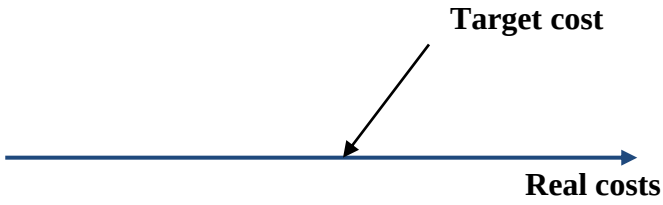


Figure 3b: Cost reimbursable plus percentage fee contracts – contractor's profit versus real costs

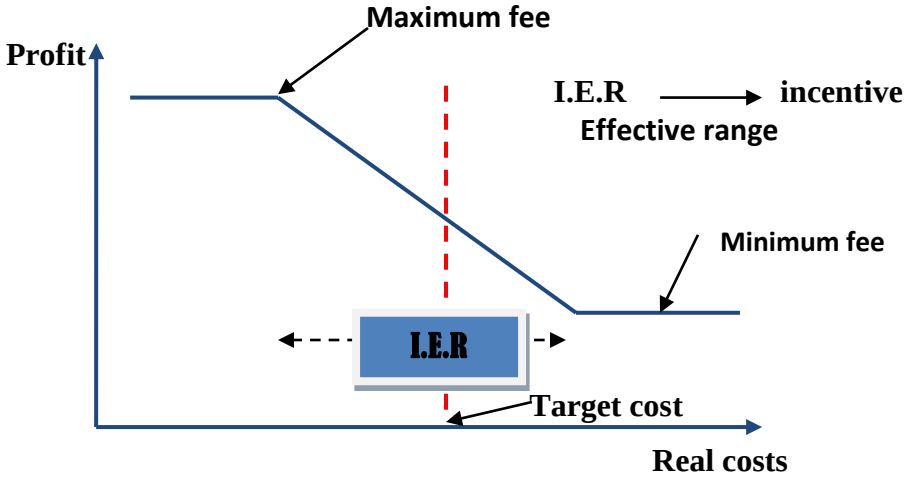


Figure 3c: Cost reimbursable plus incentive contracts – real costs versus contractor's profit

Figure 3(a-c)- Cost reimbursable contracts (Turner 2004).

Re-measurement contracts: In this type of contract, Marsh (2003) noted there are three forms of its usage; re-measurement based on a schedule of rates which is denoted by (r-sor) as the effectively cost plus, the second, is related to re-measurement based on a bill of quantities which is denoted by (r-boq), and the last form of this contract is said to be re-measurement based on a bill of materials, and it is denoted by (r-bom) as an effective fixed price with variations. According to Turner and Simister (2001) stress that the re-measurement based on a schedule of rate is often used where there is a clear definition of work and material requirements such that the contractor would supply labor and material in accordance with the standard industrial rate. As noted in this contract, there is no incentive for the contractor to increase productivity, but there is high protection for the contractor and the cost of transaction is relatively high. However the view of the contractor's is not in conformity with the objective of the client. Whereas, as in the case of re-measurement based on a bill of quantity, the contract is rewarded according to the

work performed, and this facilitate the contractor to increase productivity of work. It has however been based on an identifiable work elements and the client's are not usually in a position to receive benefit of improvement on the work as this will reduce the contractor's reward. As such, Turner and Simister (2001) acknowledges that a medium form of transaction cost is usually attached but giving the client a reduce benefit. Lastly, the re-measurement based on bill of materials is associated with low transaction cost as it relies on specificity of the work task that calls for close cooperation between the client and the contractor. In this contract, large work package are identify and only rewarded in proportion of the identified package that was completed. The degree of monitoring is relatively high which has brought about the loe transaction cost as oppose (r-sor) and (r-boq).

Fixed Priced Contracts: This type of contract has been defined as a firm price in which at some certain circumstances gives the services an adjustable price for whatever is being procured (Cleland and Kerzner, 1985). Although there several types of this form of contract, the common type is called a firm – fixed price (Peeters 1996; Rase & Barrow 1957; Veld & Peeter, 1989), and as well been called a lump-sum contracts (Cleland & Kerzner, 1985; Rase & Barrow, 1957). A specific time for completion of project at a fixed price is attached to this contracts which can come in the following form: fixed priced based on a detail design, design and build based on a scope design, and cardinal point related. For the first case, a detailed design is prepare by the client or its design consultant which subsequently is handed over to the main contractor for the execution of the project. This is usually carried out in a stiff tendering process or can be awarded based on the (r-sor) or (r-boq) forms of contracts. As noted, a re-measurement contract tends to attracts variations due to the bidding process, and are thus, a form of contract on which mistrust can be generated between the client's and the contractor' s. According to Turner (2004) stress that this is the worst form of contract as viewed from the contractor's perspective, as it involve very low reward, no safeguard is guarantee but a proper design done in this type of contract may drastically risk reduce. A high transaction cost is usually involve, as it may be needed to process variations during construction work, and tends to be court reliance due to the level of mistrust found that may generates. This is usually borne out of the fact that low incentive is attached, no motivation and mostly contractor's tries to accomplish work at a minimal cost that will conform to the objectives of the client. As in case of the design and build based on a scope design, a

preliminary scope design is done by the client or their design consultant, which is later develop by the contract to a fully flagged detailed design and thereafter carries out the construction of the project. Although it is majorly used on facilities that can be specifically specified, but may in some occasion brings about uncertainty in its method of delivery which can only be address by the contractor (Turner and Simister, 2001). It was noted that a low risk identified in such project will attracts low safeguards, and definitely the reward will be low. For this type of contract, bidding is tight has more contractor's are able to bid for such project. It however notes to enable contractor to make a creative way of going about the delivery of the project, it is best for the client to keep off. Although if the margin is extremely tight such that the contractor fall short off the expectations, creates the situation of variation to claw back more gain, thereby increasing the transaction costs. It is claimed that client could help increase the profit of the contractor at some instant, may reduce the transaction cost. However, a build-in incentive is best able to control the transaction cost (Turner 2004). Other type of fixed price contract is the cardinal points, a contract type where key functionality and performance indicators are set for the contractor to deliver, but the design and methodology to achieve its realization is left in the hand of the contractor. A notable point by Turner and Simister (2001) calls for such usage of contracts in situation where uncertainty are foresee and the client is not in any position of making contribution to resolving such problem. This kind of contracts makes contractor to be more creative and innovative to bring about better ways of addressing risk that will ensure a reduction of cost but usually in the favor of the contractor has a fixed price is set. However, this contract has proven to be effective has it was used in the case of the Botlek Tunnel where the client acclaimed that the price of the project achieved was much lower than it would have been if other types of contract has been used (Turner, 2004). This was achieved as the risk involved has been clearly written such that the contractor was able to work-around the risk. Thus, reduce the reliance on court was not part of the solution to make addition profit.

Target Cost: This contract has an agreed fixed price for specific return on a project set around a given target price, with both the client and contractor to share any extra cost incur in the course of the project above the target price. A similitude of this contract is the fixed price contract, however the contractor is expose to greater risk but can achieve better reward at certain instance. It is acclaimed that the intensity to receive incentives is much higher than in fixed price contracts

but may follow with a high transaction cost due to monitoring process. However, it is noted that this form of contract may still lead to court cases but in cases where the contractor is able to save cost less often pursue variations; as a result, both the client and contractor may tend to work in a collaborative manner which is similar to alliance contract. Some form of standard contract handles fixed price as a target cost (Institution of Civil Engineers, 1995) such as in the case of the new engineering contract (NEC), however, due to the different profiles in the two contracts, a select monitoring method is require.

Guaranteed maximum: This contract is sometimes called shared saving contracts as the maximum guaranteed are shared between client and contractor, although the contractor is responsible for any over-runs assumed in the project. The contract is based on fixed fee of profit paid to the contractor and the actual cost of assumed in the project is reimbursed back to the contractor at a sealed figure usually called 'maximum guaranteed' (Kerzner, 1995). It is said to contain the combinations of merits and demerit embedded in cost plus, target price and fixed price. This contract is usually awarded on a competitive basis, thus the clients is at an advantage has it set the earliest completion of the project on a guaranteed priced, thus over any expense in course of an emergence of an over-run. Cooperation is mostly achieved in this contract as incentive are place for early completion and room for notification in the event of changes occurring in the project. This level of cooperation is better achieved in view of early completion of the engineering specification prior to contract negotiation such that a proper revisit can be made in due time (Bentley, 1988). This is also a contract where the client has to duly involve staying abreast of the cost of project. Despite all this measures, Smith (1997) warns that situation can turn worse for both client and contractor in situation where the project has turned over-run and the interest of the two parties are not aligned.

2.2.4 Strategic Development for Contracts

An early notion proposed by Turner and Simister (2001) felt initially that the choosing of contract form was basically to reduce the cost associated with the transaction cost, as it generally assumed as in the case of routine supply (Williamson, 1996), but the resulting situation observed as shown that it might not be as was thought. This was a course of study by Turner (

2004) claimed that the purpose of contract is to motivate the contractor to work to completion by reducing cost associated with the project and subsequently achieving the client objectives. In Turner's explanation, the selection of contracts depends on three parameters below and it is illustrated in the Figure 4.

- Controlling of risk by: the client; the contractor; both
- What the project is composed of: simple; large, complex, multi-stage
- Where lies the uncertainty: in the project, methods of delivery, both.

Risk controlled by client

The proposed model is such that depending on the complexity of the risk and who controls the risk, either the client or their consultant, the suitable form of contract would be cost plus incentive fee or in some cases re-measurement on account of the risk involve. As noted by Turner and Simister (2001) explains that for a low risk re-measurement based on schedule of rate or re-measurement based on bill of quantity form of contract is suitable. This is of course built on the principle of standard schedule, fixed price with flexibility so as to handle any variations. In the case of high risk project, cost plus incentive fee would be appropriate (Smith, 2003; Marsh, 2003), on the basis that the contractor are rewarded for their contributions.

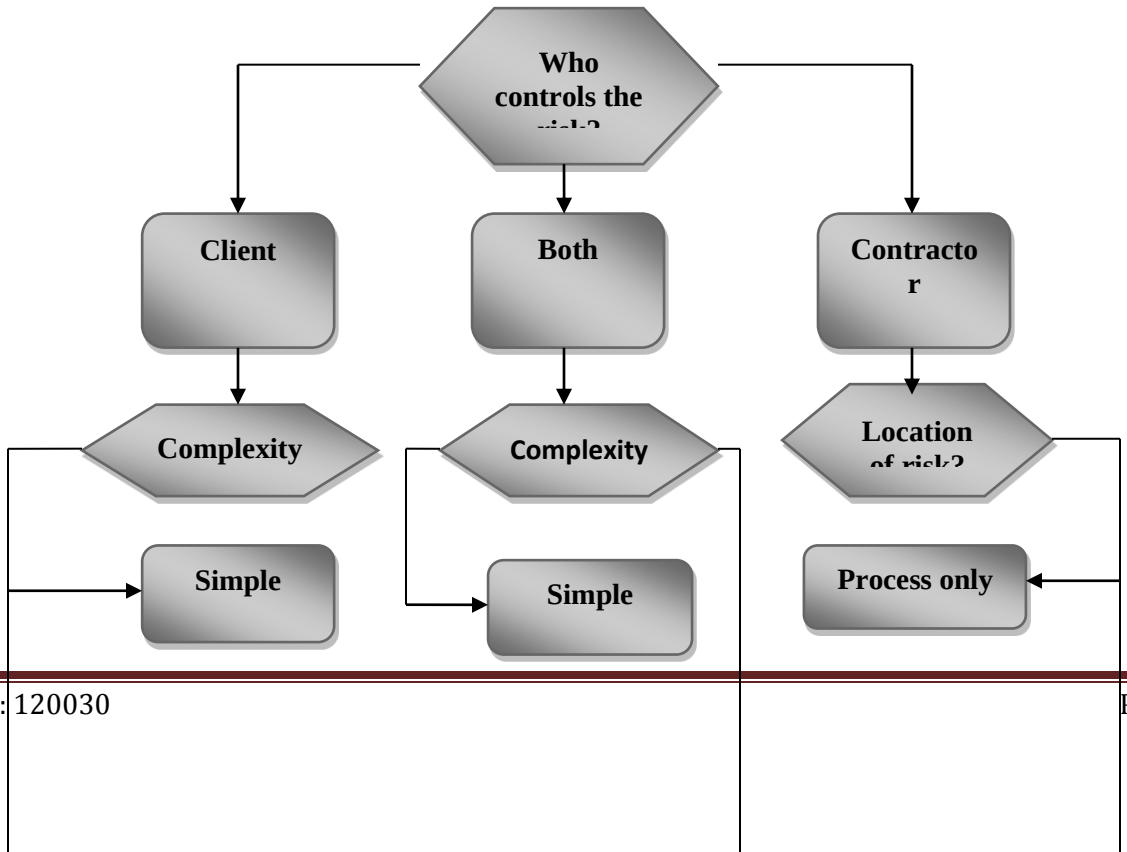
Risk controlled by contractor

Risk handle by the contractor usually depends on where the risk lies; in the process of execution, or the combination of the process and deliverable, and in some cases it could be neither. As in the case of risk embedded in the process, the uncertainty lies in the delivery of the deliverable, as the project has been set with a clear definition of the goal. Thus, such risk is better controlled by the contractor with the client setting a cardinal point based on a fixed price. Otherwise, if the risk is a combination of the process and the deliverable, and the resolution of the problem is not within the power of the client either from within or from its consultant, then a functional requirement is needed. A predominant method of contracting this type of project would be prime contracting set on target price. Also cited by Turner and Muller (2003) confirms the inclusion of design only contracts done by the client's consultant, and the motivation for this rest on the fact that the consultant's reputation would be the propelling factor to achieving the clients interest.

Similarly, it was concluded that in situation of little risk, a fixed price or re-measurement contract would serve the same purpose as indicated in other forms.

Risk controlled by both

When the two parties agree to share the risk, the same principle is applied, and it looked from the perspective of the project complexity whether high or low risk. Low risk would depend on the residue of the risk, i.e. risk in the hand of the client, contractor, deliverable or the process of delivery, and the contract to be chosen could be worked around re-measurement, fixed price or target price. Scott (2001) viewed project involving high risk is better controlled by an alliance contract. In this sense, it forms the basis on which to determine how the parties respond to risk.



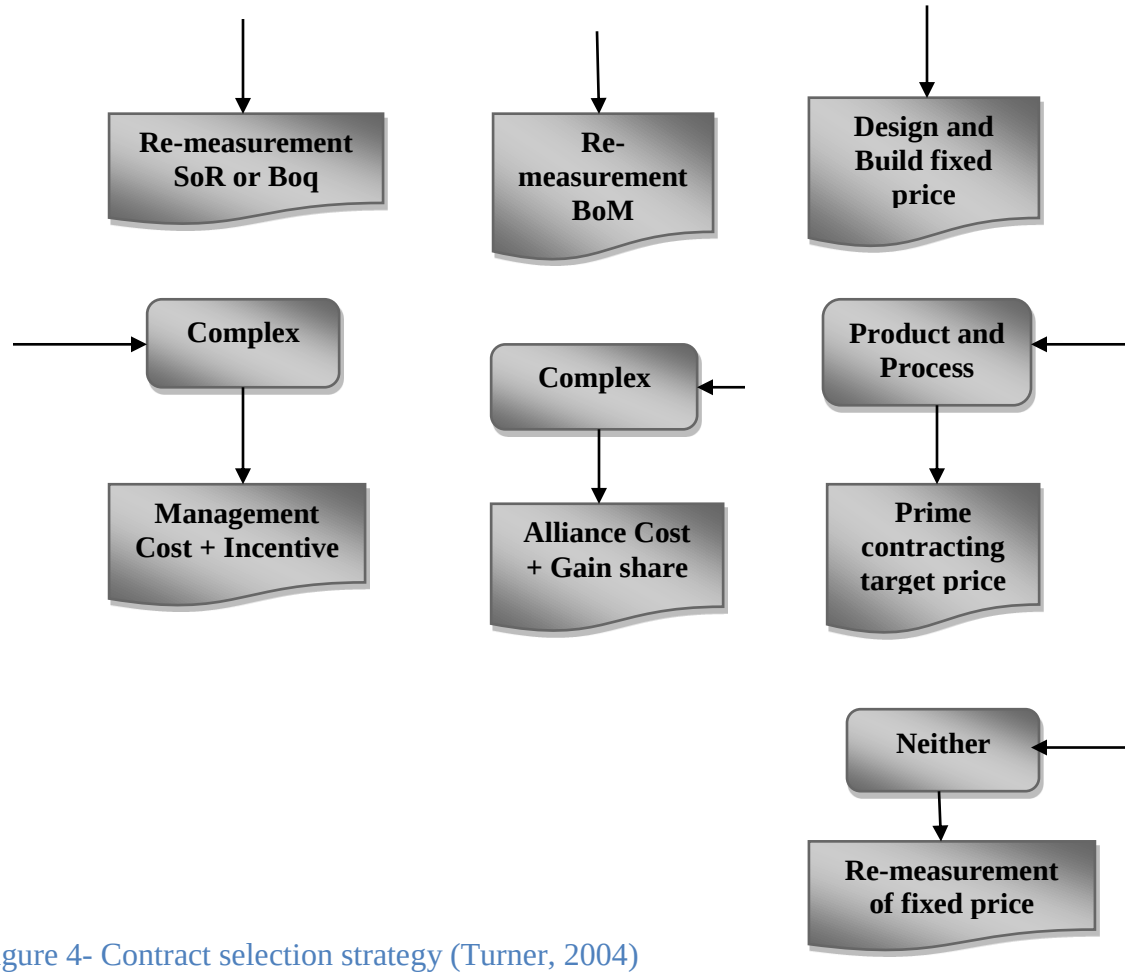


Figure 4- Contract selection strategy (Turner, 2004)

2.3 Risk Attitude

One of the very important factor in the allocation of risk lies on the perception of risk to either of the parties involved in the contracting project. Thomas et al. (2003) shows that the attitude to risk set the basic principle in the risk allocation, and call on bias in personal judgment as indicated by (Lam et al., 2007). Risk as defined in Merriam Webster, Inc.'s (1997) dictionary refer to the possibility of jeopardizing a significant financial or the loss of properties in the process of assuming a responsibility. In construction industry it has become inevitable as the situation is being faced on daily basis in the commercial world, due to the involvement of various parties, challenges in technology and the adverse working conditions. In an early research done by Erikson (1979) concluded that construction contractors are risk averse. Contrarily, a risk-averse person is a person that pays to avoid risk, in a way that such risk will be transferred to another party (Barnes, 1983). However, Porter (1981) claims that the clients are risk neutral, neither

welcome risk nor are the clients risk-averse. The limitation in the understanding of risk shifting has encouraged both parties to continue on risk-averse attitude which often is detrimental to the success of the project. The clients have got the tendency of pushing the risk to the main contractor for the fact that clients are not welcoming risk but in turns the contractor has the risk placed on the shoulder of the lower-tier parties during the contractual assignment (Jergeas and Hartman, 1996; Smith, 1995). This has lead to risk in construction been carried by the party that has least ability to control or influence the risk producing factor to shoulder the risk, and often lead to disputes in the long run, but in many occasion the risks are transferred back at much higher risk in form of claims and variations (Ng and Loosemore, 2007). Several researchers have proposed lots of model on allocation of risk in construction industry but this has been limited by the fact that construction risk in various countries differs based on the contending factors like economic, political, environmental, social and cultural conditions of each country are different, thus, the magnitude of risk in construction is greatly influenced on the bases of the country in which the project is to be executed (Andi, 2006). Despite this entire precipitating factor inherent in construction projects, the risk still has to be identified to a reasonable extent to enable the contracting parties to be able to analyze and more importantly for the party handling the risk to respond in an appropriate manner. According to Thompson and Perry (1992) explains that failure to study the uncertainty in a given project has resulted to series of problems ranging from cost, time over run to disputes. Although construction risk may be difficult to eliminate in its entirety, but rest on the fact that the owner of the risk is mostly likely to transfer the risk to a receiving party for which a premium will be paid for the risk.

2.4 Allocation of Risk

Naturally the allocation of risk in construction projects may differ from country to country as it is a fundamental for variations to exist in the characteristic way of achieving individual objectives (Kunishima and Shoji, 1996). However, the imbalance that might arise from risk allocation between parties may ultimately increase the transaction cost of project due to prolong disputes resolution in the court of law as a result of the divergence in the perception of parties on risk allocation in the construction contracts (Hartman and Snelgrove, 1996). To avoid this, quite a number of researchers has ranked risk using expected value derived from the multiplication of

probability and its impact to differentiate its ownership (Wideman, 1992; Zhi, 1995), a model contended by William (1996) stressing the importance of both impact and probability as the only fundamental part needed to be consider. An outcome of research carried out in Indonesia in that respect is shown in Table 2, and it shows the perception of risk allocation between the owner and the contractor. This outcome is similar to the research work carried out which uses qualitative approach in the USA (Kangari, 1995), Hong Kong (Ahmed et al., 1999) and Kuwait (Kartam and Kartam, 2001) on the importance of 27 most recurrence risk in construction industry. On account that risk allocation in practice has been claimed to involve a considerably high intuitive, subjective assessment and unsophisticated approach (Ng and Loosemore, 2007), the variables in the table were quantitatively determined in its formation. It was found that most undecided risk which were suppose to be primarily clients responsibility has been passed or shared with the contractor. However, giving the rising concern of construction disputes that affect project success, numerous studies have continue to explore the proper approach to risk allocation (Abrahamson, 1973; Loyd, 2001; Thomas et al., 2003; Abednego and Ogunlana, 2006, Lam et al., 2007; Gao and Jiang, 2008; Jin and Doloi, 2008; Jin and Zhang, 2010).

Table 2- Comparison of owners and contractors perception of risk allocation (Andi, 2006)

Construction risk	**Actual allocation**		**Expected allocation**	
	Owners	**Contractors**	**Owners**	**Contractors**
Acts of God	Undecided	Owner	Undecided	Owner
Changes in work	Owner	Owner	Owner	Owner
Changes in government regulation	Undecided	Undecided	Undecided	Owner
Contractor competence	Contractor	Contractor	Contractor	Contractor
Cost of legal process	Undecided	Undecided	Undecided	Undecided
Defective design	Owner	Owner	Owner	Owner
Defective materials	Contractor	Contractor	Contractor	Contractor
Deficiencies in specifications and drawings	Undecided	Undecided	Undecided	Owner
Delayed payment on contract	Owner	Owner	Owner	Owner
Delays in resolving contractual disputes	Shared	Undecided	Shared	Shared
Delays in resolving litigation/arbitration disputes	Undecided	Undecided	Shared	Shared
Environmental hazards of the project	Undecided	Contractor	Contractor	Undecided
Financial failure of contractor	Contractor	Contractor	Contractor	Contractor

Financial failure of owner	Owner	Owner	Owner	Owner
Inflation	Undecided	Undecided	Undecided	Undecided
Labor disputes	Contractor	Contractor	Contractor	Contractor
Labor, equipment and material availability	Contractor	Contractor	Contractor	Contractor
Permits and ordinances	Undecided	Undecided	Owner	Owner
Political uncertainty	Undecided	Shared	Undecided	Undecided
Poor performance of suppliers/subcontractor	Contractor	Contractor	Contractor	Contractor
Productivity of equipment	Contractor	Contractor	Contractor	Contractor
Productivity of labor	Contractor	Contractor	Contractor	Contractor
Poor quality of work	Contractor	Contractor	Contractor	Contractor
Safety	Contractor	Contractor	Contractor	Contractor
Site access/right of way	Undecided	Undecided	Undecided	Owner
Third party delays	Contractor	Contractor	Contractor	Contractor
Unforeseen site conditions	Contractor	Undecided	Contractor	Undecided

In recent time, research by Medda (2007) claims that the risk allocation process should be viewed as a bargaining activity between the contracting parties, especially when differences of objectives is on the edge of setting into the contracting process. Similarly, two risk allocation models were developed to assess the construction risk in the construction industry. One of which was proposed by Li et al., (2001) declares a model in public-private partnership (PPP) with respect to getting the value for money in construction project, while the other one was proposed by Gibson et al. (2004) develops a tool used in the assessment of construction risk for international projects. Although the two models uses a multiparty approach in the identification and assessment of the risk, but focus of the studies were based on sharing high potential prominent risks for conflict in the construction industry. The research studies as described by CII Research Team 201's followed the steps by identifying, assessing and allocating those risks and were worked into worksheets which were complemented with tools in order to understand the implications from both the technical and legal points of view.

2.4.1 Risk Allocation Model

According to CII Research Team 201 research based on the risk allocation model, the following steps were used to reaching the outcome of the model; risk alignment, risk identification, risk analysis, and risk action.

Risk Alignment

Risk alignment involve a single-party approach of ensuring a strategically defined ways of identifying, analyzing, action taken, how to respond to, and setting up proper documentation of the associating risk in a construction project. Each organizations tend to possess ways of achieving their set goals without been impeded by risk. Thus, these plans are laid such that the internal alignments of the contracting organizations are set as priority for the fulfillment of their goals. The first two section of the single-party risk assessment are completed at the internal alignment stage separately by each organization, and thereafter, the initiation of the two contracting proceeds. It is in the first phase of the single-party risk assessment that the general input of each organization are spelt out and aligned with the project information, while the second phase, list out the associated risk involved in the project which are usually a combination of standard risks born from experience or anticipated risk due to the project nature.

Risk Identification

The completion of the risk alignment stage is preceded by the coming together of the parties for the identification of risk. This is a stage in which two process communications is initiated involving the risk that might be allocated inappropriately while considering the time and cost impact of such risk. A comparison of each organization risk are compared which resulting from the single-party worksheet, and then, it is on this bases both parties justifies risk involve while ensuring there are no overlooking of any risk occurrences.

Risk Analysis

It is at this stage the risk in both the single-party and the two-party process are evaluated and each risk attributes and characteristics are assessed. The single-party risk analysis ensure that factors involving the likelihood of risk realization (LORR) in the project, relative impact (RI) based on the cost and time impact of such risk, with risk rating done on a scale of 1-5, where 1 denotes very low chance of occurrence and 5 as very high chance of occurrence, and serve as the product of LORR and the RI are carried out. CII (2003) acknowledges that the risk rating is an essential step in actualizing risk management and assessment practices. In the process of risk analysis, contracting parties may witness strong disagreement on the allocation of risk on the bases of information, financial capacities possessed by one party over the over, which has called

for concern and attention given to some particular risk to ensure proper allocation of such risk. It however, follows the principle that the higher the risk, the higher will be the incentive set to address the risk (Turner, 2004). Drawing conclusion from single-party risk analysis and two-party process, the outcomes is a combined risk rating which is calculated from the risk identification of each contracting parties with respect to how the risk factors affects the organization in the achievement of their goals on the project. The combined risk ratings is expected to identify areas of total disagreement on risk assessment of both parties emanating from the single-party risk analysis of each organization, and are addressed in such a way that the risk is assumed by the party in better position to handle such risk. Also, worthy of note is the commonality of risk from the combined risk ratings becomes a course of concern as the probability of such risk occurring will be high, and the consequence may have significant cost impact. Hence, the need for both parties to cooperatively combine effort to deal with such risk in a proactive manner to ensure an effective execution of the project plans. Table 3 (a-b) illustrates the two single-party worksheets and how they were figured out to cater for the disagreed risks and the combined risk rating in the two-party worksheet, as shown in Table 3c.

Table 3(a): Illustrates the single party 1 worksheet (CII 2003)

Party 1 Risk Assessment Worksheet										
1	2	3	4	5	6	7	8	9	10	11
List of Risks	Risk Applies?	Contract Risk?	Likelihood of Risk Realization (0-5)	Relative Impact (0-5)	Risk Rating (0-25)	Expected Value of the Risk	Recommended Action	Risk Allocation Recommendation	1-5 Risk?	Comments

2c. Legal/Insurance/Risk Management Review			0	0	0					
2c.1 Acquisition of necessary easements (x w/3a)	Yes	No	5	5	25	400,000	Transfer	Contractor		
2c.2 Ambiguous acceptance criteria (x w/4)	No		0	0	0					
2c.3 Back charge provisions	Yes	Yes	1	5	5	25,000	Accept	Owner	X	
2c.4 Cumulative impact of charge orders	Yes	Yes	2	3	6	55,000	Transfer	Contractor		
2c.5 Consequential damages	No		0	0	0					
2c.6 Design responsibility	Yes	Yes	5	5	25	425,000	Transfer	Contractor		
2c.7 Differing site conditions (x w/3b)	Yes	Yes	1	1	1	2,500	Accept	Owner		
2c.8 Disputes provisions	Yes	Yes	1	5	5	35,000	Transfer	Contractor	X	

Table 3(b): Illustrates the single party 2 worksheet (CII 2003)

Party 2 Risk Assessment Worksheet										
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**

List of Risks	Risk Applies?	Contract Risk?	Likelihood of Risk Realization (0-5)	Relative Impact (0-5)	Risk Rating (0-25)	Expected Value of the Risk	Recommended Action	Risk Allocation Recommendation	1-5 Risk?	Comments
2c. Legal/Insurance/Risk Management Review			0	0	0					
2c.1 Acquisition of necessary easements (x w/3a)	Yes	No	5	5	25	375,000	Transfer	Owner		
2c.2 Ambiguous acceptance criteria (x w/4)	Yes	Yes	5	5	25	395,000	Transfer	Owner		
2c.3 Back charge provisions	Yes	Yes	2	2	4	35,000	Accept	Contractor		
2c.4 Cumulative impact of charge orders	No		0	0	0					
2c.5 Consequential damages	No		0	0	0					
2c.6 Design responsibility	Yes	Yes	5	5	25	410,000	Accept	Contractor		
2c.7 Differing site conditions (x w/3b)	Yes	Yes	5	5	25	390,000	Transfer	Owner		
2c.8 Disputes provisions	Yes	Yes	1	5	5	50,000	Transfer	Owner	X	

Table 3 (a-c) - Illustrates the two-party worksheets (CII 2003)

Two-Party Risk Assessment Worksheet									
1	2	3	4	5	6	7	8	9	10

List of Risks	Party 1Risk Rating (0-25)	1-5 Risk?	Party 2 Risk Rating (0-25)	1-5 Risk?	Risk Rating Disagreement (0-25)	Combined Risk Rating (0-625)	Party 1 Risk Allocation Recommended	Party 2 Risk Allocation Recommendation	Comments
2c. Legal/Insurance/Risk Management Review	0		0		0	0	0	0	
2c.1 Acquisition of necessary easements (x w/3a)	25		25		0	625	Contractor	Owner	
2c.2 Ambiguous acceptance criteria (x w/4)	0		25		25	0	0	Owner	
2c.3 Back charge provisions	5	X	4		1	20	Owner	Contractor	
2c.4 Cumulative impact of charge orders	6		0		6	0	Contractor	0	
2c.5 Consequential damages	0		0		0	0	0	0	
2c.6 Design responsibility	25		25		0	625	Contractor	Contractor	
2c.7 Differing site conditions (x w/3b)	1		25		24	25	Owner	Owner	
2c.8 Disputes provisions	5	X	5	X	0	25	Contractor	Owner	

It is noted that the 1-5 risk signifies that a LORR of 1 and a RI of 5 has been issued, and for such notification the X is usually flagged red because it is not a risk of measurement but rather a notification. This type of risk has significant impact when it occurs although it is noted with a low likelihood of occurrence. Usually the 1-5 risk rating comes with a value of 5, and as such attention paid to such risk are low but it worth a second look in order to ascertain that there are no loop holes left behind.

Risk Action

When a successful risk analysis has been carried out, it is followed up with an action called risk action. Risk action has been known to possess two-party procedure for the development and recommendations of the desired actions to take place which will ultimately facilitate the success of the project. At this stage, the other parts of the single-party and two-party worksheets alongside with the help of some tools (i.e. buyer flowchart and seller flowchart) coupled with the principle of risk allocation makes the risk action worthwhile step to take.

Buyer Flowchart

This is a tool mainly used by the buyer of the services, typically an owner under a contract type contractor-owner or instances like general contractor for a subcontractor-contractor contract. As shown in the Figure 5, the steps are used by the buyer during the evaluation to determine the appropriate risk action to take after proper risk assessment has been made. It usually take a top down approach where each risk identified are addressed according to the need and further steps are taken down the tree in cases where the intensity of the risk is high.

Seller Flowchart

This is a tool mainly used by the seller of the services, typically a contractor under a contract type contractor-owner or for subcontractor-contractor contract coordinated by subcontractors during the assessment of action to be taken for the identified risk. It follows the same usage as that of the buyer flowchart as discussed above. The Figure 6 depicts sequence has it is been used.

Have you valued the LORR & RI of the risk?

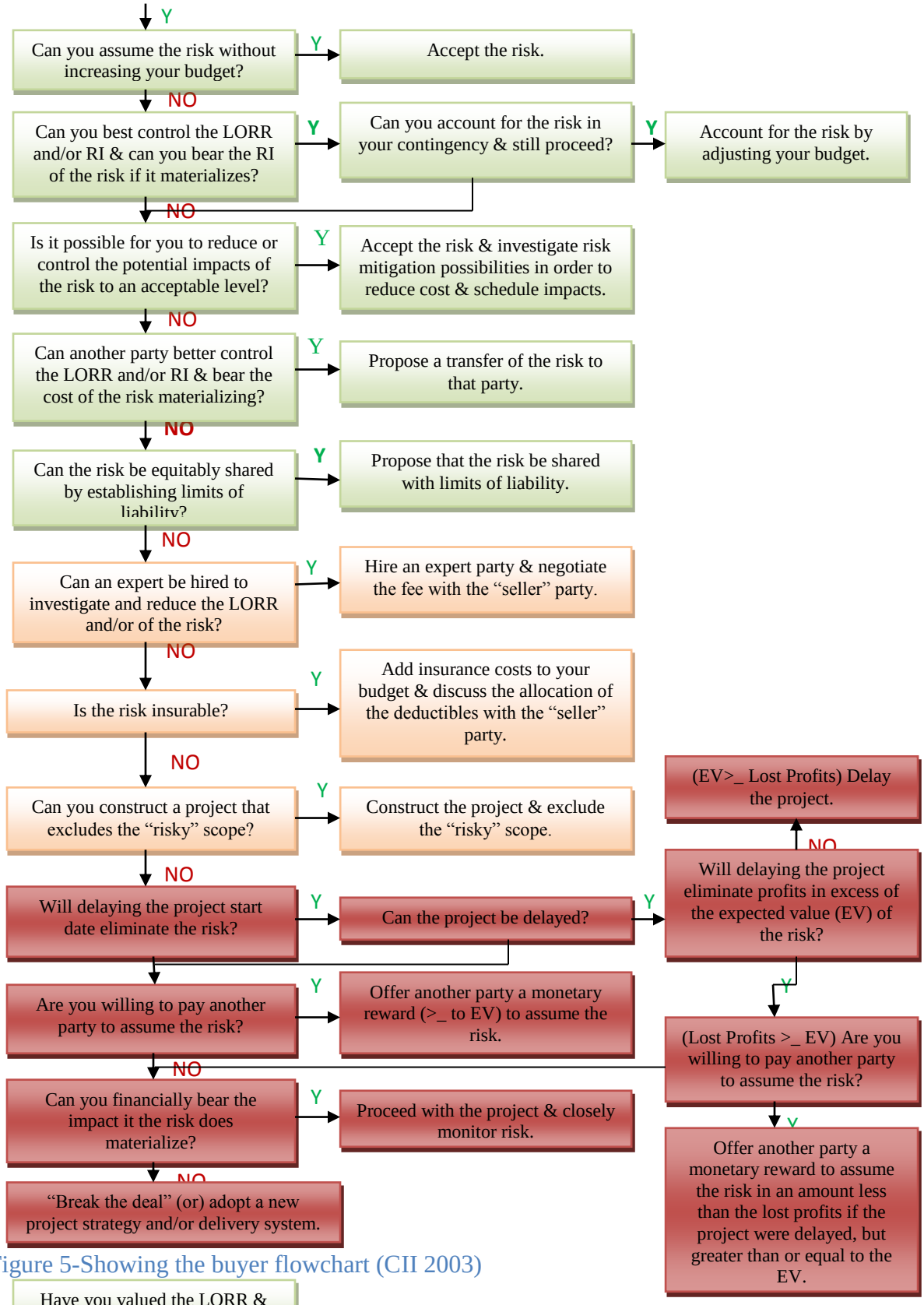


Figure 5-Showing the buyer flowchart (CII 2003)

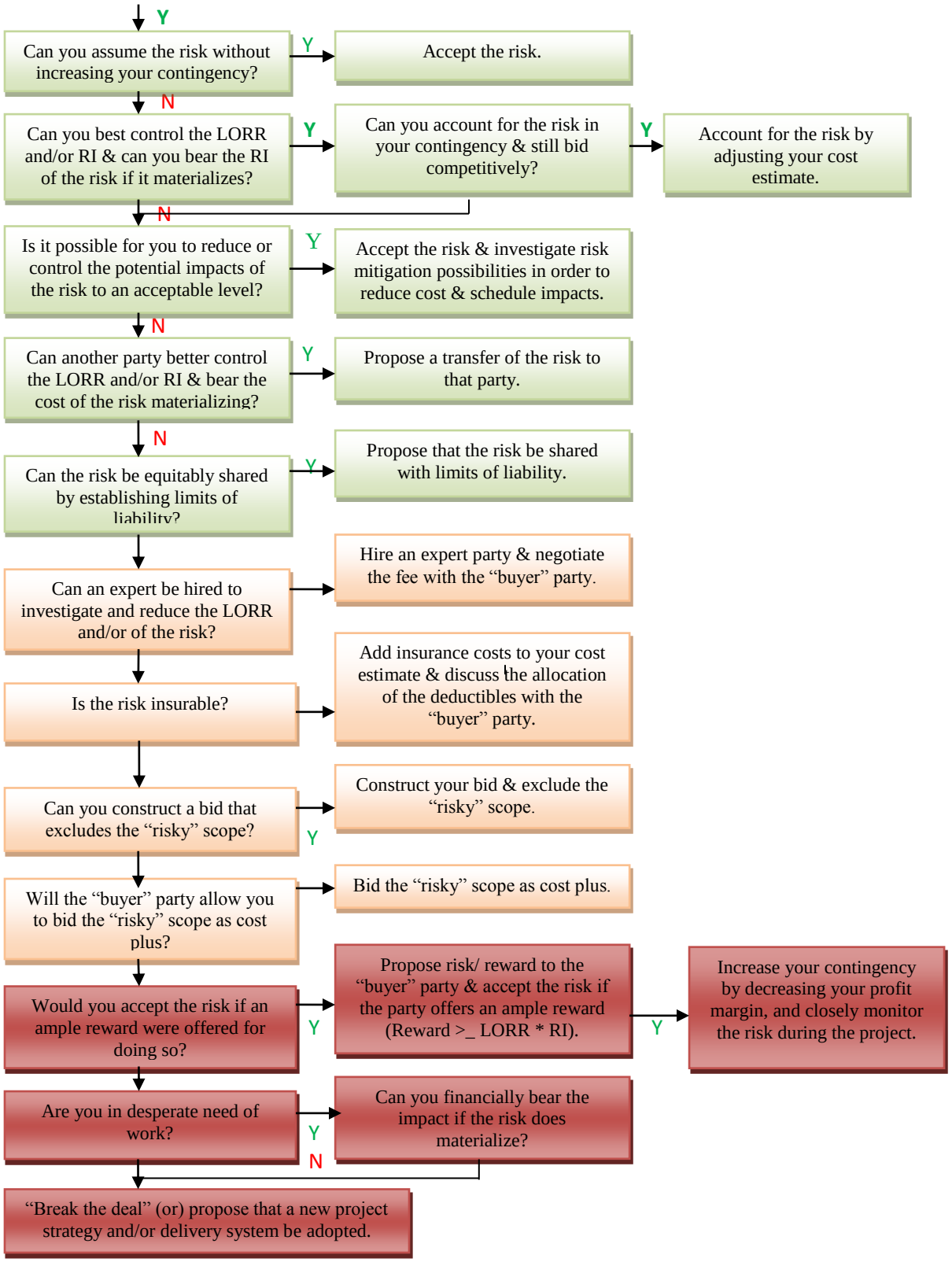


Figure 6- Showing the seller flow chart (CII 2003)

2.4.2 Legal Research Perspective

The legal research study carried out by CII Research Team 210 viewed the study from the US judicial system point of view based on judgment passed on risk not included in the contract documents and the exceptionality of risk that are included in the documents due to available evidence presented before the judicial panel. Although considering all risk is quite an important aspect of construction contracts but the often misallocated risk called the hot-button risks (i.e. No damages for delay, Consequential damages, Indemnity, Ambiguous acceptance criteria, Cumulative impact of change order, and Differing site conditions) are discussed in this study. However, the study has been design to cater for all risk in construction projects. In this section, the following will be discussed:

- The understanding of the hot-button risks, and
- The contract language used in the likely event of the risk occurring

No Damages for delay

A major cause to project failure may be associated with delay, which can impact significantly on time and financial sums of either of the owner or the contractor depending on the source of the delay. Most owners tend to mitigate this circumstance of delay damage by a contract clause inclusion of a no damages for delay. This is purported to shifting the risk to the contractor in the event of an owner-caused delay in a project which may borne of the fact that owner resisting to put all fund up-front after the signing of the contract. Although it may be contended by the contractor due to the fact that it gives room prolong delay in completing responsibilities on the part of owner design professionals due to the clause inclusion but studies shows court rarely acknowledges this fact. The importance's attached to the clause worth the need to consider the common law principles. Figure 7 shows a flowchart of a study regarding legal action taken for a project delay. Starting from the left of the figure, certain questions were posed and needs to be followed to the right side of the figure using the arrow indication. Upon the completion, a legal deduction as to which party is responsible can be inferred. However, caution has place on its usage to be limited to an educational tool only, and not as standard rule in legal jurisdiction.

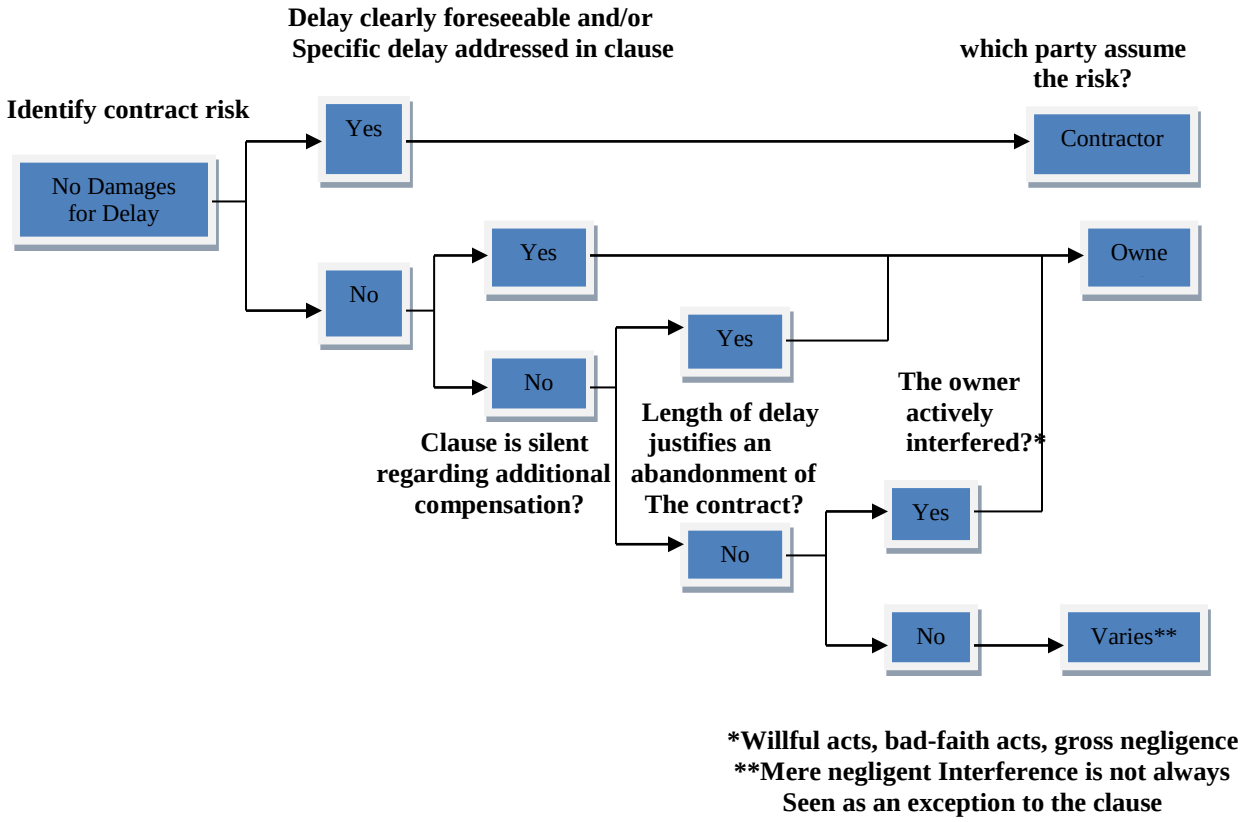


Figure 7- No damages for delay legal issues and considerations flowchart (CII 2003)

Consequential Damage

This type of damage originates due to breach in the contract. It is however different from a direct damage that could be as a result of construction projects which may includes defective workmanship, accumulating interest due to late payment, and extra cost of equipment. A consequential damage is an indirect damages that needs attention at the time of entering into contract agreement but where not taken into account. As a result, it can be foreseeable if it is truly a consequential damage as related by (Sweet and Schneier, 2004) and ought to be allocated through insurance. However, the level of its insurability should be determined so as to ensure it mitigation level before hand.

Indemnity

Indemnification is the act done by one contracting party (indemnitor) holding another party (indemnitee) responsible for a loss caused by the same indemnitor. Similarly, the indemnitor

may also indemnify the indemnitee of the loss caused by the indemnitee partly or whole depending on the contract and the supporting legal backing. Thus, indemnity may be expressly provided contractually via written document or by court validation done through legal concepts of qualitative (common law indemnity) and quantitative (doctrine of contribution). A case involve loss of life may be bear by a single party even though the other party might be a contributing to the loss. In such instance, the party may demands compensation from the other party called contribution. However, the U.S. courts do not recognize contribution in cases involving wrongdoers (Sweet and Schneier, 2004), but contributions may be allowed in cases where the other wrongdoer has not gotten compensation statutes to protect its workers' and seen to have been implemented in approximately half of the U.S. states (Sweet and Schneier, 2004).

Ambiguous Acceptance Criteria

When the acceptance criteria are using a clearly measurable objective, it is likely to benefit either party rather than basing the judgment on a qualitative measure. It may be quite common to include the ambiguous phrases that signify the completion of work at the discrete of the owner's satisfaction. In such situation, both parties assume responsibility for losses occurring through direct and indirect costs as a result of delay, and at the end, the owner is made to accept the current completion of the project and bear the cost for any rework on such project.

Cumulative Impact of Change Orders

Mostly associated with the change order is the direct and indirect cost, and are at the center of legal disputes. The cumulative impacts result from the associated costs over a large project that involves a change order. In this situation, the owner expect an estimation done at the point of submission and approval of change order, whereas, this is a difficult task to accomplish since the change order is not foreseeable, and thus, often leads to conflict. There has been two change order pertinent in the construction changes, and are noted as cardinal changes and construction changes.

Differing Site Conditions

There are two types of differing site conditions that has been identified in the construction industry; Type I, and Type II. In the case of Type I, it is noted that the conditions encountered for

the material is different from that specified in the contract documents. For the case of Type II, accounts for the work performed for a condition of material that was not ordinary expected by the contracting parties. The nature of the differing site conditions is such that could increase costs both for the mitigation and delay in such project. However, an inclusion of differing site conditions clause usually attraction an increase in the contingency by the contractor to cater for the suppose risk and the allocation of risk in the event of disputes is left to the courts to decide. On this account, the inclusion of such clauses has found its usage in the construction contracts and usually follows a laid procedure with a recommendation of cost reimbursement as a policy. But often, contractors would not rely on this step to save their company of an increase on an account of facing a differing site conditions during project. To the contrary, regardless of differing site conditions clauses, site investigation requirements, contractual statement, proof of an extent of damage, certain factors could make contractors loss the expenses incur in some cases.

2.5 Pre-legal disposition to dispute

In an early research conducted by Diekmann and Nelson (1984) stated the findings of their research that serves as the causes of disputes in construction industry, and found 427 claims in 22 federal administered construction projects. These claims were said to be causes of disputes for the parties but has been resolved before it being a litigation case via the use of alternate dispute resolution. The outcome of their findings found that certain factors actually contributed to the request of such claims as shown in Table 4.

Table 4- Project claims summary cause (Diekmann and Nelson, 1984)

Cause	Percentage (%)
Design error	39
Changes	30
Differing Site Conditions	15
Weather	7
Value Engineering	4
Strike	1
Others	4
Total	100

The findings from this research study would examine the rationale behind these causes and why it is essential to address the transaction cost economic for both parties in event of allocating risk to contractual parties in construction contracts. Thus, it is sufficient to suggest has a preposition that:

The risk allocation in construction contracts is predisposed to the aftermath of the transaction cost up held by the contractual parties.

2.6 Concept of Transaction Cost Economic (TCE)

As discussed earlier, the study is examining risk allocation in construction contracts via a litigation cases. On this ground, the study attempts understanding the role of risk allocation to minimize dispute in construction contracts such that the concept of transaction cost economic will play a significant role when allocating the risk. A review of some aspects of transaction cost economic is described in the section below.

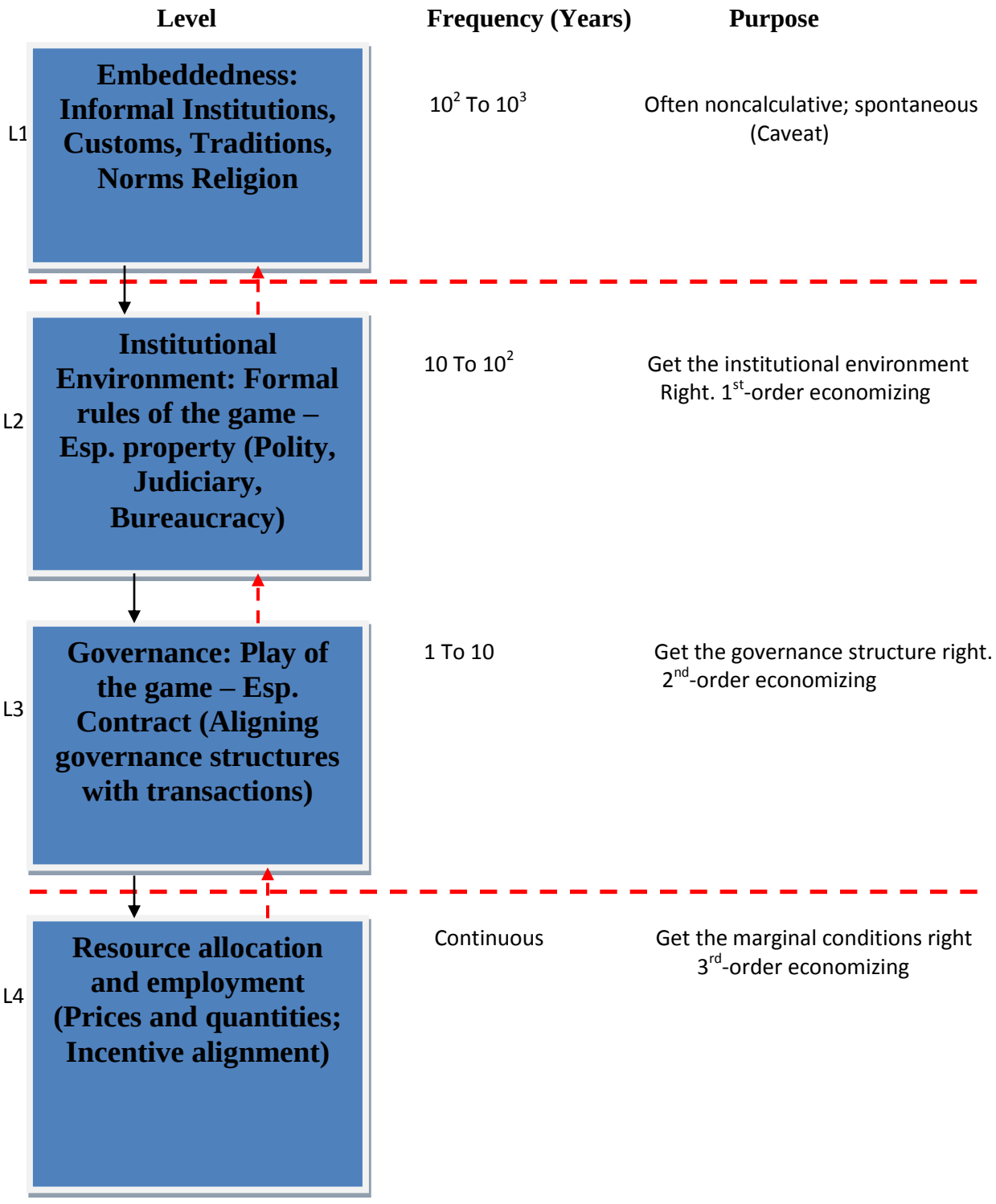
2.6.1 Transaction Cost Economics Perspective

Over time, significant cost incurred in construction litigation cases has been associated to an increased in the transaction cost. This trends has been on the increase as prolong time of resolving litigation cases has been noted in the surveyed carried out by (EC Harris, 2013), much of its root cause attributed to disputes based on the fall-out of construction contracts. The rise in cases witness in so many parts of the world where construction has been on the increase is quite alarming, and has prompted the need to examine the role of risk allocation to minimize disputes in construction contracts. Significant application of transaction cost economic (TCE) theory in addressing problems associated to construction has been noted in the work by (Eccles, 1981), much of which were concord by (Williamsson, 1985; Levitt, 1982; Winch, 1989). In recent time, Yates and Hardcastle (2003) applied the theory of TCE to understand the rationale behind the existence of conflict and dispute in construction industry. A study that was examined by Williamson (1975) explained that the problem of contracting between two parties is borne out of lack of understanding in the economic organization for which there could be many ways of going about it. As shown in the Figure 8, the TCE operates at a level 3 in the economics of institutional scale, for which the principle needs an attention. As indication in the figure, the black arrow

connecting the higher level to the lower level implies an imposition by the higher level to the lower level via a constraint. While the red arrow pointing in the upward direction sends a feedback. In a detailed study of the economics of institution, it should be noted that the illustration are interconnected, however, for the purpose of this research study level 3 is focused. The common perception for every organization is to achieve the lowest cost through an efficient route. Thus, it follows that TCE should be a choice for which an organization chooses a choice to consider an alternative arrangement (i.e. governance structure) in determining the best possible transactional cost method to use. It implies that every economic organization focus on minimizing the cost of transaction by adopting a governance structure suitable for such purpose.

2.6.2 Importance of Transaction Cost Economics

Transaction cost as defined by Klein et al. (1978) states that these are cost that have no direct link with the production of goods and services. Transaction cost view in construction field covers the cost of decision, planning, project management procedure, communication, sorting, negotiating contracts between contracting parties, and cost incurred in resolving dispute (Yates and Hardcastle, 2003). Further, it has been identified that the incompleteness of contract is associated with the increase of transaction cost borne out un-duly allocated risk. This is usually aggravated when one party or both parties takes up an opportunity behavior, and act accordingly. Opportunistic behavior may fall within the following; lying, pretending, cheating, and stealing which invariably leads to conflict and dispute if perceived by other party. The consequential fact of this is that an increase in the transaction cost will be experienced. Thus, addressing the increase in transaction cost, an advocate for appropriate form of governance structure was introduce into TCE (Coase, 1937; Williamson, 1985) which tends to provide a safeguard for the transaction between contractual parties, thus, ensuring a cordial relationship to continue to exist between parties. As viewed by some other researchers, the opportunistic behavior will persist due to incompleteness in contract making the conflict and disputes inevitable in the construction industry (Yates and Hardcastle, 2003). However, TCE analysis relies on different types of governance mechanisms in alleviating this problem as such the clauses in contract term, and inclusion of dispute resolution system.



L1: SOCIAL THEORY
L2: ECONOMICS OF PROPERTY RIGHTS
L3: TRANSACTION COST ECONOMICS
L4: NEO-CLASSICAL ECONOMICS/AGENCY THEORY

Figure 8- Economics of Institution (Cosmides and Tooby, 1996)

Chapter 3.0 Research Methodology

3.1 Research Design

This section presents the research methodology for the research study. In an account to get a recognized step to be taken for a research study, Fellows and Liu (2003) defines research methodology as "*the principle and procedures of the logical thought process which are applied to a specific investigation*". As for Naoum (1998) claims that research methodology is a significant way to question the research objectives. However, the research methodology cannot be taken haphazardly, it should be looked from the perspectives of the following; the research question, available data, researcher preference, and the resources such as access to data, while the cost and time for the research have been estimated (Gilbert, 2008). A typical research paradigm was illustrated by (Kagioglou et al., 2000) as shown Figure 9 below:

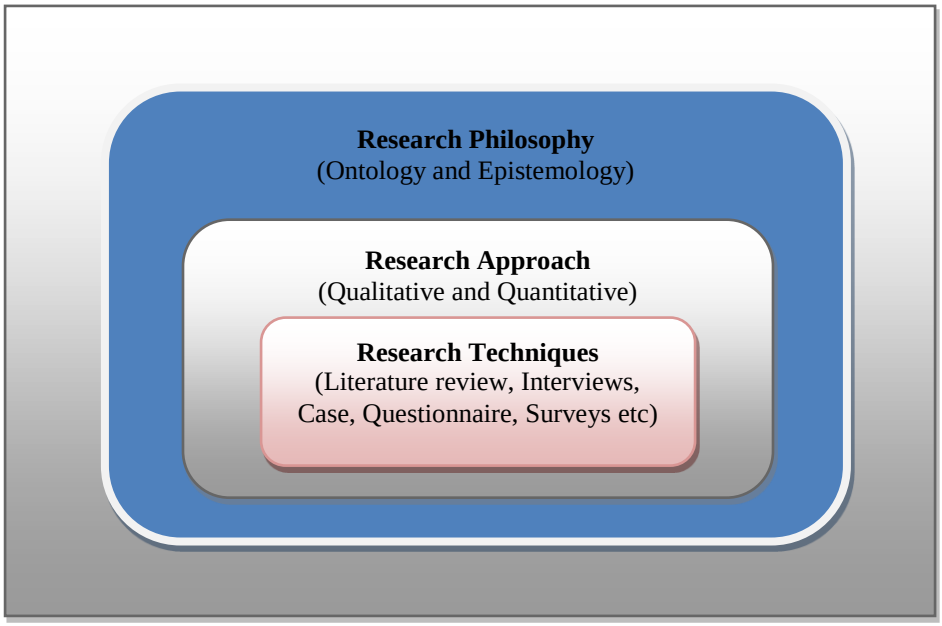


Figure 9-Nested research methodology (Kagioglou et al., 2000)

The nested paradigm has three segments, the research philosophy, research approach, and research techniques. The first segment which is the research philosophy set the guide upon which the other two inner segments operate. As for the research approach takes two forms; qualitative

and quantitative, while the research techniques is based on the source of the formation of the data (including interviews, case study, questionnaire, surveys etc.). Primarily, the research philosophy is classified as ontology and epistemology (Bryman, 2008). According to Bryman, the ontology has to do with a logical way of investigating the ways things are perceived and the way it exist in nature. In the other case, epistemology addresses focuses on the question considered to be an acceptable knowledge of the discipline. This lies on the fact of considering whether social science should be study based on principles and/or procedure of the natural science. It is on this bases epistemology philosophy was divided into positivist and interpretivist approach. Bryman (2008) expressed positivist approach to be based on an objective observational approach, termed quantitative methods, and interpretivist approach to be developed through building of theories formed from subjective observation of facts, and in this case, called qualitative method. By and large, risk allocation in construction contracts has been viewed from both perspectives by difference researchers, but little has been done to examine risk allocation in construction contract via a litigation means.

3.2 Research Approach

In this section, the approach to achieving the research questions are planned such that it begins with examining of the cases to a point where conclusion are drawn on the basis of relevant evidences and formation of logical theories. The research approach focuses on the planning, structuring, and a depth examination of the facts to satisfy the research questions (Kumar, 2005; Naoum, 1998). As acclaimed by Yin (2009) states that the research approach that should be adopted by the researcher will depend on:

- The research question posed and its intended way of enquiry
- Ability of the researcher to have control over the inherent factors of the study
- The contemporary nature of the study

To achieve this aim, three types of research approach has been identified; qualitative, quantitative and a combination of the two methods called mixed methods (Bryman, 2008;

Fellows and Liu, 2003; Neuman, 2005). Based on the nature of the study, a qualitative method has been adopted to examine the selected litigation cases.

3.2.1 Qualitative Research

Qualitative research in the last century has witnessed an impressive advance and results are showing that it is an acceptable form of research inquiry in the field of social research (Mayring, 2002, pp.9-18), as opposed to critics pointing qualitative research as a soft science which focus on exploratory and it is subjective, and therefore, termed unscientific (Denzin and Lincoln 2000). The use of qualitative research has further gained ground in social related issues as a better way of investigating into the nature of problems (Creswell, 2009). Upon this Leedy and Ormord (2010) stress that qualitative research is concerned about examining the human behavior in relation to a root cause of problems. On an account that the litigation cases are data collected through words rather than quantification makes qualitative method a suitable approach for this research study.

3.2.2 Approach of Case Study

Those selected litigation cases are qualitative and descriptive cases which were used to examine individual or bodies, deriving conclusions only on those Individual or bodies that are applicable to the context of the situation under study (Yin, 2009). In this study, individual cases were regarded as single point of source for the reviewing of risk allocation in construction contracts, and a rigorous methodological approach which was collaborated by earlier research works was used to draw reasonable conclusions from each case. This was done through examining relevant legal cases, and assessing these cases through content analysis, furthermore, a compilation of risks or unforeseen attributes were categorized from each case, thus, the research study has been undertaken via a recognized approach of conducting a case study. Basically, case study as viewed in social sciences using content analysis methodology has been use to assess human recordings that are in written or diagrammatic form, be it books, or drawing, and websites and laws contents has not been left out. The use of content analysis as a research methodology is characterize by helping the researcher to concentrate on key issues needed to be addressed in a topic and drawing relevant inferences about the context leading to such occurrences

(Krippendorff, 2004). Despite its use, there has been no systematic rules for analyzing data; the facts of content analysis lies in classifying many words into much smaller content categories (Weber, 1990). Content analysis is a two ways approach, first, it can be used in qualitative data, and secondly, it can be used in quantitative data. In whatever way the researcher wish to choose, inductive or deductive comes to place, depending on the purpose of the study. Mayring (2000a) reveal that inductive is used in studies in which the former knowledge is not easy to put together, as illustrated in Figure 10 while, deductive content analysis is used when the content of the case study is used to operationalise existing literature reviews for validating theories (Kyngas and Vanhanen, 1999). However, in various studies, significant research has been conducted on risk allocation in construction contracts, but in this study, its objectives is to determine the main causes of disputes that brings about most construction projects turning out to a litigation cases. Closed dated and far time litigation cases have been used in the study to examine the concept of transaction cost economic (TCE) theory in the interaction and interrelationship of the parties during the formation of contractual agreement. The analytical process in this study strives to make sense of the data and to learn to understand what is going on, an approach grounded in line with (Tesch, 1990). For this research study, a qualitative content analysis was used, which is a viable approach in conducting case study (Kohlbacher, 2006). Thus, the extraction and examination of the litigation cases were based on case study method as the research strategy using qualitative content analysis as its evaluating means.

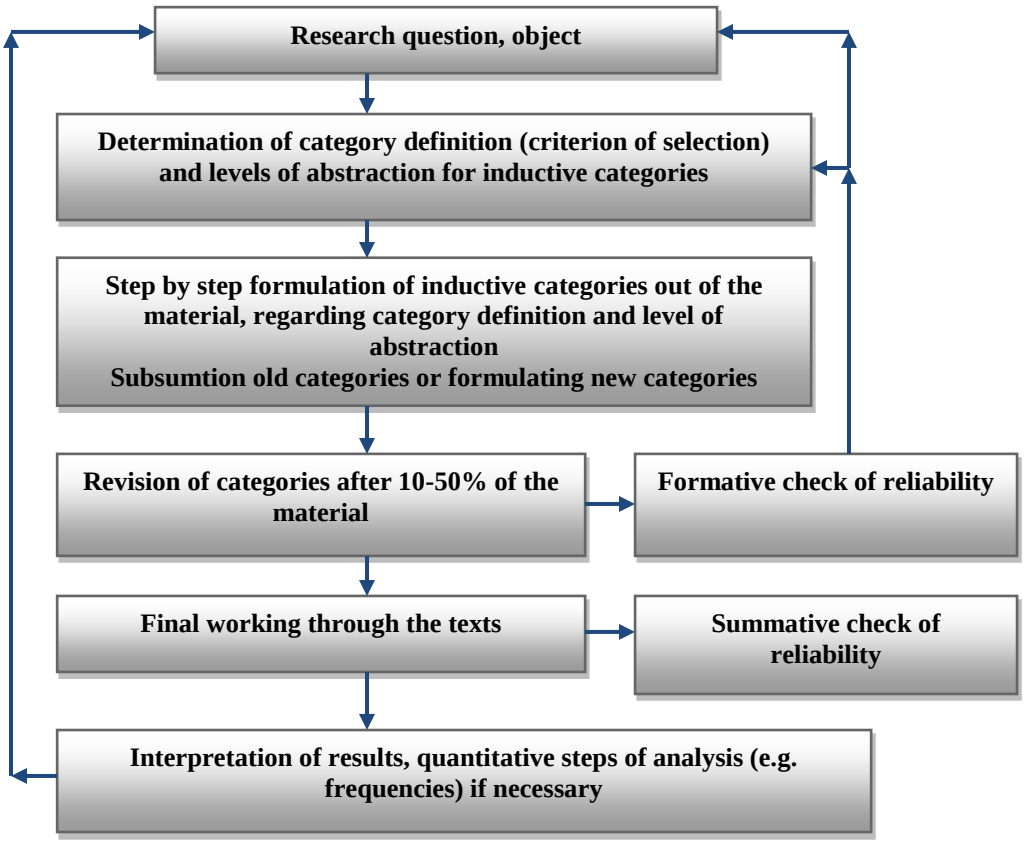


Figure 10- Step model of inductive category development (Source: Mayring, 2000a)

3.3 Data Collection and Research Method

Overview

Construction contracts – Risk allocation and Disputes

According to the global construction disputes report by a renowned build asset consultant EC HARRIS (2013) reveals the dispute trends in the construction industries as alarming. In the report, although the average value of global construction disputes was relatively stable between 2011 and 2012, but the duration to resolve disputes as seen to be on the increase. A major cause of disputes have been directly related to the administration of contracts, and perhaps, different reasons brings about the claims, claims which leads to conflicts, and conflicts that get settled in the court of law as resolution of disputes between parties, have seen to point to the discrepancies

in the risk allocation in the contracts. Thus, it would be worthy to consider contracts as a trade-off between the contractor's price to assume responsibility for both the foreseeable and unforeseeable risk (Flanagan and Norman, 1993). This would be affected by the readiness and awareness of the party to bear such risk by its attitude to risk response (Ward et al., 1991), a situation which is difficult to predict. There has been methods by which parties involve in contracts tend to up-hold continuous relationship even at the aftermath of conflicts, such as been observed in party to party negotiation and mediation been preferred over arbitration, and adjudication is employed in some other region like the Middle East. However, when parties fail to reach a compromise in regards of the conflict, more formal methods are required (i.e. litigation). The increase in litigation which has been on the increase has brought about the need to examine the root cause of disputes as undertaken by other researchers via other research methods as shown in Table 5,

Table 5- Summarizing some past research done on risks

Analysis Method (Source)	Risk addressed	Type of Project
Questionnaire survey (Yang & Ou, 2008)	Unforeseen site conditions	General construction projects (construction phase)
Real cases and questionnaire survey (Yang & Liao, 2008)	Unforeseen site conditions	Pipeline projects in sewage system
Questionnaire survey (Yang et al., 2010)	Uncertainty on political issues and government finished items	Public construction works under the Build-Operate-Transfer model
Hong Kong (Lo, Fung, & Tung, 2006)	Unforeseen ground conditions Exceptionally low bids	Civil engineering projects
Saudi Arabia (Assaf & Al-Hejji, 2006)	Variations in government regulations, Site Access/Control	NS
Ghana (Frimpong et al., 2003)	Method of procuring project materials	Groundwater projects
Jordan (Odeh & Battaineh, 2002)	Competency of the contractor	Public and private building, roads, and water and sewer projects

Among the various means by which parties maintain the fall-out of disputes, litigation is the only irreversible decision. Although, there are three level of judicial form; the highest been the Supreme Court decision. In this study, three arms of the judicial levels cases were examined. Some critics claimed the outcome of litigation decisions may not represents the true facts of the cases due to most contracts tends to favor the clients and the court judgment is devoid of

engineering knowledge, sound risk allocation, expertise input. However, the judicial judgment has remained uncontested except in situation where further appeals were made. On this basis, the study assessed legal cases of three arms of judicial level, and thus reflects the true perspective for which risk allocation should be evaluated in construction contracts, and upon which the research questions can be addressed.

3.3.1 Data Source

A review of the role of risk allocation to minimize disputes in construction contracts was examined from three judicial levels; Civilian Board of Contract Appeals (CBCA), Armed Services Board of Contract Appeals (ASBCA), Supreme Court of Canada, which were later referred to as case I, case II, and case III respectively, and focus only on the legal cases involving uncertainty (i.e. risk) and other forms of risk in construction projects. These cases were selected based on its accessibility to the general public and the trend observed in the culture of claims avoidance in those regions (EC Harris, 2013). The three documents have been accessed from different online legal portal archives as listed below:

1. http://federalconstruction.phslegal.com/ASBCA_Bean_Decision.pdf

2. http://www.cbca.gsa.gov/2007App/SOMERS_03-28-12_CBCA%201555__FLUOR_INTERCONTINENTAL,_INC..pdf

3. http://scc.lexum.org/decisia-scc-csc/scc-csc/scc-csc/en/item/8426/index.do

These cases have been selected from those sites based on the reputational status of the sites and the ease of access to the general popular. The selected legal cases majorly dealt with claims arising from improper identification of risk to respective parties involve in the construction contracts, and of course, the contracts signed serve as the only means by which the presented information would be judged. Although, the cases contained the detailed proceedings before and after the contracts was awarded to the contractors but only the legal aspect of the case dealing with risks and the attributes were used as the basis of drawing a conclusion.

3.3.2 Analytical Method

The study approach adopted in this research study is based on three litigation case studies selected across three levels of judicial forms; Civilian Board of Contract Appeals (CBCA), Armed Services Board of Contract Appeals (ASBCA), Supreme Court of Canada and content analysis methodologies was used to review risk allocation in construction contracts in those selected cases. This is a method that can be found in project management domain (Cao & Hoffman, 2011; Frimpong et al., 2003; Turner, 2010; Yeo, 1992). An extensive description of use of case study and content analysis can be found in the literatures by (Krippendorff, 2004; Yin, 2009). A detailed description of the section is presented under the case analysis.

3.4 Case analysis

This section presents the steps taken in the case analysis to assume the initial pattern formation for the cases, upon which the analyses and interpretation from the litigation cases is built on.

3.4.1 Introduction

In this section, the analytical strategy adopted for the analysis of the litigation case was based on Miles and Huberman (1994) that stress the ability of the researcher to handle the data embedded within the case by:

- Collating the identified information into different arrays
- Formation of categories and grouping the evidence within such categories
- Making the display of data in form of flowchart and graphics to enhance the easy examining of the data
- Tabulating the occurrence of the events
- The complexity of the tabulated data and their relationship is verified under a second-order numbers like means and variances
- The information are put in chronological order

As criticized by some researcher, case study has little basis for scientific generalization, however, the purpose of case study is not based upon sampling or statistical generalization as stated by Yin (2003a, p.10);

> Case studies [….] are generalizable to theoretical propositions and not to populations or universes. In this sense, the case study […] does not represent a 'sample', and in doing a case study, your goal will be to generalize theories (analytical generalization) and not to enumerate frequencies (statistical generalization).

3.4.2 The Unit of Analysis

Based on the selection of the litigation cases, there are three levels of the judicial judgment as identified in the cases, and the study conclusion was based on the proceedings of the judicial judgment at various levels. Thus, it follows that the result of the study was based on an irrevocable outcomes of the courts. The analysis is based on theory of transaction cost economic developed by Coase (1937) upon which risk allocation is viewed in construction contracts. According to Coase, the theory advocates the existence of the firm such that in the absence of transaction cost, there could not have been the economic basis for the existence of the firm. Coase (1991) argued that the continuity of a firm is based upon the ability of the firm to perform and coordinate its functions with the lowest possible cost than if such is performed by means of market transactions and the ability to perform same function at a lowest possible cost if it were to be performed by another firm. The focus of the research is to proffer a more proactive ways of administering contracts agreement such that transaction cost involve in project risk is most handle by the party able to spend the least cost via adopting a proper risk allocation method. It is believed that cost in project, spend based upon justified means would foster a cordial relationship between the parties involved in a binding construction contracts agreement.

3.4.3 Technique Adopted for the Case Study

The study relied on the proposition that the risk allocation in construction contracts is predisposed to the aftermath of the transaction cost up held by the contractual parties. To explain this, the study adopted explanation building techniques in the analyses of the data that is based on qualitative content analysis. The litigation cases are in line with the objective nature of

qualitative content analysis as it follows the pattern from one of the data collection method in qualitative research such as transcripts of interview, recordings, behavioral observation, written document and so on. The cases took the form of a written document and were analyzed on that bases, however, the inherent content embedded in the cases alongside the formal aspects of the content were analyzed to build the relevant theory attached to the research problem, a principle in line with (Mayring, 2000b). Furthermore, Mayring (2000a) defines qualitative content analysis "an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytical rules and step by step models, without rash quantification". It is very clear that qualitative content analysis has gotten an advantage in its process of following a step by step methodology, and of more important is the formations of categories build up on a theory guided approach. Titscher et al., (2000) acclaimed that the bases of qualitative content analysis lies in the formation of categories, and expressly coding the unit of analysis. Thus, categories will be taken as the operationalize variables. Content analysis was based on seven components developed by (Mayring, 2000), upon which Mayring has instituted three distinct analytical procedures for the analysis that can be adopted separately depending on the research questions (Mayring, 2002; Titscher et al., 2000). The three procedures includes; summary, explication and structuring.

Summary

This approach is in the process of reducing the material such that the original content of the material are maintained while concepts are created in a manageable size. Thus, it take the patterns; reduction, abstraction, paraphrasing and generalizing.

Explication

This method entails making clarification of the text, explaining it, and annotation formed. It follows a lexico-grammatical definition, thereafter, the explicated text is determined, subsequently streamlined by content analysis, then the paraphrasing of the explicable text is formed and explained based on the reference of the material.

Structuring

This is one of the important techniques of content analysis. It focuses on extracting of structures from the entire material. However, it begins by identifying the unit of analysis, which is followed by the bases upon which the structures are formed, in most cases, on some theoretical foundations, then, the characteristics of the categories are set. Further, definitions are formed, and the rule of coding is defined on the categories. The material at first are read, locating the area where key information lies, then, further examining of the text produce the categories. More frequently, the categories are re-visited and revised. Lastly, the results of the analysis are produced.

Many have thought that structuring is the same with the classical content analysis; however, a major difference between the two methods is the use of coding agenda (Kohlbacher, 2006). Although, Glaser and Laudel (2004) claimed that the core of the technique which is structuring might actually be the extraction, but the difference in Mayring's structuring lies in the formation of the category system, as a result of which produce new information from main text (Kohlbacher, 2006). Hence, the techniques are on the bases of addressing the research questions posed in the study. Figure 11 shows the basic proceeding of qualitative content analysis right from the point of initiating a theory to the point where the final analysis is achieved and interpreted adapted from (Glaser and Lauder, 1999).

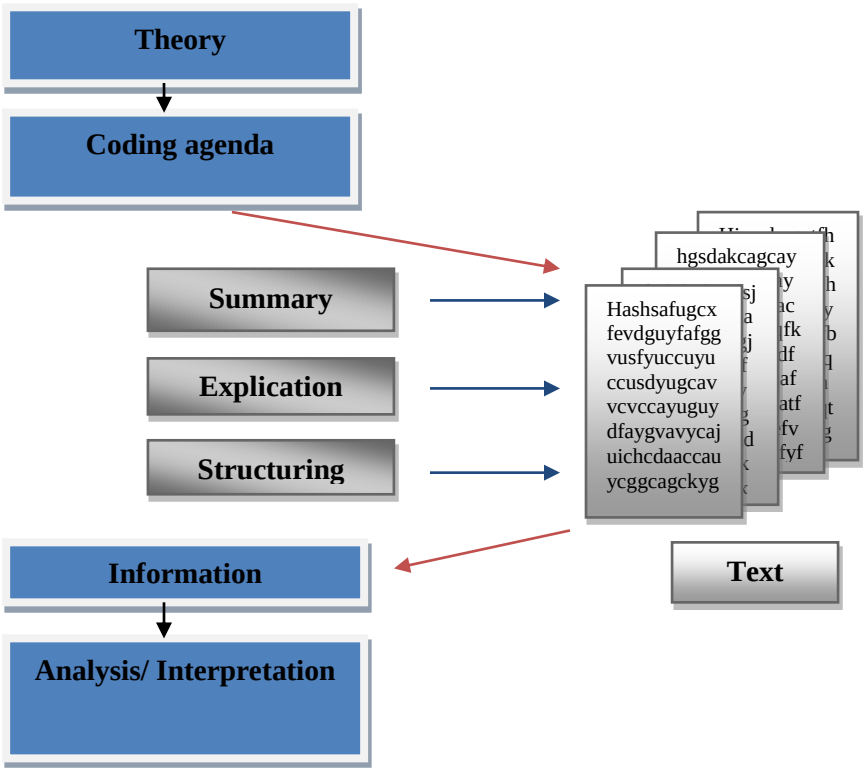


Figure 11- Basic proceeding of qualitative content analysis (Glaser & Lauder, 1999)

An in-depth study of Mayring's qualitative content analysis has shown that it comprises of nine different stages (Titscher et al., 2000; Mayring, 2003) as listed below:

1. Collection of the data
2. Situational analysis of the main text
3. Formation of categories system form the main text
4. Following particular trend in the analysis
5. Building up of theories in the formation of interpretation to research questions
6. Analytical selection of the technique (i.e. Summary, explication, and structuring)
7. Defining the unit of analysis
8. Main text analysis via summary, explication, or structuring
9. Final interpretation

According to Mayring (2000a) explains that the qualitative content analysis procedure are a hallmark to be followed with the usage of this two approaches; inductive categorization and deductive application. However, in this research study, an inductive category was adopted.

The Induction category diagram represented in the Figure 10 under the literature review is such that the trend of analysis is based on the extent of earlier studies and the association of the root cause of the problem in the study with theory of transaction cost economics (TCE), however, qualitative content analysis does not primarily answer the question via formation of categories but the questions are addressed through the development of an interpretation from the main text. Thus, inductive category focuses on the formulation of a criterion of definition through the theoretical knowledge that is looked in line with the research question when carrying out the analysis of the main text. As a result of this fact, the creation of categories is severally revised, and reduced to smaller main categories, which enhance its reliability (Mayring, 2000a).

3.4.4 Identifying Causes of Litigation

In order to identify the causes of Litigation, the cases were examined to identify where the risk factors that brought about the cause of litigation for each cases through the adoption of content analysis. To achieve this, the first step in cumulating the root causes of the litigation from the cases was done via an initial reading through the cases which was followed by an in-depth understanding of the project proceedings, which has helped the researcher to categorize the causes of each litigation case. The descriptive term obtained from each case was based on the information before the judge that is associated with some facts from the contract, and are herein called 1st tier. The second stage of the categorization describes the attribute relating to the 1st tier, and was complied as the 2nd tier. These identified parts were at the same time referred to as sub-categories. It was then followed by the grouping of these causes into a more classical category called a 3rd tier. The formation of these tiers represented the difference roles played by the clients and the contractors in the construction project that were binded by the construction contracts. A sample of the chronological formation of the tiers for the contractor is represented in the Figure 12, while the 1st tier description causes of litigation between the parties (i.e. client and the contractor) are delineated in Table 6 and 7.

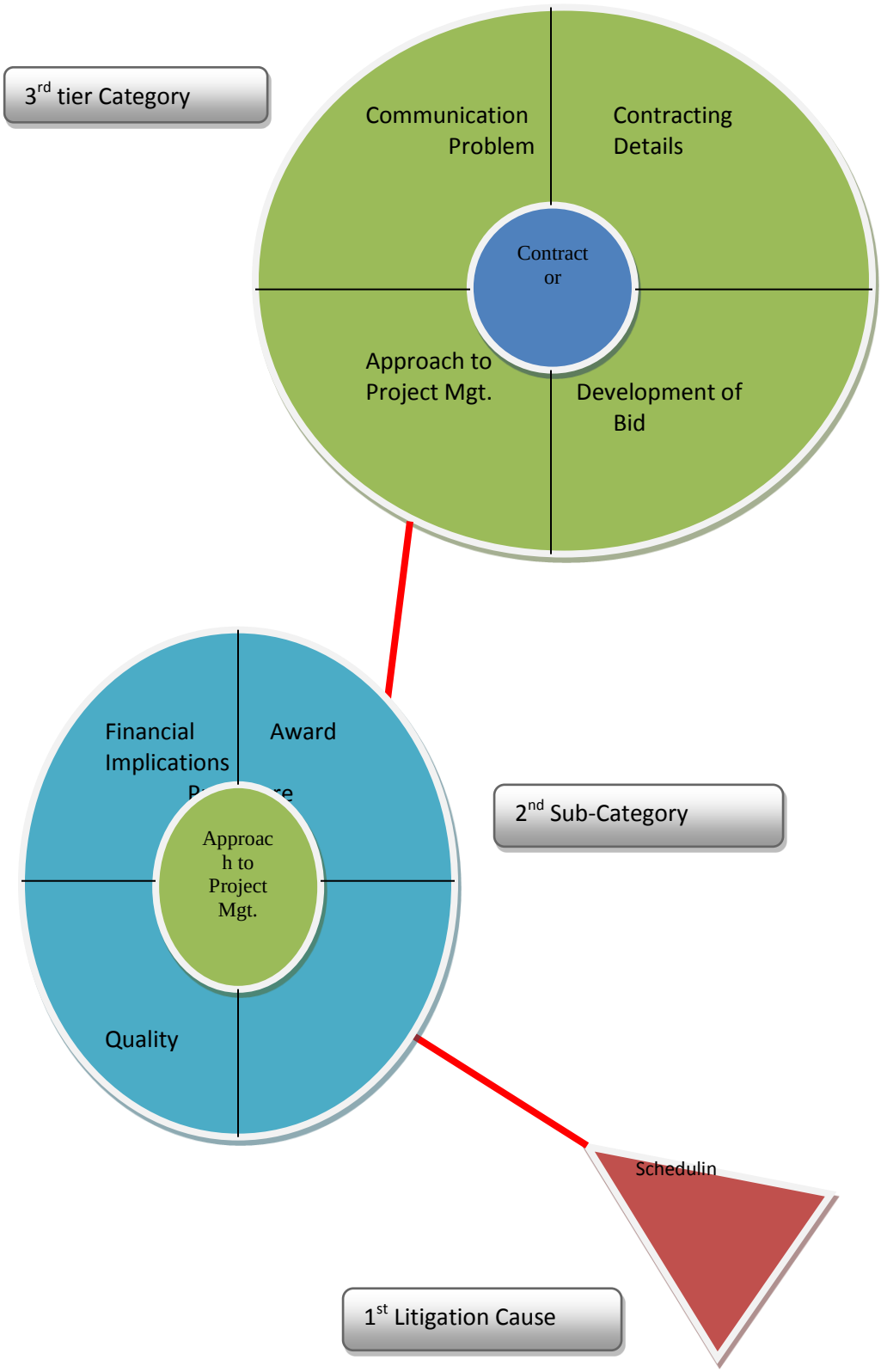


Figure 12- The three category tiers contractor litigation cause illustration

Table 6-Showing client's attributed causes

S/N	3rd Tier Category		2nd Tier Sub-Category	Bases of litigation	Case(s)
A	Approach to Project Management	i	Pre-Award Design Review	Unforeseen Site Conditions	I, II, III
				Confirmation of Site Placement	I,II,III
				Non-assessment of Requirements	I,II,III
		ii	Change Orders	Response Time	I,II,III
				Scope of Work not completed	I,II,III
				Drawings Issuance	I
		iii	Pre-Construction Conference Procedures	Clarity of Contract Requirements	I,II,III
		iv	Quality Adherence	Contractor Function	I,III
				Requirement at Site	I,III
B	Communication Problem	i	Pre-Award of Contract	Proposal Cost-Savings Methods	I,II,III
				Clarity of Requirements	I,II,III
		ii	Post-Award Construction Phase	Contract Clarity	I,II,III
				Coordination during Operation	I,II,III
				Government Attributed Delays	I
				Clarifications of Contract Procedures	I,II,III
				Changed Requirements	I,III
		iii	Internal Coordination	Communication with Contractor Officer	I,III
				Disagreement between Government and Contractor Representatives	I,III
C	Errors in Design	i	Drawings	Required Clarity	I
				Selective Equipment	I
		ii	Specifications	Adherence to Metric Requirements of the Contract	I
				Installation Instructions	I
D	Contracting Details	i	Scheduling	Performance acceleration	I
		ii	Reviewing of Bids	Bid Accuracy	I,II,III

		iii	Contract Procedures	Non-Clarification of Requirements	I,II,III

Table 7- Showing contractor's related causes

S/N	3rd Tier Category		2nd Tier Sub-Category	Bases of Litigation	Case(s)
A	Contracting Details	i	Contracts familiarity	Drawings and Specifications Misrepresented	II,III
				Assumed Rights	I,II,III
				Difficulty in Contract Bid Interpretation	I,II,III
		ii	Contract Procedures	Knowledge of Foreign regulations	I
		iii	Negotiating Method	Contract clarification requirement	I,II,III
B	Approach to Project Management	i	Award Procedure	Pre-Construction Briefing	I
				Selection of Material/Equipment	I
		ii	Scheduling	Equipment Usage	I
				Discrepancy in Material Delivery	I
				Schedule Execution	I
				Scheduling Subcontractors	I
		iii	Quality Adherence	Improper Placement of Material	I,III
		iv	Financial Implications	Payment Procedures	I
				Proposal Adjustment	I, III
C	Development of Bid	i	Estimation	Completeness	I,II,III
				Material Selection	I,III
				Erroneous Methodology	I
				Construction Method Selection	I
D	Communication Problem	i	Internal Coordination	Communication rift with Sub-Contractor	I
		ii	Post-Award	Alteration in Project Delivery	I
				Delay in Material Selection	I

3.5 Case Study and Qualitative Content Analysis

3.5.1 Case Study

As selected for the purpose of the research study, a case study forms an important way from several ways of conducting research especially in relation to social science, as it has to do with understanding the very nature of human beings under the context for which they operate. According to Gillham (2000a) defines case study as a research tool use to investigate specific research questions through a range of evidences available. Further, Yin (2003) explains that case study is a research model that study contemporary phenomenon within a real-life context. Based on the multiplicity of perspective found in human beings, a case study approach is employed to under study the situation in a detailed manner (Ritchie and Lewis, 2003). For this reason, it may be bounded by time and place, as such, case study plays an important role in this regards (McMillan and Schumacher, 2001). In studying the context, all the available evidence is collected and builds upon a theory to ensure that the research questions are addressed.

3.5.2 Qualitative Content Analysis

It is found that the use of qualitative content analysis in case study follows an important approach called triangulation. Triangulation as view in qualitative content analysis operates on two different levels, first, the analysis based on collection of different material and evidence. Secondly, it is used in qualitative content analysis for the analysis of case study for which it was not commonly used (Kohlbacher, 2006). Literally, triangulation is taken as a way of study that involves the use of multiple evidences to measure an empirical phenomenon to overcome issues that relates to bias and needs validity (Blaikie, 2000; Scandura and Williams, 2000). Furthermore, the comparison of data helps to re-enforce the solution proffer to the research question (Creswell, 2003; Patton, 2002).

Summary

Under this chapter, the research methodology and design for the study has been explained. It started with the three themes for the study; research philosophy, research approach and the research techniques, all presented in a nested diagram. The qualitative approach adopted for the study has been explained, pointing the need for qualitative content analysis as the research method use for the analysis of the litigation cases, and explaining why an inductive categorization was adopted. A review of what case study was all about was delineated and the reason why the research study has chosen to use a litigation cases rather than the pure quantitative and qualitative methods that may necessitate the need for questionnaires, surveys, interviews. Finally, the techniques needed under qualitative content analysis were explain, and the study has presented the two main approaches from which the conclusion of the study can be inferred; literature review and the case study approach, using triangulation of evidences as a validating means.

Chapter 4.0 Case Discussions and Analysis

In the examined cases, the legal disputes experienced varied across each case of the three judicial levels considered for the research study, however, the research focused on the factors precipitating the causes of litigation and the risk involved was discussed subsequently.

4.1 Data Summary

The three litigation cases were analyzed by collecting information through qualitative content analysis from each case with an initial review giving the below data information. In each case, it was possible to deduce the legal descriptions of the cases and why it was tried. The same format to extract information was considered for the three cases in this research study regardless of the judicial level in which the case falls. Complete information of the relevant issues for the cases was recorded. This information formed the pattern in which the cases were recorded.

- Case Sample
- Case Title
- Contracting Parties
- Contract Type
- Location
- Type of Project
- Project Award
- Description of Project
- Legal Issues
- Binding Decision
- Root causes of Litigation

In this research study, the main causes of litigation were identified and effort was made to examine the difficulty of the party concern (i.e. contractor) to operate under such tense project condition without claiming damages. The causes identified in this research study have been listed under the appendices.

4.2 Case Sample Analysis

The three cases considered are Civilian Board of Contract Appeals (CBCA), Supreme Court of Canada and Armed Services Board of Contract Appeals (ASBCA) where herein in this study referred to as Case I, Case II and Case III respectively. The study used the outcomes by the three judicial level to make its inference being the irrevocable decisions for the litigation cases except for instance expressed in Case II where prior hearing was done by Exchequer Court of Canada but was re-appealed by both parties involved (i.e. appellant and respondent) at the Supreme Court of Canada being the highest judicial level but eventually revoked by the presiding judge based on the evidence presented and the term of the contract which is the law of the parties and by which the court is bound. In that case, the respondent's petition of right was dismissed. Above all, the study focused on the research objectives by identifying the causes of Litigations and the challenges posed by the construction contracts used, to protect the loser and the need to consider the transaction cost economic theory in the event of allocating risk in project.

4.2.1 The Litigation Cause Descriptions

Based on the 1st causes of litigation identified from each cases summarized in Table 3 and 4 for both client-related and contractor-related factors, the section below present its qualitative content analysis has it relate to the cases.

Contracts Interpretations

Quite a number of appellant excuses were centered on the fact that the misinterpretation of the contracts was a major cause of litigation. There are various reasons associated with the misinterpretation of the contracts as classified by the hearing board.

Case Sample Excerpt:

Case I: Fluor Intercontinental, Inc vs. Department of State [2012] CBCA 491 at 14-15

> ……Fluor (i.e. Appellant) points to the DOS (respondent) – provided EFS and SUP, which Fluor claims promised that utilities and other infrastructure would be available at the beginning of the project. As a result, Fluor seeks

> $4,218,426 for damages related to alleged changes and breach of warranty related to the project infrastructure.

Case II: His Majesty The King (Crown) vs. Paradis & Farley Inc. [1942] SCC 10, rev'g [1941] Ex. Ct. at 1

> ….The respondent's claim (Paradis & Farley Inc.) was, as alleged, for compensation for work not foreseen in the agreement and performed "hors du contrat," under an implied contract, i.e. for works accepted by the Crown (i.e. appellant) for which no compensation has been paid, on a "quantum meruit" basis.

Case III: Bean Stuyvesant L.L.C. vs. U.S. Army Corps of Engineer (government) [2006] ASBCA 53882 at 9

> Appellant (i.e. Bean Stuyvesant L.L.C.) claims that it encountered a Type I differing site condition, that is, that the subsurface conditions actually encountered differed materially from those indicated in the contract.

From the excerpt, the researcher draws the situational descriptions for the cause of misinterpretation of the contract in Table 8.

Table 8- Showing examples of contract interpretation

Cause	Descriptions as specified
Contract Interpretation	Misconception of the specifications and drawings, misconstrued contract provisions, working outside the scope of contract, etc

In the three examined cases, interpretations of contracts actually form a key cause for the litigation as identified by the researcher. A note of caution was thereby expressed by the hearing board that an approach where certain portion of a document is used as a basis of making inference mainly leads to obviously neglecting the seminal rule of contract interpretation. This means that interpretation of contracts should be formed via linking of all relevant portions that made up the document to form the bases of making a decision than to ignore some aspect and assume conclusion can be reached on that basis. Case I concluded by expressly stating that the contract incorporated clause, transferred the entirety of the responsibility to the contractor through a standard clause of "site investigation and conditions affecting the work (Apr. 1984)," formulated in FAR 52.236-3. In the case of Case II, the contract agreement declares "…no

implied contract of any kind whatsoever, by or on behalf of His Majesty, shall arise or be implied from anything in this contract contained". Lastly, Case III showed that appellant has not proved that the conditions of the site were unforeseeable given the available information provided by the respondent that is made available upon request. Thus, it is claimed that the conclusion of the contracts should include the interpretations of all contract and contract-related documents.

Delays

Delay accounts for yet another cause of litigation as identified in the cases, which has brought about claim on the issue of liquidated damage. It is seen as an action taken by either of the party which results to an interruption in the construction schedule. A situation that has negative impact felt in the completion of the project.

Case Sample Excerpt:

Case I: Fluor Intercontinental, Inc vs. Department of State [2012] CBCA 1763 at 14

> ……By letter dated April 1, 2005, Fluor notified DOS "of the adverse impacts to the project and potential change to the contract resulting from the late delivery and availability of utilities and roads to the NEC Astana job site by the City of Astana.' Fluor states that "the City initially indicated that roads would not be available to the site until spring 2006," and "at this point, the City needs to deliver utilities to the site based upon the information and agreements that have been made to date." While acknowledge that the city of Astana was responsible for completion of the roads and Utilities, Flour told DOS that it would be seeking a "cost and schedule change."

Case II: His Majesty The King (Crown) vs. Paradis & Farley Inc. [1942] SCC 10, rev'g [1941] Ex. Ct. at 10-11

> …The Exchequer Court of Canada maintained the respondent's petition (i.e. Paradis & Farley Inc.) of right, holding that the latter was entitled to a sum of $119,597.22; but deducted one-third of that amount owing to loss of time, delay and incompetence attributable to the respondent.

From the excerpt, the researcher draws the situational descriptions for the cause of delay in the Table 9.

Table 9-Showing examples of delay

Cause	Descriptions as specified
Delay	Site inaccessibility due to delay in completion of utilities, modification issuance, unforeseen site condition, etc.

Delay associated with a claim of warranty in Case I proved to be inappropriate as the contract stated contrary to that assumption stating '….that no public roads or utilities are currently present on the site and informs the contractor that it must "coordinate with local authorities for the road design and construction" should plan for eventualities'. Similarly, unforeseen site condition in Case II proven by the contract as seen as in the work to be performed by the respondent was not to drive pile in a specified soil, but in a specified place. It is upon the respondent to take up the risk after agreeing to such responsibility to bare the consequence of any unforeseen; financially, and in any other ways.

Emerging Disputes

Certain disputes result during the execution of project which is usually related to procedural disagreement. This occur when the client's representative (i.e. contracting officer) object to claims put forth by the contractor as a result of changes experienced during the execution of the agreed project. In this case, the dispute may be of any sort of work categories being denied by the contracting officer.

Case Sample Excerpt:

Case I: Fluor Intercontinental, Inc vs. Department of State [2012] CBCA 1555 at 34

> ……Fluor acknowledges that some of the charges withheld were based upon delays for which it was responsible. It simply contends that but for the government caused delays, the overtime inspection costs would not have been necessary.

Case II: His Majesty The King (Crown) vs. Paradis & Farley Inc. [1942] SCC 10, rev'g [1941] Ex. Ct. at 17

> ….It has been suggested that the contract contains clauses that should be considered as inexistent, because they go beyond the authority given by the order in council. This particularly applies to clause 45 which declares that no implied contract "shall arise from any position or situation of the parties at any time", and also to that part of clause 56 which says "that any statement, representation or information, if so made, given or furnished, was merely for the general information of bidders, and not in anywise warranted or guaranteed by or on behalf of His Majesty (Crown)".

Case III: Bean Stuyvesant L.L.C. vs. U.S. Army Corps of Engineer (government) [2006] ASBCA 53882 at 9

> …It is undisputed that appellant encountered weak rock material and cemented sand at certain lower levels of the dredging prism, from -15 feet MSL to -20 feet MSL west to east within the YBBA. However, the contract drilling log for YB-1, showed rock fragments in samples from -13.6 feet MSL down to split-spoon sampler refusal at -38.1 feet MSL. Contract drilling log YB-2, showed rock fragments in samples from -18.1 feet MSL to the bottom of the hole at -25.6 feet MSL. Contract drilling log, YB-10, showed rock fragments in samples between -19 feet MSL and -24.4 feet MSL.

From the excerpt, the researcher draws the situational descriptions for the cause of disputes in Table 10.

Table 10- Showing examples of disputes

Cause	Description as specified
Disputes	General disagreements with the contracting officer on issues of procedure or decisions rendered.

A conclusion reached on Case I alleged that the dispute with respect to who bares the cost of inspection is not a case to be debated as the appellant was not entitled to compensable or concurrent delay as indicated in the contract. In the case of Case II, an acceptance of the contract with the plans and specifications was a condition for the tender that are duly formed under the Order in Council formulated in 10th February and binding on the both parties. Thus, the furnishing of the pile in a soil was on the agreement of the soil being investigated; failure to do so, its risk is upon the respondent (i.e. Contractor). Lastly, a review of evidence in Case III

showed that the contract indicated rock fragments close to the dredge prism as a result of the vibracore age, as such, the risk falls on the contractor to investigate the unknown changes that could have taken place due to erosion on the upper part of the dredge material as it will invariably could not have had any effect on the lower depths where the limestone layers has been specified.

Performance

There are certain factor contributing to the issue of project performance and these are likened to non execution of the terms and conditions of the contract in a proper manner. This can be seen in some of the example detailed below:

Case Sample Excerpt:

Case I: Fluor Intercontinental, Inc vs. Department of State [2012] CBCA 490 at 21-22

> ….Fluor submitted its new steel H pile design, identified as "pile materials substitution" to DOS on April 6, 2004…..Fluor decided to raise the site by adding 1.5 meters of loose soil to the existing jobsite to eliminate the swamp-like conditions caused by the high water table. But, when Fluor submitted its 90 percent design on July 9, 2004, the design failed to indicate the raised site. Fluor submitted revised design information regarding the elevation change to the site on August 30, 2004. …..While the parties were still trying to resolve the corrosion issue, Fluor began driving test piles using test pile driving criteria from its expert. After experiencing problems, which led to test pile failures on September 28 and 30, Fluor decided to adopt a new test plan which required, among other things, a change in pile driving equipment.

Case III: Bean Stuyvesant L.L.C. vs. U.S. Army Corps of Engineer (government) [2006] ASBCA 53882 at 9

> ….During a visit to the Oak Island beach in 2004 – roughly three years after appellant performed the contract work – Dr. Erwin discovered some rocks/cobbles on the beach.

From the excerpt, the researcher draws the situational descriptions for the cause of performance in the Table 11.

Table 11- Showing examples of performance

Cause	Description of Specified
Performance	Involves non-compliance material with that indicated in the contract, methods, and change in project deadlines, etc.

In addressing the performance specifications, it was concluded in Case I that the contractor deviated from material specified in the design specification, regardless of the difficulty faced, the risk lies upon the contractor to use its ingenuity to select the best method to solve the objective demanded by the project while taking it upon to meet the contract requirement. As in the case of Case III, the inability of the contractor to pre-determine the site condition based on the information available upon request (i.e. drilling log data) shows an incompetence on the part of the contractor, and were damage as a result of the material variation from expected and what was encountered due to unforeseen site condition.

Modifications

The sudden change in scope of work by either party generates a new introduction to the contract agreement. As consider for the purpose of this research, the modification is expressed as changes to any part of the project scope and contractual language of the contract.

Case Sample Excerpt:

Case I: Fluor Intercontinental, Inc vs. Department of State [2012] CBCA 490 at 21

> …Fluor's decision to change to steel H piles resulted in a flurry of comments on ProjNet and e-mail messages between the Government and Fluor. In one comment, DOS noted that the change would increase Fluor's cost of performing the contract, stating "Contractor needs to realize that these additional costs for the extra pile lengths are going to be absorbed by the contractor."

Case II: His Majesty The King (Crown) vs. Paradis & Farley Inc. [1942] SCC 10, rev'g [1941] Ex. Ct. at 13

> ….It is particularly on the ground of "quantum meruit" for works unforeseen in the agreement that the respondent submits its case, and it is on that ground also that the learned trial judge allowed an additional compensation.

Case III: Bean Stuyvesant L.L.C. vs. U.S. Army Corps of Engineer (government) [2006] ASBCA 53882 at 5

> …Based upon a review of the IFB as amended, but without reviewing the available log data for the holes within the vicinity of the YBBA, appellant's production estimator was of the view that the material to be excavated in the YBBA was previously dredged material, predominantly sand and wood, although "it crossed [his] mind" that some of the material could be harder or cemented.

From the excerpt, the researcher draws the situational descriptions for the cause of modification in the Table 12.

Table 12- Showing examples of modifications

Cause	Descriptions as specified
Modifications	Changes in scope, conditions of agreement, Issuance etc.

Modification has addressed in the cases were based on statement in the contract. As for Case I, as stated in the case document under the heading H.26 that each offeror is responsible for "ascertaining the availability of all materials and equipment necessary to produce the work required by the proposed Contract Documents, of sufficient skilled labor to perform the work, and of the availability of transportation to the site...". Thus, the risk of getting the agreed contract materials in a material regulated environment was solely the responsibility of the contractor. With respect to Case II, a severe warning was indicated by the contract clause based on the contract type that "the unit rate to include all charges for supplying, handling, placing, driving, drilling, and tarring the piling used" and that the work will have to be done "in spite of all difficulties including risk of piles meeting obstructions of any kind in the course of the pile driving". Thus, it goes further that all expenses has been included in the unit price as agreed by the two parties, and was buttressed by clause 37 stating that "no claim for extras would be entertained by the department on account of unforeseen difficulties in the carrying out of the works herein specified". In the Case III, as revealed by the information provided that the before and after profile of the dredged contend in the contract with respect to the dredging prism, shows that appellant (i.e. contractor) would invariably be dealing with dredged materials that are

predominantly sand would have to be excavated, but bidders who chooses to review the contract related document would possess sufficient information to know that there are possibilities of encountering hard materials in the deeper part of the dredging prism.

Site Conditions

This is one of the major reasons for litigation. The three litigation cases examined has shown that differing in site conditions was one of the cause for litigation so as to acclaim the expensed cost involve in such situation. It further proves to be one of the major causes of dispute has identified in Diekmann Nelson (1984) study. Three situations in this research study are delineated in the following excerpt.

Case Sample Excerpt:

Case I: Fluor Intercontinental, Inc vs. Department of State [2012] CBCA 491 at 14

> ….Fluor claims that DOS made certain promises about the conditions at the project site and that Fluor relied upon these promises to its detriment.

Case II: His Majesty The King (Crown) vs. Paradis & Farley Inc. [1942] SCC 10, rev'g [1941] Ex. Ct.

> ….respondent alleged that it encountered a certain material called "hard pan" and many large boulders therein embedded, thus necessitating extra work and putting the respondent to very large additional expenses.

Case III: Bean Stuyvesant L.L.C. vs. U.S. Army Corps of Engineer (government) [2006] ASBCA 53882

> Appellant claims that it encountered a Type I differing site condition, that is, that the subsurface conditions actually encountered differed materially from those indicated in the contract.

From the excerpt, the researcher draws the situational descriptions for the cause of differing site conditions in the Table 13.

Table 13- Showing examples of differing site conditions

Cause	Description as specified
Different Site Conditions	Type I differing site conditions, material changes in site conditions, Unforeseen site condition, Unfulfilled promises of site conditions etc.

Material differences, inaccessibility of site, conditions at site, promises referred to in Case I were expressed in the inspection and acceptance section of the contract that responsibility to verify the climatic conditions, local laws, exchange rate and restrictions, taxes to be paid, labor availability, transporting nature etc. was basically saddle as the contractor duties to investigate at their expense, and were not required to rely on the government (i.e. client) information. As part of what was concluded in Case II, as reinforced in the judgment heard at the Supreme Court of Canada between *His Majesty The King (Crown) vs. Paradis & Farley Inc.* [1942] SCC 10, referring to "….expenses incurred for unforeseen difficulties must be considered as being included in the amount of the tender, and the contractor has the legal obligation to execute the contract for the price agreed upon, in the same way as would have been more favorable and easier than foreseen". Case III as expressed in the judgment of Delman J. *Bean Stuyvesant L.L.C. vs. U.S. Army Corps of Engineer* (government) [2006] ASBCA 53882 at 11 when he said "We conclude that appellant failed to prove by a preponderance of the evidence ……Having failed to prove these elements of a Type I differing site condition, appellant's claim is denied,….".

Liquidated Damages

In this case the contractor seek to reduce or abort in monetary term the damages assessed by the government over delay encountered in the completion of a project that was bind by contract to be completed at a specified date. Litigation cases arising from liquidated damages are delineated below.

Case Sample Excerpt:

Case I: Fluor Intercontinental, Inc vs. Department of State [2012] CBCA 716 at 33

> ….Fluor does not challenge DOS's right to liquidated damages; it simply contends that it is entitled to recover liquidated damages for 154 days for which it contends entitlement to compensable delay damages.

Case II: His Majesty The King (Crown) vs. Paradis & Farley Inc. [1942] SCC 10, rev'g [1941] Ex. Ct. at 1

> … The Exchequer Court of Canada maintained the respondent's petition of right, holding that the latter was entitle to sum of $119,597.22; but deducted one-third of that amount owing to loss of time, delay and incompetence attributed to the respondent.

From the excerpt, the researcher draws the situational descriptions for the cause of liquidated damages conditions in the Table 14.

Table 14-Showing examples of liquidated damages

Cause	Descriptions as specified
Liquidated	Amount of, delay assessment, calculation method, justification etc.

As assessed in Case I, it was concluded that Fluor was not eligible for compensable delay since it failed to comply with contract requirements to submit a request for a schedule extension supported by a time impact analysis led to it failure. In Case II, it was specified in the contract between His *Majesty The King (Crown) vs. Paradis & Farley Inc*. [1942] SCC 10 at 16 "no claim for extras would be entertained by the department on account of unforeseen difficulties in the carrying out of the works herein specified," as such, Fluor could not have claimed any additional cost based on this fact.

4.2.2 Risk Factors Analyses

It was clear that the causes that warranted litigation were actually associated with risk, but these risks were covertly not allocated properly. According to Al-Sobiei et al., (2005) states that risk totally transferred to the contractor or owner taking up all risks associated in a project would increase the transaction costs, thus, making a balance risks allocation provides a reduction of transaction cost for both parties. Transaction cost approach is assumed to operate at three levels, firstly, at the topmost structural level of the enterprise that is based on the operations of the parties and what relationship exist between the parties, which form a direct reflection upon which the organization is design. At the second level, the operations are focused and the activities needed to be operated within the scope of the firm and that needed to be operated outside the firm, and the reason for such an action. Lastly, the manner of organizing human assets to match the existing internal structure of the parties is of concern (Williamson, 1981). Although, some have criticized the concept of transaction cost economic (TCE) that transaction cost may not necessarily come from the use of inappropriate governance structure but on the pretence that fairness plays a significant role in its implementation (Lind, 1997). However, the

usefulness of transaction cost analysis in the domain of project management is attributed to the fact that it integrates economics, organization theory, contract law, and behavioral assumptions in an interdisciplinary study of organizational phenomena (Williamson, 1981); as such the issue of fairness may as well be taken care of if implemented adequately. The risks identified in the litigation cases where it is difficult for the contract to protect the contractors are explained below.

Concurrent Delay

In order to explain this, concurrent delay has been defined as delay occurring from two or more delays usually overlapping within the same period for the completion of a given task or if it occurred singly still affects the completion date. (Morgantown, 2011). However, it has been a contentious issue, as it is found that when liquidated damages are assessed for project delay, excuses of concurrent delay are brought up.

Case I: Fluor Intercontinental, Inc vs. Department of State [2012] CBCA 1763 at 30-31

> …..Mr Ross reminded Fluor that under the contract, "in accordance with Reference C, liquidated damages 'will be assessed from the completion date indicated in the contract or extensions thereof to the date that substantial completion is actually achieved by the contractor…." Also, the contract provided that "in cases where the contractor does not submit a time impact analysis for a specific change order or delay within the specified time, the contractor shall be deemed to have irrevocably waived any rights to any additional time and compensation." It follows that delay on the project actually did happened and Fluor asserted that DOS had formal and actually notice of the delays. Fluor claims that, despite this knowledge, DOS failed to grant contract extensions when requested, causing it to accelerate the schedule to compensate for the delays. Flour replied to clarify its claim of constructive acceleration, stating that DOS's "threat of liquidated damages, and instruction to Flour to meet the original project schedule constitute a constructive changes to the contract." Fluor cites Hensel Phelps Construction Co. v. General Services Administration, GSBCA 14744, et al., to support this proposition. A clear statement in the contract stated that the "*project schedule*

shall be the critical tool for effective project management, analysis, control, and overall performance." Upon this, DOS contends that Fluor is responsible for its delays, none of the delays are excusable, and accordingly, Fluor is not entitled to any additional costs resulting from its efforts to compensate for the delays. DOS added, Fluor failed to submit a request for a schedule extension supported by a time impact analysis, as required by the contract. It was thus concluded that Fluor was responsible for any delays that occurred on the project, and that there are no excusable delays.

Case II: His Majesty The King (Crown) vs. Paradis & Farley Inc. [1942] SCC 10, rev'g [1941] Ex. Ct.

In this case, the major item of the contract was the furnishing and driving into the soil of a number of steel piles of interlocking type. The respondent (contractor) performed the entire work but claimed by petition of right from the appellant (Crown) a further sum of $160,000 for damages and additional compensation. The claim was based on the ground that the unit price tendered by the respondent would have been sufficient to cover the work, leaving a reasonable profit, if the soil into which the piles had to be driven had been as described in the plans and specifications, which were declared to be part of the contract; but the respondent alleged that it encountered a certain material called "hard pan" and many large boulders therein embedded, thus necessitating extra work and putting the respondent to very large additional expenses. The respondent's claim was, as alleged, for compensation for work not foreseen in the agreement and performed "hors du contract," under an implied contract, i.e., for works accepted by the crown for which no compensation has been paid, on a "quantum meruit" basis. An initial hearing by The Exchequer Court of Canada maintained the respondent's petition of right holding that the latter was entitled to a sum of $119,597.22; but deducted one-third of that amount owing to loss of time, delay and incompetence attributable to the respondent. Further, the case was appealed at the Supreme Court of Canada and the conclusion reached was based on the

> contract. It was concluded that the respondent tendered to furnish and drive the piles in a soil the nature of which it agreed to investigate, and which the appellant did not guarantee, but merely indicated with some reserves as being of a certain kind or nature. The works to be performed by the respondent were fully covered by the contract and the obligation of the respondent was not to drive piles in a specific soil, but in a specified place. The risk was upon the respondent, and having assumed it, it must necessarily bear all the consequences, financial and others if it misjudged the works to be performed and miscalculated the cost of the enterprise.

Differing Site Conditions

In this type of situation, a contractor is faced with a site conditions different from that specified in the contract or at the time of bidding for the contract. Cases of this like occur when the contractor has not gotten the opportunity to inspect the site during bid development. The differing site conditions cases are describe in the following cases:

Case II: His Majesty The King (Crown) vs. Paradis & Farley Inc. [1942] SCC 10 at rev'g [1941] Ex. Ct.

> …In 1936, the Minister of Public Works, acting on behalf of His Majesty the King in right of the Dominion of Canada, asked for tenders for the construction of a wharf at Rimouski, in the province of Quebec. Plans and specifications, prepared by the engineers of the Department of Public Works, were furnished to the tenderers; and a specific clause therein provided that the contractor would "be required to sign a contract similar to the form exhibited at the same time as the plans and specifications." …In May, 1938, the respondent (contractor) claimed by petition of right from the appellant a further sum of $160,000 for damages and additional compensation. The claim was based on the ground that the unit price tendered by the respondent would have been sufficient to cover the work, leaving a reasonable profit, if the soil into which the piles had to be driven had been as described in the plans and specifications, which were declared to be part of the contract; but the

> respondent alleged that it encountered a certain material called "hard pan" and many large boulders therein embedded, thus necessitating extra work and putting the respondent to very large additional expenses. The respondent's claim was, as alleged, for compensation for work not foreseen in the agreement and performed "hors du contrat," under an implied contract, i.e. for works accepted by the Crown for which no compensation has been paid, on a "quantum meruit" basis. Upon hearing at the Supreme Court of Canada, it was concluded that in view of the terms of the contract, which is the law of the parties and by which this Court is bound, the respondent's petition was dismissed. Based on the fact that respondent tendered to furnish and drive the piles in a soil the nature of which it agreed to investigate, and which the appellant did not guarantee, but merely indicated with some reserves as being of a certain kind or nature. The works to be performed by the respondent were fully covered by the contract and the obligation of the respondent was not to drive piles in a specified soil, but in a specified place. The risk was upon the respondent, and having assumed it, it must necessarily bear all the consequences, financial and others, if it misjudged the works to be performed and miscalculated the cost of the enterprise….

Case III: Bean Stuyvesant L.L.C. vs. U.S. Army Corps of Engineer (government) [2006] ASBCA 53882 at 9-11

> ..Appellant claims that it encountered a Type I differing site condition, that is, that the subsurface conditions actually encountered differed materially from those indicated in the contract….Appellant contends that Paragraph 2.1 of specification Section 02220 was misleading, because it indicated that the materials to be excavated were "predominately sands". More so, the "before" and "after" dredging profile of the contract dredging prism showed that the excavated material for the project, roughly 2.6 million cubic yards of material, was in fact predominately sands. Equally, subsection (h) of the physical data clause stated that the area to be dredged contained "dredged material" but the "Yellow Banks Borrow Area" (YBBA) in fact contained material of this kind,

> and we do not interpret this clause as a warranty or guarantee that no rocks, cobbles, or other hard matter would be contained within the dredging prism..It was concluded that appellant has not shown that the conditions it encountered were reasonably unforeseeable based upon all the information available at the time of bidding. A contractor has the duty to review information that is made available for inspection. The invitation for bids (IFB) placed the bidders on notice that drilling logs of other boring in the vicinity of the YBBA would be made available upon request. Appellant's competitors requested and received the vicinity data. Appellant did not. If appellant had reviewed the drilling log for nearby hole 20, it would have seen that all material below -18.7 feet MSL was classified as limestone. The drilling log for nearby hole 21 showed that all material below -17.2 feet MSL was classified as limestone. Given the drilling log data included in the bid documents, and the available drilling log data for the bore holes within the close proximity of the YBBA, it was concluded that the appellant has not shown that the rock material it encountered was reasonably unforeseeable..

It can be inferred from the cases that contractors seeking for compensation under a differing site condition clause should be aware of the following;

- There are risks involved in inferring based on literally conclusion reached between boring in order to assume soil transition and the encountering of differing soil type and/or rocks.
- There are risks involved in concluding on contract "silence" issues (i.e. the absence of rocks or cemented sand information may not guarantee their absence)
- Bid documents information said to be available upon request can be considered as part of contract documents by reference.

Chapter 5.0 Case Presentations and Findings

This chapter dealt with the explanation of the analysis of the cases and presents the findings in relation to the underlying causes found in the cases. These causes are mostly associated with the risk of the project classified as unforeseeable situations of the sites conditions and are linked to misinterpretation or misguidance of the contract. The need to sort out these cases at the court of Law has been associated to the theory of transaction cost economic.

5.1 Overview

The findings of the cases were based on subjective analysis using content analysis. It follows that there are factors that led to the cases being a litigated case, and this has been taken as the root cause of the problem. However, the associated causes were precipitated as a result of theory of transaction cost on accounts of the unforeseen risk encountered during the execution of the project for which the misinterpretation of the contract contributed significantly. In an instance, multiple causes were assigned to both parties while on several occasion, as was found in the outcome of the cases, causes of litigation were mostly assigned to the contractor inability to interpret the contract. According to Diekmann and Girard (1995) stressed that technical specifications need to be explicitly understood and clear to both parties. Uncertainty associated with transaction has been considered a very important part to project success and should be handled with utmost caution to prevent conflicts and disputes. As stated earlier in the introductory part of this study, construction is full of complexity, upon this, contracts serves as the only means that can define the role and responsibilities between each party. Although, the contract could not predicts all possible problems that could be encountered during project execution, but the contract can be administered in a flexible, clear manner via proper risk allocation that would reduce the insurgence of project claims resulting to disputes which eventually brings about litigation. Appendix (1-3) shows the format in which the cases have been summarized for the analyses of the causes.

5.2 Clients-Related Facts

The facts claimed by the clients in the three litigated cases which have brought about dispute accounted for 20 out of the identified root causes in the study. Based on the final category made in this study, approach to project management, communication problem-related, error in design and contracting details formed the main factors for the causes. Table 15 presents the frequency for each categories and their percentage of occurrence as calculated in the study. An illustrative chart of these main causes is shown in Figure 13 below.

Table 15- Litigated main causes (Client's Related)

S/N	3rd Tier Category	Frequency	Total % of Occurrence
1	Approach Project Management	8	40.0
2	Communication Problem-Related	6	30.0
3	Errors in Design	3	15.0
4	Contracting Details	3	15.0
	Total	20	100.0

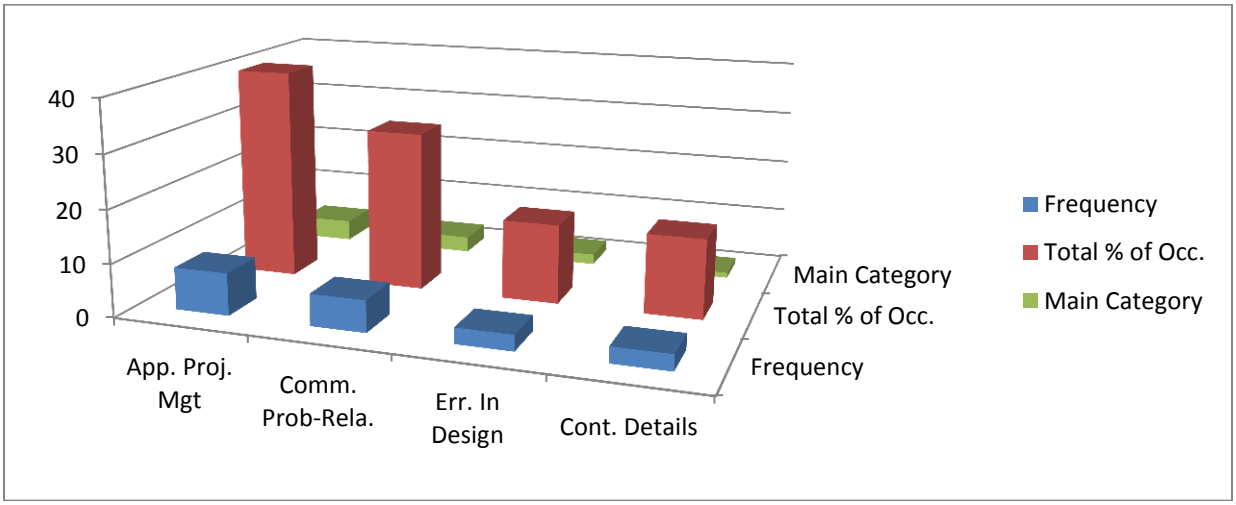


Figure 13- Chart representing main causes (Client's Related)

5.2.1 Approach to Project Management

Approach to project management incorporate some underlying causes, these causes are said to be the root of the problem, and these includes Pre-construction conference procedure, Pre-award design review, change order, and quality adherence. The ways these causes contribute to disputes are indicated in the Table 16 and its descriptions as specified in the cases are given in Table 17.

Table 16- Litigated root causes of approach to project management (Client's Related)

S/N	2nd Tier Category	Frequency	Total % of Occurrence
1	Pre-Construction Conference Procedure	3	37.5
2	Pre-Award Design Review	2	25.0
3	Change Orders	2	25.0
4	Quality Adherence	1	12.5
	Total	8	100.0

Table 17- Description of causes of approach to project management

S/N	2nd Tier Category	Descriptions of Causes
1	Pre-Construction Conference Procedure	Clarification of contract agreement
2	Pre-Award Design Review	Confirmation of site placement, Non-assessment of requirement, Unforeseen site conditions
3	Change Order	Response time, Scope of work not completed, Drawing issuance
4	Quality Adherence	Contractor function, Requirement at site

5.2.2 Communication Problem-Related

The problems that are linked to communication precipitated from issues arising from Pre-Award of Contract, Post-Award Construction Phase, and Internal Coordination. These causes have to do with the ways the two parties had an initial agreement which resulted to disputes during the execution of the project. The ways these causes contribute to disputes are indicated in the Table 18 and its descriptions as specified in the cases are given in Table 19.

Table 18-Litigated root causes of communication problem-related (Client's Related)

S/N	2nd Tier Category	Frequency	Total % of Occurrence
1	Pre-Award of Contract	2	33.3
2	Post-Award	2	33.3
3	Internal Coordination	2	33.3
	Total	6	100.0

Table 19- Description of causes of communication problem-related

S/N	2nd Tier Category	Descriptions of Causes
1	Pre-Award of Contract	Clarity on contract requirement, Non-adoption of cost Saving methods
2	Post-Award	Contract clarity, Coordination during operation, Adaptation of change Requirement, Verification on contract procedure
3	Internal Coordination	Communication with contracting officer, Disagreement between government and contractor representative

5.2.3 Errors in Design

The problems faced with error in design results due to non-coordination or confirmation of requirement in the clients drawings and specifications by the contractor. Instances were cited where drawings were referred to as mere information and require the contractor to make a verification or confirmation that will suit the contract requirement. Failure to do this has resulted in the various disputes found in the cases. The ways these causes contribute to disputes are indicated in the Table 20 and its descriptions as specified in the cases are given in Table 21.

Table 20- Litigated root causes of errors in design (Client's Related)

S/N	2nd Tier Category	Frequency	Total % of Occurrence
1	Drawings	1	33.3
2	Specifications	2	66.7
	Total	3	100.0

Table 21- Description of causes of errors in design

S/N	2nd Tier Category	Descriptions of Causes
1	Drawings	Required clarity, Selective equipment
3	Specifications	Adherence to metric requirement of the contract, Installation instructions

5.2.4 Contracting Details

The contracting details relates significantly to actions taken by the clients' contracting officer and the procedural steps that adversely affects the contractor in the reaching an agreeable stands to resolve claims. This has been claimed to have occurred due to the fact that contractor fail to comply with the following; scheduling, review bids, and follow contract procedures. The ways these causes contribute to disputes are indicated in the Table 22 and its descriptions as specified in the cases are given in Table 23.

Table 22- Litigated root causes of contracting details (Client's Related)

S/N	2nd Tier Category	Frequency	Total % of Occurrence
1	Scheduling	1	33.3
2	Reviewing of Bids	1	33.3
3	Contract Procedures	1	33.3
	Total	3	100.0

Table 23- Description of causes of contracting details

S/N	2nd Tier Category	Descriptions of Causes
1	Scheduling	Performance acceleration
2	Reviewing of Bids	Bid accuracy
3	Contract Procedures	Non-clarification of requirement

5.3 Contractor Problem-Related

There are problems that have been identified as the main causes for disputes in the litigation cases which are in connection with the allegation raised by the contractor during hearing of the

cases. These main causes are the contracting details, approach to project management, development of bid, and communication problems. Each of these causes was as a result of some factors that were perceived by the contractor as adversely not in their favor, and are said to be the root causes for the litigation. Table 24 presents the frequency for each categories and their percentage of occurrence as calculated in the study. An illustrative chart of these main causes is shown in Figure 14 below.

Table 24- Litigated main causes (Contractor Related)

S/N	3rd Tier Category	Frequency	Total % of Occurrence
1	Contracting Details	6	33.3
2	Approach to Project Management	5	27.8
3	Communication Problem	4	22.2
4	Development of Bid	3	16.7
	Total	18	100.0

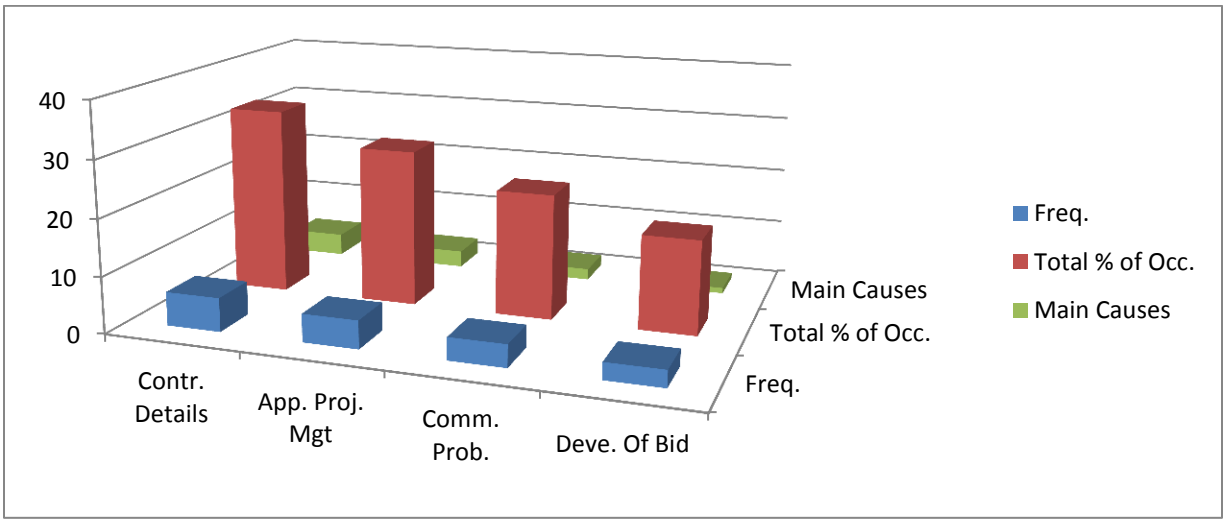


Figure 14- Chart representing main causes (Contractor Related)

5.3.1 Contracting Details

Contracting details focus on the issues surrounding the understanding of the contract. There are three problems as identified in the cases that are associated with dispute, these includes; contracts familiarity, contract procedures, and negotiation method. Misrepresentation or

misunderstanding from the either parties on any of this issues leads to dispute. The ways these causes contribute to disputes are indicated in the Table 25 and its descriptions as specified in the cases are given in Table 26.

Table 25- Litigated root causes of contracting details (Contractor Related)

S/N	2nd Tier Category	Frequency	Total % of Occurrence
1	Contracts familiarity	6	33.3
2	Contract Procedure	5	27.8
3	Negotiation Method	4	22.2
	Total	18	100.0

Table 26- Description of causes of contracting details

S/N	2nd Tier Category	Descriptions of Causes
1	Contracts familiarity	Drawings and Specifications Misrepresented, Contract interpretation
2	Contract Procedure	Knowledge of foreign regulations
3	Negotiation Method	Contract clarification requirement

5.3.2 Approach to Project Management

The approach to project management has examined in the cases from the contractor perspectives has given rise to four causes designated as the root cause for litigation. These causes are award procedure, scheduling, quality adherence, and financial implication. The ways these causes contribute to disputes are indicated in the Table 27 and its descriptions as specified in the cases are given in Table 28.

Table 27- Litigated root causes of approach to project management (Contractor Related)

S/N	2nd Tier Category	Frequency	Total % of Occurrence
1	Award Procedure	2	40.0
2	Scheduling	1	20.0
3	Quality Adherence	1	20.0

4	Financial Implications	1	20.0
	Total	5	100.0

Table 28- Description of causes of approach to project management

S/N	2nd Tier Category	Descriptions of Causes
1	Award Procedure	Pre-Construction Briefing, Selection of material/Equipment
2	Scheduling	Equipment usage, discrepancy in material delivery, Schedule execution, Sub-contractors Activities
3	Quality Adherence	Material Suitability
4	Financial Implications	Payment procedure, Proposal adjustment

5.3.3 Communication Problems

The problem associated with communication has to do with disagreement in assuming responsibility on an issue, which may arise between the contractor and the client or the contractor and the sub-contractor. In this case, it can be said to be a post contract award break down of communication between the contractor and the contracting officer (i.e. government representative) or in some cases, an internal rift between the contractor and the sub-contractor. The ways these causes contribute to disputes are indicated in the Table 29 and its descriptions as specified in the cases are given in Table 30.

Table 29- Litigated root causes of communication problems (Contractor Related)

S/N	2nd Tier Category	Frequency	Total % of Occurrence
1	Internal Coordination	1	25.0
2	Post Award	3	75.0
	Total	4	100.0

Table 30- Description of causes of communication problems

S/N	2nd Tier Category	Descriptions of Causes
1	Post Award	Alteration in delivery project, delay in material selection
2	Internal Coordination	Communication rift with sub-contractor

5.3.4 Development of Bid

In development of bid, problems associated with it come in the form of estimation that has to do with selection of material, defective methodology, and improper construction methods among others. These problems become severe due to the increase in cost associated. The ways these causes contribute to disputes are indicated in the Table 31 and its descriptions as specified in the cases are given in Table 32.

Table 31- Litigated root causes of development of bid (Contractor Related)

S/N	3rd Tier Category	Frequency	Total % of Occurrence
1	Estimation	3	100.0
	Total	3	100.0

Table 32- Description of causes of development of bid

S/N	3nd Tier Category	Descriptions of Causes
1	Estimation	Selection of materials, Defective methodology, improper construction methods

5.4 Outcomes of Case Review for Theory

In the examined cases, the findings based on the identified causes of litigation showed that disputes in construction contracts arise from risk that were not properly define or issues that were covertly misrepresented/ misunderstood by the parties involved in the contractual agreement, and thus, brought about high transaction cost to the supposed party. Such issues become a responsibility to the party that assumes the task. For the purpose of clarity, the causes identified in the litigation cases are situation that exists that sets up a potential risk, and the litigation becomes the effect of the non-clarified risk. Thus, it is suggested that the identified causes in the cases reviewed sets up the risk that ought to have been properly allocated using the combined risk rating which is the product of the party 1 and party 2 risk assessment worksheet as explained in the literature review section. It is observed that the adopted contracts in the cases transfer all risks to the contractor thereby increasing the transaction cost of the contractor. This goes further

to explain the proposition stated earlier, which conjure to the fact that when the transaction cost of a project is high on a party that assumed the risk for such project is not its responsibility, the tendency to dispute is high. According to Al-Sobiei et al., (2005), stated that a risk that is totally transferred to the contractor or perhaps retaining all risks in a project causes the owner's transaction cost to rise. Thus, it is in this light that a smooth relationship between contractual parties becomes incumbent so as to foster cooperation, reduce disagreements, brings about the easy resolution of conflicts, thereby ensuring the fairness of play that would ultimately reduce the uncertainty faced in the transactional environment. This study focused on *ex ante* incentivization in construction contracts which need to be understood through the concept of opportunism expressed in *ex post*. In this study, the clients negotiated very hard to get the project achieved at the lowest possible price, coupled with the misrepresentation/misinterpretation of contract, as in turns, becomes a detrimental situation to the contractor that assumes the task. In such situation, a climate of conflict prevails over the entirety of the project delivery. In reference to the literature review, a project should be seen as hybrid organizations where an incorporation of governance structure, production functions and transactions are aligned (Tuner and Keegan, 2001), to cater for the specificity and uncertainty nature of project (Williamson, 1996; Winch, 2001). The medium through which these can be achieved lies in the formulation of the construction contracts (Lusch & Brown, 1996; Hill & King, 2004).

5.5 Explanations of Theory

It should be understood that the approach to deliver the project was structured via the drafting of the contract agreement for the project specific and their management functions needed to be discharge on behalf of the client are understood, and are in line with the principle by (Morris, 1994; Walker 1996). However, these structure did not cater for the most effective ways to address the transaction cost economic involved in the execution of the project. The equivocal structure of the transaction cost in the project has led to series of litigation cases in the construction project as seen in the cases. Transaction cost economic is very important in this regard, as it helps to determine the fairness of relationship existing between organization and

market environment, which can be used to consolidate the project management theory. According to Buckley and Enderwick (1989) explained that the missing parts of transaction cost analysis in construction project has to do with the specification of the organizational structure of the client in relation to the project management analysis. Although the transaction cost economic theory cannot put aside the behavioral theories which embed the political, cultural and sociological models but lies on the fact, which underpin issues like opportunism and self-interestedness that is difficult for the management to accept. Coase (1991) explained the theory has an integral part to basic system component. Coase further stress that transaction cost should deal with the governance needed to provide the market with the cost of drafting contracts, obtaining tender, preparing the contract-related documents and the cost to ensure the delivery of the project by the consultant and contractors. This would be a similitude of the project management theory that focused on the integration, safeguarding and monitoring of the project activities. By so doing, a mutual relationship that is built on the party taking up a particular responsibility would be achieved.

5.6 Summary

This section presents the summary of the cases reviewed in line with the subjective analyses of the study. In addressing the first objective of the study, the researcher was able to evident several instances where the interpretation of the contract had different meaning to the two parties involved in the contractual agreement. This was exemplified in case I, case II, and case III where the contractor acted on promises, implied contract and type 1 differing site condition respectively but was interpreted contrarily to their expectations. Further, the researcher delved into the causes of the dispute in the construction contracts to explain the second objective. Based on the identified causes of disputes, it was obvious that the cause's sets up the risk involved in the project which needed to have been identified by both parties via combined risk rating to amicably allocate the risk of the project in order to minimize disputes as stated in the third objective. Subsequently, the researcher explained steps needed to circumvent disputes in construction contracts using the concept of transaction cost economic theory that lies on the existence of firm to exist by performing project activities at its lowest possible cost as would have been done if it was undertaken by another firm. In conclusion, it was explained that proper

risk allocation would enable an *ex ante* incentivization to provide the flexibility to govern the construction contracts in a cordially manner via the understanding of the hazard of opportunism expressed in *ex post*. Thus, the research findings points to the fact that the research questions are achievable if the approach is tread in the best of ways.

Chapter 6.0 Research Conclusions and Recommendations

6.1 Conclusions

The purpose of the study was to examine the role of risk allocation to minimize disputes in construction contracts, and was carried out via litigated cases. The three litigated cases in this research study were analyzed using a qualitative content analysis methodology. Thus, the researcher has been able to understand the causes of litigation cases in construction project that sets up potential risk in such sector. It is worthwhile to note that most of the causes that set up a potential risk could have been mutual worked out by both parties and can be planned for or addressed through some known risk models, such that the risk are apportioned to the party best able to handle the risk. However, this was not the case in the examined cases, as was observed that the contracts were awarded to the lowest bidder in the three examined cases. Thus, this draw attention to some of the research findings that concluded that many of the disputes resulting to litigation cases were as a result of the contractors' inability to assess the amount of risk involved in the project. There has been little evidence showing that contractors actually carry out in details the risk embedded in a project during tendering. In this research study, three litigation cases was selected from well known legal portal archives that includes Civilian Board of Contract Appeals (CBCA), Armed Services Board of Contract Appeals (ASBCA), and Supreme Court of Canada and the researcher started by looking into the causes of disputes in the three cases individually. This was then followed by forming three constructs that brought like-terms together until the main category for disputes were formed. Subsequently, the analyses of the main categories were done by checking its occurrence in the cases and obtaining the frequency for each main category. Thereafter, the analysis was based on transaction cost economic (TCE) theory which was used to examine the governance efficacy in the construction contracts. TCE takes its stand from the rules of the game that was indicated in Level 2 under the literature review, which deals with playing the game in a construction contracts. It was established that TCE subscribe to the fact that an important bounded rationality for economic organization embodied the fact that all complex contracts are unavoidably incomplete. It is in this light that self-interestedness is not seen as frailty but as an opportunistic approach. This is based on the fact that incomplete contracts

contains promises, voids, errors, and can be misconstrued as was seen in the examined litigation cases. Thus, the research emphasized the need to understand the concept of opportunism as it applies to contracts and risk allocation. In conclusion, the hazard of opportunism expressed in *ex post* is attenuated by emulating cordial relationship in the choice of governance as upheld in *ex ante* incentivization, upon which transaction cost economic theory is based.

6.2 Recommendations

The fourth object for this research study dealt with the provision of recommendations on ways of proactively managing construction contracts to minimize disputes. Based on the findings derived from the study which was built upon by the understanding and identification of the root causes of disputes, the following recommendations are proffered.

To begin with, the outcomes of the three litigation cases were in favor of the clients which show that the contracts were drafted in specificity to favor the clients in the advent of any controversy coming up. By so doing, the long term relationship is not at the interest of the clients but the immediate benefit that can be derived from the completion of the project. However, this is not in the best interest of the two parties. It ought to be noted that a cordial relationship between contractual parties enhances cooperation, reduce disagreements, creates room for easy resolution of conflicts, maintains stability for the clients, thereby, ensuring that the project uncertainty are kept to its barest minimum.

Equally, this should sound a note of warning to contractors who for the sake of contracts been awarded in their favor, do not go the extra mile to find out the risks involved in the project, and are thereby awarded on the basis of being the lowest bidder. Contrarily, the principle of transaction cost economic sets in when it is found out that the existence of such firm is at risk by shouldering a huge transaction cost with respect to the project. Drawing references on the bases of the causes that set up potential risk, the contract details which involve contracts familiarity, contract procedure, and negotiation methods are fundament to project success without course for litigation.

Firstly, contracts familiarity entails the clarification on the drawings and specifications related to the project. In this study, it was obvious that an incomplete or misrepresented drawings and

specifications contributed significantly to the disputes across the three litigated cases, and as such, the transaction cost was increased. Further, for the cases to be settled at the court of law is an extra cost to the transaction cost. It is in this light; that project drawings and specifications ought to be properly clarified and understood by both contractual parties and allocation of risk with respect to defects in designs should be assigned to the defaulter.

Secondly, contract procedure and negotiation methods are pertinent to the success of the project. A clear knowledge of the foreign regulations or local availability of materials required for the project, and contract requirements is necessary to be clarified at the on-set before embarking or execution of the project. Issues arising from non-clarification of contract requirements and regulations accounted for large percentage of dispute across the cases. It should be noted that all contract related documents should be verified and integrated appropriately to ensure that the requirement of the contracts are met. It was evidenced in the study that information referred to as being available upon request are taken to be an essential parts of the contract documents by reference. This has called for contractors to be wary of such information and clarify contracts requirement adequately.

Furthermore, approach to project management which has been identified in the study as a main cause to disputes lies basically in the analysis of the transaction cost economics that believed the choice of a governance structure is founded on the relative cost of nature of the project specificity which is determined by the type of project, but defined by the project management theory. Approach to project management has to do with the award procedure, scheduling, quality adherence, and financial implication as it has been identified in the examined cases. The project can only be detailed when the project methodology is defined and the design specification is complete. Failure to clarify this, result to clinching to satisfy the client's requirement which are often in vague terminologies and are perception oriented, thus, increasing the transaction cost to achieve a desire result. Situation of this nature were found in the discrepancy in the materials selection, improper placement of materials, disputes on performance acceleration and financial implications due to payment of overtime.

In addition, a breakdown in communication between the contracting parties has also had its contribution to the causes found in the litigation cases. The communication problems comes into place during the post award of contracts when contractors rises delay in the delivery of construction materials due to local restrictions, it is bluntly rejected by the clients representatives

as an excuse for delay in the delivery of the project at the right time that prevents the contractors from an excusable delay and liable to liquidation damages. Thus, it is recommended that factors that could cause delay in project delivery at the right time should have been anticipated for and party that can best address such issue should be made to take the responsibility.

On a final note, it can be seen from the recommendations provided in this study that there is a great need to allocate risk in project properly to the party that can best handle the risk involved at the lowest transaction cost in the construction contracts. As researchers has pointed out the difficulties that may be involved to reach such a conclusion as call for a mutual relationship were the hazard of opportunism created by *ex post* can be attenuated through an *ex ante* choice of governance is essential in the transaction cost economic analysis.

6.3 Limitations of the Research

The limitation of this research study is expressed on the basis that the judicial outcomes of the three litigation cases were in favor of the clients, as such, the analyses focused on those factors that caused the contractors to lose the cases based on the hearing by the judicial panel and the evidence presented before the court. It is worthy of note that instance are bound were the contract terms were implicitly expressed causing both parties to be at the receiving ends. In such cases, it would be more balance to be able to express the limitation of the construction contracts that failed to allocate the risk explicitly to the contractual parties as the main cause of litigation.

Similarly, the three cases were between government or crowns (i.e. client) and the contractors. The research would have seen how this research finding operates between two private sectors and correlate its outcomes with this present study. However, the relative similarity in the three cases can form a trend of what operates between government and private contractors.

Lastly, the numbers of cases used for the study could also be increased as this may help to detect more root causes of disputes in the construction contracts. Although the three cases are sufficient as a case study, but the researcher is only advocating for more cases to be examined in order to determine more root causes of disputes.

6.4 Recommendations for Future Study

A groundwork to further discover the root causes of disputes in construction project has been laid down by this research study, more so, the research focused on the role of risk allocation in minimizing disputes in construction contracts and how it can be used to circumvent the possible outbreak of disputes or address the disputes in construction contracts that result to litigation cases. In that light, this research study based its analyses on the understanding of the concept of transaction cost economics theory that can be used to explain the reasons for disputes in the construction projects, and the need to adopt an *ex ante* incentivization approach in administrating construction contracts that is based on the understanding of the hazard of opportunism expressed in *ex post*. Thus, for more holistic views, there is the need to look into the limitation of this research study to extend its external validation of the outcomes of this study.

It is in this sense; future research study should compare the trend of operation between the private companies and private contractors along side with the government and the private contractors. Furthermore, large numbers of cases should be employed in the study to enrich the root causes of disputes in construction contracts. Alternatively, other research methodology can be applied to review the litigation cases in order to find more promising ways to addressing the bases of disputes in construction contracts, and how proper risk allocation could be a possible remedy.

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Appendices

Appendix 1

Case Description I

Sample: 1

Case Title: Fluor Intercontinental, Inc.,

Contracting Parties: Fluor International, Inc., vs. Department of State

Contract Types: Fixed price

Location: United States embassy complex to be located in Astana

Type of project: Design and Build

Project Award: $63,057,022

Description of Project: The new capital of Kazakhstan, United State embassy complex to be located in Astana

Legal Issues: According to appellant (Fluor), it incurred significant problems during construction as a result of various broken promises and misrepresentations by the Government. The agency denied appellant's claims for additional costs.

Infrastructure: The appellant seeks $4,218,426 for damages related to alleged changes and breach of warranty related to the project infrastructure.

Perimeter Wall: The appellant seeks $1,817,770 for alleged changes to the perimeter wall design.

Liquidated Damages: The appellant seeks $2,773,694 in unpaid contract balance withheld by DOS for liquidated damages.

Acceleration: The appellant seeks $4,197,345 for acceleration damages allegedly required to overcome project delays; and

Overtime: The appellant seeks $488,216 in unpaid contract balance withheld by DOS for overtime costs.

Binding Decision: The appeal was denied because the evidence does not prove the followings: appellant must establish that the contract documents, reasonably read, made promises to it about

the conditions to be expected. It must also establish that it relied upon these promises when it prepared it offer and entered into the contract. This of course was not evidenced in either ways by the appellant.

Appeal Denied

Root Causes of Litigation:

Contractor: Misrepresentation of contract agreement, non-fulfillment of promises

Client: Delay, Material suitability

Appendix 2

Case Description II

Sample: 2

Case Title: Paradis & Ferley Inc. (Respondent)

Contracting Parties: Paradis & Farley Inc. vs Crown

Contract Types: Unit price

Location: Construction of a wharf at Rimouski, in the province of Quebec

Type of project: Construction

Project Award: $365,750.18

Description of Project: The major item of the contract was furnishing and driving into the soil of a number of steel piles of interlocking type.

Legal Issue: In May, 1938, the respondent claimed by petition of right from the appellant (Crown) a further sum of $ 160,000 for damages and additional compensation. The respondent's claim was, as alleged, for compensation for work not foreseen in the agreement and performed "hors du contract" under an implied contract i.e. for works accepted by the crown for which no compensation has been paid, on a "quantum meruit" basis.

Binding Decision: (At First) The Exchequer court of Canada maintained the respondent's petition of right holding that the latter was entitled to sum of $ 119,597.22; but deducted one-third of that amount owing loss of time, delay and incompetence attribute to the respondent.
NB: Both parties appealed to Supreme Court of Canada, the Crown to have the claim dismissed and the respondent to have the amount awarded in the court below increased.
Second: Supreme Court of Canada reversed the judgment of the Exchequer Court of Canada, that in view of the terms of the contract, which is the law of the parties and by which this Court is bound, the respondent's petition of right should be dismissed. The respondent tendered to furnish and drive the piles in a soil the nature of which it agreed to investigate, and which the appellant did not guarantee, but merely indicated with some reserves as being of a certain kind or nature.

The works to be performed by the respondent was not to drive piles in a specified soil, but in a specified place. The risk was upon the respondent, and having assumed it, it must necessarily bear all the consequences, financial and others, if it misjudged the works to be performed and miscalculated the cost of the enterprise. Expenses incurred for unforeseen difficulties must be considered as being included in the amount of the tender, and the respondent had the legal obligation to execute the contract for the price agreed upon, in the same way as would have been its undisputable right to benefit, if the soil had been more favorable and easier than foreseen.

Appeal allowed and cross-appeal dismissed with costs.

Root Causes of Litigation:

Contractor: Conditions of the site differ from that specified in the contract, plans and specifications was misleading, Acting on an implied contract (i.e. for works accepted by Crown for which no compensation has been paid on a "quantum meruit" basis.

Crown: no implied contract stated, as there was no warranty or guarantee expressed in the contract.

Appendix 3

Case Description III

Sample: 3

Case Title: Bean Stuyvesant L.L.C

Contracting Parties: Bean Stuyvesant L.L.C vs. Government

Contract Types: Fixed Price

Location: Oak Island, North Carolina

Type of Project: Construction

Project Award: $ 8,550,000

Description of Project: Dredging and Beach – Fill work

Legal Issue: Bean Stuyvesant L.L.C (appellant) seeks an equitable adjustment in the amount of $2,903,347, contending that it encountered differing site conditions under its contract with the U.S. Army Corps of Engineers (Government).

Binding Decision: The appellant failed to prove by a preponderance of the evidence that the conditions indicated in the contract documents differed materially from those conditions actually encountered; that the latter conditions were reasonable unforeseeable based upon all the information available to the contractor at the time of bidding; and that it reasonably relied upon its interpretation of all contract and contract-related documents. Having failed to prove these elements of a Type 1 differing site condition, appellant's claim is denied, and we need not address any other prerequisites for recovery, nor do the other grounds asserted by the government for denying the claim.

Appeal Denied

Root Causes of Litigation:

Contractor: Differing site condition, material variation