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Construction Delay Claims And Risk Management From The Owners’ Perspective

By
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Submitted in partial fulfilment of the requirements for the degree of Master of Science in Construction Management (Construction Project Management)

Department of Civil and Architectural Engineering
City University of Hong Kong

July, 2014
Abstract

Delay claim is the most common and influential type in the construction industry nowadays. It could cause a serious problem like extension of time (EOT), loss and expenses (L&E) and also loss of benefit. So along with the prosperity of the construction industry, the contract claims management should be taken seriously. In this dissertation, we through the case study method to explore the tricks and traps may set by the contractor during the construction and the contract management phases. After analyzing plenty of cases, we find out the tricks are mainly focus on four aspects. The first one is the contractor may through the properties of the delay to argue the entitlement of EOT. According to the standards and regulations of the construction contract, different types of delay may lead to different resolutions; The second potential factor is variable, although it may more relevant to the valuation, still could apply claims opportunity for the contractors; And also the contract problems, during the contract claims management, matters are the closest to the claims will be definitely the contract. The language of the contract, the validity of the provisions are all influence the decision of the entitlement. At last, the process of issuing the EOT appliance are also may lead to some disputes. If these small problems are not brought to the attention, then the construction period cannot be assured and may induce many relevant problems. In other words, these potential tricks and traps are actually some kinds of the risks during the construction, so we developed a claims risk management system based on existing theories to help the owner avoid and balance the risks relevant to the claims. In this study, we indicate to assess the risks by using the fuzzy mathematics model. Through a real example case, we present how to use this system to get the risk magnitude level, and develop a self-check list for owners, in order to control the risks in advance according to the result of the fuzzy risk management system.

Key words: Construction contract, Claims, EOT, Fuzzy risk management model;
Acknowledgements

This study has benefited from the suggestions and guidance of many individuals. The first people I thanked is my dissertation supervisor Tae Wan Dr Kim, he encouraged me to challenge myself, sorted the logic for me, and also gave me many valuable suggestions. Without him, this dissertation could not be complete. Additionally, my former colleges and leaders worked in Xiaoshan state-owned company give me huge support on the professionals’ opinions to the case in this research. The interview for them is one of the core methodology. Also need to thank my classmate Songmao Song to help me on the format adjustment.

I also need to thank the City University of HONG KONG gives me the authority to search relevant literature and data. These supports are essential to the completion. At last, I need to thank everyone who accompany with me during the creation stages.
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CHAPTER 1: Introduction

1.1. Background

Along with the increasing complexity and the enlarging scale of the projects, the risks of construction is more uncertain and the competition are getting intense, so construction claims are becoming a necessary service to the international market of construction. Construction claims management is complex because it refers many fields like tendering, design, construction, relative law regulations, contract conditions, cost management, quality management and progress management etc. (Simon, 1989). During the construction project management, claims management should be carried out the whole process, and it will be the most high level and with comprehensive management work. Claims management could not only defend the legal advantage of the company, but also could improve the level of operation management.

As to the construction industry, it is determined to be a multi-claims industry because of the features. In the normal way, the profit of the contractor could be 3%-5% of the total cost. However, through the claims and disputes, some of them could get nearly 10%-20% profit. The profit could be improved around 10%-12% (Gerald and Eric, 2004). So the claims and disputes could not be overlooked. In the international market, claims management has become a strategy to reduce and remove the construction risks, it is determined directly whether the project is profitable or not.

Among such many kinds of types, construction delay claims are the most common, but also the least understood type of dispute in the construction industry. Most claims are submitted but without appropriate resolution (Arditi and Pattanakitchamroon, 2005). In most projects, the client care about when it will be available, and the contractor concern how long it will take, so the construction time becomes to the most essential factor. And also, the delay will directly cause the contract price increasing because of the extension of time, the exceed use of material and the overworked labor. And almost every problem may happen in the construction will lead to delays. So the delay claims is definitely the most important part in the claims management, it may still difficult to prevent delay happened, but the claims could allocate the risks among different parties. So solving the problems of delay claims is necessary and significant.
1.2. State of the Practice

Nowadays, many problems exist in the construction claims management in mainland China. The environment of contract law is not in a good mood, there are many loops in the real situations, both contractors and the owner do not used to through legal ways to solve problems. From draft to sign the contract, non-standard provisions and operations happened a lot. The level of contract management, is hard to improve, it will cause inevitable loss to the owner.

Moreover, during the development and completion of the industry in the real construction projects, contractors accumulate rich project management experience, especially when low tendering price is a necessary strategy to get the project faced to the intense competition. Claims management becomes to a main method to gain profit. Contractors have realized that the necessity of claims management, indeed many contractors’ companies build the professional team especially for claims.

In this situation, the owners relatively weak in this field. Not only because they cannot focus on only one project, but also for this project is also temporary to them. Basically, owners always not as familiar with the law regulations as contractors. So the contractors and the clients are information asymmetric parties. But the claims are objective existence because of the risks, so usually the contractors will rise up many claims related to delay and budget in a real project which lead to the extension of time and over budget compared to the original contract. So without claims, the contractors’ company will get less profit, but without defends the inappropriate claims from contractors, the owners’ company will lose money in a passive status. Thus it shows that the defendant of contractors’ claims is also an important measure to guard owners’ own benefits.

Also the owner lacks the knowledge of the claims management, it is a fair measurement between owners and contractors to balance the risks, and it is not the privilege for the contractors. Actually, nowadays the consciousness of preventing and defending inappropriate claims from contractors is still shallow in the owners’ mind. It does not

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1 http://www.jianshe99.com/new/201009/we7651383716290102300.shtml
Hongsheng Zhang 2013.6. “The strategies analysis of construction claims based on bargaining game”
mean to deny all of the requirements of the contractors, the client should have a right attitude to the claims. The right prevention of claims means according to the regulations in the construction contract, analyzing and predicting the possibilities which could induce to claims by contractors and then owners try to strengthen the management of the contract, carry out the provisions strictly in case of let contractors could get the opportunity to rise up the claim. Then the owner could defend it in a positive way. However, in the management organization of the owners, they still did not consider the claim management as an important role, also they have no professionals of claim management, they basically in a passive status. On the other hand, when owners keep watch on the activities of contractors, they also need to improve the profession of themselves. Only when they could do a good job on both sides, then the loss of claims will be reduced to the minimum.

Above all, claims management in mainland China still in the primary stage, compared to western countries, we start to research this field pretty late, so we only got a little experience from some projects which are constructed by international contractors. So we need a relative mature problem summery and resolve system in extremely urgent.

1.3. Research Objectives

In this research, we indicated to find out the problems exist in the claims management, from the owners’ perspective, try to find out the existing problems during the process of the contractor issuing the claims, help the owners through the quality analyze to control the potential risks. This study try to develop a modified system for the claims risks, considered the properties of claims management adequately.

And we want to arise the interest of the owners, through the study to let them know the potential and advantage if they could do the claims management well. And hopefully to promote the motivation of the owners that they could protect and defend inappropriate risks on their own initiative. The industry is blossoming, face to the profit, the techniques are updating every day. So the claims management cannot be once for all, it must be dynamic adjustment by professionals. This study is provide a basic method for professionals to control it.
1.4. **Methodology**

The whole article will mainly apply four research methods: literature review, case study, interview and statistics.

The techniques of rising claims by contractors usually based on the regulations of contract law and relevant provisions, so it should be necessary to known well through a comprehensive literature review. To get to know how the contractors rise claim by a tricky way is a necessary part of the research, some loops between the regulations and the provisions may give the contractors opportunity. So the relevant literature will take example to illustrate the specific method for the contractor, and then the research could think it in the opposite way to against the tricky skills of the contractor, that will be the most effective way to analyze.

The core methodology applied in the research is case study. It could gather the information related to the specific problems happened before. Even the cases are difficult to find out because they are usually confidential, but those from the court record and public now are available. And some construction claims report could helped also. The article could base on these cases to summarize and analysis them into a claims problem structure which impede the process of owners defending claims that is also the core of the whole research, and it could be used as a basic database for the owners, some general problems related to the claims could be applied in the future.

Considered the tricks and traps we find out from the cases, we need a way to solve it. So in the study, we introduce a risk system to analyze the risk magnitude. This methodology is a kind of statistic. Because the system will take the factors may induce claims as criteria, through the interview method to get the professionals’ opinions and scores of each criteria, and then based on the existing theories about fuzzy mathematics to analyze the data. The whole process will turn the scores into fuzzy linguist description and then integrate and at last defuzzification. Through this process, the system could avoid the error about lacking of the information and data during the collection. During the turning phase, the result will be more precise.

During the statistic stage, the interview for professionals is necessary. All of the analyze
data comes from the experience and judgement of the professionals. Considered the criteria is set by the case study and literature review, it should be weighted before put them into the system to analyze. So the core of the criteria will sent to the professionals in advance for preview, and then we will send out the score forms to them. We also need to stand by them to tell them how to score and weight the criteria. And only when we get the reliable data, we could do a reliable analyze to get the risk magnitude level.
CHAPTER 2: Literature Review

2.1. Claims and Claim Management

The most commonly used definition of Claim in a construction contract is: “A demand or assertion by one of the parties seeking, as a matter of right, payment of money, or other relief with respect to the terms of the Contract. The term “Claims” also includes other disputes and matters in question between the owner and contractor arising out of or relating to the contract. The responsibility to substantiate Claims shall rest with the party making the Claim.”

According to this definition, a contractor’s claim originates with the client’s denial of the proposal for a variation about the contract price and total complete time. The contractor through the claim to response to the denial of clients.

K.C.Iyer, N.B.Chaphalkar and G.A.Joshi (2008) analysis the different types of claims due to delay, through the very particular description of delay causes, they summery the relationship of disputes between cause and effect. And developed a software based on the observation of delay and extension, especially focus on the unclear field of the provisions and clauses, one-sided contract conditions and varied interpretation of the contract. Based on the arbitration awards available, they formulated to evaluate the applicability and acceptability of the decision under time delay and extension of the time. This software could mainly reduce the gaps in contract documents leading to disputes. It is an advanced way to solve the delay claims problems. But it also got limitations, for real situation of delay happened, it could be caused by multi-reasons at the same time, and they still developing the software and willing to put the logic of the cases happened before into the database which could convenient for the future usage, that will be really difficult to achieve.

David Arditi, Thanat Pattanakichamroon (2005) try to find out a delay analysis method to solve delay claims in the most effective way. Through analysis the delay issues related to concurrent delays, float ownership and scheduling options to illustrate the merit and demerit of as-planned or as-built method, impact as-planned method,

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collapsed as-built method and time impact analysis method respectively. The research found out that selecting a delay method should consider the multi-factors. The information available, time of analysis and funds available for the analysis are all important for the decision. In an ideal circumstance, the project manager could get the detailed information in practice, then the time impact analysis is the most effective way to avoid delay claims but it is difficult to each different projects.

M.M.Kumaraswamy (2001) through the questionnaire and interview for professionals to illustrate that it was really difficult to convince the relevant participants to hand out a totally reliable data and evidence with an accurate techniques, because the situation always so complex. So the research mainly focus on the substantiation and assessment of claims. According to the questionnaire, the factors in submission and assessment of claims are ranked with frequency and they find out the extensions of time (EOT) are always submitted at the end of the construction period, so the EOT problems will be late assessment of the claims. The research recommended that derived from the strategies, extract the common/recurring generic causes and corresponding recommendations from tabulations could be scenario-specific related to Hong Kong.

Ir.Harbans Singh K.S. (2004) study the pitfalls and pratfalls of variation claims. They indicated the common myths of the contractors, according to the main issues to summarize the pitfalls and pratfalls may could happen during the construction and give the solution and measurement to the value of variation order. But the variation cannot be resolved unless all of the parties could play a very active way to prevent it which is without one party’s control.

Zhang Yang (2012) pointed out that the construction project make the agreements, owners as the parties performed contract-issuing roles and the construction enterprises which are contractors. In order to complete specific construction and installation projects, it is required to follow the basic construction procedures, and also necessary to define both parties’ rights and obligations. It also illustrated the situation and practice method under the contract provision is valid and invalid. But the research only focus on the law and some general provisions, did not put the real delay situation into the application.
2.2. Risk Management

Risk is defined as “the potential for unwanted or negative consequences of an event or activity” by Rowe (1977). Many risk management systems exist right now, each kinds of them owns their advantages. Some of them are partly suitable for claims management, but still could be improved. So we need to combine different systems and based on the existing theories has been proved effectively in this field to develop a better suitable system. So a relevant comprehensive literature review is necessary.

Patrick X.W. Zou and Guomin Zhang and el. (2007) presents the results of questionnaires and compared parallel in China and Australia, a total of 25 key risks were analyzed based on the likelihood of occurrence and magnitude. And it shows that the contractors’ poor management ability, difficult to reimbursement, unwilling to buy insurance etc. come to serious in China. And then it explored deeply from different parties respectively, and suggest in different phase through the whole life cycle of the projects. The article provides a comprehensive risk factors may exist from feasibility to construction phases.

K.C.Lam, D. Wang and el. (2006) used fuzzy set theory to propose a risk allocation decision model, which consist three stages of fuzzification, inference engine and defuzzification. According to the expert team’s suggestions based on the information pool, they are trying to analyze the risk allocation between the owner and contractor, adopt a traditional contract arrangement with seven linguistic input variables. After building the model, the study use a case of the Railway Company supported by Hong Kong Government to evaluate the model. They categorized the risks into five groups which is contractual and legal risks, economic risks, physical risks and political and societal risks. After calculating the risks, it comes to the conclusion that maximizing the certainty of the price and the process of the project is more important than minimum cost of risks. This study provide a support tool for decision making because of the ground calculated by the model is the experience suggestions of different experts from the owners, consultants and contractors, it will be reliable. But considered the criteria information is not completed with the relationship between contractor and sub-contractors or suppliers, so that could be improved in the future.
Irem Dikmen, M. Talat Birgonul and el. (2007) focus on the risks of projects in international construction markets. The study generated a quality risks tool for final cost overrun risk rating by gathering the expert knowledge and capturing fuzzy operations to determine the final project risk level. The model illustrated how to do these jobs in the most effective and reliable way. Finally, it uses a case study to test the model and illustrate that the model is easy to apply and it can provide guidance to the company. However, the whole research is only based on one case which cannot reflect the validity and also, the experts’ information gathering phase is based on the brainstorming of one company’s expert group, which means they have a preference by themselves, it will cause some bias.

Jiahao Zeng, Min An and el. (2007) established a new tool for construction project risk analysis to solve risks related to the constructions under the complicated situations and limited information. It emphasis that there are mature risk management systems exist in the UK, but considered incomplete data and uncertainty, the traditional systems may not satisfy the currently situation. The study provided detailed method from review risk data to output modification phase and applied on a case of risk assessment on steel erection and the final result is found reliable and with valuable information for risk evaluation. But the study is only for the preparation stage because of the criteria is set in general which is not for more detailed construction phase and it could be improved in this aspect.
CHAPTER 3: Case Study

There will be numerous specific reasons for rising construction claims among clients, general contractors, sub-contractors and suppliers, although the origins of the claim are different, still could be classified into different categories: delay claims, acceleration claims, scope-of-work claims and changing-site condition claims. (James, 1988). A delay claim absolutely is the most common and important type in recent decades. Considered that delay will cause a series problems like late completion, lost productivity, acceleration, increased costs and contract termination (David Arditi and Thanat Pattanakitchamroon, 2005), the risks from delay claims should be emphasized, and also the liability in the research. Extension of time (EOT) claims as one of the delay claims’ consequence, to be more specific this research is only focusing on claims of issuing EOT when the construction delay happened between the relationship of the client and general contractor. EOT claim causes more disputes than any other contractual or technical issues. Then the EOT claims will conclude in the following ways.

3.1. Delay Causes

There are various types of delay which could lead to different consequence of the claims and dispute during the construction. And the delay cause is the most directly relevant factors to the EOT entitlement in the phase of the construction. So the distinguished of the excusable and non-excusable delay, the combination situations of the concurrent and compensable delay and also the ownership of the float problems are seem to be significant in this field. So we discuss these as follow in detail.

3.1.1 Excusable Delays and Non-excusable Delays

Excusable delays are the delay types which could serve to justify and EOT. Usually, the common excusable delays for a contractor include the owner required changes, unforeseen weather, labor disputes, and force majeure. However, the non-excusable delay is not just influence the risk of cost and other consequences, but also got impact to others as well.

Usually the excusable delays and non-excusable delays could be classified as shown in Table.3.1.
Table 3.1  the classification of excusable and non-excusable delays

<table>
<thead>
<tr>
<th>Excusable delays</th>
<th>Non-excusable delays</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor dispute</td>
<td>Ordinary &amp; unforeseeable weather conditions</td>
</tr>
<tr>
<td>Force majeure</td>
<td>Subcontractor’s delay</td>
</tr>
<tr>
<td>Unusual delay in deliveries</td>
<td>Contractor fails to manage &amp; coordinate project site</td>
</tr>
<tr>
<td>Unavoidable delays</td>
<td>Contractor’s financing problem</td>
</tr>
<tr>
<td>Unforeseen delays in transportation</td>
<td>Contractor fails to mobilize quickly enough</td>
</tr>
<tr>
<td>Other unforeseeable causes</td>
<td>Delay by contractor in obtaining material</td>
</tr>
<tr>
<td></td>
<td>Poor workmanship</td>
</tr>
</tbody>
</table>

With many standard requirements, the classification is clear, but in the real situation, the contractor will indistinct the bound between them.

For example, how to distinct the contractor could avoid or could not avoid some situations may induce delay. How to prove it will be very vague and difficult. And also, what kind of weather condition is ordinary or foreseeable? To try to get the compensation and EOT, the contractor will try their best to convince the owner that the situation that had happened is out of control.

3.1.2  Concurrent Delays

And what is more complicated? If the situations under the concurrent delays, then there may need more considerations.

Concurrent delays means two or more delays occurred at the same time, either one occurred alone will affect the completion time. If a delay caused by one of the concurrent events, then the whole prepared schedule will be delayed. But even if this one didn’t occur, the schedule may also delayed because of other events. When this type of delay happened, although the delay is real, the nature of the delay is totally different. Using different reasons of delays may induce opposite consequence because they may excusable or non-excusable reasons.

So in the real project, the contractor may use the excusable delays to claim an EOT, but the real delay may induced by the non-excusable one. So the owner need to get the root
reason for the delay, not just the fact or consequence of the delay.

For example, as the figure 3.1 shown above. B1, B2, B3 are concurrent delays, if B1 is an excusable delay, B2 is a non-excusable delay, and the delay happens for real. Assume that B1 and B2 have the same delay period, then the delay actually caused by B1 and B2 and they are both contribute to the delay. Under this situation, the contractor may try to cover the nature of B2 and emphasis the B1 to convince that the whole responsibility of the delay is because of the excusable delay and they need the entitlement of the EOT, but in fact, the owner should find out the real reasons that is contributed by both excusable and non-excusable to negotiate a compromised solution which could lead less EOT.

![Figure 3.1 Concurrent with excusable and non-excusable delays](image)

### 3.1.3 Compensable and Non-compensable delays

Although compensable determined that the Loss and Expenses (L&E) mainly, there are also related to the EOT problems closely, for comparing the different of resources of delay, we list them in one form as table 3.2 followed. It illustrated that the entitlement of EOT and L&E according to the different resource of delay.

<table>
<thead>
<tr>
<th>Delay caused by</th>
<th>EOT entitlement</th>
<th>L&amp;E entitlement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contractor</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Nominated sub-contractor</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

12
<table>
<thead>
<tr>
<th>Neutral event</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer and architect</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 3.2 Compensable and non-compensable entitlement

The concurrent problems with the compensable and non-compensable problems could be more complicated. The situations could be as the figure 3.2 followed.

Figure 3.2 Concurrent with excusable and compensable delays

In the situation of the figure 3.2, if B1, B2, B3 happened independently, B1 is excusable & non-compensable delays then it could get EOT entitlement and no L&E entitlement. B2 is excusable & compensable delays then EOT and L&E entitlement. B3 is non-excusable delays so no entitlement.

But if these three complex situations could be happened in concurrently like the Fig.2, there is no sure answer until now, and we could only determine it by examining the resource of the delay and analyze the situation to give an appropriate conclusion.

3.1.4 Critical and Non-critical delays

During the project, there will be many different routes in concurrently at the same period, but not all the contractor’s methods will influence the result in the delay to the whole project completion. For example, if the contractor wants to change the type of the windows, this action may induce delay partly, but consider this situation in the overall project, this little change will not delay the whole project. When the contractor do the changing job, there are other jobs in proceeding, and that the installation of
windows will not influence other construction activities. So this job is on the non-critical path, it will not influence the whole project process. However if the change is relevant to the steel structure, then the delay will definitely influence the whole project. The contractor has to prepare the change order and revise the drawings to get the approval, the steel need to be prepared and delivered to the site. In the meantime, the other job cannot proceed the time and the delay will happen with the whole project. So the work like this is called on the critical path.

Generally, if there is an excusable delay happened, but it is on the non-critical path, then the contractor could get no entitlement on EOT. The time consuming with critical path will more than the non-critical path, and the time of waiting for the critical path is called float. So the situation happened above could use the float to fix it.

The definition of the critical path is also depends on the different construction environment, some regulate that the longest path in the network and some regulate the most amount of total float in different paths (Jentzen, Spittler and el, 1994). These two measurements is contentious when considered EOT only entitled to the critical path.

Case 1: Difference between critical path and total amount float methods

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor’s activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Owner’s activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Figure 3.3 Contractor and owner’s activity schedule

In this case, according to the figure 3.3 shown, the contract completion time is 13 weeks, and the two situations represent the longest path and total amount of float respectively. If we adopt the longest path as critical path theory, then the owner should take responsibility for the 2 weeks of delay, because the extended project delay is on the critical path.

However, if analyze the situation under the total amount of float theory, the concurrent delay is justified on the 14 weeks because the contractor’s activity is also critical. Considered there is only one week negative float is caused by the contractor and the negative float will influence the entitlement of EOT directly, and also L&E and
liquidated damages further, the resolution will be more influential. So, according to the experience of this, we should make a clear announcement to regulate uniformly. Considered the float’s ownership, there will be some controversy situations.

Case 2: Ascon Contracting Ltd v Alfred McAlpine Construction (1999)
In this case, the main contractor argued that if all subcontractors could start and finish on time, then the practical completion date should complete early resulting in financial gain to the contractor. This period would in essence have been a float period. It was the contractor’s case that because one of the subcontractors completed late the contractor was prevented from completing early. The tribunal viewed that the float period is caused from completion early. In the sense of this pedigree, the delay should be fitted in the float period. In this manner, the float could help to avoid passing the contract original agreed period and also could remove the liability to the contractors to pay liquidated damages. However, the court held that contractor was not entitled to claim financial compensation from the subcontractor.

Although the relationship in the case is between contractors and sub-contractors, the case mainly illustrates that there is no hard rule to regulate the float’s ownership, the ownership is different in a different contract environment. In the UK, the float regulates as “first come, first served basis”. While in HK, the float belongs to the contractor, but also served as “first come, first served basis”. But as a contractor, the float is for accommodating the risk items which cannot be predicted precisely because of time involvement, and likewise to provide time for correcting errors, then the float belongs to the contractor and the owner or his agent cannot oppose if later the contractor absorbs it when they reprogram the schedule.

Case 3: Glenlion Construction Ltd v The Guinness Trust
The original tender documents were based on the 104 weeks of contract period. Glenlion submitted an alternative tender for 10 weeks extension which is 114 weeks and have accepted by Guinness. So the revised completion date was 114 weeks after the date of possession. The contract required Glenlion to make the construction schedule no later than the completion date. Glenlion complied by producing a programme which showed completion in 101 weeks, the programme show completion thirteen weeks before the completion date in the contract agreement. So the Guinness
arose claims about entitlement to an EOT to Glenlion.

CPM (Construction Path Methodology) has been accepted to evaluate the impact of delays by courts as an effective tool for a long time. Illustrated by David Arditi (2005) and Levin (1998). So the paper will adopt CPM to illustrate as figure 3.4.

![Figure 3.4 CPM of analysis](image)

**Bar A:** the contract period of 104 weeks stated in the tender document.

**Bar B:** Glenlion submitted that an alternative tender for completion of 114 weeks.

And then the owner required that the Glenlion should not later than the revised new completion date which has inserted in the contract provisions that 114 weeks accepted by the owner. The programme shows that they completed in 101 weeks and complete it before the contractual date. So there were delays and disputes arose as to Glenlion’s entitlement of EOT.

**Bar D:** D1: 1-5 weeks occurs at the outset of the contract. It is a qualifying delay, entitled to EOT. They should reduce the contractor’s float from 13 weeks to 8 weeks.

**Bar E:** D2: 2-4 weeks qualifying delay during the contract period. So they should reduce the contractor’s float from 8 weeks to 4 weeks.

**Bar F:** D3: is qualifying delay from 3-4 weeks during the contract period. So reducing contractor’s remaining float from 4 weeks to 0 weeks.

**Bar G:** D4: a further delay before the contract completion, although it is not a qualifying delay, but contractor has award of 4 weeks of entitlement of EOT.

This is the court final decision about the entitlement of EOT related to the float ownership, and this decision could be regarded as a reference.
3.2. **Variation Causes**

Most contracts allow the owner to change the design within a general scope of the contract without invalidating or breaching the contract, and it is called variations. The variations could be raised by owner or the agent. But the owner should be responsible for the impact upon the contractor’s time and cost of performance.

Actually, variation does not mean affect the contract time, the contractor must prove the time impact of the changes attributable to the owner or the owner would give them no entitlement of EOT and L&E.

Basically, if the owner raised the variation by their own willingness is fine. But if the contractor raised up through the site agent and let the owner approval, the owner should be really careful, remember to check the contract provisions in details and avoid the traps by the contractors.

Although the contract is drafted by owner, the contractor will deliberate on every word in it. On the opposite, the owner always not take it seriously, even just drafted by the law section, the project manager may not that familiar with the detail. Usually, the contract management of the contractor includes the investigation of the contract and find out the details that the contractor may take advantage of it, some provisions may loose and vague so that they could take good use of these to get claims of entitlement EOT or even L&E.

**Case 4:** During the process of construction, the contractor claims that they may need more time to do a variation, because when they dig the foundation ditch, the design of the depth is 7.8 meters, it is not convenient to feed the piles into the pile foundation. If they still construct as the design depth, they may cost more to take relevant measurements and induce to lose money. So the contractor applies to owners and architect to change the design to 4 meters deeper of the foundation. The owner discussed with the project supervisor, they both think the change indeed could help the construction, so the owner approved. It induces that more quantity of work, so the owner gives it the entitlement of EOT and L&E.
After the construction, when the owner review the project, they found out that there is a hard provision: “the contractor has the responsibility to take relevant measurements to make the piles into the pile foundation as the depth required by design.” in the contract. So the contractor should have no excuse to complain the inconvenient or cost more to take measurements because the expenses should be included in the tendering price.

3.3. Contract Causes
A contract is a method to balance and readjust risks for both the contractors and the owners. Many new agreements between them formed in this structure. So the contract should be drafted very carefully. Any mistakes or loops may lead to huge involvement of the claims and more serious situations could be raised if the contract obeys the provisions of the basic law. If it is not legal then the contract could not be carried on validly. So the contract language and validity of the contract are the most significant things in this field.

3.3.1 Contract Language
Contract language is rigorous and precise, the clauses regarding time and delay should be well drafted, flowing together with consistency. The provisions should reinforce each other. The agreement must deal with the problem from inception and provide a procedure to obtain a mutually acceptable resolution within the bounds of the contract. Although it is impossible to prevent the delay happened by the contract, the time and cost impact could be minimized through it, and the risks could be allocated among different parties.

Case 5: David McLean v Swansea Housing Association Ltd (2001)
The claim reasons in the cases are various, one of the issue is the use of the sectional completion supplement may lead to the need to name, in s.51.1, or for the purpose of cl.1.1, an adjudicator. The text of the bundle of contract documents says only “the President or Vice-President of the Chartered Institute of Arbitrators” which must be a reference to the appointing body. However, e.g. on the other amendments deleting those words as there was no relevant provision which they referred or could be attached sensibly. So, in one word, it is not clear that whether the Chartered Institute of
Arbitrators had the right to appoint an adjudicator or not. Or whether they are effective provisions in the Scheme for Construction Contracts for adjudication.

3.3.2 Confirm the Validity of Construction Contracts
Considered the paper aims to help the mainland China, although the tricks and traps in cases are global, the relevant regulations and contract law environment should under the mainland China. So based on the rules of the Law of Contract and General Provision of Civil Law, the principle of equality, fairness, voluntarism, compensation of equal value and good faith, principle of prohibiting abuse of rights, the principle of negotiated consensus, and principles of civil rights and interests protected by law are the fundamental principles to engage in civil activities and to conclude contracts. As a construction contract, it should follow the fundamental principles.

According to the rules of Article 58 of General Principles of Civil Law and Article 52 of the Contract Law, the owner should review the quality of the contract subjects, whether the contract contents are legal, whether the contract performed with a legal approval process and also necessary to test that whether the declaration of the intention could lead to partial invalidity, invalidity or the application for revocation of construction contracts.

3.4. Process of Issuing EOT
There will be a process if the contractor raised up a claim to the client, they should have some limitations and stipulations like the what kind of approval document they need to prepare, within how many days should they notice the owner and so on. If not, they could get opportunities to argue for more claims and entitlements.

3.4.1 Relevant Document Preparation
As the owner, it is necessary to make sure that the documents received from contractors should be genuine and comprehensive. Sometimes the contractors will try to cover some facts or causes may go against during the process of issue the claims to the owner, even to the adjudicator.

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Case 6: David McLean v Swansea Housing Association Ltd (2001)

The primary subject of this lawsuit was whether the contractor was to be paid a sum representing liquidated damages withheld by the employer. The contractor, McLean, redevelop a former post office in Swansea under the JCT 81 with a design by the Housing Association. Practical completion was set on 31 July 2000, and subsequently the contractor applied claim for valuation of variations, L&E and relevant provisional sums adjustment. The works have been late, and there was likewise an EOT will be issued. A notice of adjudication was issued by the contractor refer to these claims. In the observance, they did not mention the issue of liquidated damages. The adjudicator make a decision that both contractors and owners issued judgement applications as a conclusion, and the defendant applied for a stay according to section 9 of the Arbitration Act 1996.

There are several problems raised by the applications. For example, is it valid for the contract related to the CLArb if the adjudicator is appointed by the RICS? And also amendments appeared to delete the reference to the CIArb? Does the notice which is made by the adjudicator valid if more than one dispute has been referred? If not should the adjudicator owns the right to make decisions on the amount of liquidated damages. If any., when the adjudicator considered the EOT, and the resulting amount of L&E,

Furthermore, the adjudicator's decision include the legal nature which was in issue. The decision may create a debt, or is the cause of action the right or obligation in dispute (see Glencoat Development and Design Co Limited v Ben Barrett & Son (Contractors) Limited)? HHJ Lloyd QC held, first, that the documents were imperfectly complied, but the reference to the CIArb was deleted so the Scheme applied. The adjudicator was therefore validly appointed. Second, one dispute was referred containing 6 separate matters, which were set out in the notice of adjudication, and so the notice was valid. In order to determine the amount of L&E the right to any EOT needed to be considered. Third, when the adjudicator considered the EOT and its impact on L&E, a natural consequence was the crystallization of the amount of liquidated damages due to the employer. The claimant had no realistic prospect of resisting the counterclaim, and so the employer was entitled to keep the liquidated damages. In respect of the legal nature of the decision, HHJ Lloyd QC held that the decision was not itself a cause of action. The decision is of temporary effect and should
be enforced, but the claimant may at some future date have to establish its rights and cause of action. If the decision was in itself a cause of action, then it would supplant the original cause of action. Finally, the application for a stay to arbitration was dismissed.

3.4.2 Late of Submissions

Sometimes, the contractor in order to get more chance to fight for the claims, they will not submit the EOT relevant documents on time. According to the contract provisions, the contractor should prepare the claims documents at the first time when the delay happened, and also submit them to the owner in 7 days. While during the real project, the contractor always takes the evidence is not enough as an excuse to submit the appliance late. It seems like the contractor takes no advantage in this, but actually, they may use this time to fix some non-excusable delays to get the entitlement of EOT and L&E. During the period of late submission, some of the situations could be changed, and some non-excusable may spin and recover to excusable delays. If the owner is not that clear the whole process of the delays happened, they may induce to the wrong way and give them to the entitlement of EOT.

3.4.3 Make Sure the Scope of the Jurisdiction

Sometimes, if the contractor raise the dispute to the court and let the adjudicator to judge it, then the owner always ignore to check the validity of the document they have handed out. Although it is usually could be found out if the jurisdiction is exceed.

Case 7: R Durtnell & Sons Limited v Kaduna Limited (2003)

Kaduna engages the contractor, Durtnell with a construction contract on 18th May 1999. The contractor should take works at a freehold property (Laverstoke House) for the sum of £5,890,244.55. Kaduna was a company which is benefiting from operating the racing drivers as Mr. Jody Scheckter. While now, as an owner, they draft the contract together with amendments based on the JCT 1980 Edition and Amendment 18. The construction period extended to a considerably date and also increased £11 million compared to the original total contract sum. Various claims and disputes raised by contractors, and on 14th Nov 2002, they issued a Notice of Adjudication. It covered multifarious matters, including no. 40 which is interim application. An adjudicator
issued his decision that Kaduna should follow the instructing payment of £1,228,313.50 to Durtnell on 24\textsuperscript{th} Dec 2002. Kaduna paid the sum of £610,883.50 on 13\textsuperscript{th} Jan 2003. However on 10\textsuperscript{th} Jan 2003, a letter issued which stated that considered at the time the Notice of Adjudication was issued, there is no dispute had been raised related to the EOT, so the adjudicator had exceeded his jurisdiction. Therefore, the Adjudicator’s decision should be considered to balance and regarded as a concluded judgment.

Kaduna argued that because the application for an EOT had been made to the Architect, and he had not made a decision about the solution of the claims of EOT, so the Adjudicator had no jurisdiction refer to delay. If any, and also under the situation of the time permitted by the contract constrain, because the determination had not at the date of the Notice of Adjudication expired for the Architect. And also, Durtnell thought that the Adjudicator issued decisions were in dispute. Anyway, due to Kaduna had gave up the opportunity to challenge the decision. Further, they also adopted and paid half of the decision they were approbating and reprobating the decision and so should pay the outstanding balance.

Whilst, it is held by HHJ Seymour QC that the decision of granting it an EOT is not a precedent to the exercise conditionally right to the adjudication “at any time”, a dispute must have crystallized before it could be referred to adjudication. It could not be said to be a “dispute” before the Notice of Adjudication was issued, and considered to the ground of an EOT will influence the entitlement to an EOT and L&E directly, because in accordance with the contract, the Architect refers to the problems that if the time should be allowed to any further and they also had not made a determination yet, even in the contract, the time required to make the decision has not been expired for him. If the architect failed to make an assessment.

Until the architect had made an assessment or failed to do so within the time provided by the contract, there was clearly nothing to argue about and therefore no dispute that was capable of being referred to adjudication. The decision was therefore invalid and made in excess of jurisdiction.

At the time of the adjudication, Durtnell’s arguments are also rejected that Kaduna
could have objected to the jurisdiction of the Adjudicator. It is not disabled for a party from taking a point that an adjudicator has decided something not referred to him, unless he also has elected to raise the claims they will not in dispute. In this case, to Kaduna is receiving the decision, they could not appreciate the nature of the challenge. Finally, the provision of approbation and reprobation was applicable to the decision of Adjudicators. However, according to the facts shown in this case, the related different dispute could not apply as a decision.

In conclusion Durtnell failed the surviving claims because the decision has exceeded the jurisdiction.
CHAPTER 4: Fuzzy Based Risk Management Model

Employing an effective risk management is meaningful to a project which could relate to different construction activities, it is significant to deliver a project successfully. The previous study has proved that the impacts of risks on one or two aspects of project strategies with cost (Kaming, Olomolaiye and el. 1997), time (Shen, 1997), quality (Abdelhamid, 2000), safety (Chen, Wong and el. 2000) and environmental sustainability (Dione, 2005). In this study, we will explore the application of risk management on contract claims.

During the construction stage, there will be various risks occurred resulting from the poor management with the EOT and L&E. EOT is always a necessary and indispensable precursor to the L&E. So the nature of construction determines that it is an industry with high risks, e.g. in the building environment, it is the constant change, high pressure to demanding schedules and costs and increasing techniques complexity. There are many techniques of risk assessment exist and relatively mature currently, such as Monte Carlo Analysis, Fault Tree Analysis, Failure Mode and Effects Analysis, Event Tree Analysis, Scenario Planning, Programme Evaluation and Review Technique (Zeng, An and el, 2007). Otherwise, these methods are so precise and sophisticated that the data they required is hard to obtain or even does not exist (Winch, 2002).

In order to address the subjectivities and uncertainties related to construction activities, the risk management model adopted in this research is based on fuzzy reasoning theories is appropriate in the process of decision making in contract management.

A regular risk management process will include four steps which are risk identification, risk assessment, risk response and risk monitor and review (Zhi, 1995). The fuzzy reasoning, risk management model is based on these four stages too, and the fuzzy reasoning techniques, concept is widely accepted by the professionals (Zeng, 2004). So the fuzzy reasoning model will be effective and efficient, the flow chart shown as followed.
The flow chart of figure 4.1 shows that the main body of the model is the risk assessment part, and four phases are preliminary phase, measurement of factor index phases, measurement of risk likelihood and risk severity phase and fuzzy inference phase. The whole process indicate to build a risk assessment group, we review the cases in the chapter 3 and extract the main problems exist as the risk criteria and use the breakdown system to refining the big classifications. And the second step is to use the triangular and trapezoidal methods to measure the bottom of the classifications. And then compare them in pair-wise and convert them into standardized trapezoidal fuzzy...
numbers (STFNs), through an aggregate and defuzzification to get the factor index. The third step is to measure the risk likelihood and risk severity, convert them into STFNs and get an aggregated STFN. At last, we convert the STFNs into the fuzzy sets through inference and defuzzification to get an output risk magnitude.

4.1. **Preliminary Phase**

4.1.1 **Cases Review**

As the flow chart above will instruct that in the third chapter of the thesis, the case review has been done, so we need to summarize the risk situations into points and determine them as risk criteria.

4.1.2 **Weight the Experts**

According to the analysis of the 3rd chapter, the risk related to the contract management are massive, so the risk assessment should be established with a couple of experts with contract management or project management experience. Such as a professional project management team. We connect with 5 professionals in mainland China and they are now in one project team and engaged with the Citizen’s center project in XiaoShan, Hangzhou. They are one project manager, one site engineer, one site construction manager, one electrical engineer and one quantity surveyor. The professional group is required to review the relative information.

And next, the contribute factors should be allocated to the professionals, considered different professionals will have different considerations with the final suggestion, and also by different professionals got distinguished experience and knowledge, so the contribute of them should be weighted by percentage according to their background. Now we got 5 professionals in the group, assume the contribute factor is $C_n \in (0,1)$.

$$C_1 + C_2 + C_3 + C_4 + C_5 = 1$$

Now, the five professionals are assigned to different weights based on their individual acknowledgement, professional background and relevant experience as table. 4.1 shown.
<table>
<thead>
<tr>
<th>Professionals</th>
<th>Background</th>
<th>CFs</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1</td>
<td>Project Manager</td>
<td>C1=0.23</td>
</tr>
<tr>
<td>P2</td>
<td>Site Engineer</td>
<td>C2=0.19</td>
</tr>
<tr>
<td>P3</td>
<td>Site Construction Manager</td>
<td>C3=0.18</td>
</tr>
<tr>
<td>P4</td>
<td>Electrical Engineer</td>
<td>C4=0.17</td>
</tr>
<tr>
<td>P5</td>
<td>Quantity Surveyor with 10 years contract experience</td>
<td>C5=0.23</td>
</tr>
</tbody>
</table>

Table 4.1 Weight the professionals

4.1.3 **Determine Fuzzy Membership Functions**

At this stage, the professional group members should discuss the validity of the risk criteria in the real situation by the standards of risk parameters. When the risk criteria are approved by all of them, then they could set up the risk parameters to measure the degree of the risk in different aspect. Like risk likelihood is to measure the possibility of the risk happened, risk severity is to describe the influence degree if the risk happened and also factor index. These are the basis measurements of the input of the risk system and the output is a relevant comprehensive parameter which could be set as risk magnitude, it will also determine the fuzzy membership functions (MFs). Only when the stem of the experimental data is valid, the MFs could be the reality of the simulations.

During the simulation, the risk magnitude could be assessed by two parameters which are risk likelihood and risk severity, and according to the character of fuzzy reasoning, the extent of parameters need to be turned into linguistic variables which could be defined to express with very good (VG), good (G), fair (F), poor (P) and very poor (VG) for factor index, very high (VH), high (H), medium (M), low (L) and very low (VL) for risk likelihood and risk severity, and critical (C), major (Mj), minor (Mn) and negligible (N) could be described for risk magnitude, the MFs score system then could be expressed by triangular and trapezoidal as figure.4.2 and figure.4.3 shown which has been proved the most frequently used in construction project risk analysis practice (Baker, 2005)
So three parameters which are Risk likelihood, Risk severity and Factor index mentioned above in the figure 4.2 and 4.3 are chosen to assess the contract EOT claims risks.

4.1.4 Construct Factor Index Hierarchy

The risk management model adopt here is mainly to solve the contract claim problem with EOT, as the analysis before, there are many factors would have impacts on it, they will influence the risk magnitude. So the professionals are required to provide the
relative information and experience. The purpose of getting the factor index hierarchy is to get the risk factors in very details, so we adopt the case study to get the information, and based on it, we could use breakdown structure system to enlarge the details as followed.

As the figure 4.4 shown, the breakdown system could distinct different levels of the factor index hierarchy. The first level shows the result of factor index analysis and then it could be breakdown into many detailed criteria on the basis of the analysis of risks. Factors at the end of the hierarchy will be the risk factors we need to analysis further.

**4.2. Measurement of Factor Index phase**

**4.2.1 Measure Risk Factors in the Breakdown System**

The professionals need to assess the bottom of the factors in factor index hierarchy with the agreed score system mentioned above in figure 4.4.

Also the professionals have to compare the factors in pairwise with the degree of 1-9, if the two compared factors are equally important, then the professionals could give it a 1. The number is larger, the factor is relatively more important. 3 means weakly more important and 5, 7 and 9 means more significant, strongly more significant and absolutely more significant respectively, 2, 4, 6 and 8 also could be used as slightly different between the degree. In the same way, the reciprocals could represent the relative less important. This way is so detailed that some professionals do not regard it
as a good way to assess because sometimes they know F1 is important than F2, but how much the degree is difficult to measure.

So the standardized trapezoidal fuzzy number (STFN) is invented by Laarhoven and Pedrycz in 1983. This new approach required to convert the professionals’ fuzzy information and judgement. The fuzzy aggregation could be used to create the professionals’ scores and suggestions, and defuzzification to transform them into the priority scale.

To do the measurement work, it could be finished in the following steps:
The professionals could provide a score based on their preferred method. So they could choose one from the three methods that mentioned before which are linguistic triangular value, 1-9 scale number and STFN scales number.

The first method could be described in detail as table 4.2, table 4.3, table 4.4 and table 4.5 as factor index, risk likelihood, risk severity and risk magnitude respectively:

<table>
<thead>
<tr>
<th>Factor Index</th>
<th>General description</th>
<th>Fuzzy number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very good</td>
<td>Involve factors have no impact on induce EOT claims</td>
<td>(7.5,10.0,10.0)</td>
</tr>
<tr>
<td>Good</td>
<td>Involve factors non-critically impact on induce EOT claims</td>
<td>(5.0, 7.5,10.0)</td>
</tr>
<tr>
<td>Fair</td>
<td>Involve factors non-essentially impact on induce EOT claims</td>
<td>(2.5, 5.0, 7.5)</td>
</tr>
<tr>
<td>Poor</td>
<td>Involve factors certainly impact on induce EOT claims</td>
<td>(0.0, 2.5, 5.0)</td>
</tr>
<tr>
<td>Very poor</td>
<td>Involve factors highly impact on induce EOT claims</td>
<td>(0.0, 0.0, 2.5)</td>
</tr>
</tbody>
</table>

Table 4.2 Factor index converted fuzzy number

<table>
<thead>
<tr>
<th>Risk likelihood</th>
<th>General description</th>
<th>Fuzzy number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high</td>
<td>Almost must happened</td>
<td>(7.5,10.0,10.0)</td>
</tr>
<tr>
<td>High</td>
<td>Very likely happened</td>
<td>(5.0, 7.5,10.0)</td>
</tr>
<tr>
<td>Medium</td>
<td>Likely happened</td>
<td>(2.5, 5.0, 7.5)</td>
</tr>
<tr>
<td>Low</td>
<td>Unlikely happened</td>
<td>(0.0, 2.5, 5.0)</td>
</tr>
</tbody>
</table>
### Table 4.3 Risk likelihood converted fuzzy number

<table>
<thead>
<tr>
<th>Risk severity</th>
<th>General description</th>
<th>Fuzzy number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very high</td>
<td>Serious delay may cause 5 weeks EOT</td>
<td>(7.5, 10.0, 10.0)</td>
</tr>
<tr>
<td>High</td>
<td>Considerable delay with 3-5 weeks EOT</td>
<td>(5.0, 7.5, 10.0)</td>
</tr>
<tr>
<td>Medium</td>
<td>Normal delay with 1.5-3 weeks EOT</td>
<td>(2.5, 5.0, 7.5)</td>
</tr>
<tr>
<td>Low</td>
<td>Slight delay with 0.5-1.5 weeks EOT</td>
<td>(0.0, 2.5, 5.0)</td>
</tr>
<tr>
<td>Very low</td>
<td>No delay with no EOT</td>
<td>(0.0, 0.0, 2.5)</td>
</tr>
</tbody>
</table>

### Table 4.4 Risk severity converted fuzzy number

<table>
<thead>
<tr>
<th>Risk severity</th>
<th>General description</th>
<th>Fuzzy number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical</td>
<td>Risk must take measurements immediately</td>
<td>(7.0, 9.0, 10.0, 10.0)</td>
</tr>
<tr>
<td>Major</td>
<td>Risk need to be control</td>
<td>(4.0, 6.0, 7.0, 9.0)</td>
</tr>
<tr>
<td>Minor</td>
<td>Risk is undertaken</td>
<td>(1.0, 3.0, 4.0, 6.0)</td>
</tr>
<tr>
<td>Negligible</td>
<td>Risk is acceptable</td>
<td>(0.0, 0.0, 1.0, 3.0)</td>
</tr>
</tbody>
</table>

### Table 4.5 Risk magnitude converted fuzzy number

4.2.2 **Compare Risk Factors Pairwise**

The second method is difficult to be measured by professionals, so we need to transfer the 1-9 scale to a fuzzy description. Then the professionals could more clearly how to score the parameters.

If the professionals are pretty clear in one parameter, they could score it in a linguistic term, e.g. “about 5”.

If the professional only could recognize that the parameter fluctuate between a range, e.g. (5, 8), then it means the scale is likely between 5 and 8.

Or the professional could use a fuzzy number description, e.g. (5, 7, 8) means the range is between 5 and 8 but most likely is 7. Also could expressed like (5, 6, 7, 8) means the range is between 5 and 8 but most likely between 6 and 7.

If the professional feel the parameter is really hard to define and no standards could be
taken as reference, then 0 means cannot compare these two parameters at all.

4.2.3 Convert the Defuzzification Back into the STFN

The methods of the first one and second one will present with a serious of numerical value, linguistic term or a fuzzy number. The STFN is used to convert all of these different expression into a universe format.

A STFN can be defined as:

\[ A^* = (a_1, a_2, a_3, \mu) \quad 0 \leq a_1 \leq a_2 \leq a_3 \leq \mu \]

And the membership function is:

\[ \mu_{A^*}(x) = \begin{cases} 
(x - a_1)/(a_2 - a_1) & \text{for } a_1 \leq x \leq a_2 \\
1 & \text{for } a_2 \leq x \leq a_3 \\
(a_\mu - x)/(a_\mu - a_3) & \text{for } a_3 \leq x \leq a_\mu \\
0 & \text{for otherwise}
\end{cases} \]

According to the calculations and combine the trapezoidal method, we could get the defuzzification of STFN as the figure 4.5 shown.

![Figure 4.5 Defuzzification of the STFN](image)

4.2.4 Aggregate Individual STFNs into Group

Although the membership function describes the degree of the preference, numerical value are clearer to be compared. The triangle method could help convert the membership function into a fuzzy number.
In this project, the five professionals have their own preference to choose the methods mentioned before. P1 and P3 choose “Very good to Very poor” methods, and P2, P4 and P5 choose 1-9 scale methods, so according to the convert regulations to the standard STFN method we could get the aggregated STFN in the uniform form. The aggregated STFN could calculate as followed.

\[ S_i = S_{i1} \times c1 + S_{i2} \times c2 + \cdots + S_{in} \times cn \]

So we could get the aggregate STFN with delay cause, variation cause, contract cause and process cause in the table 4.6, table.4.7, table.4.8 and table.4.9 as followed respectively.

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Excusable problems</th>
<th>Concurrent problems</th>
<th>Compensable problems</th>
<th>Critical path problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1=0.23</td>
<td>Fair</td>
<td>Good</td>
<td>Fair</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>(2.5, 5, 5, 7.5)</td>
<td>(5, 7.5, 7.5, 10.0)</td>
<td>(2.5, 5, 5, 7.5)</td>
<td>(5, 7.5, 7.5, 10.0)</td>
</tr>
<tr>
<td>P2=0.19</td>
<td>(5, 7)</td>
<td>(5, 7)</td>
<td>(4, 6)</td>
<td>(6, 8)</td>
</tr>
<tr>
<td></td>
<td>(5, 5, 7, 7)</td>
<td>(5, 5, 7, 7)</td>
<td>(4, 4, 6, 6)</td>
<td>(6, 6, 8, 8)</td>
</tr>
<tr>
<td>P3=0.18</td>
<td>Good</td>
<td>Fair</td>
<td>Fair</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>(5, 7.5, 7.5, 10.0)</td>
<td>(2.5, 5, 5, 7.5)</td>
<td>(2.5, 5, 5, 7.5)</td>
<td>(5, 7.5, 7.5, 10.0)</td>
</tr>
<tr>
<td>P4=0.17</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>(6, 6, 6, 6)</td>
<td>(6, 6, 6, 6)</td>
<td>(5, 5, 5, 5)</td>
<td>(7, 7, 7, 7)</td>
</tr>
<tr>
<td>P5=0.23</td>
<td>(5, 6, 8)</td>
<td>(6, 7, 8)</td>
<td>(4, 5, 6)</td>
<td>(7, 8, 9)</td>
</tr>
<tr>
<td></td>
<td>(5, 6, 8, 8)</td>
<td>(6, 7, 7, 8)</td>
<td>(4, 5, 5, 6)</td>
<td>(7, 8, 8, 9)</td>
</tr>
</tbody>
</table>

Table 4.6 Aggregated STFN by delay cause

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Variation cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1=0.23</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>(5, 7.5, 7.5, 10.0)</td>
</tr>
<tr>
<td>P2=0.19</td>
<td>(6, 8)</td>
</tr>
<tr>
<td></td>
<td>(6, 6, 8, 8)</td>
</tr>
<tr>
<td>P3=0.18</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>(5, 7.5, 7.5, 10.0)</td>
</tr>
<tr>
<td>Risk factor</td>
<td>Contract language</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>P1=0.23</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>(5, 7.5, 7.5, 10.0)</td>
</tr>
<tr>
<td>P2=0.19</td>
<td>(6, 7)</td>
</tr>
<tr>
<td></td>
<td>(6, 6, 7, 7)</td>
</tr>
<tr>
<td>P3=0.18</td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>(5, 7.5, 7.5, 10.0)</td>
</tr>
<tr>
<td>P4=0.17</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>(6, 6, 6, 6)</td>
</tr>
<tr>
<td>P5=0.23</td>
<td>(6, 7, 8)</td>
</tr>
<tr>
<td></td>
<td>(6, 7, 7, 8)</td>
</tr>
<tr>
<td>Aggregated STFN</td>
<td>(5.590, 6.845, 7.035, 8.29)</td>
</tr>
</tbody>
</table>

Table 4.8 Aggregated STFN by contract cause

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Document preparation</th>
<th>Late of submission</th>
<th>Scope of jurisdiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1=0.23</td>
<td>Fair</td>
<td>Good</td>
<td>Fair</td>
</tr>
<tr>
<td></td>
<td>(2.5, 5, 5, 7.5)</td>
<td>(5, 7.5, 7.5, 10.0)</td>
<td>(2.5, 5, 5, 7.5)</td>
</tr>
<tr>
<td>P2=0.19</td>
<td>(5, 7)</td>
<td>(6, 8)</td>
<td>(5, 6)</td>
</tr>
<tr>
<td></td>
<td>(5, 5, 7, 7)</td>
<td>(6, 6, 8, 8)</td>
<td>(5, 5, 6, 6)</td>
</tr>
<tr>
<td>P3=0.18</td>
<td>Good</td>
<td>Good</td>
<td>Fair</td>
</tr>
<tr>
<td></td>
<td>(5, 7.5, 7.5, 10.0)</td>
<td>(5, 7.5, 7.5, 10.0)</td>
<td>(2.5, 5, 5, 7.5)</td>
</tr>
<tr>
<td>P4=0.17</td>
<td>6</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>(6, 6, 6, 6)</td>
<td>(7, 7, 7, 7)</td>
<td>(5, 5, 5, 5)</td>
</tr>
<tr>
<td>P5=0.23</td>
<td>(6, 7, 8)</td>
<td>(7, 8, 9)</td>
<td>(5, 6, 7)</td>
</tr>
<tr>
<td></td>
<td>(6, 7, 7, 8)</td>
<td>(7, 8, 8, 9)</td>
<td>(5, 6, 6, 7)</td>
</tr>
</tbody>
</table>

Table 4.9 Aggregated STFN by process cause
Similarly, the pairwise comparisons between risk factors should be calculated as:

\[ a_{ij} = a_{ij1} \times c_1 + a_{ij2} \times c_2 + \cdots + a_{ijn} \times c_n \]

So we could get the pairwise comparable in each factor as the figure, figure.4.6, figure.4.7 and figure.4.8 respectively.

According to the formula:

\[ a_{ij} = \left[ a_{ij}^1 + 2(a_{ij}^2 + a_{ij}^3) + a_{ij}^\mu \right]/6 \]

So, \( a_{12} = \left[ 0.4 + 2 \times (0.4 + 0.5583) + 0.5583 \right]/6 = 0.4792 \)

Similarly, we could get a square matrix

\[
\begin{bmatrix}
1 & 0.4792 & 0.745 & 0.2975 \\
0.4792 & 1 & 2.305 & 0.8283 \\
0.745 & 2.305 & 1 & 0.3281 \\
0.2975 & 0.8283 & 0.3281 & 1
\end{bmatrix}
\]

Consequently, the aggregated fuzzy scale of delay causes' section is defuzzified and the section weight can calculate by formula:

\[
w_i = \frac{1}{n} \sum_{j=1}^{n} \frac{a_{ij}}{\sum_{k=1}^{n} a_{kj}} \quad i, j = 1, 2 \ldots n
\]

So after the calculation, \( w \) (delay cause) = (0.148, 0.371, 0.170, 0.484)
### Figure 4.7 Pairwise comparable STFN by variations

<table>
<thead>
<tr>
<th>Variation</th>
<th>Variation</th>
<th>scale</th>
<th>STFN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variation</td>
<td>P1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### Figure 4.8 Pairwise comparable STFN by contract

<table>
<thead>
<tr>
<th>Contract cause</th>
<th>Contract language</th>
<th>Validity of contract</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>scale</td>
<td>STFN</td>
</tr>
<tr>
<td>Contract language</td>
<td>P1</td>
<td>(1, 2)</td>
</tr>
<tr>
<td></td>
<td>P2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>P3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>P4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>P5</td>
<td>(1, 2)</td>
</tr>
<tr>
<td>Validity of contract</td>
<td>P1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>1</td>
</tr>
</tbody>
</table>

### Figure 4.9 Pairwise comparable STFN by process

<table>
<thead>
<tr>
<th>Process cause</th>
<th>Document preparation</th>
<th>Late submission</th>
<th>Scope of jurisdiction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>scale</td>
<td>STFN</td>
<td>scale</td>
</tr>
<tr>
<td>Document preparation</td>
<td>P1</td>
<td>1/2</td>
<td>(1/2, 1/2, 1/2, 1/2)</td>
</tr>
<tr>
<td></td>
<td>P2</td>
<td>1</td>
<td>(1, 1, 1, 1)</td>
</tr>
<tr>
<td></td>
<td>P3</td>
<td>(1/2, 1)</td>
<td>(1/2, 1/2, 1/2)</td>
</tr>
<tr>
<td></td>
<td>P4</td>
<td>1/2</td>
<td>(1/2, 1/2, 1/2, 1/2)</td>
</tr>
<tr>
<td></td>
<td>P5</td>
<td>(1/2, 1)</td>
<td>(1/2, 1/2, 1/2)</td>
</tr>
<tr>
<td>Late submission</td>
<td>P1</td>
<td>1</td>
<td>(0.595, 0.595, 0.8, 0.8)</td>
</tr>
<tr>
<td></td>
<td>P2</td>
<td>3</td>
<td>(3, 3, 3, 3)</td>
</tr>
<tr>
<td></td>
<td>P3</td>
<td>3</td>
<td>(3, 3, 3, 3)</td>
</tr>
<tr>
<td></td>
<td>P4</td>
<td>2</td>
<td>(2, 2, 2, 2)</td>
</tr>
<tr>
<td></td>
<td>P5</td>
<td>2</td>
<td>(2, 2, 2, 2)</td>
</tr>
<tr>
<td>Scope of jurisdiction</td>
<td>P1</td>
<td>1</td>
<td>(2.24, 2.24, 2.83, 2.83)</td>
</tr>
<tr>
<td></td>
<td>P2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
Same with the calculation before, we could get:

\[ w_{\text{variation}} = 1 \]

\[ w_{\text{contract}} = (0.555, 0.445) \]

\[ w_{\text{process}} = (0.345, 0.475, 0.180) \]

\[
w_i' = w_i \times \prod_{i=3}^{t} w_{\text{section}}^i
\]

\[
FI^* = \sum_{i=1}^{n} S_i^* w_i'
\]

We could get the final weights of all risk factors in the case is \( FI^* = \{(\text{fair}, 0.613), (\text{good}, 0.796), (\text{very good}, 0.134)\} \).

### 4.3. Measurement of Risk Likelihood and Risk Severity

The next step of the fuzzy risk management is to measure the risk likelihood and risk severity. Likewise the way of factor index, the form is shown as table 4.10.

<table>
<thead>
<tr>
<th>Professionals</th>
<th>Measurement</th>
<th>Risk likelihood</th>
<th></th>
<th>Risk severity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Preference</td>
<td>STNF</td>
<td>Preference</td>
</tr>
<tr>
<td>P1</td>
<td>(4.0, 5.0)</td>
<td>(4.0, 4.0, 5.0)</td>
<td>(6.0, 8.0)</td>
<td>(6.0, 6.0, 8.0, 8.0)</td>
</tr>
<tr>
<td>P2</td>
<td>Medium</td>
<td>(2.5, 5.0, 5.0)</td>
<td>High</td>
<td>(5.0, 7.5, 7.5, 10.0)</td>
</tr>
<tr>
<td>P3</td>
<td>(2.0, 4.0, 5.0)</td>
<td>(2.0, 4.0, 5.0)</td>
<td>(5.0, 7.0, 8.0)</td>
<td>(5.0, 7.0, 7.0, 8.0)</td>
</tr>
<tr>
<td>P4</td>
<td>4</td>
<td>(4.0, 4.0, 4.0)</td>
<td>6</td>
<td>(6.0, 6.0, 6.0, 6.0)</td>
</tr>
<tr>
<td>P5</td>
<td>(2.0, 4.0, 6.0)</td>
<td>(2.0, 4.0, 4.0, 4.0)</td>
<td>(6.0, 7.0, 9.0)</td>
<td>(6.0, 6.0, 7.0, 9.0)</td>
</tr>
<tr>
<td>A</td>
<td>(2.895, 4.19, 4.42, 5.535)</td>
<td>(5.63, 6.465, 7.155, 8.27)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.10 Measurement of risk likelihood and risk severity

Finally, two aggregated STNF are obtained:

\( RL^* = (2.895, 4.19, 4.42, 5.535) \)

\( RS^* = (5.63, 6.465, 7.155, 8.27) \)
4.4. **Fuzzy Inference Phase**

In this phase, we need to convert the STFNs into the fuzzy sets, use the aggregate STFN of FI, RL and RS get the fuzzy inference. According to the theories of the fuzzy mathematics to difuzzified the risk magnitude.

4.4.1 **Convert STFNs into the Fuzzy Sets**

Considered the FI, RL and RS are fuzzy numbers which are not in linguist expression, so the way of convert them is to find out the intersection between STFN and member function of the corresponding part:

The aggregate STFN of $F_I^*$ is $(4.782, 5.465, 6.197, 7.210)$.

Similarly, $R_L^* = \{(\text{low}, 0.4576), (\text{medium}, 0.807), (\text{high}, 0.131)\}$

$R_S^* = \{(\text{medium}, 0.554), (\text{high}, 0.899), (\text{very high}, 0.312)\}$

4.4.2 **Fuzzy Inference**

Because the factor index, risk severity and risk likelihood all have 5 degree level in the linguist description. So the intersection of them will be a total of 75 sets. These rules are defined by the professionals according to their experience and judgement subjectively, so we only list a 27 form as table 4.11.

<table>
<thead>
<tr>
<th>Factor Index</th>
<th>Risk severity</th>
<th>Risk likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L (0.4576)</td>
<td>M (0.807)</td>
</tr>
<tr>
<td>VG 0.134</td>
<td>VH 0.312</td>
<td>Mn 0.134</td>
</tr>
<tr>
<td></td>
<td>H 0.899</td>
<td>Mn 0.134</td>
</tr>
<tr>
<td></td>
<td>M 0.554</td>
<td>Mn 0.134</td>
</tr>
<tr>
<td>G 0.793</td>
<td>VH 0.312</td>
<td>Mn 0.312</td>
</tr>
<tr>
<td></td>
<td>H 0.899</td>
<td>Mn 0.4576</td>
</tr>
<tr>
<td></td>
<td>M 0.554</td>
<td>N 0.4576</td>
</tr>
<tr>
<td>F 0.613</td>
<td>VH 0.312</td>
<td>Mn</td>
</tr>
<tr>
<td></td>
<td>H 0.899</td>
<td>Mn</td>
</tr>
<tr>
<td></td>
<td>M 0.554</td>
<td>Mn</td>
</tr>
</tbody>
</table>

Table 4.11 Fuzzy inference by FI, RL and RS

This form is based on the formula:

$$\mu_k^k(x, y) = \mu_{F_I^*}^k(x_1) \land \mu_{R_L^*}^k(x_2) \land \mu_{R_S^*}^k(x_3) \land \mu_{R_M}^k(y)$$

$x_1 \in X_1 \ x_2 \in X_2 \ x_3 \in X_3 \ y \in Y$ And they belong to factor index, risk likelihood, risk
severity and risk magnitude respectively.

4.4.3 Defuzzification

In order to convert the fuzzy output $RM^*$ into the correlated risk magnitude of EOT claim, by using the center-average Defuzzification operator as defined is as followed:

$$RM = \frac{0.4576 + 4 \times 0.613 + 7 \times 0.793 + 10 \times 0.134}{0.4576 + 0.613 + 0.793 + 0.134} = 4.907$$

The overall risk magnitude is 4.907 under the defined scale system of RM, which means the risk is between minor with a belief of 49.1% and major of 50.9%.

4.5. The Output Modification Phase

Reviewing the whole process of the simulation, the final result is reliable and accountable, so no modification is needed at this stage. This final result could be used for the decision making in the professional team in assessing the risk of construction contract EOT claims problems.
CHAPTER 5: Discussion and Conclusion

5.1. Dissertation Result and Contribution

Through the analysis of the dissertation, we developed a system of the contract EOT claim problems. Based on the public cases from the court and experienced projects, the tricks and traps of contractors are summarized in the third chapter. We conclude them into four types which are delay causes, variation causes, contract causes and issue the process causes. Considered that the EOT claims are getting more common and essential in the construction industry, this summarization is necessary and meaningful.

The content stated before is just proposed the problems of the current situation, considered how to help the owner to avoid the traps effectively is the way of solve the problem. Then we apply the fuzzy risk management model which is the most burgeoning method applied in the construction industry, we compared the properties between construction management and contract management, find out that these two fields got similar properties, both of them may cannot be clearly get related of detailed data and information, so fuzzy analysis could remedy the default by convert limited information and uncompleted data into fuzzy linguist description, and then through defuzzification and fuzzy mathematics calculation to get the risk magnitude of contract EOT claims. We consider the tricks and traps summarized before as the criteria of the fuzzy risk management and analysis the risk of each factors is a new try in this domain.

Through the conclusion of the risk management, we could get the risk magnitude of each factors, then we could suggest the owner how to pay their attention on different factors of the matters need attention. In this project, the professionals come from the target project, and this research is to teach them how to use the method and take it like an experiment, the project is on the feasibility stage, the study could help the professionals take relevant measurements in advance.

We developed a self-check list here as table. 5.1 shown in helping the owner at the beginning of the project so that they could avoid or balance some unnecessary risks.

<table>
<thead>
<tr>
<th>T</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking list</td>
<td></td>
</tr>
<tr>
<td>Did you make a project-owner prepared bar chart or critical path method (CPM) diagram that sets out specific milestone dates as part of the</td>
<td></td>
</tr>
</tbody>
</table>
Did you overlook the contractor’s requirement to submit a project schedule?

As part of the contract language, did you get the expert witness/arbitrator?

Did you draft the contract language clear and precise regarding the administration?

Did you budget a contingency for potential disputes, change orders, or uncertain events?

Did you set out a regular process for the contractor when they want to raise claims?

Did you set the relevant measurement to check out the original reasons of the claims that the contractor have issued?

Table 5.1 Self-check list for the owner

5.2. Limitation and Expectation

The third chapter of the dissertation is presented by the case study method which adopted by the court and the experienced projects. The source of the cases are from China to the UK, the scope of them are varied from public sector projects to the private sector development, so these cases are representatively to the study.

However, the tricks and traps in issue an EOT claims of contractor summarized in the cases come from limited cases. Although they are represented in a degree, still not a full-scale summery. The situations cannot be summarized in every detailed which is limited. We just indicate to remind the owner be care of the contractor by finding out some tricks as an example, try to form a foundation but not to build a complete system, we only provide a new idea of defend awareness and the detailed tricks could be supplemented by future experienced.

The future study could explore how to summarize a complete and automatic system to test the tricks and traps of contractors. Along with the development of the industry, new skills will be developed by contractors so we need to update the knowledge all the time.

Considered the fourth chapter, we adopted the fuzzy risk management, the original model is applied to project management, based on the fuzzy theory (Baker and Zeng,
2005), we know the theory is viable to the project management, so we compared the properties between project and contract management, and find out that they got similar properties. But still, this study is the first attempt on the contract claim field. The feasibility of fuzzy analysis to contract claim field need further investigation.

The future study could discuss the application range of fuzzy analysis on risk management. Apply a basis of theory for contract risk management and that could help the contract claims more reliable.

Also, the study could only provide a self-check list as a solution to prevent the potential risks during the contract management. And the prevention is indeed significant, but risk management should be carried out the whole process. That means even if the claims has been issued, the owner should take measures to solve the problems. Considered the limitation of the length of the dissertation, we did not study further, so if possible, we believed that the negotiation is an influential part in the study, the game theory could be adopted and apply a game theory model to find out the most beneficiary way for the owner. That will be meaningful as well during the whole process of the risk management on EOT claims.

5.3. Conclusion

The whole study analysis the nowadays status of the contract claims on EOT, find out that it is the most common and most influential type of claims. So we indicate on exploring an effective way to find out how the contractors tricked the EOT from the owner and help them to avoid unnecessary risks.

Through the cases study method, we got four major resources of the EOT claim, and uses breakdown system to subdivide them into small criteria, put the criteria into the fuzzy risk management model to calculate the risk magnitude. Through the whole process of analysis, we give the owner a self-check list as a resolution of the risk avoidance.

In the big picture, the study provided a new visual angle on solving the EOT claims problems, analogy project risk management method to contract risk management which
is a new attempt in this field. Apply the fuzzy concept is fit the properties of contract risk analysis exactly considered that the limited information and uncompleted data. So this study could be used as a basis for the claims management and hopefully it could be developed in a better detailed, complete and automatic way.
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Appendix 1: Durtnell R & Sons Ltd v Kaduna Ltd [2003]
Adj.L.R. 03/19

JUDGMENT: HIS HONOUR JUDGE RICHARD SEYMOUR Q. C. TCC: 19 March 2003
Introduction: The Claimant, R. Durtnell & Sons Ltd. ("Durtnell"), is a very long established construction company based at Brasted in Kent. It specialises in the restoration and rebuilding of older properties principally in London and the South-East of England.

The Defendant, Kaduna Ltd ("Kaduna") is a company incorporated in the Isle of Man, but controlled from the Principality of Monaco. Its operations seem to be conducted ultimately for the benefit of the well-known racing driver Mr. Jody Scheckter.

It appears that Kaduna is the freehold owner of the property known as and situate at Laverstoke House, Laverstoke Park, Whitchurch, Hampshire ("the Property").

By an agreement ("the Contract") in writing dated 18 May 1999 and made between Kaduna and Durtnell Durtnell agreed to undertake various works ("the Works") at the Property for the sum of £5,890,244.55, or such other sum as should become payable pursuant to the provisions of the Contract. The Date for Completion specified in the Contract was 11 July 2000.


By clause 41 A of the Contract it was provided, so far as is presently material, as follows: 
"41A. I Clause 41A applies where, pursuant to Article S, either Party refers any dispute or difference arising under this Contract to adjudication...

41A.4.1 When pursuant to Article S a Party requires a dispute or difference to be referred to adjudication then that Party shall give notice to the other Party of his intention to refer the dispute or difference, briefly identified in the notice, to adjudication. Within 7 days from the date of such notice or the execution of the JCT Adjudication Agreement by the Adjudicator if later, the Party giving the notice of intention shall refer the dispute or difference to the Adjudicator for his decision ("the referral"); and shall include with that referral particulars of the dispute or difference together with a summary of the contentions on which he relies, a statement of the relief or remedy which is sought and any material he wishes the Adjudicator to consider. The referral and its accompanying documentation shall be copied simultaneously to the other Party...

41A. 7.1 The decision of the Adjudicator shall be binding on the Parties until the dispute or difference is finally determined by arbitration or legal proceedings or by an agreement in writing between the Parties made after the decision of the Adjudicator has been given.

41A. 7.2 The Parties shall, without prejudice to their other rights under the Contract, comply with the decisions of the Adjudicator; and the Employer and the Contractor shall ensure that the decisions of the Adjudicator are given effect.

41A.7.3 If either Party does not comply with the decision of the Adjudicator the other Party shall be entitled to take legal proceedings to secure such compliance pending any final determination of the referred dispute or difference pursuant to clause 41A. 71... "

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The duration of the Works was considerably extended, in part, at least, as a result of variations, which increased the Contract Sum to a figure in excess of £11,000,000. By November 2002 a revised Completion Date of 22 February 2002 had been fixed. By that time the company performing the role of the architect named for the purposes of the Contract ("the Architect") was Format Milton Architects Ltd. ("FMA").

By November 2002 various disputes are said to have arisen between Durnell and Kaduna, to the detail of some of which it will be necessary to return.

By a Notice of Adjudication ("the Notice") dated 14 November 2002 and given on behalf of Durnell by Messrs. Knowles Legal Services, Durnell sought to refer some disputes between it and Kaduna to adjudication pursuant to the provisions of clause 41 A of the Contract.

Section 2 of the Notice was entitled "The nature of the dispute". The terms of paragraph 2.1 of that section were these: "This Notice concerns a dispute between the Referring Party, R Durnell and Sons Limited ("Durnell"), the contractor, and Kaduna Limited ("Kaduna") the employer under the Contract, for the alteration and refurbishment of Laverstoke House, together with the addition of an attached Orangery with enclosed walkway link to an indoor tennis/squash court and refurbishment of the existing stable block resurfacing and planting works and isolated works about the estate at Laverstoke Park, Whitchurch, Hampshire."

Despite its heading Section 2 of the Notice in fact gave no information as to the nature of the disputes which it was sought to refer to adjudication. For that information one had to turn to section 3, which was entitled "The issues in dispute and redress sought".

So far as is presently material, section 3 of the Notice was in these terms:

3.1 Practical Completion
Whether the Works have achieved Practical Completion, if so, when was Practical Completion achieved, if not, identification of the reasons why.
Durnell request a declaration as to the above.

3.2 Breach of Contract
Durnell contends that Kaduna is in breach of contract for the following reasons: (a) Breach of Contract with respect to certifying Practical Completion.
(b) Breach of Contract by interference with the function of the Architect and other consultants.
(c) Breach of Contract by interference with Durnell’s Subcontractors without either the knowledge or consent of Durnell.
(d) Breach of Contract by failing to comply with Article 3 of the Contract.
(e) Breach of Contract by failing to pass on information from the first Architect to the replacement Architect. (f) Breach of Contract by installation of the future occupier’s fittings by others.

Remedies sought for breach of Contract with respect to certifying in Practical Completion
Durnell requests a declaration that:
(a) That Durnell are required to complete the Works not by the Completion Date, but within a reasonable time; (b) That Durnell did complete the Works within a reasonable time;
(c) That Kaduna is not entitled to deduct liquidated damages, any such deduction is to be refunded, with interest;
(d) That Durnell is entitled to be paid on a quantum meruit basis for work carried out after the Works were Practically Complete;
(e) That Durnell are entitled to the refund of retention monies and interest as calculated in the "Interim Account" section of this Referral, or such other sums as the Adjudicator shall decide.

Alternative argument to breach of Contract under paragraph 3.2 above
(f) If the Adjudicator decides that Practical Completion has not occurred, Durnell contend that they are entitled to a further extension of time from the current Completion Date of 22 February 2002.
until now, or such other date as the Adjudicator shall decide. Durtnell request a declaration as to the above.

3.3 Additional Works
(a) Durtnell contends that they have carried out the following works, which are variations to the Contract: making good movement in timber, Re-preparation and redecoration of the internal works, and the dismantling, redecoration and reassembly of window hinges and shutters.
(b) Durtnell seeks a declaration that the above items are Relevant Events and matters under clause 25 and 26 respectively and that they are to be valued as per clause 13.5.4 of the Contract, or by whatever means the Adjudicator shall decide.

3.4 Interim Account
(a) Durtnell contends that their interim application No. 40 dated 19 September 2002 was not properly valued, and requests that it is done so.
(b) Durtnell contends that their loss and expense claims, covering the following periods, have not been properly valued, and requests that it is done so.
   (1) The period 12 July 2000 to 3 May 2001; and,
   (2) The period 4 May 2001 to 15 November 2001; and,
   (3) The period 16 November 2001 to 14 December 2001; and,
   (4) The period 15 December 2001 to 22 February 2002 (the present Completion Date); and,
(c) In connection with application 40, and the loss and expense claimed therein, Durtnell contends that it is entitled to and due the sum of £2,797,631 plus additional interest thereon or such other sums as the Adjudicator shall decide.

3.5 Liquidated Damages
(a) The Employer has deducted liquidated damages on two occasions, however the Employer failed to issue a valid notice of such deductions within the time specified in the Contract.
(b) Durtnell request that the liquidated damages deducted by the Employer are refunded with interest thereon or such other sum as the Adjudicator shall decide."

"Durtnell's interim application No. 40 was in the total sum of £2,797,631. One of the elements making up that total was an amount of £412,524 in respect of what were called "Sub-Contractors’ Claims ". That was in fact but a claim from one sub-contractor, A & A Co-ordinated Services Ltd. ("A&A") , in respect of alleged delay to mechanical and electrical works for a period of 74 weeks up to 14 December 2001. The claim was set out in A&A's valuation numbered 38 which was sent to Durtnell under cover of a letter dated 19 September 2002 which was in the following terms:
"Please find enclosed our valuation 38 for the above project. This includes our prolongation claim up until 14th December 2001. We will be pursuing a prolongation claim beyond this period up until our completion on site. In addition to the prolongation claim we are also compiling a disruption claim that will be in excess of £1,000,000. 00."

The person appointed as adjudicator to determine the matters raised in the Notice was Mr. Michael Wilkey. Mr. Wilkey produced a "Corrected Decision " ("the Decision ") dated 24 December 2002.

In the Decision Mr. Wilkey set out in section 4 what he indicated was "MY DECISION'. For present purposes the material parts of it were:
" 4.11 decide that the sum due to the Referring Party in respect of the matters referred to me is £1,228,313.50 + VAT at the applicable rate.
4.2 I decide that the sum of £1,228,313.50 + VAT shall be paid by Kaduna Ltd. to R. Durtnell & Sons Ltd, forthwith. "
The remainder of section 4 of the Decision was concerned with costs.
Section 3 of the Decision was entitled "THE ISSUES AND MY FINDINGS". That section included:

"3.12 I find that, as a result of instructions issued to the contractor, that the contract period is extended to the 24 October 2002. I find that in considering the events pertaining to this contract the time taken to execute the varied works is reasonable...."

Interim Account - Prolongation

3.49 I find that as a result of the instructions issued by the architects that the contract has been delayed by a further 45 weeks from the 15 December 2001 to 24 October 2002.

3.50 I consider that a global claim is, or could be agreed to be, an acceptable basis of a claim such as is being considered in this matter. However, for the purposes of this adjudication I am unable to consider this claim in such detail as would need to be undertaken in seeking a final agreement and I therefore find that I am only able to make a decision on the basis of an interim account.

3.51 I am persuaded by the expert evidence of Mr. Davidson in respect of the claims under "prolongation" and the award of loss and expense. I find that the Employer's quantity surveyor has awarded a sum of £839,423.00 for the prolongation in respect of the extended contract for a period of 74 weeks (to 14 December 2001), which I consider to be a reasonable sum.

3.52 I find that in respect of the period of 45 weeks for which I consider Durtnall [sic] has a reasonable claim for prolongation, that the sum for this loss and expense, on the basis of an interim account is £510,435.00.

Interim Account - Variations

3.53 Movement in timber - I find that the contract rates, as a result of the nature of the works as to scope, quantity and quality, cannot be applied and that therefore dayworks is a reasonable basis of the calculation of the costs of the works. I find that, on the basis of an interim account, a reasonable cost for these works is £100,869.62, which represents 70% of that claimed.

3.54 Additional coats of paint - I find that this work can be valued on the basis of a fair rate for the work. I find that, on the basis of an interim account, a reasonable cost for these works is £88,280.49, which represents 70% of that claimed.

3.55 Hinges - I find that the contract rates, as a result of the nature of the works as to scope, quantity and quality, cannot be applied and that therefore dayworks is a reasonable basis of the calculation of the costs of the works. I find that, on the basis of an interim account, a reasonable cost for these works is £52,898.32.

Interim Account - Sub-Contractors

3.57 I find that as a result of the instructions issued by the architects that the M&E sub-contract has been delayed and disrupted by a further 45 weeks from the 15 December 2001 to 24 October 2002.

3.58 I find that the Employer's quantity surveyor has awarded a sum of £240,625 for prolongation in respect of the extended contract for a period of 74 weeks (to 14 December 2001), (£3,251.69 per week), which I consider to be a reasonable sum.

3.59 I find that in respect of the period of 45 weeks for which I consider Durtnall [sic] has a reasonable claim for prolongation, that the sum for this loss and expense (£3,251.69 per week), on the basis of an interim account, is £146,326.05.

Interim Account - Liquidated and Ascertained Damages

3.62 I find that as a result of the instructions issued by the architects that the contract has been delayed by a further 35 weeks from the 22 February 2002 to 24 October 2002 and that therefore liquidated and ascertained damages beyond this date cannot be withheld under the terms of the contract.

3.63 I therefore Decide that the sum of £92,569.26 be paid to Durtnall [sic] as the sums authorised in interim certificates numbered 39 & 40. "Durtnell. It only paid, on 13 January 2003, a sum of £610,883.50. The justification for paying the lesser sum advanced was set out in a letter dated 10 January 2003 written
by Kaduna's solicitors, Messrs. Masons, to Durtnell's solicitors, Messrs. Berrymans Lace Mawer as follows:

"In reviewing the Adjudicator's Decision it is clear that the Adjudicator exceeded his jurisdiction in relation to that element of his Decision which deals with the award of an extension of time to the date of Practical Completion, which the Adjudicator decided was 24 October 2002.

At the date of the Adjudication, being 20 November 2002, no dispute had arisen in relation to the extension of time sought and this point is pleaded at paragraph 30 of Kaduna's response.

Since the Adjudicator exceeded his jurisdiction in relation to the award of extensions of time, it follows that his award in relation to prolongation costs and repayment of liquidated damages fall away, as does the extension of time awarded.

On this basis we calculate that the sums properly due to your clients arising out of the Adjudication are as follows: ...

We repeat that our clients are very keen to pay the monies properly due to your clients and we look forward to receiving your proposals for breaking the impasse at the Bank of Bermuda caused by your clients' actions."

On 14 November 2002 FMA issued an interim certificate numbered 41 in which an amount of £60,434.61 was stated to be due to Durtnell from Kaduna. In a letter dated 3 December 2002 to Durtnell Kaduna wrote

"This is a notice under Clause 30.1.1.4 and 24.2.1 of the Contract.

You are aware that the Architect has issued a Certificate under Clause 24.1, which was dated 3 December 2002.

You will also be aware that by our letter dated 12 September 2002, we gave you notice under Clause 24.2.1 that we require you to pay or allow us liquidated and ascertained damages. This letter is also a notice under Clause 24.2.1. By the Architect's Certificate number 41, which was issued on 14 November 2002, the amount of £60,434.61 was stated to be due. The final date for payment of that amount is 12 December 2002.

We hereby give you written notice that we intend to withhold the amount of £60,434.61 from the amount, which became due under Certificate number 41, by reason of your failure to complete the Works by the adjusted completion date."

The outstanding issues in this action As matters have progressed since this action was commenced by a claim form issued on 30 December 2002, what remains in issue is the liability of Kaduna to pay the unpaid balance of the sum which Mr. Wilkey determined in the Decision to be payable, namely £652,788.56, and the liability of Kaduna to pay the amount of interim certificate 41, namely £60,434.61. Durtnell has sought summary judgment for those sums. The basis upon which it is contended that no answer to the claim latter, notwithstanding the writing by Kaduna of the letter dated 3 December 2002 which I have quoted, is that Mr. Wilkey determined in the Decision that Practical Completion of the Works was achieved on 24 October 2002 and that Durtnell was entitled to an extension of time for completion of the Works until that date, which findings are binding upon Kaduna unless and until disturbed by the award of an arbitrator or the decision of a court.

The grounds upon which it was contended that the determinations of the Adjudicator which were not accepted were in excess of jurisdiction.

Mr. Adrian Williamson Q.C., who appeared on behalf of Kaduna, submitted that Mr. Wilkey had no jurisdiction to find that there was due to Durtnell a sum of £146,326.05 in respect of delay to the part of the Works undertaken by A&A in respect of any date later than 14 December 2001 because
A&A had made no claim in relation to such period of delay and no claim on behalf of A&A had been included within interim application No. 40 in respect of any delay after 14 December 2001. Thus, submitted Mr. Williamson, there was at the date of the Notice no dispute concerning any entitlement of A&A to payment in respect to its works after 14 December 2001. Moreover, he submitted, on proper construction of the Notice Mr. Wilkey was not asked to make a determination as to what sum was due to A&A in respect of any delay to its works after 14 December 2001.

As a separate point Mr. Williamson submitted that Mr. Wilkey had had no jurisdiction to decide that Durtnell was entitled to the extension of time which he awarded for two separate reasons. The first was that, so Mr. Williamson contended, as at the date of the Notice there was no dispute at all between 2002 and payment of any amount by way of loss and expense in consequence because an application for a further extension of time had been made to FMA, the time allowed in the Contract for FMA to make a determination in respect of the application had not expired, and FMA had not yet made a determination. The second reason was that, as Mr. Williamson submitted, on proper construction of the Notice Mr. Wilkey was not asked to decide whether Durtnell was entitled to an extension of time and payment of loss and expense on the ground upon which he did in fact so decide, namely that the matters raised in paragraph 3.3 of the Notice, to which I shall refer hereafter for convenience as "the Extra Works ", were variations the carrying out of which caused the completion of the Works to be delayed. Mr. Williamson submitted that by paragraph 3.3 of the Notice what was being sought was simply a decision in principle that the matters there mentioned were variations capable of giving rise to an entitlement to extensions of time and payment of loss and expense, and valuation of them simply as items of work, not any assessment of whether they did actually cause delay to the completion of the Works and, if so, the amount to which Durtnell was entitled by way of payment of loss and expense.

In the context of his submission that at the date of the Notice there was no dispute as to the entitlement of Durtnell to an extension of time or payment of any further sums by way of loss and expense in respect of any period after 22 February 2002 Mr. Williamson drew to my attention that under cover of a letter dated 9 September 2002 Durtnell submitted to FMA what was described as an application "for a further Extension of Time beyond the 22 February 2002 the date to which the contract is currently extended." Under clause 25.3.1 of the Contract FMA was bound to determine the application within 12 weeks of receipt of the notice by which the application was made. That is to say, in this instance the application should have been determined by 2 December 2002. Durtnell's letter dated 9 September 2002 set out what were alleged to be the "Relevant Events" which entitled it to an extension of time, as it contended to 6 September 2002. Those "Relevant Events" were alleged to be:

1. Sundry additional work instructed by Format Milton Architects.
2. The EIB system and interface with other services.
3. Default of Article 3 and disregard of acceptance of work by Robert Adam Architects.
4. The shutter hinge variation.
5. Shrinkage and movement.
6 Enhanced specification.
7. Protracted snagging, refusal to carry out snagging inspections and delayed issue of snagging lists.
8. Statutory holidays 2002."

The grounds upon which an extension was sought thus included the execution of the Extra Works. In the event, by a letter dated 2 December 2002 FMA communicated to Durtnell its decision to grant an extension of time for completion of the Works to 8 March 2002.

In relation to the claim in respect of interim certificate 41 Mr. Williamson submitted that Kaduna was not bound to pay it for the reasons set out at paragraph 34 of the witness statement of Mr. Laurence Fryer dated 21 February 2003, namely: "... they were entitled to set off accrued liquidated and ascertained damages against this sum on the basis of the extensions of time then granted by the
Architect. A copy of the relevant Withholding Notice dated 3rd December 2002 is at Exhibit LDF 11. Kaduna remained so entitled notwithstanding FMA’s extension of time award of 2nd December and Certificate of Non-Completion of 3rd December. These documents were not, of course, subject to adjudication but remain effective as between the parties. Durtnell now contend that Kaduna had no such entitlement and in support of this contention rely on the Adjudicator’s Decision extending time to 24th October 2002. For reasons set out above, Kaduna contend that the Adjudicator had no jurisdiction to so decide. Copies of correspondence relevant to Interim Certificate 41 are attached at Exhibit LDF 11."

Submissions on behalf of Durtnell Mr. Martin Bowdery Q.C., who appeared on behalf of Durtnell, submitted that the points taken on behalf of Kaduna were bad points for five reasons which he set out in his written skeleton argument as follows:

"(i) all issues resolved by the Adjudicator’s Decision were in dispute when the Adjudication began;
(ii) the dispute which was resolved by the Adjudicator’s Decision had been properly referred to him;
(iii) Kaduna took part in the adjudication and raised jurisdictional objections to discrete matters but not to the claims which are now said to be jurisdictionally objectionable;
(iv) in any event Kaduna by adopting half of the Decision are approbating and reprobating the Decision. The Adjudicator held that Kaduna owed Durtnell £1,228,313.50 plus VAT Kaduna having paid Durtnell half the outstanding sum on the 13th January 2003 must now pay the balance. They cannot cherry-pick which parts of the Decision they like and which parts they choose to dislike;
(v) 2003 informed Durtnell. finally, Kaduna through their agent, their architect, have waived any objection or any half-objection to jurisdiction by insisting that Durtnell’s current valuation must conform with the Adjudicator’s Decision on prolongation. The architect on the 6th February "There is also considerable concern regarding your current valuations submission which does not reflect the Adjudicator’s financial award, for example in respect of prolongation:"
The latter point Mr. Bowdery frankly conceded in his oral submissions was in the nature of a jury point.

As to what amounted to a "dispute" for the purposes of a reference to adjudication Mr. Bowdery referred to a decision of my own, Edmund Nuttall Ltd. v. R. G. Carter Ltd. [2002] BLR 312, in which case he appeared for the successful defendant. In my judgment at paragraph 36 on pages 321 and 322 of the report I said:

"In my judgment, both the definitions in Shorter Oxford Dictionary and the decisions to which I have been referred in which the question of what constitutes a "dispute" has been considered have the common feature that for there to be a "dispute" there must have been an opportunity for the protagonists each to consider the position adopted by the other and to formulate arguments of a reasoned kind. It may be that it can be said that there is a "dispute" in a case in which a party which has been afforded an opportunity to evaluate rationally the position of an opposite party has either chosen not to avail himself of that opportunity or has refused to communicate the results of his evaluation. However, where a party has had an opportunity to consider the position of the opposite party and to formulate arguments in relation to that position, what constitutes a "dispute " between the parties is not only a "claim " which has been rejected, if that is what the dispute is about, but the whole package of arguments advanced and facts relied upon by each side. No doubt, for the purposes of a reference to adjudication under the 1996 Act or equivalent contractual provision, a party can refine its arguments and abandon points not thought to be meritorious without altering fundamentally the nature of the "dispute " between them. However, what a party cannot do, in my judgment, is abandon wholesale facts previously relied upon or arguments previously advanced and contend that because the "claim " remains the same as that made previously, the dispute" is the same. The construction of the word "dispute "for the purposes of the 1996 Act and equivalent contractual provisions, in my judgment, is not simply a matter of semantics, but a question of practical policy. It seems to me that considerations of practical policy favour giving to the word
"dispute" the meaning which I have identified. The whole concept underlying adjudication is that the parties to an adjudication should first themselves have attempted to resolve their differences by open exchange of views and, if they are unable to, they should submit to an independent third party for decision the facts and arguments which they have previously rehearsed among themselves. If adjudication does not work in that way there is the risk of premature and unnecessary adjudications in cases in which, if only one party had had a proper opportunity to consider the arguments of the other, accommodation might have been possible. There is also the risk that a party to an adjudication might be ambushed by new arguments and assessments which have not featured in the "dispute" up to that point but which might have persuaded the party facing them, if only he had had an opportunity to consider them. Although no doubt cheaper than litigation, as Mr. Richards's fees in the present case indicate, adjudication is not necessarily cheap."

Mr. Bowdery submitted that the Extra Works were at the core of the dispute between Durtnell and Kaduna because, as he put it at paragraph 7 of his written skeleton argument:

"- Kaduna's second architect maintained that this work was the dominant delay - described by them as remedial works to finishes see architects' letter dated 15th July 2002;
- Durtnell contended all this work was additional varied work as it was an enhancement of the original specification. Durtnell complicated matters by also alleging that the original architect had accepted the schedule of works and had "snagged" the house and was about to or should have issued a Certificate of Practical Completion much earlier: see Durtnell's letter dated 9th September 2002 in response to FM's letter dated 15th July 2002."

At paragraph 8 of his written skeleton argument Mr. Bowdery continued:

"What is clear is that the question as to whether what the architect considered was the dominant cause of the delay to the completion of the works:
- making good movement of timber;
- re-preparation and redecoration of the internal works;
- the dismantling, redecoration and reassembly of window hinges and shutters was or was not varied work was in dispute and was referred to adjudication."

Mr. Bowdery submitted that it was no answer to the entitlement of Durtnell to rely upon the Decision in relation to the determination of the extension of time to which it was entitled and to payment of loss and expense in respect of delay for Kaduna to say that there was no dispute about these matters because the FMA was still considering, at the date of the Notice, an application for a further extension of time and had not taken longer than the period permitted by the Contract to do so, because a decision of the Architect under the Standard Form in relation to an application for an extension of time was not a condition precedent to the exercise of a right to adjudicate. That right, he submitted, was a right exercisable at any time.

Mr. Bowdery further submitted that it was too late, at the enforcement stage, to take objection to the jurisdiction of an adjudicator. He submitted that such objection had to be taken at the adjudication stage. In support of that submission he relied upon a decision of H.H. Judge John Toulmin C.M.G., Q.C., Maymac Environmental Services Ltd. v. Faraday Building Services Ltd. (2000) 75 Con LR 101. In that case an issue was whether there was a concluded contract between parties as between which an adjudication had taken place. The party against which enforcement of the decision was sought contended that the adjudicator lacked jurisdiction because there had been no concluded contract between the parties, with the consequence that the decision of the adjudicator was unenforceable. About that submission H.H. Judge Toulmin said, at page 111 "Faraday go further. Their primary submission is that the adjudicator's decision can be challenged on the grounds that he had no jurisdiction because no construction contract complying with the 1996 Act had been established. I have already concluded that Faraday has no realistic prospect of succeeding on the facts. Assuming that I am wrong about this, Maymac make a further submission. They say that Faraday agreed that the dispute should be adjudicated and cannot resile from their agreement. I agree with this submission. Faraday consented to submit to the adjudication and admitted that there
was a contract to which the 1996 Act and the scheme apply. The adjudication was conducted on that basis. Accordingly, Faraday are estopped by representation and convention from now arguing that the Act and the scheme did not apply and that the adjudicator was not entitled to make an adjudication which would be binding until final determination of the dispute. Assuming that no contract existed and the referral was not under the 1996 Act, it was made by the parties on the basis that the adjudication took place by agreement between the parties on the same terms as the 1996 Act and the scheme, such an agreement between the parties is enforceable on the same basis as if the Act applied.

Mr. Bowdery submitted that, whereas a number of jurisdictional objections were taken on behalf of Kaduna in its response to Durtnell’s Referral Notice, no suggestion was made that Mr. Wilkey did not have jurisdiction to decide that Durtnell was entitled to an extension of time or to payment of loss and expense by reason of the execution of the Extra Works or that a further sum was payable to Durtnell in respect of the entitlement of A&A to payment of loss and expense after 14 December 2001.

Mr. Bowdery’s last main point was that by paying part of the sum which Mr. Wilkey had determined was due from Kaduna whilst objecting to other parts of the Decision Kaduna was seeking both to approbate and to reprobate the Decision, which he submitted was not permissible. In support of that submission he relied on another decision of my own, Shimazu Europe Ltd. v. Automajor Ltd. [2002] BLR113. He reminded me of what I had said at paragraphs 27 to 29 inclusive on page 123 of the report:

"27. Mr. Constable also relied on the comments of His Honour Judge Gilliland Q. C. in Farebrother Building Services Ltd. v. Frogmore Investments Ltd at the conclusion of the judgment in that case: - "...It seems to me that a party cannot pick and choose amongst the decisions given by an adjudicator, assert or characterise part as unjustified and then allege that the part objected to has been made without jurisdiction. That is not permissible under the TeCSA Rules. Either the adjudicator has jurisdiction or he does not. If he had jurisdiction, it seems to me that his decision is binding even if he was wrong to reach the conclusion he did... "

Miss Dumaresq submitted that both the decision in KNS Industrial Services (Birmingham) Ltd. v. Sindall Ltd and the decision in Farebrother Building Services Ltd. v. Frogmore Investments Ltd were distinguishable in relation to the comments which I have quoted. She submitted that a decision may have many separate and severable elements within it.
In my judgment it cannot be right that it is open to a party to an adjudication simultaneously to approbate and to reprobate a decision of the adjudicator. Assuming that good grounds exist on which a decision may be subject to objection, either the whole of the relevant decision must be accepted or the whole of it must be contested. It may, of course, be important correctly to characterise what constitutes a decision of the adjudicator. It is likely that, to be relevant for the purposes now under consideration, a decision will be the answer to a question referred to the adjudicator, rather than a conclusion reached on the way to providing such an answer. For example, if the adjudicator has had referred to him or her for decision both the question how much money is due to a contractor and the question to what extension of time for completion of construction works the contractor is entitled, it is likely that it will be open to a party to the adjudication to accept the determination in relation to the sum due while disputing, if otherwise there are good grounds for so doing, the assessment of the extension of time, or vice versa. In such a case two separate questions would have been referred to the adjudicator. However, that situation is to be distinguished from the case in which in order to answer the question what sum a party is entitled it is necessary to consider a number of elements of claim, or the case in which in order to reach a conclusion as to what extension of time is appropriate a number of grounds of possible entitlement to extension of time need to be considered. In each of these latter cases the result of the evaluation of the various elements will be a single cash sum or a single period of extension of time. It seems to me that the option available to a party who otherwise has good grounds for objecting to a decision that a particular sum is payable is to accept it in its entirety or not at all. He does not have the option of declining to accept the decision in its entirety, but to accept the reasoning which led to particular items being included in the overall total. Similarly with an evaluation of a period of extension of time. The overall period of extension must be accepted or none. The submissions on behalf of Kaduna in response.

Mr. Williamson did not dissent from the proposition that helpful guidance as to what constituted a "dispute" for the purposes of a reference to adjudication was to be found in my comments in Edmund Nuttall Ltd. v. R. G. Carter Ltd.

Mr. Williamson submitted that it was not enough to give rise to a dispute as to the entitlement of Durtnell to an extension of time and payment of loss and expense by reason of the execution of the Extra Works that a dispute had arisen, as he accepted, as to whether the Extra Works amounted to variations. He contended that it was plain from the terms of paragraph 3.3 of the Notice that what was sought to be referred to adjudication was simply whether the Extra Works ranked as variations, and if so, to what payment for the work as work Durtnell was entitled. It was, I think, implicit in his submissions that, in the context of an outstanding application to FMA for an extension of time based in part on the contention that the Extra Works constituted "Relevant Events", reference of the question of principle whether the Extra Works did constitute "Relevant Events" was a worthwhile exercise because a decision in favour of Durtnell on that issue would influence the decision of FMA on the application under consideration.

Mr. Williamson accepted that it was not a condition precedent to the jurisdiction of an adjudicator to determine whether, under the Contract, Durtnell was entitled to an extension of time for completion of the Works or payment of loss and expense that there should first have been a decision of the Architect on those questions. However, he submitted that where Durtnell had elected to seek a decision from FMA, then so long as FMA did not take longer than the time permitted under the Contract to make its decision, until there was a decision there was nothing for Durtnell to dispute and hence no "dispute" as to entitlement to an extension of time or payment of loss and expense which could be referred to adjudication under clause 41A.

Mr. Williamson emphasised that the issue of what A&A might be entitled to by way of payment of loss and expense only arose in connection with the issues identified in paragraph 3.4 of the Notice.
in the context of the claimed entitlement of Durtnell in relation to its application No. 40. Thus there could be no question of any dispute as to the entitlement of A&A to a payment in respect of loss and expense in respect of any period after 14 December 2001 because A&A had not even formulated a claim, still less made a claim which had been contested.

While Mr. Williamson accepted that it would often be convenient, if a clear issue as to the jurisdiction of an adjudicator has arisen at the time of the adjudication itself, for a party which wished to raise such question to do so then, he submitted that a party which did not raise any jurisdictional point at that stage was not forever after barred from so doing. He pointed out that the fact that there was an issue as to the jurisdiction of an adjudicator might, indeed often would, only become apparent once the decision in the adjudication was known. He submitted that the question of whether a party which did not raise a jurisdictional issue during the adjudication itself was thereafter prevented from doing so was really a matter of waiver, the determining factor being whether a party which had appreciated that a jurisdictional point was open to it had deliberately elected not to take it.

On the question of approbating and reprobating Mr. Williamson suggested, correctly, that in the argument leading up to my decision in Shimuzu Europe Ltd. v. Automajor Ltd. my attention had not been drawn to the decision of the House of Lords in Lissenden v. C.A. V Bosch Ltd. [1940] AC 412 or to the later decision of the Court of Appeal in Banque des Marchands de Moscou v. Kindersley [1951] Ch.112. He invited me to reconsider the comments which I made in Shimuzu Europe Ltd. v. Automajor Ltd, in the light of what was said in those two cases.

In Lissenden v. CA V Bosch Ltd. the meaning of the doctrine of approbation and reprobation was considered by Viscount Maugham at pages 417 to 419 of the report. What Viscount Maugham said was this: "My Lords, I think our first inquiry should be as to the meaning and proper application of the maxim that you may not approbate and reprobate. The phrase comes to us from the northern side of the Tweed, and there it is of comparatively modern use. It is, however, to be found in Bell's Commentaries, 7th ed., vol i, pp 141-2; he treats "the Scottish doctrine of approbate and reprobate" as "approaching nearly to that of election in English jurisprudence ". It is, I think, now settled by decisions in this House that there is no difference at all between the two doctrines. I will cite three cases. First, is the case of Ker v. Wauchope (1) where Lord Eldon explained the doctrine in these terms: "It is equally settled in the law of Scotland, as of England, that no person can accept and reject the same instrument... The Court will not permit him to take that which cannot be his, but by virtue of the disposition of the will; and at the same time to keep what by the same will is given, or intended to be given, to another person. " The next case is that of Birmingham v. Kirwan (2) where Lord Redesdale treats the two doctrines as the same. He said: " The general rule is that a person cannot accept and reject the same instrument, and this is the foundation of the law of election. " The third case is that of Codrington v. Codrington (3). Lord Chelmsford observed (4): "It seemed to be considered in argument that the rule of the Scotch law that a person cannot approbate and reprobate under the same instrument was not altogether the same as the English doctrine of election, but Lord Redesdale in Birmingham v. Kirwan (2) puts them exactly on the same footing. " Lord Hatherley agreed and said he was himself about to cite the observations made by Lord Redesdale in Birmingham v. Kirwan (1) which had just been made by Lord Chelmsford. Lord Cairns L. C. (2) stated the matter thus: "By the well settled doctrine which is termed in the Scotch law the doctrine of "approbate " and "reprobate ", and in our Courts more commonly the doctrine of "election ", where a deed or will professes to make a general disposition of property for the benefit of a person named in it, such person cannot accept a benefit under the instrument without at the same time conforming to all its provisions, and renouncing every right inconsistent with them ". In the light of these authorities it seems that the phrase 'you may not approbate and reprobate ', or the Latin "quod approbo non reprobo "; as used in England is no more than a picturesque synonym for the ancient equitable doctrine of election, originally derived from the civil law, which finds its place in our records as early as the reign of Queen Elizabeth: Lacy v. Anderson (3); and see as regards the history of the
doctrines the very learned note of Mr. Swanston to Dillon v. Parker. (4) It is perhaps well to observe
here that the equitable doctrine of election has no connection with the common law principle which
puts a man to his election (to give a few instances only) whether he will affirm a contract induced
by fraud or avoid it, whether he will in certain cases waive a tort and claim as in contract, or
whether in a case of wrongful conversion he will waive the tort and recover the proceeds in an action
for money had and received. These cases mainly relate to alternative remedies in a court of justice.
The history of the common law rules, the principles which apply to them, and the effect of election
are all very different from those which prevail where the equitable principle is in question. I will not
attempt to summarize all the rules which are applicable to election in equity; but it is desirable for
my present purpose to state some general propositions which not I believe in doubt. In the first place,
the doctrine - till the case of Johnson v. Newton Fire Extinguisher Co. (S) - seems to have been
confined in England as in
Scotland to cases arising under wills, and deeds and other instruments inter vivos. In the second
place the doctrine is founded on the intention, explicit or presumed, of the testator in the case of a
will and of the author or donor in the case of instruments, namely, the intention that a man shall not
claim under the will or instrument and also claim adversely to it. The intention it may be added is not
presumed in the case of two clauses in the same will, and in such a case the doctrine does not apply:
nor could the doctrine be applied in the case of a married woman where either of the properties
between which she would prima facie have to elect was subject to a restraint on anticipation; for the
imposition of the restraint showed an intention that the married woman should not be put to her
election: In re Pardon's Trusts. (1) In the third place the doctrine proceeds upon the principle not of
forfeiture but of compensation. The beneficiary electing against an instrument is required to do no
more than to compensate the disappointed beneficiaries. The balance of the property coming to him
under the instrument he may keep for himself. In the fourth place no person is taken to have made an
election until he has had an opportunity of ascertaining his rights, and is aware of their nature and
extent. Election in other words, being an equitable doctrine, is a question of intention based on
knowledge."

In Banque des Marchands de Moscou v. Kindersley a bank established in Russia in 1866 was
dissolved by the Soviet regime in 1918. It had substantial assets in England. A winding up order was
made in respect of the bank in 1932 in England. The defendants had been a customer of the bank.
The liquidator of the bank claimed that a sum was due to it from the defendants and commenced an
action to recover the sum claimed. The defendants took out a summons seeking an order that the
claim be struck out on the ground that the bank was non-existent and the action had been commenced
without proper authority. That notwithstanding, the defendants sought to prove in the liquidation for
sums claimed to be due to them from the bank. At first instance the judge dismissed the summons to
strike out on the ground that the defendants were seeking to approbate and reprobate by
simultaneously challenging the validity of the liquidation and seeking to prove in it. The defendants
appealed. In the Court of Appeal the only substantive judgment was that of Sir Raymond Evershed
M.R. At pages 119 to 120 in his judgment Sir Raymond considered the expression "approbating and
reprobating". He said:"The phrases "approbating and reprobating" or "blowing hot and cold" are
expressive and useful, but if they are used to signify a valid answer to a claim or allegation they must
be defined. Otherwise the claim or allegation would be liable to be rejected on the mere ground that
the conduct of the party making it was regarded by the court as unmeritorious. From the authorities
cited to us it seems to me to be clear that these phrases must be taken to express, first, that the party
in question is to be treated as having made an election from which he cannot resile, and, second, that
he will not be regarded, at least in a case such as the present, as having so elected unless he has taken
a benefit under or arising out of the course of conduct which he has first pursued and with which his
present action is inconsistent. These requirements appear to me to be inherent, for example, in Smith
v. Baker (19) and Ex parte Robinson (20). See also the speech of Lord Atkin in Evans v. Bartlam (21):
"I find nothing in the facts analogous to cases where a party, having obtained and enjoyed material
benefit from a judgment, has been held precluded from attacking it while he still is in enjoyment of
the benefit. I cannot bring myself to think that a judgment debtor, who asks for and receives a stay of
execution, approbates the judgment so as to preclude him thereafter from seeking to set it aside,
whether by appeal or otherwise. Nor do I find it possible to apply the doctrine of election.": and the speech of Lord Russell of Killowen (22): "The doctrine of approbation and reprobation requires for its foundation inconsistency of conduct; as where a man, having accepted a benefit given him by a judgment, cannot allege the invalidity of the judgment which conferred the benefit."

Mr. Williamson submitted that in the present case Kaduna had not derived any benefit from the Decision. He contended that it was not enough, as Mr. Bowdery submitted, that by the Decision the liability of Kaduna, which Durtnell had contended totalled some £2,797,631, had been fixed on an interim basis at a total of £1,228,313.50 and that Kaduna had sought to rely upon the findings of Mr. Wilkey as limiting its liability in respect of those elements of the Decision which it did accept to £610,883.50. He also resisted the suggestion of Mr. Bowdery that Kaduna had received a benefit by the determination of Mr. Wilkey that Practical Completion had taken place, which entitled it, through Mr. Scheckter and his family, to take up occupation of the Property. Mr. Williamson submitted that in any event, as it was a question of intention whether the doctrine of approbation and reprobation applied, the letter dated 10 January 2003 by which Messrs. Masons on behalf of Kaduna had communicated its desire to accept the Decision as to the findings that elements totalling £610,883.50 were payable had made it clear that Kaduna was not thereby evincing an intention to accept the Decision. Finally, on this aspect, Mr. Williamson submitted that in any event what was referred to Mr. Wilkey by the Notice was more than one dispute and the doctrine of approbation and reprobation did not apply where a party accepted a resolution by adjudication of one of the disputes referred but not another.

Consideration and conclusions
It is, in my judgment, plain that, unlike the position where a reference is made to adjudication under The Scheme for Construction Contracts (England and Wales) Regulations 1998, SI 1998 No 649, where it is clear from the terms of paragraph 8 in Part I of the Schedule that, absent the consent of all parties, only one dispute may be referred to adjudication at a time, under clause 41A of the Contract any number of disparate disputes can simultaneously be the subject of one notice of adjudication. Moreover, it seems to me that by the Notice Durtnell sought through the advisers then assisting it to refer to adjudication simultaneously a number of different disputes. Those disputes included a dispute as to whether Practical Completion of the Works had been achieved, an alleged dispute as to whether, if Practical Completion of the Works had not been achieved, Durtnell was entitled to further extensions of time for completion, a dispute as to whether the Extra Works amounted to variations for the purposes of the Contract, a dispute as to the sum which should have been found to be due to Durtnell in respect of its application No. 40, an alleged dispute as to the valuation of Durtnell's loss and expense claim for the period 22 February to 6 September 2002, and a dispute as to whether Kaduna had given valid notices before deducting liquidated damages from sums otherwise certified as due to Durtnell under the Contract.

In the preceding paragraph I have used the adjective "alleged" to describe the purported referral to adjudication by the Notice of "disputes" as to extensions of time and valuations of loss and expense. The reason for using that adjective is that in my judgment it cannot be said that there is a "dispute" as to entitlement to extensions of time, or as to valuation of loss and expense consequent upon a grant of extensions of time, at a time at which the question of whether there should be any extension of time, or any further extension of time has been referred to the Architect for the purposes of the Standard Form, the time allowed by the Standard form for him to make a determination has not expired, and no determination has been made. I readily accept that it is not, expressly, a condition precedent to any reference to adjudication of a dispute as to entitlement to an extension of time under a contract in the Standard Form that the dispute should first have been referred to the Architect. However, it is not easy to see how a dispute as to entitlement to an extension of time could arise until that had happened and the Architect had made his determination or the time permitted for doing so had expired. The reason is that under the Standard Form it is not for the employer to grant an extension of time or not. That function is entrusted to the Architect who is under an obligation to act impartially in making his assessment. Until the Architect has made his assessment, or failed to do so within the
time permitted by the Standard Form, there is just nothing to argue about, no "dispute". Whether the employer is in agreement with a claim to an extension of time is not relevant, because the decision whether one should be granted is not his and he has no role in the making of the decision. He may, under the Standard Form, have imposed upon him by the decision of the Architect, acting impartially, an extended contract period about which he is extremely aggrieved. If so, he, like the contractor, can seek to challenge the determination of the Architect by reference to adjudication. However, it is nonsensical to suggest that a "dispute " can exist between two parties as to a matter entrusted to a third party for independent decision in advance of the decision being known. For practical purposes, therefore, it seems to me that it is a condition precedent to the reference to adjudication of a "dispute" as to entitlement to an extension of time and as to anything which is dependent upon such decision, such as a claim for payment of loss and expense in relation to an extension of time claimed but not granted, that the person to whom the making of a decision on the relevant issue is entrusted under the contract between the parties should have made his decision, or the time within which it should have been made has elapsed without a decision being made.

In the circumstances it is clear, in my judgment, that Mr. Wilkey in fact had no jurisdiction to make the assessments which he purported to make as to the grant of an extension of time for completion of the Works to 24 October 2002 or as to loss and expense in respect of any period after 22 February 2002, the date for completion last fixed by FMA prior to the Notice. His decisions on those aspects of that which was purportedly referred to adjudication by the Notice were thus invalid and made in excess of jurisdiction.

While, in the light of my conclusions that Mr. Wilkey had no jurisdiction to decide on any extension of time beyond 22 February 2002 or on any loss and expense in respect of the period after 22 February 2002, which at least were purportedly referred to adjudication by the Notice, it is not strictly necessary to consider whether, upon proper construction of the Notice, a claim for an extension of time by reason of the execution of the Extra Works was comprehended within what was referred, it is plain to me that it was not. Mr. Bowdery's reliance upon the terms of paragraph 3.3 of the Notice was, in my judgment, misplaced. That paragraph contained no reference to any assessment being sought of the effect upon the completion of the Works of the execution of the Extra Works. What was sought, and all that was sought, as Mr. Williamson submitted, was, first, a decision in principle of whether the Extra Works amounted to "Relevant Events" for the purposes of the Contract, and, second, an assessment of the value of the Extra Works as work. The latter was clear from the reference to the seeking of a declaration that the Extra Works were to be valued as per clause 13.5.4 of the Contract.

I accept the implicit submission of Mr. Williamson that the decision sought in principle that the Extra Works amounted to "Relevant Events" was a sensible thing to seek at a time when FMA was considering a further application for an extension of time for completion of the Works against the background of its earlier indicated view that the Extra Works were not variations for the purposes of the Contract, but remedial works which had been a substantial cause of delay in the completion of the Works. A decision from an adjudicator that FMA was wrong about that would be bound to influence its decision, acting impartially, as to whether Durtnell was entitled to a further extension of time, and, if so, of how long.

It is also plain, as it seems to me, that Mr. Wilkey had no jurisdiction to make any assessment of an amount of loss and expense suffered by A&A in respect of any period after 14 December 2001. A&A had made no claim in respect of that period, although it had indicated that it was likely to, and there cannot possibly, in my view, be a dispute about a claim which has not even been made.

I reject the submission of Mr. Bowdery that a party to an adjudication must take an objection to the jurisdiction of the adjudicator at the time of the adjudication or not at all. The decision of H.H. Judge John Toulmin C.M.G., Q.C. in Maymac Environmental Services Ltd. v. Faraday Building Services Ltd. is not, in my judgment, authority for that proposition. The point which arose in that case was very similar to the point which arose in Furniss Withy (Australia) Ltd. v. Metal Distributors (UK) Ltd. [1990] ILloyd's Rep 236, and was essentially whether it was open to a party which had participated
in a dispute resolution process which depended upon the tribunal having any jurisdiction over the dispute at all, to contend at the enforcement stage that the tribunal lacked any jurisdiction. In the latter case, as in the former, the submission to jurisdiction represented by the participation in the dispute resolution process was treated as giving rise to an estopped by convention. The question which arose in the two cases which I have mentioned is a different question from the question what was the extent of the jurisdiction of a tribunal which had some jurisdiction on any view. So far as that question is concerned it seems to me that, if it is contended that the tribunal exceeded the jurisdiction conferred upon it, and the answer sought to be given is that it is too late so to contend, the issue is one of waiver. That is to say, a party is not disabled from relying upon a point that an adjudicator has decided something not referred to him or not in dispute at the time of the notice of referral unless, with knowledge of the availability of the point, he has elected not to raise it. The process of adjudication has many imperfections. Not the least of them is the risk that an adjudicator, many of whom are not legally qualified, will misunderstand the scope of the matters referred or exactly what it is that he or she is being asked to decide. It would be bizarre in the extreme if a party to an adjudication who proceeded upon the basis that his understanding of what had been referred and upon which issues decisions were required was correct should either be required to put forward formulaic, and probably, so far as the adjudicator was concerned, rather offensive "health warnings" to the effect that he only consented to the process insofar as the adjudicator decided matters properly referred to him or her; or was stuck with the consequences of the adjudicator "going on a frolic of his own" with no opportunity of complaint at the enforcement stage. In the present case it seems to me that the courses which Mr. Wilkey took which I have found were not justified and in excess of his jurisdiction were not such as Kaduna either did or should have appreciated, such that its failure to raise the questions of jurisdiction raised before me any earlier should be treated as a waiver of the right to do.

In my view, notwithstanding the submissions of Mr. Williamson, the doctrine of approbation and reprobation is applicable to the decisions of adjudicators. In simple terms, a party to an adjudication cannot pick and choose which parts of a decision upon a dispute he will accept and which not. The decision upon a particular dispute must either be accepted in whole or not at all, assuming that the latter option is otherwise available. I accept that for the doctrine to apply it is necessary for a party, with knowledge that it is open to him to object to the decision, to take the benefit of part of it. However, I do not accept that what constitutes a "benefit" for this purpose depends simply upon whether the party whose receipt of a "benefit" is in question has obtained a net cash sum or an entitlement to a payment. It is, in my judgment, a "benefit" to a party, for the purposes of the doctrine, that his liability to another party in respect of any particular matter is crystallised on an interim basis at a particular amount, even though that is an amount which he is called upon to pay. Thus a party who contends that his obligation towards another party is limited to payment of a particular sum by reason of the decision of an adjudicator has both claimed and derived a "benefit" from that decision. It is probably also correct, as Mr. Bowdery submitted, that a party who is, in consequence of the decision of an adjudicator, entitled to take possession of a building and does so, has claimed and derived a "benefit" from the decision.

However, in the present case it is clear, as it seems to me, that although Kaduna has both claimed and derived benefits from the decisions of Mr. Wilkey on some matters in dispute by seeking to limit its liability on an interim basis at a particular amount, even though that is an amount which he is called upon to pay. Thus a party who contends that his obligation towards another party is limited to payment of a particular sum by reason of the decision of an adjudicator has both claimed and derived a "benefit" from that decision. It is probably also correct, as Mr. Bowdery submitted, that a party who is, in consequence of the decision of an adjudicator, entitled to take possession of a building and does so, has claimed and derived a "benefit" from the decision.

One of the matters which was referred to Mr. Wilkey for his decision by the Notice was whether Practical Completion of the Works had been achieved, and if so, when. He decided that it had, on 24 October 2002. It seems to me that he did in fact have jurisdiction to decide those matters. If the entitlement of Kaduna to set off against its liability to pay interim certificate 41 depended simply upon whether Practical Completion had taken place, I should have held that it was not open to
Kaduna to go behind that determination, which was plainly recorded in the Decision, notwithstanding that section 4 of the Decision was on its face concerned only with sums payable to Durnell. The Decision, in my view, has to be considered as a whole in order to ascertain what was actually decided, and the question whether Practical Completion had taken place was one about which Kaduna and Durnell were in dispute and was a matter set out in the Notice. However, the critical issue is not whether Practical Completion had taken place, but when and whether Durnell was liable under the Contract to pay liquidated damages because Practical Completion had not been achieved earlier. Upon the second, and crucial one, of those questions Mr. Wilkey had no jurisdiction to decide. Thus the Decision provides no obstacle, in my judgment, to Kaduna relying upon its letter dated 3 December 2002 in answer to the claim for payment of interim certificate 41.

For the reasons which I have given it seems to me that the surviving claims of Durnell in this action all fail.
Appendix 2: David McLean v Swansea Housing Association Ltd [2001] Adj.L.R. 06/27

JUDGMENT: His Honour Judge Humphrey Lloyd Q.C. 27th June 2001. TCC.

I have two applications, both for summary judgment (from both parties), and an application by the defendant for a stay under section 9 of the Arbitration Act 1996. Essentially the issue between the parties is whether the claimant contractor is to be paid an amount of liquidated damages to which the defendant employer considers that it is entitled. In order to reach a decision on that question it is necessary to go back in the history of the events. So far as I can, I shall therefore deal with the arguments advanced by the parties as they arise in chronological order and therefore not necessarily in the order in which Mr. Harding (for the claimant) and Mr. Mort (for the defendant) have so ably presented them to me.

The contract was basically on the standard form JCT 81 with Contractor's Design. It concerned the redevelopment of the former head Post Office in Wind Street, Swansea, to provide housing for the defendant Housing Association as well as commercial and other uses. It was dated 19 October 1998, and had been amended to take account of the Housing Grants, Construction and Regeneration Act 1996. The contract was also amended to provide for sectional completion and in other respects. The documents were assembled imperfectly. The result is far from easy to determine.

Practical completion was achieved about 31 July 2000. A payment application, No. 19, was made in the autumn of last year. In it the contractor claimed money for direct loss and expense, money in respect of the valuation of variations, money in respect of measured work, and also certain adjustments in relation to the expenditure of provisional sums. The contract had finished late. Accordingly, at that time, there was also an argument about whether or not the contractor was entitled to an extension of time.

On 19 January 2001 a notice of adjudication was issued on behalf of the claimant contractor by its solicitors. It stated in paragraph 5: "There are matters in dispute as follows:

(i) The Referring Party's entitlement to direct loss and/or expense pursuant to Clause 26 of the Contract;
(ii) The Referring Party's entitlement to extensions of time pursuant to Clause 25 of the Contract;
(iii) A proper valuation of variations carried out by the Referring Party pursuant to Clause 12 of the Contract;
(iv) The proper valuation to be ascribed to measured work; (v) Release of retention;
(vi) Expenditure of provisional sums."

Paragraph 6 then said: "Without prejudice to the Referring Party's right to add to the remedies sought in its Referral, its claims are set out in the Application (attached), or as assessed in adjudication ...". It may be noted that the claimant did not refer any dispute about the validity of the notice which the defendant had given of its intention to withhold liquidated damages due on the claimant's failure to complete on time, although the amount of such damages might be affected by any decision relating to an extension of time.

The adjudicator was Mr. Weekes. He was appointed by the President of the Royal Institution of Chartered Surveyors. His jurisdiction was challenged during the course of the adjudication on a number of grounds, with which I am only concerned with one: whether he was the right person to have been appointed. Curiously, it seems to have been accepted by the parties that they would be happy with Mr. Weekes by whomsoever he had been appointed.

The reason for this dispute arises because the use of the sectional completion supplement led to the need to name, in s.S1.1, or for the purpose of cl.1.1, an adjudicator. The text on p.79 of the bundle of...
contract documents says only "the President or Vice-President of the Chartered Institute of Arbitrators" which must be a reference to the appointing body. However, other amendments made, e.g. on p.135, had the effect of deleting those words as there was then no provision to which they referred or could sensibly be attached. So, in a nutshell, there is a question as to whether the Chartered Institute of Arbitrators had the right to appoint an adjudicator, or whether there was in effect an ineffective provision for adjudication so that the Scheme for Construction Contracts would apply. (Mr. Weekes was appointed pursuant to the Scheme.)

In my view the unfortunate manner in which the contract documents were compiled destroyed any intention that the adjudicator should be appointed by the Chartered Institute of Arbitrators and the provisions in relation to adjudication as set out in the JCT form became inoperative as they were struck out on pp.127 onwards. Thus the Scheme took effect as the contract did not meet the requirements of section 108 of the HGCRA. Mr. Weekes was rightly appointed.

The second question is whether the adjudicator had jurisdiction to deal with more than one dispute, or, put another way: was more than one dispute referred? Paragraph 8(1) of the Scheme provides:
"The adjudicator may, with the consent of all parties to those disputes, adjudicate at the same time on more than one dispute under the same contract" Did the notice of adjudication refer more than one dispute? I have said before that in dealing with adjudications one must approach the interpretation of any document in a sensible manner and to try to give effect to its intentions, whilst bearing in mind the purposes of adjudication and the presumed intentions of the parties to be inferred from the contract, including the Scheme as it is part of the contract (see section 114 of the Act) and adjudication is fundamentally a contractual form of dispute resolution.

Paragraph 8(1) of the Scheme clearly precludes the reference of more than one dispute, without the requisite consent of the other party or parties. Such consent was not given in this case as the defendant's participation in the adjudication proceedings was subject to its protest about the jurisdiction of the adjudicator on this and other grounds, as fully set out by Mr. Mort in his submissions. The reason is that it would not normally be practicable to decide more than one dispute fairly within the period required. On the face of it, the notice given by the claimant referred to six separate matters.

A notice of adjudication has to be put in its context. I have done so briefly. I agree with what was said in Fastrack Contractors Ltd v Morrison Construction Ltd [2000] BLR 168 by His Honour Judge Thornton QC said (at page 176):"During the course of a construction contract, many claims, heads of claim, issues, contentions, and causes of action will arise. Many of these will be collectively, or individually disputed. When a dispute arises, it may cover one, several or many of one, some or all of these matters. At any particular moment in time, it will be a question of fact what is in dispute. Thus the "dispute" which may be referred to adjudication is all or part of whatever is in dispute at the moment the referring party first intimates an adjudication reference. In other words, the "dispute" is whatever claims, heads of claims, issues or contentions or causes of action that are then in dispute which the referring party has chosen to crystallise into an adjudication reference. A vital and necessary question to be answered, when a jurisdictional challenge is mounted, is: what was actually referred? That requires a careful characterisation of the dispute referred to be made. This exercise will not necessarily be determined solely by the wording of the notice of adjudication since this document, like any commercial document having contractual force, must be construed against the background from which it springs and which will be known to both parties." When the context is examined, it is plain, in my judgment, that the real dispute was about what payment ought to have been made as a result of application No. 19. That contained various elements - valuation of measured work, valuation of variations, provisional sums, direct loss and expense, etc. Those elements were therefore reflected in the notice of adjudication. The notice was therefore valid in referring the dispute about the payment to be made which could not be decided without considering each such element.

Mr Mort submitted, with reason, that the reference in (ii) to an "entitlement to extensions of time"
does not fit into that analysis. However "loss and expense" under the JCT forms which is part of a dispute about an interim or progress payment may not properly be ascertainable or determined until any right to extension of time is also determined. If only prolongation is being claimed, as opposed to disruption, the right to an extension of time may run hand in hand with the right to loss and expense, provided that each stems from the same relevant event and no other cause, and the event therefore which gives rise to a claim for an extension of time and, if such an extension is justified, to money payable under the contract in consequence of that event and the extension.

and indispensable precursor to the direct loss or expense and, as it may be, the establishment of a proper or new rate or price, to enable the rules for valuation of variations to be properly applied, or indeed, perhaps, for the adjustment of rates of prices for measured work. Accordingly, giving the notice a benevolent interpretation, I would hold that this notice did not refer more than one dispute. It referred a single dispute, namely, "How much should I be paid?", or, "Should I have been paid on application 19?" Had the notice not been directed to such a single question then it would have referred more than one dispute. A notice that refers more than one dispute is invalid. The appointment of an adjudicator in consequence of it is similarly invalid, unless the other party has nonetheless clearly and knowingly accepted the notice or the appointment as valid so that there is consent for the purposes of paragraph 8(1) of the Scheme.

The next point is: did the adjudicator really do what he was being asked to do? Again, it is unfortunate that the notice did not say clearly that the contractor was claiming was what ought to have been paid. That was not said in so many words, at least until the submissions were made in the adjudication itself. The adjudicator's decision, however, was also not expressed in quite those terms. Giving it a sensible interpretation, and trying to give effect to its purpose and to the aims of adjudication, in my judgment the adjudicator in arriving at his conclusions on the various elements was saying, in effect: "That is what you should have been paid in response to application 19". Indeed, that is precisely how the defendant apparently read the decision, since, within a few days after the issue of the decision, either in its original form on 21 March, or in the corrected form of 22 March, certificate 20 was issued on 23 March which met the requirements of the decision in relation to payment, ie the claimant contractor got the certificate to which it was entitled, in the opinion of the adjudicator. Thus I do not consider that any point arises about the validity of the decision in terms of the dispute or in terms of what it is seeking payment. The adjudicator was entitled therefore to arrive at his decision about the extension of time as it affected the payment and, thus also, the amount of liquidated damages to which the defendant claimed to be entitled. The claimant has to accept the consequences of its own reference on this point.

But, and this is the next point that arises, what is the legal nature of the adjudicator's decision? I was referred to the decision of His Honour Judge Hicks QC in the case of VHE Construction plc v. RBSTB Trust Co. Ltd. (2000) 70 Con LR 51. At para.65 (on page 65 of the report) Judge Hicks said, in relation to a claim of a residual right to set off liquidated damages, that there was no such right against an adjudication decision. "In the first place the right under cl.24.2.1 is to deduct from moneys due or to become due 'under the contract'. The money in question here was not payable under the contract, in the sense contemplated by that clause, but by way of compliance (albeit contractually required) with the adjudicators' decisions." He then goes on to amplify his reasoning. Mr. Harding submitted that Judge Hicks held that the adjudicator's decision itself created a debt, and that is the cause of action upon which a claimant can claim. In other cases (see eg Glencot Development and Design Co Ltd v Ben Barrett & Son (Contractors) Ltd [2000] BLR 207) I have held (without having been referred to VHE) that the cause of action is the right or obligation in dispute, i.e. here, the unmet claim for payment on application 19 and the right to a further certificate. That is the right under the contract which has or had not been honoured by the defendant, thereby giving rise to the dispute about a cause of action for, for example, a sum due under the contract. Mr Mort submitted that this was the correct approach.

Assuming that Mr Harding is right in his reading of this paragraph of the judgment of Judge Hicks QC (which is also concerned with submissions designed to avoid section 111 of the HGCRA) I adhere
to the view that I previously expressed. The Scheme (and, so as far as I am aware, other standard forms of contract) does not confer on an adjudicator a right to adapt, vary or otherwise modify a contract. Under the statutory Scheme an adjudicator has to decide a dispute under the contract (and in other schemes, disputes arising out of or in connection with the contract). It is a decision about to the rights and liabilities of the contract which are questioned. Thus paragraph 20 of the Scheme expressly provides for the review of a certificate that has been issued (sub-para (a)) and for the adjudicator to decide a person "is liable to make a payment under the contract ... [emphasis supplied] and, subject to section 111(4) of the right or liability except, perhaps, in one respect.

I agree with Mr Harding that since the Scheme (see paras 20 (b) and 21) provides for the time for compliance with an adjudicator's decision to be set, it or the adjudicator's decision may alter the time within which, for example, a payment might otherwise have had to have been made, where an adjudicator decided that there had been an under-payment or under-certification. The purpose is of this is clear. If an adjudicator were merely to decide that a different certificate should be issued or a different payment should be made the paying party could properly take the view that it would have the contractual period in which to honour the decision. Hence the statutory provisions make it clear that it has not to have that time. Indeed it may have had it already, and more, and that therefore a shorter period of time may be appropriate. Thus the Scheme permits the time within payment is to be made to be altered. Indeed if the decision does not set a time compliance is immediate which in my view shows that the decision does not affect or create a new cause of action. The scheme is an implied term of the contract. As part of the contractual scheme it therefore modifies the ordinary contractual relationship. Only to that extent might one say that there has to be, as it were, in the words of Judge Hicks, compliance with the adjudicator's decision other than in accordance with what would otherwise be the strict terms of the contract. The scheme and the other contractual terms have to be read together.

The words "due under the contract" mean what is due on facts and on a proper application of the contractual terms. The adjudicator decides that issue. The decision establishes what is due under the contract. The parties have agreed to accept the decision as binding (section 108(3) of HGCRA and paragraph 23(2) of the Scheme) so, unless otherwise agreed by them or determined by a court or arbitral tribunal, each agrees that, for example, the amount to be paid is and was due, and each must act accordingly and accept any assumptions upon which the decision must have been based. As Chadwick LJ said in paragraph 26 of his judgment in Bouygues (UK) Ltd v Dahl-Jensen (UK) Ltd [2000] BLR 522 at page 525:"The adjudicator's decision, although not finally determinative may give rise to an immediate payment obligation. That obligation can be enforced by the courts. But the adjudicator's determination is capable of being reopened in subsequent proceedings. It may be looked upon as a method of providing a summary procedure for the enforcement of payment provisions due under a construction contract". [Emphasis supplied] If, for example proceedings are necessary to enforce the award the defendant cannot be allowed heard to allege that the decision was incorrect, i.e. that the claimant has not got a right or cause of action as some necessary fact or aspect of the law is missing, and is in effect temporarily estopped by its agreement from doing so. But ultimately the claimant will, if necessary, have to establish its right and cause of action. If the decision was itself a cause of action then it would supplant any cause of action. The decision is not an arbitral award nor can it be equated to one. An action to enforce an adjudicator's decision is an action to enforce the right or liability which has been upheld by the decision.

The next point is the real issue: is the claimant entitled to all the money the subject of the adjudicator's decision. All the money that was certified in certificate 20, bar the amount in dispute on liquidated damages, has in fact been paid. Is the claimant entitled to the amount for liquidated damages? That amount now reflects the adjudicator's view about the extension of time that was sought by the claimant so the claimant is bound to accept that conclusion in these proceedings since it was part of the dispute which it referred.

The original decision had to be corrected. That was done on 22 March. On 23 March the employer
wrote a letter to the contractor saying: "I write to advise that work was not completed within the extended contract period and I am therefore writing formally to inform you that liquidated and ascertained damages will be deducted from the payment due to you under certificate Number 20 issued on the 23rd March 2001. "Damages totalling £130,359 apply." The contract, as I said, was amended. The defendant employer had issued a valid notice under clause 24.1. Clause 24.2.1 reads as follows: "Provided the Employer has issued a notice under clause 24.1 and provided, before the date when the Final account and Final Statement ... becomes conclusive as to the balance due between the parties by agreement or by the operation of clause 30.5.5 or clause 30.5.8, the Employer has informed the Contractor in writing that he may require the payment of, or may hold withhold or deduct, liquidated and ascertained damages then the Employer may not later than five days before the final date for payment of the debt due under clause 30.6: Either:1 require in writing the Contractor to pay to the Employer liquidated and ascertained damages at the rate stated in Appendix I (or at such lesser rate as may be specified in writing by the Employer) for the period between the Completion Date and the date of Practical Completion and the Employer may recover the same as damages. If money is or will be due then clause 24.2.2 would be appropriate but money is not due then the clause 24.2.1 is appropriate. It really does not matter whether the word "recover" or "deduct" is used since a misapprehension as to the true position in fact or law will not stand in the way of an clear intention. In any event, for all practical purposes, on 16 May 2001 a letter was sent which satisfies the requirements of cl.24.2.1. It starts off boldly: "Your Client is liable to pay or allow liquidated and ascertained damages in the event of late completion of any section of the Works, pursuant to Clause 24.2 and appendix 1 of the above contract. Although extension of time has been granted, your Client still failed to complete the four sections of the works within the contract period as extended. In the circumstances you client is now liable to pay liquidated damages to the employer in the sum of £130,359.00. (This assessment of your Clientʹs liability, and/or entitlement to extension of time, may of course be the subject of review in arbitration or litigation). We are instructed that no payment has been made. So far as we are aware your Client has not served a notice of the type described in Section 110 (2) of the Housing Grants, Construction and Regeneration Act 1996, nor has your Client served a withholding notice conforming with Section 111 (2) of the 1996 Act or at all. Further, your Client has made no allowance for this sum in the proceedings brought in the High Court (Claim Number HT 01 00115). So far as we are aware there is no explanation as to why this amount has not been paid. Our Client's primary case is that it is entitled to deduct liquidated damages from such amount as is otherwise due to your Client under the Contract. In the alternative, but without prejudice to our Client's primary case, if for any reason our Client is not entitled to deduct liquidated damages then proceedings are necessary for the recovery of this sum, either in a future adjudication and/or in arbitration or litigation." That letter was followed by the counterclaim in these proceedings, which was served with the defence at the end of May 2001. So that even if the letter of 23 March is not a notice for the purposes of point 1 or 2 of cl.24.2.1, the letter of 16 May satisfies the requirements of 24.2.1.

Was the letter of 23 March given within the five days mentioned in clause 24.2? The adjudicator's decision was issued on 21 March, but it was corrected on 22 March. The time for payment for the purposes of the contract and clause 24.2 would have expired on 29 March. It seems to me that I cannot say that the defendant does not have realistic prospects of success in maintaining that an effective notice was given within the five days prescribed by the opening words of cl.24.2.1 sufficient to enable it to rely upon its letter to resist payment of the amounts due under the decision. Clause 24.2 (and section 111) are drafted on the basis that the person who wishes to withhold money will
know of the likely date of payment and can act. There is no such certainty in the case of an adjudicator’s decision since until it issued the time for compliance will not be known. It is of course possible for a pre-emptive notice to be given (and to have been given).

In my view the defendant has realistic prospects of success in maintaining that it gave an effective notice, particularly having regard to the fact that underlying all this was the fact that all along it had made it very clear that it wanted to recover liquidated damages. It had served its notices under cl.24.1, and as required by cl.24.2.1 and, in my view, it would be manifestly unjust also to deprive the defendant of an opportunity of maintaining that it was not obliged to pay the full amount of the adjudicator’s decision.

However, even if I am wrong on this part, and even if the letter of 23 March 2001 did not satisfy the requirements of cl.24.2.1 so that the adjudicator’s decision became payable in full, nevertheless the letter of the 16 May 2001 satisfies the requirements of cl.24.2.1.1 so that the counterclaim is a viable counterclaim. No defence to it has been shown and there is in any event, given the adjudicator’s view on the extension of time there is in these proceedings no realistic prospect available to the claimant for resisting payment on that counterclaim so that, in practical terms, subject to questions of costs, the result will be the same. The defendant is plainly entitled to summary judgment dismissing the claim so that it can safely keep the liquidated damages. Even if the claimant were entitled to judgment, the defendant would undoubtedly be entitled to a stay of execution or it would be entitled to set off the amount due on the counterclaim against the debt due on the claim so that, in practical terms, the claimant will not get the money that it is seeking.

I now deal with the question of the stay of the counterclaim sought by the claimant. As I have indicated, the defendant advanced the counterclaim on 31 May 2001. It sought summary judgment at the same time. The claimant has also sought summary judgment on its application, and at the same time sought to have the counterclaim struck out. I assume, against the defendant’s case, that there was an arbitration agreement. It is not necessary to make a finding at this stage. It is said that there has been a step in the proceedings for the purpose of s 9(3) of the Arbitration Act 1996 sufficient to preclude the claimant from maintaining that the dispute on the counterclaim should be referred to arbitration.

In my judgment, there has been a step by the claimant. The actions taken by the claimant to invoke the assistance of the court to enforce the adjudicator’s decision which was intimately connected with the subject matter of the counterclaim and to have the counterclaim struck out were not taken without prejudice nor in the latter case, at the same time as an application under s.9, which has followed later. On the established authorities, particularly the case of Turner & Goudy v. McConnell (1985) 30B.L.R.108, referred to by Mr. Mort at the end of his submissions, if filing an affidavit in reply to an application for summary judgment is a step then, a fortiori, the application to invoke the assistance of the court to dispose of a claim or counterclaim must be a step. It is inconsistent with the right to have a dispute arbitrated and must be regarded as a step in the proceedings. The application for a stay will be dismissed.

Therefore, for the reasons that I have given, the claimant's application for summary judgment on its claim is dismissed as the defendant has realistic prospects of success. The defendant's application for summary judgment on the counterclaim is allowed and, as I said, the application for a stay, if it does not now fall by the wayside, is dismissed.