

Can construction disputes be settled easily?^{1, 2}

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ABSTRACT

Construction is one of the most booming business in the world. It is one of the important sources of generating employment and capital. The construction industry is larger and more complex because of the involvement of various parties associated with the project. Due to its complexity, various risks are involved like delays, improper cash flow, lack of skill, change orders and environmental conditions; if these are not cleared they lead to Disputes. Disputes can break the relationship among the participants, affect the work quality and productivity, leading to claims and may lead to project fail if it is not managed inappropriate method. The aim of this paper is to present different types of disputes that occur in construction and analyzing various alternative dispute resolution methods using Multi-Attribute Decision Model by comparing different resolution methods between them and providing the best option to resolve the disputes without claims. These findings can be helpful to construction practitioners in understanding the dispute problems that occur frequently. This can minimize the risk of cost overruns associated with disputes.

Key words: Construction dispute, Delay Causes, Road construction, Contract errors, Claims

INTRODUCTION

The construction industry is complex, unique, and span for long period, which make more challenging to avoid disputes. Depending upon delivery method, type of skills, and required type of contract to use an employee, have different forms of disputes. Disputes are never budgeted for therefore occurrence of any disputes turn out to be very costly. It can damage financial and human resources, time, quality of work, and opportunity cost. Therefore, disputes are unavoidable. It should be managed properly by assessing the causes.

¹ Editor's note: Student papers are authored by graduate or undergraduate students based on coursework at accredited universities or training programs. This paper was prepared for the course "International Contract Management" facilitated by Dr Paul D. Giammalvo of PT Mitrata Citragraha, Jakarta, Indonesia as an Adjunct Professor under contract to SKEMA Business School for the program Master of Science in Project and Programme Management and Business Development. <http://www.skema.edu/programmes/masters-of-science>. For more information on this global program (Lille and Paris in France; Belo Horizonte in Brazil), contact Dr Paul Gardiner, Global Programme Director, at paul.gardiner@skema.edu.

² How to cite this paper: Maru, V. (2019). Can construction disputes be settled easily? *PM World Journal*, Vol. VIII, Issue VIII, September.

FIGURE 1. Risks changing into disputes³

"Road construction contracts are responsible for several types of disputes. The disputes may be among the client and the contractor, the key contractor, and sub-contractor over-compensation, concert of the contract, delay and disturbance of works, design variations, value escalation, the value of works etc. Maximum disputes are fixed by compromise among the contracting revelries without the participation of third party⁴. The accessing architect and engineer tenacity maximum disputes that might arise through the development of the work on site. Roughly cases still may need the structure of dispute review professional or panel. Still, around cases could be mentioned to an autonomous adjudicator to seek practical solutions and disputing revelries may intentionally accept and implement the result of the adjudicator. Subsequently exhausting the preceding dispute resolution mechanisms, it may be inevitable to take the substance to arbitration, frequently for last and binding reward that is enforceable by public law court like any court decision"⁵

Construction Claim can be well-defined as an appeal by any revelry to the agreement, frequently the Contractor, for reimbursement of reparations produced by a disaster of the further party to achieve his portion of responsibilities as stated in the contract. The reimbursement is frequently in the method of the added compensation or an extra time.

Claims are⁶ inevitable in road construction projects. Claims are an appeal for time and financial reimbursement for repairs acquired by any revelry to the agreement. The amount and occurrence of claims have enlarged over current years due to the upsurge in the proportions and

³ STUDY OF CONSTRUCTION DISPUTES & IT's RESOLUTION THROUGH ARBITRATION? (2015, August 9). Retrieved from <https://www.slideshare.net/abhishekshah798/c-51427660>

⁴ (PDF) Assessment of Construction Dispute Resolution in Ethiopian Somali Regional State Road Projects: A Case Study on Road Projects in the Region. (n.d.). Retrieved from https://www.researchgate.net/publication/321012269_Assessment_of_Construction_Dispute_Resolution_in_Ethiopian_Somali_Regional_State_Road_Projects_A_Case_Study_on_Road_Projects_in_the_Region

⁵ Dispute_paper[1]. (2016, September 21). Retrieved from <https://www.slideshare.net/YolenteMacarubbo/disputepaper1>

⁶ "Types and Causes of Construction Claims". (2015, 28). Retrieved from <https://www.slideshare.net/abhishekshah798/types-and-causes-of-construction-claims>

complication of these missions. These claims outcome in cost overruns, agenda interruptions and combative relations amongst the contracting revelries⁷.

The below Figure 2. shows the typical worth of construction conflicts globally between 2011 and 2016, corresponding by area. In 2016, the average value of construction disputes globally was 216 million U.S. dollars. A conflict was charted as a condition of concerns wherever 2 parties take problem within the declaration of a written bond right. The value of this dispute is that the extra claim to it enclosed within the contract.

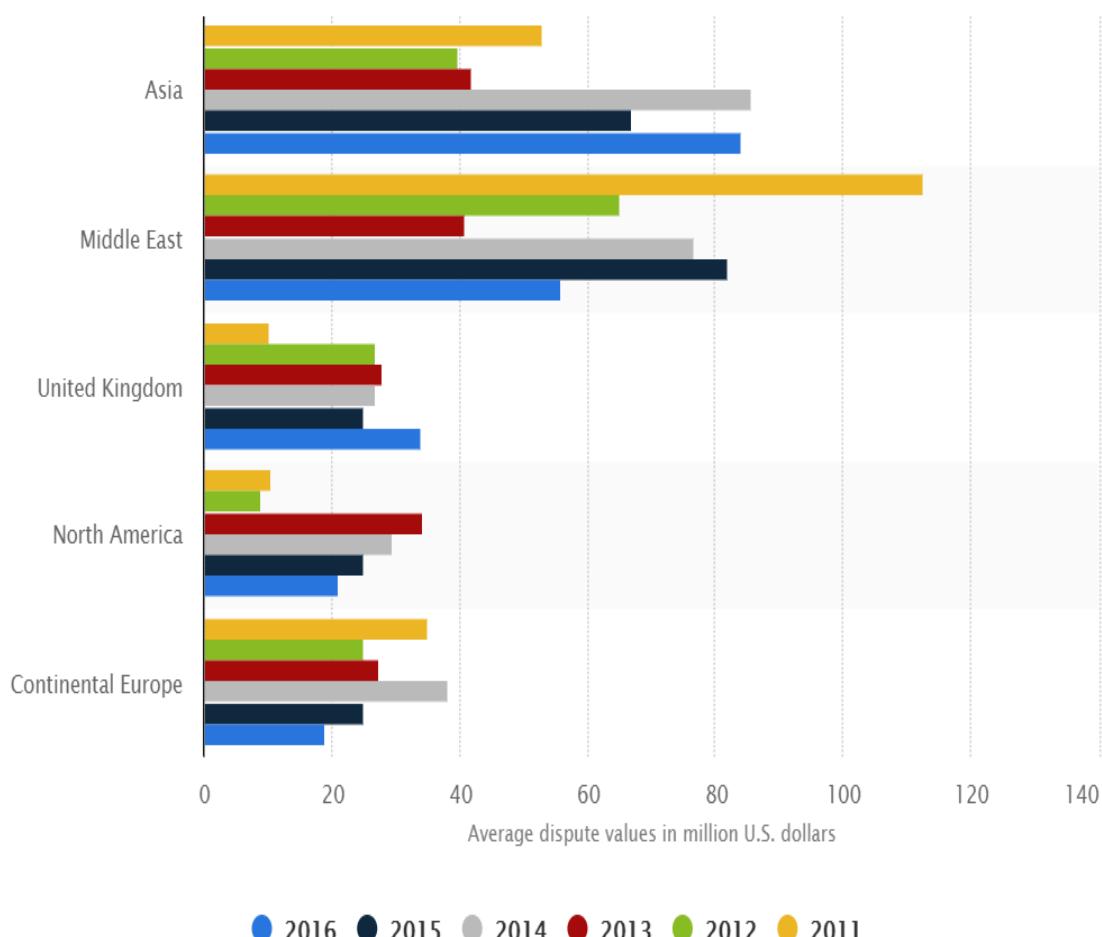


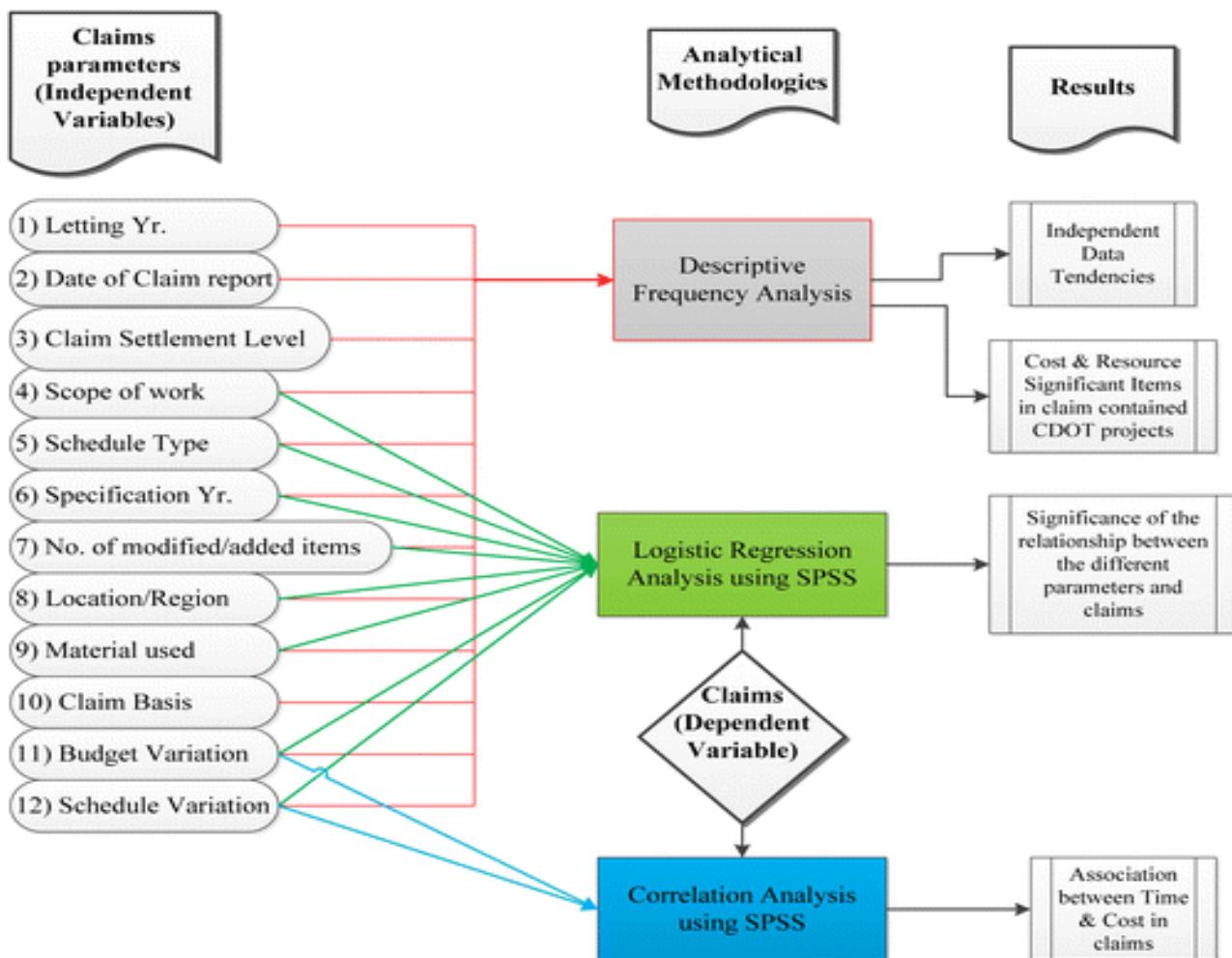
FIGURE 2. Middling price of construction conflicts worldwide from 2011 to 2016, by province.⁸⁹

There are various kinds of constructional claims out of which some of them registered below after reading the research documents, periodicals, records.

⁷ Causes of claims in road construction projects in the UAE. (2016, December 14). Retrieved from <https://www.tandfonline.com/doi/abs/10.1080/15623599.2016.1230959>

⁸ Average construction dispute values globally 2016 | Statistic. (n.d.). Retrieved from <https://www.statista.com/statistics/731826/global-construction-dispute-values/>

⁹ Average construction dispute values worldwide by region 2016 | Statistic. (n.d.). Retrieved from <https://www.statista.com/statistics/731808/global-construction-dispute-values-by-region/>

FIGURE 3¹⁰. claim parameters with different methodologies and results¹¹

“It is better to settle down conflicts immediately as the tenacity of disputes can be costly, increase the duration of the project and occasionally producing a high negative impression on the business. Whenever conflicts occur, we must solve the conflicts instantly in a productive and cooperative method in order to get quick and productive settlements¹². Disputes¹³ can arise in the road construction industry due to several explanations including design errors, deviations, and numerous major contracting revelries, complication and extent of the work, diverse

¹⁰ "Types and Causes of Construction Claims". (2015, 28). Retrieved from <https://www.slideshare.net/abhishekshah798/types-and-causes-of-construction-claims>

¹¹ Causes of Road and Bridge Construction Claims: Analysis of Colorado Department of Transportation Projects | Journal of Legal Affairs and Dispute Resolution in Engineering and Construction | Vol 7, No 2. (n.d.). Retrieved from <https://ascelibrary.org/doi/10.1061/%28ASCE%29LA.1943-4170.0000162>

¹² (PDF) Assessment on Effectiveness of Dispute Review Expert Practice in Ethiopian Federal Road Projects. (n.d.). Retrieved from

[https://www.researchgate.net/publication/327285475 Assessment on Effectiveness of Dispute Review Expert Practice in Ethiopian Federal Road Projects](https://www.researchgate.net/publication/327285475_Assessment_on_Effectiveness_of_Dispute_Review_Expert_Practice_in_Ethiopian_Federal_Road_Projects)

¹³ Reference Materials Dispute Resolution (August 2015)_e.pdf. (n.d.). Retrieved from <https://www.scribd.com/document/369334100/Reference-Materials-Dispute-Resolution-August-2015-e-pdf>

communication problems, work area conditions, insufficient planning, faulty stipulations, and monetary issues.

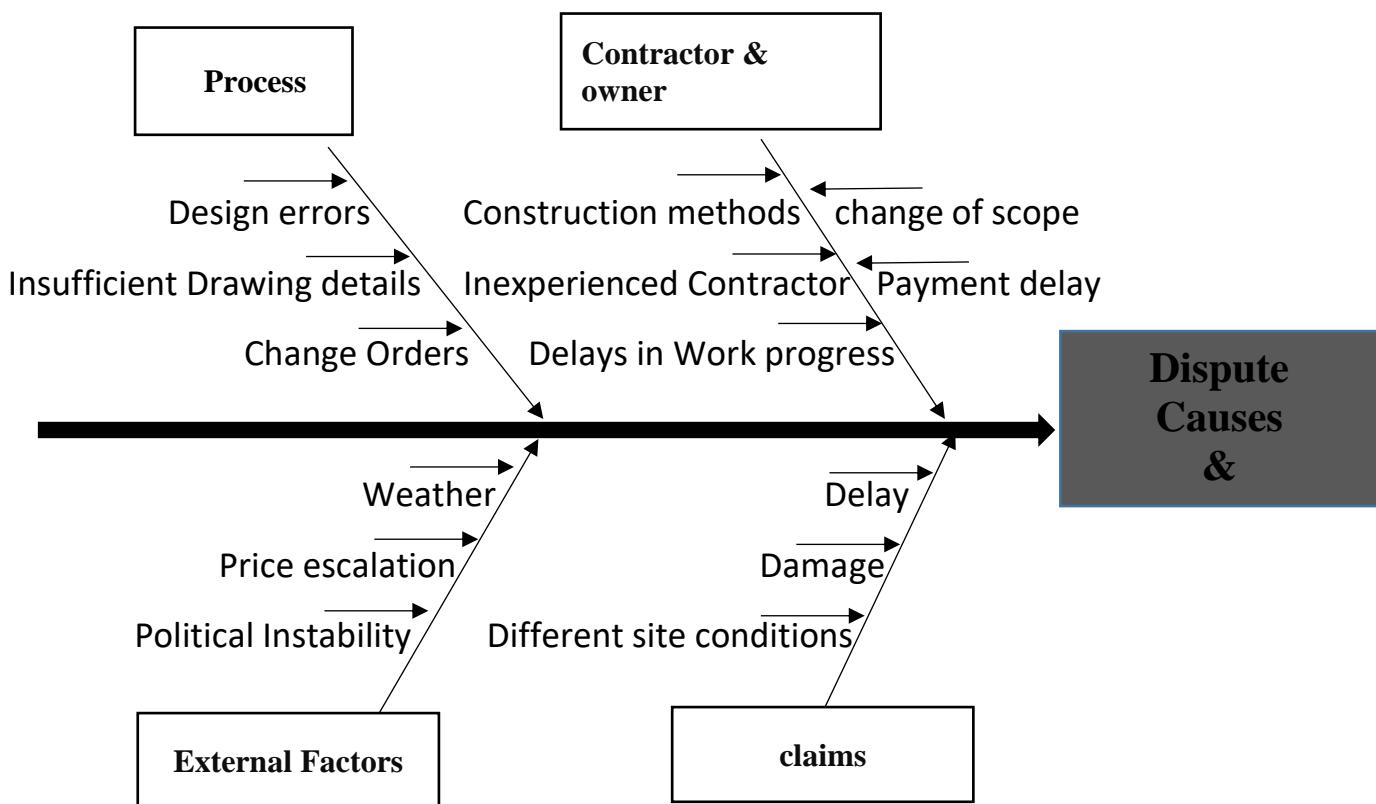


FIGURE 4. Fishbone Diagram Showing the leading causes of construction claims & disputes¹⁴

The root causes can be divided into four parts depending on who is responsible for the disputes and for the different type of claims i.e. from the Design & Specification, contractor & owner, claims and external factors. Design errors, Insufficient drawing details and changing the orders are in process side. Different construction methods, changing the scope, lack experience, delays in payment and work are from the contractor and owner side. weather, price variation in market and political factors are under external factors. There are mainly three types of claims they are due to delay¹⁵, damage and different side conditions.

The purpose of this paper is to answer the research questions

- 1) What are the different types of leading disputes in road construction?
- 2) What are the different alternatives to resolve disputes in road construction?
- 3) What are the claims in road construction and how to avoid claims?

¹⁴ Fishbone Diagram by “author”

¹⁵ Exploring delay causes of road construction projects in Egypt. (n.d.). Retrieved from <https://www.sciencedirect.com/science/article/pii/S1110016816300187>

METHODOLOGY

Step 1- SUMMARIZE

The purpose of this paper is to identify different types of disputes in road construction and analyzing the alternative dispute resolution methods for solving these disputes and avoiding claims in the road construction.

Material, Labor & Equipment Related Factors	Quality of material	Category of disputes	Causes of disputes
	Price fluctuation of Construction Materials		Failure to Finance and payments of completed work
	Government Regulations		Failure to respond on time
	Shortage in material		Owner Interference
	Shortage of Labor supply		Lowest Price mentality in engagement of contractor
	Labor productivity		Slow decision making
	Equipment availability and failure		Unrealistic contract duration and requirements imposed
Contract & Contract Relationship Related Factors	Change orders	Contractor Related Factors	Inadequate investigation before bidding
	Mistakes and discrepancies in contract document		Site management
	Inappropriate overall organizational structure linking to the project		Failure to plan & execute the changes of works
	Lack of communication between the parties		Construction methods
External Factors	Inclement Weather condition		Mistakes during construction stage
	Regulatory changes		Inexperienced contractor
	Unforeseen site condition		Lack of understanding & agreement in contract document
	Political Instability		Financial Difficulties
	Force Majeure		Exceptionally Low Bid
	Price escalation		Poor Contract management & Supervision
		Consultant Related Factors	Preparation and approval of drawings
			Frequent Changes in orders & Designs
			Incompleteness of drawing and specification
			Variations due to design errors
			Waiting time for approval of tests and inspection

FIGURE 5. Different types of Road Construction Disputes¹⁶

From the above FIGURE 5, we can observe different types of disputes from various categories occurring in the road construction. This is the major disputes and it's important to take all disputes into consideration.

¹⁶ Open Access Journals | OMICS International. (n.d.). Retrieved from <https://www.omicsonline.org/open-access/a-review-of-causes-and-effects-of-dispute-in-the-construction-projects-of-nepal-2472-0437-1000144>

STEP 2 – DEVELOPMENT OF FEASIBLE ALTERNATIVE SOLUTIONS

The construction business is thought to be one in all the foremost conflict and dispute-ridden industries, that has resulted in it being one in all the foremost claim-oriented sectors. Traditionally, parties would enter into proceedings, typically a pricey and windy suggests that of breakdown a dispute. Over the ages, several approaches of alternative dispute resolution have been offered into the construction business as a means to evade long and exclusive litigation”¹⁷.

Alternate Dispute Resolution to involves methodologies such as arbitration and Mediation that are willingly implemented to resolve disagreements or to settle down dissimilarities before captivating remedy to authorized activities.”¹⁸.

“The attainable ADR processes on the market to construction disputes are mediation; adjudication; arbitration; professional determination and court proceedings. Each possible method will be considered in turn. It is common and advisable for a construction contract to specify one or additional ways of dispute resolution.

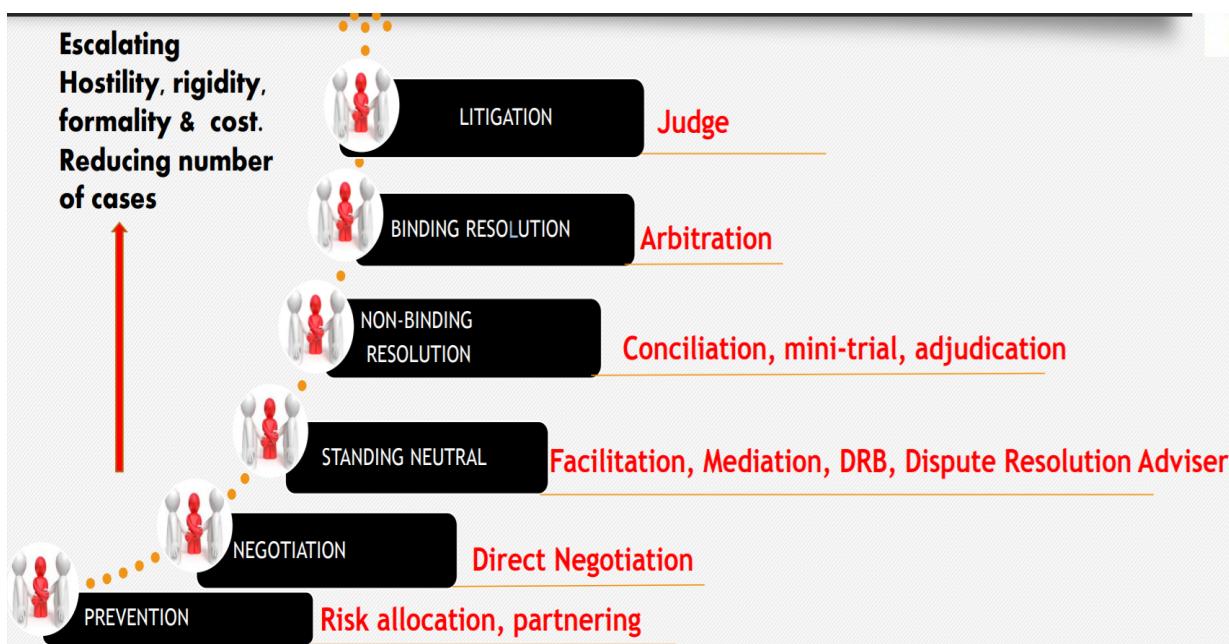


FIGURE 6”¹⁹. ADR PROCESSES & NATURE OF OUTCOMES²⁰

¹⁷ Different methods of dispute resolution in construction disputes | Lexology. (2016, April 30). Retrieved from <https://www.lexology.com/library/detail.aspx?g=3c05af6b-1733-4e2b-a552-108163ba9319>

¹⁸ What is alternative dispute resolution (ADR)? definition and meaning. (n.d.). Retrieved from <http://www.businessdictionary.com/definition/alternate-dispute-resolution-ADR.html>

¹⁹ Different methods of dispute resolution in construction disputes | Lexology. (2016, April 30). Retrieved from <https://www.lexology.com/library/detail.aspx?g=3c05af6b-1733-4e2b-a552-108163ba9319>

²⁰ The Nigerian Institute of Quantity Surveyors | Page not found. (n.d.). Retrieved from <http://niqs.org.ng/wp-content/uploads/2017/04/DISPUTE-RESOLUTION-PRESENTATION.pdf>

- Alternative dispute methodologies generally include early neutral analysis, negotiation, mediation, and arbitration. As escalating Law court queues, rising prices of a judicial proceeding, and time delays still wave litigants, additional states have begun testing with ADR programs. Few agendas are charitable and remaining are obligatory."
- The 2 most sorting methods for dispute resolution are arbitration and mediation, at all times negotiation is implemented first for resolving clashes. It is the distinguished way in dispute resolution. Negotiation permits the parties to satisfy so as to settle a dispute. The key benefit of this type of dispute clearance is that it permits the parties themselves to regulate and find an appropriate decision ."²¹²²

The highest used Dispute Resolution Procedures are

- **Prevention**
- **Negotiation**
- **Adjudication**
- **Litigation**
- **Arbitration**
- **Mediation**
- **Expert Determination**

STEP 3 - DEVELOPMENT OF THE OUTCOME OF EACH ALTERNATIVE

To find out which method suits best for the dispute resolution, we need to analyze each alternative in detail to know the outcomes

Prevention²³ :

- Most substantial early stages to prevent disputes is by choosing the utmost suitable plan delivery and management technique. The construction business has established several methods for delivering a venture, as well as old-style design-bid-build, cost-plus issue to a certain maximum value, construction director at-risk, construction administrator as an agent, bridging with design or build, and so out. The development delivery method

²¹GUILD OF PROJECT CONTROLS COMPENDIUM and REFERENCE (CaR) | Project Controls - planning, scheduling, cost management and forensic analysis (Planning Planet). (n.d.). Retrieved from <http://www.planningplanet.com/guild/gpccar/formal-disputes-resolution>

²² Alternative Dispute Resolution. (2017, June 5). Retrieved from https://www.law.cornell.edu/wex/alternative_dispute_resolution

²³ 3 Brief Review of Typical Dispute Prevention and Resolution Best Practices | Reducing Construction Costs: Uses of Best Dispute Resolution Practices by Project Owners: Proceedings Report | The National Academies Press. (n.d.). Retrieved from <https://www.nap.edu/read/11846/chapter/4>

should be selected with care, liable to the nature of the project. The well-versed proprietor will choose the suitable conveyance method at the very opening of the scheduling process, moreover before choosing the project crew.

- Additional finest rehearsal for dispute stoppage is to allocate separately project menace to the party who is top able to succeed, switch, and, if essential, assure against the menace. Genuine risk apportionment is crucial. Saddling project members with risks they can't handle can build bitterness, subjecting the project to adversarial relationships and countless potential disputes”²⁴.

Negotiation²⁵

- In the initial stage of the negotiation, a formal meeting is organized, there could be a price of negotiation between the revelries to resolve their dissimilarities themselves. This may be the humblest answer to the problem²⁶.

This preparation²⁷, however is not certainly official and usually less confrontational, doesn't mean it can be preserved as insignificant or without a good and suitable level of expertise.

- All revelries need to have a complete and comprehensive considerate of all the matters, from all sides. Dissatisfaction to know and escalate the position of the contrasting side will make prolific negotiations hard if not unbearable. There needs to joint respect for the subjects even though there is dissimilarity.
- Depending on how much hostility has been made, it would be desirable for all revelries to meet with the objective to be practical in accomplishment a clearance.
- As mediation and negotiations need coaching and an exclusive set of people services, it is desirable if a qualified mediator/negotiator is working as a sovereign third party to enable the negotiations.

²⁴ 3 Brief Review of Typical Dispute Prevention and Resolution Best Practices | Reducing Construction Costs: Uses of Best Dispute Resolution Practices by Project Owners: Proceedings Report | The National Academies Press. (n.d.). Retrieved from <https://www.nap.edu/read/11846/chapter/4>

²⁵ GUILD OF PROJECT CONTROLS COMPENDIUM and REFERENCE (CaR) | Project Controls - planning, scheduling, cost management and forensic analysis (Planning Planet). (n.d.). Retrieved from <http://www.planningplanet.com/guild/gpccar/settlement-negotiations-phase>

²⁶ 3 Brief Review of Typical Dispute Prevention and Resolution Best Practices | Reducing Construction Costs: Uses of Best Dispute Resolution Practices by Project Owners: Proceedings Report | The National Academies Press. (n.d.). Retrieved from <https://www.nap.edu/read/11846/chapter/4>

²⁷ Options for dispute resolution - Designing Buildings Wiki. (n.d.). Retrieved December 1, 2018, from https://www.designingbuildings.co.uk/wiki/Options_for_dispute_resolution

- The supercilious agreement has been grasped, and the claim/dispute is established, the appropriate Brochures are recruited, employed and payment is made on time per what was approved.

“Adjudication”²⁸

The adjudication technique also contains an unbiased third party but dissimilar with the mediation way, the adjudicator will stretch a choice, while the moderator will support revelries in discovery the resolution. Adjudication sections characteristically also include the opportunity of smearing to a court to impose the adjudicator's choice, if the argument is not determined by the decision itself. It is a cost-effective process which assistance procedures continue while the dispute is fixed. A”²⁹ effective “revelry to adjudication can smear to the Expertise and Construction Law court to impose an adjudicator's choice. The result of the adjudicator will be obligatory until it is swotted in arbitration or litigation³⁰.

Assistance of Adjudication

- The adjudicator is an unbiased individual who is not tangled in the day to day session of the construction contract.
- Adjudication is a fast procedure, which is planned to guarantee that money flow is continued throughout the construction procedure.
- While it is still probable to go to the Law court, in utmost cases the result of the adjudicator resolves the dispute.
- Adjudication is lesser costly than court chronicles.

Difficulties of adjudication

- The argument requires to have been exposed among the parties prior adjudication can be originated.
- The adjudicator's influences are restricted.
- Law Court reports are still mandatory to impose the adjudicator's choice if the “trailing” party does not compensate”³¹.

²⁸ Different methods of dispute resolution in construction disputes | Lexology. (2016, April 30). Retrieved from <https://www.lexology.com/library/detail.aspx?g=3c05af6b-1733-4e2b-a552-108163ba9319>

²⁹ Six Tips for Successfully Resolving Construction Disputes. (n.d.). Retrieved from <http://constructionexec.com/article/six-tips-for-successfully-resolving-construction-disputes>

³⁰ Six Tips for Successfully Resolving Construction Disputes. (n.d.). Retrieved from <http://constructionexec.com/article/six-tips-for-successfully-resolving-construction-disputes>

³¹ Different methods of dispute resolution in construction disputes | Lexology. (2016, April 30). Retrieved from <https://www.lexology.com/library/detail.aspx?g=3c05af6b-1733-4e2b-a552-108163ba9319>

“Litigation³²

Litigation is argument resolution in the Law Courts, where all revelries are subject to all the procedures of finding, such as interrogatories, needs for an entry fee, file creation demands, and admissions. The parties then have an experimental, moreover by a law court alone or by judges. If the parties are displeased with the consequences, they have an demand as a substance of precise. Factually, litigation has a status for being an extended, expensive procedure. That's one important motive why arbitrations arose into a rage on construction disputes. Nevertheless, at about the similar time that arbitration misplaced a bit of its glint, some public and centralized law courts made the procedure expressively quicker and less costly.

Rewards of³³ Litigation

- The claim procedure will be achieved by a justice in this method.
- Composite problems can be allocated.
- The revelries will obtain an obligatory and enforceable conclusion.

Drawbacks of Litigation

- Solitary claims which are above the value of £255,000 can be dispensed with at the TCC. Any privileges under this amount will be apportioned with at the District Law Court.
- It is regularly a deliberate method.
- It is probable to be the furthermost exclusive mode of undertaking a dispute.
- The chronicles will be in community and are consequently not personal, excluding in certain very partial surroundings³⁴.

“Arbitration³⁵

In arbitration, an unbiased individual termed an "arbitrator" perceives urgings and proofs from each side and then agrees on the consequence of the argument. Arbitration is not much official than a provisional, and the guidelines of indication are often comfortable. Arbitration will be similarly compulsory or nonbinding. Necessary arbitration says that the revelries abandon their chance to a probationary and decide to admit the arbitrator's choice as closing. Normally, there

³² Confronting Construction Conflicts. (2012, April 5). Retrieved from <https://www.ecmweb.com/ops-amp-maintenance/confronting-construction-conflicts>

³³ Confronting Construction Conflicts. (2012, April 5). Retrieved from <https://www.ecmweb.com/ops-amp-maintenance/confronting-construction-conflicts>

³⁴ Different methods of dispute resolution in construction disputes | Lexology. (2016, April 30). Retrieved from <https://www.lexology.com/library/detail.aspx?g=3c05af6b-1733-4e2b-a552-108163ba9319>

³⁵ GUILD OF PROJECT CONTROLS COMPENDIUM and REFERENCE (CaR) | Project Controls - planning, scheduling, cost management and forensic analysis (Planning Planet). (n.d.). Retrieved from <http://www.planningplanet.com/guild/gpccar/formal-disputes-resolution>

is no right to petition an arbitrator's conclusion. Nonbinding settlement decides that the revelries are allowed to demand a provisional if they do not agree to take the arbitrator's result.

If revelries³⁶ "agree for arbitration, they will yet again have an unbiased third revelry enter the circumstances for support to determine it. In arbitration, gatherings decide to the arbitrator who has the related practice to involve in the situation. The arbitrator studies papers and evidence that apprehends the condition and can make a choice that string-pull one way if the revelries fail to attain an agreement. Arbitrations can be lawfully obligatory, dependent on the authority. The expenses of arbitration can be expressively advanced than other approaches, occasionally uniform as high as lawful reports"³⁷³⁸.

"Profits of Arbitration

- Similarly mediation, arbitration is also an intimate procedure.
- Gatherings can decide on the arbitrator who has related knowledge in the substance.
- Related to Law court reports, it is the comparatively fast procedure.
- It is extremely supple related to Law court records.

Difficulties of Arbitration

- It's the revelries accountability to accept the expenses of both the arbitrator and the site where the arbitration is planned.
- Restricted powers of obligation or approval accessible to the arbitrator if one gathering miscarries to obey with the instructions targeted by the arbitrator.
- There are restricted demand privileges obtainable through arbitration.
- Expenses can be comparable to litigation at Law court³⁹.

Mediation⁴⁰

"Mediation is generally used within the building industry to determine disputes. The Expertise and Construction Court provides direction to different ways of legal action within the construction business and state that the court should support revelry to use alternative dispute

³⁶ ADR Types & Benefits - alternative_dispute_resolution. (n.d.). Retrieved from <http://www.courts.ca.gov/3074.htm>

³⁷ Six Tips for Successfully Resolving Construction Disputes. (n.d.). Retrieved from <http://constructionexec.com/article/six-tips-for-successfully-resolving-construction-disputes>

³⁸ World Highways - Minimising the problems of construction disputes. (n.d.). Retrieved from <http://www.worldhighways.com/categories/auctions-equipment-supply-servicing-finance/features/minimising-the-problems-of-construction-disputes/>

³⁹ Different methods of dispute resolution in construction disputes | Lexology. (2016, April 30). Retrieved from <https://www.lexology.com/library/detail.aspx?g=3c05af6b-1733-4e2b-a552-108163ba9319>

⁴⁰ GUILD OF PROJECT CONTROLS COMPENDIUM and REFERENCE (CaR) | Project Controls - planning, scheduling, cost management and forensic analysis (Planning Planet). (n.d.). Retrieved from <http://www.planningplanet.com/guild/gpccar/formal-disputes-resolution>

resolution, which in utmost situations, will be mediation. The pre-planning procedure for Construction and Engineering dispute require parties in dispute to gather, at least formerly previous to court case commences, to converse whether some form of ADR, such as mediation, would be a more suitable means to decide the dispute.

Assistance of Mediation

- The mediator will be an autonomous individual, who will not make a choice, critic or suggestions, but will make possible planning between the parties, with the plan of resolving the dispute. Mediators are normally very skilled in the area of the dispute, and may even be TCC board of judges.
- It can help maintain a business relationship.
- It is comparatively fast, with mediations usually lasting one otherwise two days.
- Mediation is classically less costly over litigation.
- Everything that happens in a mediation is confidential.
- Mediators normally will reassure the revelries to find a resolution to the dispute which will ensemble both the revelries needs.

Difficulties of Mediation

- In some situations, there may be a concern that, through mediation, parties may reveal an imperative part of their argument or profit-making position, which (despite the secret nature of mediation) could advantage the other party if the matter went to assessment.
- Normally if the parties do not come to conformity, the dispute will stay in doubt and the charge of mediation will have been exhausted.

Expert Determination

Specialist willpower is often used to resolve issues or disputes of a professional character, such as construction, and is one of the most familiar systems of dispute resolution. Connoisseur determination is frequently used when there is a survey dispute. If an expert is to be used to conclude the dispute, the parties will agree on this by contract and will agree that the expert determination will be obligatory.

The assistance of Expert Determination

- This method is a financial way of conclusion resolving evaluation disputes.

- Expert determination is less pricey and a faster and a less formal technique of dispute resolution”⁴¹.

Drawbacks of Expert Determination”⁴²

- The habit of experts is much fewer together to authorized processes and therefore it is harder to face the judgment of an expert.
- Expert’s statement cannot usually be imposed without further court or mediation events”⁴³.

STEP 4 - SELECTION OF CRITERIA FOR ALTERNATIVE SOLUTIONS

To evaluate each of the alternatives, we will use the Multi-Attribute Decision Making (MADM) process. This process helps to analyze all the alternative solutions and finds the best method to resolve disputes and to reduce claims. The process is to measure and evaluate each Dispute Resolution Method with attributes and ranking them on their acceptance criteria.

The attributes⁴⁴ to evaluate the dispute methods are

- Duration: Time is money in the world of business and project management. Lengthy delay of dispute resolution will delay the progress of works resulting in extra costs and incur potential penalty points. It was considered to be one of the main attributes of dispute resolution. In the past few years, practitioners have increasingly questioned which is best for resolving the dispute quickly.
- Cost: The costs associated with dispute resolution involve reaching settlement agreements including expenses relating to revenue, the neutral third party fee, documentation, and settlement costs. Cost is one of the most critical criteria for the organization when assessing which dispute resolution method to use for dispute resolution as it affects the profit share of the project outcome. In assessing the suitability of a case for ADR, a cost-benefit analysis of the costs and value of the case must be undertaken. This involves trading off the various criteria and also helps the parties to better understand the issues involved and the expense likely to be incurred if the dispute continues.

⁴¹ Different methods of dispute resolution in construction disputes | Lexology. (2016, April 30). Retrieved from <https://www.lexology.com/library/detail.aspx?g=3c05af6b-1733-4e2b-a552-108163ba9319>

⁴³ Different methods of dispute resolution in construction disputes | Lexology. (2016, April 30). Retrieved from <https://www.lexology.com/library/detail.aspx?g=3c05af6b-1733-4e2b-a552-108163ba9319>

⁴⁴ (PDF) A multi-attribute utility model for dispute resolution strategy selection. (2014, September 1). Retrieved from https://www.researchgate.net/publication/24077600_A_multi-attribute_utility_model_for_dispute_resolution_strategy_selection

- Flexibility: The non-binding nature of ADR methods is likely to encourage cooperation for all parties to reach an agreement through negotiation as it is more flexible than traditional methods.
- Claims: The next outcome of disputes are claims. The claims play a key role in dispute resolution. Their probability of claims should be as low as possible. If the claims are low, then it's the best resolution method.
- Preservation of Relationships: A continuing relationship is one of the key elements for any organization to strive for. A good relationship is always based on trust, common interests, and respect and requires the effort and commitment of the parties to make it last. ADR methods allow parties to negotiate the process of dispute resolution and the neutral facilitator assists both parties to always focus on the issue of the dispute and to try to achieve a win-win situation which is crucial to the Melbourne construction industry as it is heavily reliant on relationships.
- Confidentiality: Confidentiality is an implied and inherent feature of ADR processes that parties to a dispute are not allowed to disclose any information or materials to the public unless by mutual consent of the parties.
- Enforceability: ADR methods of dispute resolution are non-binding therefore it cannot be enforced upon by the courts unless a written agreement is concluded. However, the selection of a competent neutral facilitator with excellent negotiation skills can encourage the parties to settle.
- Limited Discovery: “Discovery is commonly partial, and occasionally completely excepted. Reliant on the condition of a revelry in a specific dispute, that can be observed as moreover a benefit or a drawback. It is frequently observed as a benefit by revelries with a civil law circumstantial, as they are unaware with and regularly aggressive to discovery”⁴⁵.
- Fairness: fairness depends heavily on the competence, training, and integrity of the neutral third parties. During the resolution process, a neutral third party owes a duty of care to his or her clients to remain impartial. He or she facilitates the parties' reaching a settlement but must make a conscientious effort to avoid personal biases. The neutral third must not have any professional or financial relationship with any party otherwise the information must be disclosed to the other party. Finally, the neutral third party must be agreed by both sides. Since the choice of the neutral third party is of paramount

⁴⁵ Perceived Advantages and Disadvantages of International Arbitration - Proskauer on International Litigation and Arbitration. (n.d.). Retrieved from <https://www.proskauerguide.com/arbitration/19>

importance there must be a code of conduct to monitor the standard of professional mediators, conciliators, and arbitrators. This will enhance the trust and comfort level between parties to voluntarily reach a settlement.

- Transparency of Judgement: For the dispute settlement process to be genuinely transparent, it is important for the public to have access to information throughout the various stages of the proceeding.
- Control by parties: When parties feel in control of the outcome and processes involved to reach an agreement, it will also mitigate the adversarial climate between disputing parties.
- Ability to Appeal: The parties must have an ability to appeal in case of fraud and improper judgments. The chance for appeal should be good in dispute resolution.
- Wide range of Issues: The dispute resolution must address all issues regarding the conflict. That method should clear all disputes and the conflicts must not be raised in the future.
- Width of Remedy: Creative agreement is directly related to the skills, experience, and inherent character of a neutral third party. Depending on the nature and requirements of the parties, he or she should try to come up with a solution that can satisfy both parties' needs. Settlements can include human factors such as business relationships and personal issues can be considered. Lateral thinking by the facilitator is vital as it takes the various factors into consideration before reaching a settlement. Reality testing by writing down the pros and cons of each possible outcome will allow parties to feel fully informed with the decision making power in their hands.

At this stage, we have explained and analyzed the different possibilities. Now, we are going to compare them to find out which one is the most adapted method to resolve disputes. We have selected attributes retrieved from Proskauer⁴⁶ that defines the advantages of Alternative dispute resolution.

The attributes⁴⁷ will be compared using a gradual notation system from 0.5 to 2.5 saying that the lower is the attribute; the lower is the impact of the clause.

⁴⁶ Perceived Advantages and Disadvantages of International Arbitration - Proskauer on International Litigation and Arbitration. (n.d.). Retrieved from <https://www.proskauerguide.com/arbitration/19>

⁴⁷ Retrieved from http://www.arcom.ac.uk/-docs/proceedings/ar2008-455-464_Iltar_and_Dikbas

VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
0.5	1	1.5	2	2.5

ATTRIBUTES	PREVENTION	NEGOTIATION	AJUDICATION	LITIGATION	ARBITRATION	MEDIATION	EXPERT DETERMINATION
DURATION	2.5	2	2.5	1	1.5	2	1.5
COST	2	2	2	0.5	1	1.5	1.5
FLEXIBILITY	2	2.5	2	1.5	1	1.5	1
CLAIMS	2.5	1.5	1.5	1	1.5	2	1
PRESERVATION OF RELATIONSHIPS	2	1.5	2	1.5	1.5	2	1.5
CONFIDENTIALITY	2.5	1.5	1.5	1	1.5	2	1.5
ENFORCEABILITY	2	1.5	1.5	1.5	1.5	2	1.5
LIMITED DISCOVERY	2	2	1	1.5	2	2.5	2
FAIRNESS	2	1	2	2.5	2	2	2
TRANSPARENCY OF JUDGEMENT	1.5	1.5	1.5	2.5	1	1.5	1.5
CONTROL BY PARTIES	2	2	1.5	1	1.5	2	1
ABILITY TO APPEAL	2	1.5	1	1.5	2	1.5	2
WIDE RANGE OF ISSUES	2	2	1.5	1.5	1.5	2	1.5
WIDTH OF REMEDY	1.5	1.5	2	1.5	2	2	1.5

FIGURE 6. Multi-Attribute Decision Making for analysis of dispute resolution methods⁴⁸

FINDINGS

STEP 5 – ANALYSIS AND COMPARISON OF THE ALTERNATIVES

- As the Multi-Attribute Decision Making is finished, we are going to use those values to rank the attributes according to their importance.

⁴⁸ Multi-Attribute Decision Making by “author”

	DURATION	COST	FLEXIBILITY	CLAIMS	PRESERVATION OF RELATIONSHIPS	CONFIDENTIALITY	ENFORCEABILITY	LIMITED DISCOVERY	FAIRNESS	TRANSPARENCY OF JUDGEMENT	CONTROL BY PARTIES	ABILITY TO APPEAL	WIDE RANGE OF ISSUES	WIDTH OF REMEDY	TOTAL	RANK
DURATION	0	1	1	0	1	1	1	1	1	1	1	1	1	1	12	2
COST	0	0	1	0	1	1	1	1	1	1	1	1	1	1	11	3
FLEXIBILITY	0	0	0	0	0	0	1	1	0	0	0	0	1	1	4	9
CLAIMS	1	1	1	0	1	1	1	1	1	1	1	1	1	1	13	1
PRESERVATION OF RELATIONSHIPS	0	0	1	0	0	1	1	1	1	0	1	1	1	1	9	5
CONFIDENTIALITY	0	0	1	0	0	0	1	1	0	0	0	0	0	0	3	12
ENFORCEABILITY	0	0	0	0	0	0	0	1	0	0	1	1	0	1	4	10
LIMITED DISCOVERY	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	14
FAIRNESS	0	0	1	0	0	1	1	1	0	1	1	0	1	7	7	
TRANSPARENCY OF JUDGEMENT	0	0	1	0	1	1	1	1	1	0	1	1	1	1	10	4
CONTROL BY PARTIES	0	0	1	0	0	1	0	1	0	0	1	0	1	5	8	
ABILITY TO APPEAL	0	0	1	0	0	1	0	0	0	0	0	0	0	0	2	13
WIDE RANGE OF ISSUES	0	0	0	0	0	1	1	1	0	1	1	0	1	7	6	
WIDTH OF REMEDY	0	0	0	0	0	1	0	1	0	0	0	1	0	0	3	11

FIGURE 7.The relative ranking of attributes based on their importance⁴⁹

From FIGURE 7. We can see the importance of different attributes based on their Rank. Claims, Duration and cost are the most credible attributes. Limited discovery and confidentiality are least important comparing to others.

⁴⁹ Relative ranking by “author”

For further comparing, I used the additive weighting technique which is one of the compensatory model techniques. The sum of each alternative can be compared to the normalized weight of 1.

	STEP 1	STEP 2	PREVENTION		NEGOTIATION		AJUDICATION		LITIGATION		ARBITRATION		MEDIATION		EXPERT DETERMINATION	
ATTRIBUTES	Relative rank	Normalized weight (A)	(B)	(A)×(B)	(C)	(A)×(C)	(D)	(A)×(D)	(E)	(A)×(E)	(F)	(A)×(F)	(G)	(A)×(G)	(H)	(A)×(H)
DURATION	2	2/105 = 0.019	2.5	0.0475	2	0.038	2.5	0.0475	1	0.019	1.5	0.0285	2	0.038	1.5	0.0285
COST	3	3/105 = 0.028	2	0.056	2	0.056	2	0.056	0.5	0.014	1	0.028	1.5	0.042	1.5	0.042
FLEXIBILITY	9	9/105 = 0.085	2	0.17	2.5	0.2125	2	0.17	1.5	0.1275	1	0.085	1.5	0.1275	1	0.085
CLAIMS	1	1/105 = 0.009	2.5	0.0225	1.5	0.0135	1.5	0.0135	1	0.009	1.5	0.0135	2	0.018	1	0.009
PRESERVATION OF RELATIONSHIPS	5	5/105 = 0.047	2	0.094	1.5	0.0705	2	0.094	1.5	0.0705	1.5	0.0705	2	0.094	1.5	0.0705
CONFIDENTIALITY	12	12/105 = 0.114	2.5	0.285	1.5	0.171	1.5	0.171	1	0.114	1.5	0.171	2	0.228	1.5	0.171
ENFORCEABILITY	10	10/105 = 0.095	2	0.19	1.5	0.1425	1.5	0.1425	1.5	0.1425	1.5	0.1425	2	0.19	1.5	0.1425
LIMITED DISCOVERY	14	14/105 = 0.133	2	0.266	2	0.266	1	0.133	1.5	0.1995	2	0.266	2.5	0.3325	2	0.266
FAIRNESS	7	7/105 = 0.066	2	0.132	1	0.066	2	0.132	2.5	0.165	2	0.132	2	0.132	2	0.132
TRANSPARENCY OF JUDGEMENT	4	4/105 = 0.038	1.5	0.057	1.5	0.057	1.5	0.057	2.5	0.095	1	0.038	1.5	0.057	1.5	0.057
CONTROL BY PARTIES	8	8/105 = 0.076	2	0.152	2	0.152	1.5	0.114	1	0.076	1.5	0.114	2	0.152	1	0.076
ABILITY TO APPEAL	13	13/105 = 0.123	2	0.246	1.5	0.1845	1	0.123	1.5	0.1845	2	0.246	1.5	0.1845	2	0.246
WIDE RANGE OF ISSUES	6	6/105 = 0.057	2	0.114	2	0.114	1.5	0.0855	1.5	0.0855	1.5	0.0855	2	0.114	1.5	0.0855
WIDTH OF REMEDY	11	11/105 = 0.104	1.5	0.156	1.5	0.156	2	0.208	1.5	0.156	2	0.208	2	0.208	1.5	0.156
TOTAL	105	1	24.5	1.988	24	1.6995	23.5	1.547	20	1.458	21.5	1.6285	26.5	1.9175	21	1.567

FIGURE 8. Additive Weighting Technique⁵⁰

Step 6 – SELECTION OF THE PREFERRED ALTERNATIVE

- From the analysis of Additive weighting technique, we will select the best dispute resolution method by their total score. The alternative that gets the highest score is considered as the best Dispute Resolution Method.

⁵⁰ Additive weighting Technique by “author”

- We can easily observe that after calculating the score, Prevention is the best form of Dispute Resolution and Litigation is the last alternative. Now we are comparing dispute resolution methods to see how our Prevention method is better than all alternatives.

Prevention / Negotiation → $1.988 / 1.6995 \times 100 \% = 117 \%$

Prevention / Litigation → $1.988 / 1.458 \times 100 \% = 136 \%$

- To conclude, the Dispute Resolution Method, being 117 % better than the Negotiation and 136 % better than the Litigation. So Mediation is obviously the best-preferred alternative.

Step 7 – PERFORMANCE MONITORING AND POST-EVALUATION OF RESULTS

In this paper, different methods are used to find out the best dispute resolution method for Road construction disputes. We have analyzed various dispute methods and a wide range of attributes for finding the optimal solution. Explaining clearly different resolution methods helps to understand the benefits and loopholes of each method. To provide optimal help different attributes are ranked according to their importance. From the analysis, based on the situation the construction manager can decide the solution, which suits better to reduce claims, costs, and duration. The other advantage of this analysis is that, if the contractor is not satisfied with the chosen method, the next best one is clearly defined and can be chosen easily. Majority of the dispute causes have been listed and this helps the contractor to look over those dispute causes and prevent them before there occurrence.

CONCLUSION

The purpose of this paper is to find out the best dispute resolution method among different alternatives and to reduce claims in the road construction. It also answers the question of different types of conflicts and claims that occur in construction. “Prevention is better than cure” same as like that Prevention is always better than finding a solution to the problem. From this paper we have seen various types of disputes that are frequent in construction, so we should take appropriate measures to prevent them. As some of the disputes are unpredictable, we should use mediation as a dispute resolution method for those cases. Finally based on our analysis the best dispute resolution method in road construction and to avoid claims is prevention. In terms of claims, cost, duration, and flexibility shows this method as the most suitable form of dispute resolution.

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