

Dispute resolution methods in South Africa: a case of the Limpopo construction industry

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Abstract:

The lack of information in the construction industry leads to many disputes during the construction process. Hence this paper investigates the dispute resolution methods used in the Limpopo construction industry. This is with an aim to provide a basis or the understanding of the range of values, attitudes, beliefs and behaviour displayed by these different professional groups involved in the construction process. This paper presents the results of the professional respondents on the dispute resolution methods used in the Limpopo construction industry. This article investigates the common dispute resolution methods used in the Limpopo construction industry. The primary data for the study was collected through a structured questionnaire survey distributed to a sample of 51 professionals from the Limpopo construction industry. Findings revealed that negotiating a win/win situation and knowing other professionals by forging good work relationships can minimise dispute occurrence in construction projects. Mediation and negotiation were found to be preferred and used mostly in the construction industry to resolve disputes. This study adds knowledge on mitigation methods of disputes and dispute resolution methods.

Keywords Dispute resolution methods, Limpopo construction industry.

1. Introduction

The construction industry imposes a number of challenges to those working in it, one important challenge is that the industry is dependent upon human interactions in the management of building projects, (Weddikara, 2003). In this industry it is important for those who manage the projects to deal with intricate relationships, and to consider the emotions, interactions and various types of reasoning that lie behind the actions and decisions taken by the participants. Hence Ilter (2012) highlights that prevention of disputes becomes one of the most important processes that determine the performance of a construction project and it depends highly on sound understanding of dispute occurrence.

According to Love and Davis (2008), disputes are an endemic feature in the construction industry. When not properly resolved, they may escalate and ultimately require litigation proceedings, which can be extremely costly for the parties concerned, states Cheung et al (2004). Disputes always affect the productivity and performance of a project. Hence Ankrah (2009), highlights that the history of construction points out that almost all projects face

variation or poor performance with many projects failing to exceed to the expectation of the client thus, affecting time, cost and quality of the projects. According to Love, et.al, (2010) direct costs associated with disputes range from 0.5 to 5 percent of the projects contract value. The indirect costs, on the other hand, resulting from lost productivity, stress, fatigue, loss of future work, the cost of strained business relationships among the various parties and tarnished reputation may cause even more damages to the parties involved. Therefore, this current research will investigate the perception of professionals on ways to mitigate disputes and the dispute resolution methods in the Limpopo province construction industry. Hence, this paper contains discussions on the theory of dispute mitigation methods and dispute resolution methods in the Limpopo construction industry. This paper makes significant insight onto how projects can be completed on time thus overcoming disputes in construction projects. The paper starts with an overview of dispute mitigation methods and dispute resolution methods followed by the presentation of the methodology and findings from the data collected before conclusion is drawn.

Conflict and dispute are inter-related (Chong and Zin, 2012). However, they involve two different concepts, which are that conflict is simply about an incompatibility of interest, while dispute is a subsequent stage that involves the resolution of legitimate issues states Fenn et al. (1997). A conflict becomes an unresolved circumstance when the contracting parties fail to manage the conflict, and then it becomes a dispute.

2. Causes of Disputes

In most developed countries, the construction industry accounts for over 50% of fixed capital formation each year, states Weddikkara (2003). It is also a complicated industry where different professionals work together to form a final product that a client's needs. Disputes are more likely to occur and disagreements to arise where there are more people with different views and opinions about a certain case. According to Waldon (2006), scope changes, erroneous documentation, ambiguous contract conditions, continue to be fundamental contributors of disputes in the construction industry.

There are a number of activities that, when not managed properly, can lead to disputes in the construction industry. Hence, Weddikkara (2003) states that the construction industry is characterized by a complex set of temporary human relationships and contractual commitments. Whilst, Rizwan categorised disputes into the following groups as follows; construction related causes, financial/economical, management and contract related causes of disputes.

3. Dispute resolution methods

According to Jelodar et al., (2014), selecting the best conflict and dispute resolution method is not easy and can be very problematic specially when the decision involves multiple objectives or attributes. Conventionally construction parties consider cost, time and the amount of control

they have in selecting their dispute resolution method states, Jelodar et al. (2014). On the other hand, one of the most important issues is the intended relationship quality and future retention status of working relationships. Based on the range of potential relationship contingencies the conflicting parties can decide on their potential strategy, style and method of conflicting management states, Jelodar et al. (2014). Tanielian, (2013) endorses arbitration as a superior dispute resolution method for construction disputes. Alternative dispute resolution methods such as mediation, negotiation and adjudication are considered options for predispute phases, whereas arbitration is the best all-around binding states Tanielian, (2013).

3.1. Characteristics of ADR

ADR usually has important attributes. These are cost effective, confidentiality, expediency, the preservation of relationships, less formality, sometimes a less right based approach, and often the involvement of an independent, neutral third party. The entire process is voluntarily entered into, even through the procedure may be contractually or statutorily provided for. The ADR may be tailored to meet the unique requirements of each case. The procedure is more flexible and less formal than court proceedings.

A further argument in favour of ADR is that ADR may be applied in any area of life so as to settle disputes of any nature, such as commercial, family, engineering and construction disputes. Such disputes at times involve large sums of money as well as complex factual and legal matters and as such cannot be resolved in a mundane manner. ADR can often assist the parties involved in such complex disputes to settle or alternatively to at least narrow down the issues involved. Furthermore, ADR may be extremely beneficial in instances where there is an ongoing business or personal relationship between the disputants, where confidentiality is required and/ or where economic or other pressures favour an early settlement. ADR has not always been positively received by all in the legal fraternity. Criticism that has been levied against the practice of ADR is that it lacks the legitimacy of authoritative judicial decisions as well as that it may seem to stifle the development of law and precedent in certain areas of the law.

The judicial approach to resolving disputes is right based. The parties' respective cases are usually presented to the presiding officer by means of their legal representatives. The result is that the parties themselves are kept at a distance from the presiding officer as well as each other. The presiding officer resolves the dispute in terms of what is prescribed by the law applicable to the dispute. The outcome often results in a win-lose situation. ADR is usually an interest based approach and therefore focuses on achieving a win-win situation upon the settlement of the dispute. By doing this it preserves the relationship between parties. It also ensures that both sides benefit from the outcome and allows the contract to continue.

Disputes that arise in the construction industry usually involve a diverse range of issues due to the technical and complex nature of the industry itself. Preference is given to resolving disputes outside of the court and by means of ADR. This is because the presiding officer may not necessarily have the technical expertise to resolve the dispute; the costly and lengthy process

that litigation has become; confidentiality and the need to preserve the business relationship between the parties.

4. Stages of dispute resolution

4.1. Grievance

The stages of dispute resolution always begin with grievance states Chong and Zin, (2012). Badman and Grimmett, (1996) highlights that the grievance may be abandoned when it is considered to be too trivial and not worth pursuing, where there is felt be an inability to pursue the matter or, there is a lack of understanding that legal recourse is available to resolve it.

4.2. Negotiation

Negotiation is the second step of the stages of dispute resolution, which is the first informal method of dispute resolution. At this stage there is an attempt to communicate the grievance and negotiate for a settlement (Chong and Zin, 2012). This negotiation technique is the preferred choice of the disputants, and most disputes are resolved by this process (Cheung et al., 2000). It is the least expensive method, and is a speedy, voluntary and unstructured process, which can preserve the working relation of the parties involved states Chong and Zin, (2012). However, negotiation is not always workable in bringing consensus at the end.

4.3. Mediation

Mediation may need to take place to reach a settlement after the negotiation. Ironically, the mediator has no power to impose a solution and his/her function is limited only to helping or guiding the disputants to focus on their actual objectives and resolve their matter consensually, (Treacy, 1995). The success of mediation very much relies on its fairness and the bargaining power and position during the proceedings states Bellucci et al, (2010). Where the disputants have equal opportunities and rights in the disputed matter, they are most likely to appreciate the settlement proposed by the mediator and the success rate of mediation could be increased, (Chong and Zin, 2012).

4.4. Adjudication

The alternative to arbitration is the use of adjudication, which may be considered certain features and benefits, that is decision can be temporary binding and it allows for quick determination states, Dancaaster, 2008). Usually adjudication deals with the payment problem between the contracting parties (Paul, 2008). It can assist in expediting payment and improving cash flow within the construction industry especially from the contractor's perspective (Uher and Brand, 2008).

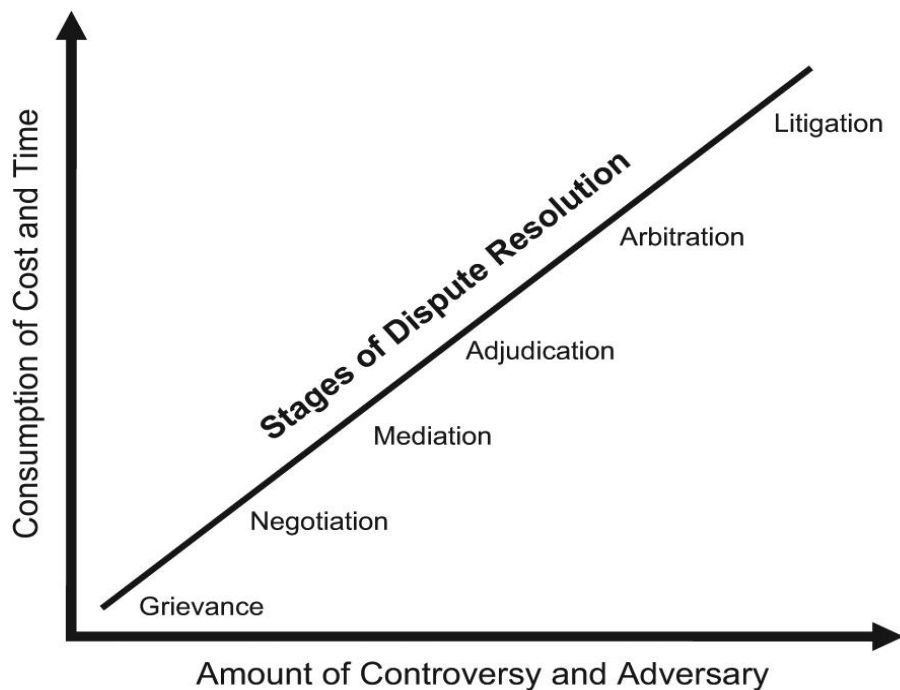
4.5. Arbitration

According to Chong and Zin, (2012) in arbitration the disputants need an arbitrator, an independent expert to act as the decision maker, while the disputants also need to agree to be bound by the decision made by the arbitrator which is final and enforced by law. The

arbitration clauses are included in most of the standard forms of contracts (Harmon, 2003) and the proceeding are conducted in private and confidentially (Teo and Aibinu, 2007).

4.6.Litigation

Litigation is the final stage of dispute resolution. It is a traditional dispute resolution method and provides an involuntary and binding solution (Chong and Zin, 2012). Usually the litigation proceedings are brought by clients and main contractors states Love et al., (2010). It is costly, time consuming and risky (Gebken and Gibson, 2006). It also involves a number of variables and is likely to satisfy the litigants (Harmon, 2004). Nevertheless, litigation could be the preferred dispute resolution method if the dispute involves legal issues or point of law that are best determined by a judge (Harmon, 2003). The dispute should be resolved in the earliest possible stages of dispute resolution (Chong and Zin, 2012).



Sources: Modified from Groton (1992) and Cheung *et al.* (2000)

5. Methodology

The data used in this paper were derived from both primary and secondary sources. The primary data was obtained through the survey method, while the secondary data was derived from the review of literature. The primary data was obtained through the use of a structured questionnaire aimed at professionals in the construction industry based in the Limpopo province. The respondents were selected based on the fact that they have a qualification in a construction related field and have working experience in order to meet the research objectives. Random sampling was used to select the professionals in the construction industry'. According

to Kombo and Tromp (2006) random sampling is the probability whereby people, place or things are randomly selected. Out of the 51 questionnaires sent out, all were received back representing 100% response rate and all were usable. A 5-point Likert type scale was used to analyse the 'professionals' levels of agreement on the dispute resolution methods used in the construction industry of Limpopo. This was considered adequate for the analysis based on the assertion by Mukuka et al. (2013) that the result of a survey could be considered as biased and of little value if the return rate was lower than 30% to 40%. Because the sample size for this study was relatively small, all groups of respondents were lumped together in the analysis in order to obtain significant results. The data were analysed by calculating frequencies and the mean item score (MIS) of the rated factors. The calculation of the MIS is explained in the next section. The research was conducted between the months of June to October, 2014. The questionnaire was designed based on the information gathered during the literature review and does not form part of an existing survey instrument.

5.1 Mean Item Score (MIS)

A five point Likert scales was used to analyse the causes of disputes and ways to mitigate them, and to further investigate the common dispute resolution methods in the Limpopo construction industry. The Likert scales were transformed to an MIS for each of the research objectives as applicable. The indices were then used to determine the rank of each item. These rankings made it possible to cross compare the relative importance of the items as perceived by the respondents. This method was also adopted to analyze the current data collected from the questionnaire survey. The computation of the MIS was calculated from the total of all weighted responses and then relating it to the total responses on a particular aspect. This was based on the principle that respondents' scores on all the selected criteria, considered together, are the empirically determined indices of relative importance. The index of MIS of a particular factor is the sum of the respondents' actual scores (on the particular Likert scale) given by all the respondents' as a proportion of the sum of all maximum possible scores on the scale that all the respondents could give to that criterion. Weighting were assigned to each responses ranging from one to five for the responses of 'strongly disagree' to 'strongly agree'.

Following the mathematical computations, the criteria are then ranked in descending order of their relative importance index (from the highest to the lowest). The next section of the article presents the findings of the survey and some discussions.

6. Findings and discussions

6.1. Biographical data results

Findings from the questionnaire survey revealed that out of the 51 respondents that participated in the questionnaire survey 57% were male and 43% were female. Further analysis showed that 33.3% of the respondents were between the ages of 26-30 years, 25.5% were between the ages

of 20-25 years, 17.6% were between the ages of 31-35 years, 11.8% were between the ages of 36-40 years, 7.8% were between the ages of 46-50 years and 3.9% were between 41-45 years. Furthermore, it was revealed that 6.7% of the respondents were black and 17.6% were white, in which 11.8% were Indian or Asian and 3.9% were coloured. The questionnaire revealed the respondents years of experience that 41.2% have 1-5 years experience, 23.5% have been 5 - 10 years experience, 15.7% have less than 1 year experience, 13.7 % have 10 -15 working years experience and those who had 15-20 years of experience were 5.9%. Based on these finding, it can therefore be inferred that the respondents have adequate knowledge of the causes of disputes, ways to mitigate them and disputes resolution methods in the construction industry; hence their views will be a useful notion to inform about construction industry and its implications.

6.2. Findings on the causes of disputes and dispute resolution methods

6.2.1. Causes of disputes

Respondents were asked to rate their opinion based on construction related causes of disputes in the construction industry. Based on the ranking of the weighted average from the mean item score (MIS) for listed statements (Table 1), it was observed that the majority was Lack of professionalism of project participants (MIS=4.08; R=1), Lack of machinery and plants (MIS=4.02; R=2), Reluctance to seek clarification by the contractor (MIS=4.00; R=3; S D=0.782), and lack of competence of project participants (MIS=4.00; R=3), Inappropriate selection of subcontractors (MIS=3.94; R=4; SD=0.571), Poor supervision (MIS=3.86; R=5), Lack of appropriate level of man power (MIS=3.84; R=6), Unrealistic tender pricing (MIS=3.78; R=7), Unrealistic information expectations (MIS=3.72; R=8), Unfair risk allocation (MIS=3.68; R=9), Unclear risk allocation was ranked last (MIS=3.62; R=10). The findings of the present study disagree with findings from previous researchers. For instance Farooqui and Azhar (2014) which both found that the main factors that influence the cause of construction related disputes were unrealistic tender pricing, poor supervision and unrealistic information. Whilst the current study revealed that lack of professionalism of project participants, lack of machinery/plants and reluctance to seek clarification by the contractor were found to be the major factors that can cause construction related causes of disputes as shown in (Table 1).

Table 1: Responds from respondents on construction related causes of disputes

Contract ion related causes of disputes	MIS	SD	Rank
Lack of professionalism of project participants	4.08	0.534	1
Lack of machinery/ plants	4.02	0.845	2
Reluctance to seek clarification by the contractor	4.00	0.782	3

Lack of competence of project participants	4.00	0.571	3
Inappropriate selection of subcontractors	3.94	0.843	4
Poor supervision	3.86	0.756	5
Lack of appropriate level of man power	3.84	0.792	6
Unrealistic tender pricing	3.78	0.737	7
Unrealistic information expectations	3.72	0.858	8
Unfair risk allocation	3.68	0.844	9
Unclear risk allocation	3.62	0.878	10

Furthermore, Table 2 revealed the common contract related causes of disputes (respondents' have experienced since working in the construction industry. Based on the ranking of the weighted average from the mean item score (MIS) for listed statements (Table 2), it was observed that the majority was Breaches of contract by the project participants (MIS=4.16; R=1), exaggerated claims (MIS=3.94; R=2), unrealistic tender pricing (MIS=3.86; R=3), Untimely presentation of claims (MIS=3.82; R=4), Ambiguous contract documents (MIS=3.51; R=5; SD=0.960) and Contract clause interpretation (MIS=3.51; R=5; SD=0.893) , Ambiguous contract language (MIS=3.39; R=6). These findings were found to disagree with the works of Waldron (2006) which found that the main factors that influence the cause of construction related disputes were contract interpretation and late incomplete or substandard information. Whilst the current study revealed that breach of contract by project participants, exaggerated claims and unrealistic tender pricing are the major factors that can cause contract related causes of disputes as shown in (Table 2).

Table2: Responds from respondents on contract related causes of disputes

Contract related causes of disputes	MIS	SD	Rank
Breaches of contract by the project participants	4.16	0.874	1
Exaggerated claims	3.94	0.689	2
Unrealistic tender pricing	3.86	0.707	3
Untimely presentation of claims	3.82	0.727	4
Contract clause interpretation	3.51	0.893	5
Ambiguous contract documents	3.51	0.960	5
Ambiguous contract language	3.39	1.037	6

When the respondents were asked to rate their opinion on management related causes of disputes in the construction industry, Table 3 revealed that the majority was Negligence was (MIS=4.08; R=1), Inappropriate payment schedule (MIS=4.06; R=2), Poor procurement management (MIS=4.00; R=3), Poor communication (MIS=3.96; R=4; SD=0.662), and Changing of orders (MIS=3.96; R=4; SD=0.662), Poor procurement management (MIS=3.88;

R=5; SD=0.840) and Unrealistic expectations (MIS=3.88; R=5; SD=0.621), Poor coordination (MIS=3.84; R=6), Inadequate contract administration (MIS=3.80; R=7), Lack of risk management (MIS=3.75; R=8), Unrealistic construction schedule (MIS=3.73; R=9), Lack of team spirit (MIS=3.67; R=10), Lack of contingency provision in schedule (MIS=3.59; R=11). These findings were found to disagree with the works of Kumaraswamy (1997) and Yiu & Cheung (2004) which both found that the main factors that influence the cause of construction related disputes were inaccurate design information, Inadequate design information, Delay in work progress and inadequate site investigations. Whilst the current study revealed that negligence, inappropriate payment schedule and inappropriate contract type are the major factors that can cause management related causes of disputes as shown in (Table 3).

Table 4.3: MIS of management related causes of disputes

Management related causes of disputes	MIS	SD	Rank
Negligence	4.08	0.891	1
Inappropriate payment schedule	4.06	0.705	2
Inappropriate contract type	4.00	0.748	3
Poor communication	3.96	0.662	4
Changing of orders	3.96	0.662	4
Poor procurement management	3.88	0.84	5
Unrealistic expectations	3.88	0.621	5
Poor coordination	3.84	0.834	6
Inadequate contract administration	3.8	0.872	7
Lack of risk management	3.75	0.935	8
Unrealistic construction schedules	3.73	0.75	9
Lack of team spirit	3.67	0.864	10
Lack of contingency provision in schedules	3.59	0.726	11

Furthermore, respondents were asked to rate their opinion on financial related causes of disputes in the construction industry. Based on the ranking of the weighted average from the mean item score (MIS) for listed statements (Table 4), it was observed that the majority was Inadequate financial strength of the contractor (MIS=4.30; R=1), Delay in payments (MIS=4.28; R=2), Project participants default of payments (MIS=3.62; R=3), Material price fluctuations (MIS=3.06; R=4), Rising value of rand (MIS=2.9; R=5). These findings were found to be in agreement with the works of Cheung and Yui (2006) which both found that the main factors that influence the cause of construction related disputes were delay in payment and project participants' default of payments. Whilst the current study revealed that inadequate financial strength of the contractor, delay in payments and participant's default of payments

are the major factors that can cause management related causes of disputes as shown in Table 4.

Table 4: MIS of financial related causes of disputes

Financial related causes of disputes	MIS	SD	Rank
Inadequate financial strength of the contractor	4.30	0.65	1
Delay in payments	4.28	0.76	2
Project participants default of payments	3.62	0.90	3
Material price fluctuations	3.06	0.84	4
Rising value of rand	2.90	0.71	5

In addition, when the respondents were asked to rate the commonly used dispute resolution methods in the construction industry, the following information was obtained as shown in table 5. Mediation and negotiation were ranked first (MIS=4.31; R=1), arbitration was ranked second (MIS=4.25; R=2), while dispute review board was ranked third to the last (MIS=3.92; R=7), mini-trial was ranked second to the last (MIS=3.74; R=8), and hybrid alternative dispute resolution was ranked last (MIS=3.37; R=9). These findings were found to be in agreement with the works of Tucker (2005) which both found that the main factors that dispute resolution methods used in the construction industry were mediation then arbitration. Whilst the current study revealed that mediation, Negotiation and arbitration are the major factors that can be used to resolve disputes as shown in table 5.

Table 5: MIS of dispute resolution methods

Disputes Resolution Methods	MIS	SD	Rank
Mediation	4.31	0.678	1
Negotiation	4.31	0.836	1
Arbitration	4.25	0.796	2
Adjudication	4.22	0.808	3
Litigation	4.10	0.855	4
Expert determination	4.00	6.00	5
Dispute resolution advisor	3.98	0.583	6
Dispute review board	3.92	0.688	7

7. Conclusion

The study investigated the dispute resolution methods in the Limpopo construction industry. The data collected from the questionnaire was completed by the professionals in the construction industry that are based in the Polokwane municipality. The findings suggest that there is considerable evidence that disputes do occur in the construction industry and they affect

the productivity of the construction team. Although the empirical study is based on a relatively small sample, the findings provide understanding into the causes and ways to minimise them, as well as the dispute resolution methods in the Limpopo construction industry.

8. Reference

Ankrah, N.I. (2009), An investigation into the impact of culture on construction project performance. University of Wolverhampton.

Badman, J. and Grimmett, L. (1996), Legal framework for the built Environment, E & FN Spon, London

Bellucci, E., Macfarlane, D and Zeleznikow, J. (2010), “ How information technology can support family law and mediation’ . Lecture Notes in Business Information Processing, Vol. 57, pp. 243-55

Bielefeld, B & Rusch, L.P. (2006), Building projects in China. A manual for Architects & Engineers, pp68.

Cheung, S.O., Seun, H.H.C., Ng, S.T.T. and Leung, M.L., (2004), ‘Convergent views of neutrals and users about alternative dispute resolution’. ASCE journal of management in engineering, vol.20.No 3, pp.88.

Cheung, S. and Yiu, T. (2006) Are construction disputes inevitable?, IEE Transactions on Engineering Management, vol. 53, no. 3, pp. 456-470.

Cheung, S.O., Tam, C.M., Ndekugri, I. and Harris, F.C. (2000), “ Factors affecting client’s project dispute resolution satisfaction in Hong Kong”, Journal of Construction Management and Economics, Vol.18 No.3, pp.281 -94.

Dancaster, C. (2008), “ Construction adjudication in the United Kingdom: past, present and future”, Journal of Professional Issues in Engineering Education and Practice, Vol. 134 No.2, pp. 204-8.

De Oliveira, M. (2010), Dispute resolution under the general condition of contract.

Farooqul, R.U., Umer, M., and Azhar, S. Key causes of disputes in the Pakistani construction industry- assessment of trends from the viewpoint of contractor. NED university of engineering and technology Karachi, Pakistan

Fenn, P. (1998) Rigour in research and peer review, *Journal of Construction Management and Economics*, 15: pp 383-385.

Oklahoma Bar Association. (2012), *Methods for resolving conflicts and disputes*. Oklahoma City: Oklahoma Bar Association.

Gould, N.(2006), *Mediating Construction Disputes: An evaluation of existing practice*. Kings college London. London Vintage books.

Groton, J.P. (1992), *Supplementary to Alternative Dispute Resolution in the Construction Industry*, Wiley Law Publications, New York, NY.

Harmon, K.M.J. (2003), “ Resolution of construction disputes: a review of current methodologies”, *Journal of leadership and management engineering*, Vol.3 No.4, pp. 187- 201.

Iltter, D. (2012), Identification of the relation between dispute factors and dispute categories in construction projects: *international journal of law in the built Environment*, vol.4 No.1, pp 46.

Jaffe, M., and McHugh,R . (2010). “ U.S. project disputes: Has the time to consider adjudication finally arrived?” *AAA handbook on construction arbitration and ADR*, Pillsbury Winthrop Shaw Pittman LLP, New York.

Jelodar, M.B., Tak Wing Yiu and Wilkinson, S. (2014). *A multi-objective decision support system for selecting dispute resolution methods on Construction Industry*.

Kombo, D.K and Tromp, D.L.A. (2006), *Proposal and thesis writing: An introduction* .Nairobi, Kenya: Paulines publications for Africa.

Kumaraswamy, M. (1997) *Conflicts, claims and disputes in construction*, *Engineering, Construction and Architectural Management*, vol. 4, no. 2, pp 95-111.

Love, P., Davis, P., Ellis, J. and Cheung, S.O. (2010), “Dispute causation: identification of pathogenic influences in construction”, *Engineering, Construction and Architectural Management*, Vol. 17 No. 4, pp. 404-423.

Love, P., Davis, P., Ellis, J. (2008), *Dispute causation identification of pathogenic influence in construction*. Department of Construction Management, Curtin University of Technology, Perth, Australia.

Menassa, C. and Peña Mora, F. (2007). “An Option Pricing Model to Evaluate ADR Investments in AEC Construction Projects Under Different Scenarios.” *Proceedings of the 2007 International Workshop on Computing in Civil Engineering*, ASCE, 566-574.

Mukuka, M.J., Aigbavboa, C.O and Thwala, W.D.(2013), *Construction professional’s perception on the causes and effects of project delay in Lusaka, Zambia*.

Rizwan, U.F., Muhammad, U & Salman, A.(2014), *Key causes of disputes in the Pakistani construction industry – Assessment of trends from the view point of contractors*. Pp.4-6

Sinha, M and Wayal, A.S. (), Dispute causation in construction projects of Mumbai. India. Pp54-58

Tanielian, A. (2013). “ Arbitration still best road to dispute resolution”. J. Leg. Aff. Dispute Resolut. Eng. Constr., 5(2), 90-96.

Treacy, T. B. (1995), “Use of alternative of dispute resolution in the construction industry”, Journal of Management in Engineering, Vol. 16 No.3, pp. 58-63

Tucker, M.P. (2005). An overview of alternate dispute resolution use in the construction industry. University of Texas at Austin.

Waldron, B.D. (2006), ‘ Scope for improvement: a survey of pressure points in Australian construction and infrastructure projects’. A report prepared for the Australian constructors Association by Blake Dawson Waldron lawyers, Sydney

Weddikkara, C. (2003), The impact of professional culture on dispute resolution in the building industries of Australia and Sri-Lanka, Murdoch University. pp iii-35.

Yiu, K. and Cheung, S. (2004), Significant dispute sources of construction mediation, 1st International Conference World of Construction Project Management, Toronto, Canada