

Sources of Conflicts in a Construction Projects: A perspective of South Africa Construction Industry

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Abstract— The construction industry business across the country is questioned because of the complex divided nature of the business and the ill-disposed connections the customarily exist between project members. The point of the paper was feature the wellsprings of contentions in construction projects, the condition of disputes administration in the South Africa construction industry. The paper specifically examinations disputes resolution in construction industry by efficiently auditing the wellsprings of contentions. The poll review of the construction projects on the rate and administration of disputes. The information were investigations utilizing rate score and seriousness list techniques with the Statistical Package for Social Science (SPSS).indicate that disputes happened because of owner payment deferrals and temporary workers legally binding cases. The discovering demonstrate that Adjudication is the most usually utilized strategy for question determination and discoveries demonstrated that intervention and case are more articulate while settling and arrangement are the ADR methods in like manner utilize. All things considered, the across the board utilization of the other ADR procedures is thwarted for the most part by a general absence of consciousness of their reality and newness to their workings among partner in the business.

Keywords— *Conflicts, (ADR) construction industry disputes, South Africa*

Introduction (Heading 1)

It surely appears that construction contracts turn out badly; everyone realizes that. It is one of the issues of construction projects. The issues have fascinated, one may state fixated, the industry and government for a long time." [17]. Since 1995 the post-politically-sanctioned racial segregation South African government has likewise been fixated on the quest for obtainment change, particularly in presenting suitable techniques for compelling disputes resolution the construction business. Perceiving the entrenchment of option question on the dispute resolution (ADR) methods for settling work dispute in the Labour Relations Act No 66 of 1995.

According to [6], pointed that the complex nature of construction project confound even the most intricate management systems. This, with regard to the fact that construction project require the coordinated efforts of a temporarily assembled task force of many independent participants, each having a different specialty, and each expecting to make a profit, creates problems that make the construction industry adversarial and disputes.

According to [20], disputes result from such factors as unfair allocation of project risks, multiple prime contracts, unrealistic schedule and expectations, poorly prepared contract documents, variation orders and communication problems, among others.

Literature Review

The issues in dispute must be clearly stated in all claims. The subject matter approach employs these issues to identify the dispute. This approach is widely used for the convenience and ease of understanding. [35] Illustrated this observation by suggesting that site overhead, loss of productivity, loss of revenue and financing costs are the main types of construction dispute. Likewise, [47] argued that the main types of construction dispute arising from the contract document include (1) variations; (2) ambiguities in contract documents; (3) inclement weather; (4) late issue of design information/drawings; (5) delayed possession of site; (6) delay by other contractors employed by the client and (7) postponement of part of the project. Furthermore, [22] found six principal types of construction dispute and these are change of scope, change conditions, delay, disruption, acceleration and termination. With reference to the construction disputes that reached the Supreme Courts of New South Wales and Victoria, Australia in 1989 and 1990, [46] and [46] assembled 59 categories of dispute with 117 sources. The 59 categories of dispute fall into the following subject matters: (1) determination of the agreement; (2) payment related; (3) the site and execution of work; (4) time related; (5) final certificate and final payment and (6) tort related. Heath (1994) also found seven main subject matters of construction dispute; (1) contract terms; (2) payments; (3) variations; (4) extensions of time; (5) nomination; (6) re-nomination and (7) availability of information. Similarly, [11] summarized that payment, performance, delay, negligence, quality and administration are major issues of construction disputes. [28] also found that construction disputes can be categorized as (1) variation due to site conditions; (2) variations due to client changes; (3) variations due to design errors; (4) unforeseen ground conditions; (5) ambiguities in contract documents; (6) variations due to external events; (7) interferences with utility lines; (8) exceptional inclement weather; (9) delayed design information and (10) delayed site possession. This categorization is another manifestation of the subject matter approach. In fact, [41] pointed out that construction contract disputes must have a contractual base. [19]S further elaborated that construction disputes originate from two main interrelated sources; construction contracts and unexpected events. As construction works are subject to many uncertainties, exhaustive planning for

the possible eventualities within the contract is daunting. This can be the result of outright failure to recognise the sources of uncertainties. More problematic though is having unintended contradicting contractual provisions to deal with them. With reference to [36] data collected by the Adjudication Reporting Centre (ARC), the typical disputes settled by adjudication in the United Kingdom include: ‘valuation of variations’, ‘valuation of final account’ and ‘failure to comply with payment provisions’. [3] examined the types of disputes where mediation had been used in U.K. and found that payment, delay, defect/quality and professional negligence as subject matters contributed 72 percent of the reported cases. A similar study on construction mediation conducted in Hong Kong also found that variation, delay in work progress, parties’ expectations and intra-parties’ problem were the significant types of dispute source [48]. Table 2.1 summaries the studies that employ the subject matter approach to identify construction disputes

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The South Construction Industry

The construction industry was the dominant contributor to South African Gross Domestic Product (GDP). This made the industry to accounting for about 70 per-cent of the (GDP). This made the industry very strategic to the nation’s development efforts. Nevertheless, the industry has been bedevilled by a combination of low demand and consistent low productivity and poor performance since the decline of the national economy started at the end of the 1999 [13]; Construction industry development board [12].This has reduced its contribution to the national economy to a 3 per-cent of GDP in 2014[1]. The industry suffers very high rates of cost and time overruns which in the public sectors.

Disputes in the Construction Industry

The complexity of construction projects make them open to different interpretations by different contractual parties. According to Construction Education Training Authority [5], the parties often view the construction process from differing perspectives and it is therefore not uncommon for a dispute to arise, for example, when a contractor evokes contractual clauses to claim for additional monetary compensation and or extension of time for an issue that has developed on the project. The global economic crisis has engendered an

environment of cutthroat competition among construction firms for a rapidly decreasing number of projects, forcing them to bid for projects at or below minimum profit levels [6].

Conflicts in construction contracts are generally rooted in the facts while the client on the one hand usually aims to optimize quality and functionality at minimum cost , the contractor on the other strives to satisfy the client and achieved maximum profit at the same time using minimum resources[20].These priorities are mutually exclusive, unsurprisingly at conflict with one another and set the framework for a repetitive cycle of hostilities [42].This is responsible for the adversarial win-lose relationships generally found in construction contracts.

The causes of construction disputes originate from a variety of sources ranging from unrealistic schedules and expectations to changes in the economic situation. Table 1is a summary of the literature on the causes of construction disputes.

Table 1: Summary of the literature on the causes of construction disputes (Sources: as indicated in the table below and literature Sources)

Construction disputes	References
(1) Change of scope, (2) change conditions, (3) delay, (4) disruption, (5) acceleration and (6) termination	Hewit (1991) [22]
(1) Determination of the agreement; (2) payment related; (3) the site and execution of work; (4) time related; (5) final certificate and final payment and (6) tort related	Watts and Scrivener (1993) [46]
1) Contract terms; (2) payments; (3) variations; (4) extensions of time; (5) nomination; (6) re-nomination and (7) availability of information	Heath et al. (1994) [21]
(1) Payment, (2) performance, (3) delay, (4) negligence, (5) quality and administration as headings of construction disputes	Conlin et al. (1996a,b) [11]
(1) Variation due to site conditions; (2) variations due to client changes; (3) variations due to design errors; (4) unforeseen ground conditions; (5) ambiguities in contract documents; (6) variations due to external events; (7) interferences with	Kumaraswamy (1997) [28]
(1)Variations; (2) ambiguities in contract documents; (3) inclement weather; (4) late issue of design information/ drawings; (5) delayed possession of site; (6) delay by other contractors employed by the client (e.g. utility companies) and (7) postponement of part of the project	Yates (1998) [47]
(1) Valuation of variations, (2) valuation of final account and (3) failure to comply with payment provisions	Sheridan (2003) [36]
(1) Payment, (2) delay, (3) defect/quality and (4) professional negligence	Brooker (2002) [3]
(1) Ambiguous contract documents, (2) competitive/ adversarial attitude and (3) dissimilar perceptions of fairness by the participants	Spittler and Jentzen (1992) [37]
(1) Project uncertainty; (2) contractual problems, (3) opportunistic behaviour, (4) contractors’ financial position and (5) cost of conflict and culture	Mitropoulos and Howell (2001) [32]

Dispute Resolution Methods

Dispute resolution is a very important task in construction because huge sums are invested in projects and stakeholders are eager to resolve disputes before they bring their projects to a halt and bankrupt them. At the project level, unresolved disputes can lead to programme delay, increased tension, and can damage long term business relationships as a result.

An alternative dispute resolution method, like mediation was developed for various reasons, but mostly because the traditional processes, for instance litigation, were seen to be less favourable for the following reasons: Cost – Attorneys, senior council and expert witnesses, all contribute to heavy costs being incurred by both parties; Time – long waiting time for court dates where cases were often postponed for on-site visits, calling for expert witnesses, etc.; Most magistrates or judges are not specialists in the field of construction; and The outcomes often cause more damage. [17]: [31].

The following are some of the ADR methods used in the construction industry, all having the common goal to resolve disputes voluntarily and initiated by the parties themselves: Agent resolution; Informal discussion; Negotiation; Mediation; Conciliation; The mini trial; Engineering expert assessment; Adjudication; Dispute Review Board; Partnering; and Dispute Resolution Advisor System [40];[34].

Choice of ADR Methods

For the purpose of this paper, the following five methods were investigated: Agent resolution; Adjudication; Conciliation; Mediation; and Arbitration. The various ADR methods are briefly discussed to show the background of the elements and methods covered by the surveys and what was understood by each method under consideration.

Agent Resolution (expert resolution)

Traditionally, in the South African context, agent resolution (usually the architect) was the first stage towards resolving differences and disputes. The resolution by this agent was final and binding unless disputed within an agreed period [33]; [18]. In terms of the Joint Building Contracts Committee (JBCC) [25], the principle agent shall give a decision, on request by the contractor, should there be any disagreement between the parties. Such a decision shall be final and binding unless timeously disputed. This clause has however been removed in the latest editions of JBCC Series 2000 (JBCC,[27]

Adjudication

Adjudication is an accelerated form of dispute resolution

in which a neutral, impartial and independent third party deals with the dispute as an expert and not as an arbitrator, and whose determination is binding unless and until invalidated or overturned by an arbitration award [23]. The adjudicator shall not advise the parties or their representatives regarding any aspect of the agreement in respect of which he has been appointed other than in accordance with stated rules [26] The adjudicator's written determination of the dispute shall: Be delivered to the parties, and outline reasons for his decisions [26]. The decision is final and binding until and unless reversed by an arbitrator [27]

Conciliation

Conciliation involves a process of bringing disputing parties together in a forum to investigate the problem and assist the parties to formulate their own solutions; the conciliators may also be requested to formulate their own opinion. The parties decide who the conciliator will be. The conciliator should, however, be a person with good communication skills and relevant knowledge [29].

Mediation

Mediation means different things to different people, but in the construction industry, it usually denotes a procedure in which a neutral third party seeks to resolve a dispute between contracting parties through mutual agreement, by conducting an enquiry, similar to arbitration, but less formal and by giving a non-binding opinion. The parties represent themselves without calling in legal professionals. The mediator should know the details of the dispute and should give each party the opportunity to state their case. The mediator should decide on the best procedure, based on circumstances [15]; [18];[23]; [31];[33]. Quantity surveyors often perform mediation tasks for clients or other parties, be it informal as a quantity surveyor, or a formal mediator by appointment. However, in terms of many contracts, JBCC, the parties shall agree on the appointment of a mediator and meet with the mediator in an effort to reach a settlement. If a settlement is reached, the mediator shall record such an agreement which shall become binding on the parties on the signing thereof [27].

Arbitration

In some countries, arbitration is a process provided for by an act of law, adopted by parties through mutual agreement, stipulating that they will submit any dispute that may arise between them to the impartial judgement of some third party of their choice and that the award by this impartial person will be final and binding. Arbitration is not a new process; in fact, it was known to the Romans, used by the Dutch and English in the days of colonial expansion and is currently widely used in

the construction industry and further afield [18]. [2] suggests approaching an arbitrator rather than a lawyer. He further mentions the importance of securing a competent arbitrator, one well acquainted with the process of arbitration. In South Africa, arbitration is regulated by an act of parliament [38] (South Africa 1969, Act 42). Arbitration is a more formal process than other dispute-resolution processes mentioned

earlier, but arbitration has many advantages. Some of these are: Expert knowledge of a selected arbitrator; Possible savings in legal representation costs Flexibility of the process; the decision is final and binding; Time and money are saved; and Arbitration is a private matter [4] & [18]; [15], [19]; [31] & [31]. Arbitration is sometimes also criticised as being only marginally quicker than litigation, especially where FIDIC documents are used [2].

Research Methodology

A questionnaire survey of contractors and consulting architects, engineers and quantity surveyors was carried out in Gauteng Province in South Africa where the majority of the consultants and contractors are based. A five point Likert-scale question was used to measure a range of opinions from 1 meaning strongly disagree, 2 being disagree, 3 being neutral, 4 being agree and 5 being strongly agree. The researcher used Likert-scale questions because Likert scale questions eliminates the development of response bias amongst the respondents and also reduce interviewer bias. Likert scale questions also enable standard response items which are easy to code, analyse and compare amongst the respondents. In addition the Likert scale can be used to assess attitudes, beliefs, opinions and perception [9] and [9]. This means that any result significantly different from this uncommitted or unsure value was assumed to be either positive or negative to the notion being tested [16] and [16]. The questionnaire was distributed to a total of 150 construction and consulting firms. Eighty-six questionnaires were completed and returned by the respondents but only 85 were found to be properly completed and useful for analysis. This represented a response rate of 40-50 per-cent which according to [16] and [16] and [24] & [24] is good enough in construction studies. The Statistical Package for Social Science (SPSS) was used to analysis the data using the percentile method and severity index analysis.

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The formula for severity index (SI) is by [16] and [16] as:

$$S.I = \left[\sum_{i=1}^n \omega_i f_i \right] \times 100\% / n$$

Findings and Discussion

The findings of the study are analysed and presented in this section with respect to the respondents profile, the frequency and causes of disputes, and the methods of dispute resolution used.

Respondents Profiles

The results in the Table 1 indicate that close to half of the respondents (48.7%) have been in practice for over 10 years and were therefore very familiar with and had a good knowledge of the industry. Hence they were considered as well placed to provide useful data for the survey. Table 1 below shows the respondent’s profiles by the business while Table 3 categorises them by their experience of the disputes in the industry.

Table 1: Profiles of the profession

Quantity Surveyors	Architects	Engineers	Contractors
25.9%	29.6%	16.1%	28.4%

The results in the Table 2 show that of the 81 respondents, 23 (28.4%) were architects, 21(25.9%) were contractors, 13 (16.1%) were engineers and 24 (29.6%) were quantity surveyors. A very large majority of them (98.7%) had experienced disputes. As many as 58% responded that they often experienced disputes on the projects they were involved in. This indicates that disputes are quite common in the South Africa construction industry.

Table 2: Respondents experience of the occurrence of the disputes

Strongly Agree	Agree	Disagree	Natural
2.3%	67.7%	9.6%	33.1%

Causes of disputes

The results in the Table 3 shows that a majority of the respondents (67.7%) experienced up to 10 disputes while only a few (2.3%) experienced over 30 in the last 10 years.

Table 3: Cases of disputes in the last 10 year

Number of disputes	Frequency	Percentage	Cumulative Percentage
None	3	10	12
1-10	57	63.7	69.9
11-20	14	14.8	82.7
21-30	14	14.8	97.5
Above 30	2	2.5	100.0
Total	90	100	

The most common cause of dispute was delayed payment by the client with SI =98.80% and breach of contract the least common with SI=72.00% (Table 4)

Table 4: Ranking of the causes of disputes

Causes	1	2	3	4	5	Severity Index (%)	Rank
Breach of contract	5.0	15	4.0	5.0	35.0	72.00	6
Professional negligence	5.0	6.3	32.5	43.8	12.5	70.56	5
Contractual claims	0	0	8.6	17.3	74.1	93.10	2
Consultants design deficiencies	1.3	7.6	39.2	34.2	17.7	71.88	4
Contractors poor workmanship	1.3	2.5	12.5	27.5	56.3	87.06	3
Delayed payment by client	0	0	6.2	8.6	85.2	98.80%	1

Dispute resolution techniques

The methods of disputes resolution used in the South African Construction industry include the traditional methods of Arbitration and litigation as well as Adr methods.

Table: 5 Dispute resolution methods in use

Methods	0	1	2	3	4	Severity Index (%)	Rank
Arbitration	59.1	36.5	0	9.1	1.3	13.00	4
Litigation	3.8	0	25.5	57.5	16.3	58.54	3
Adjudication	6.5	1.5	0	27.3	64.9	69.56	1
Conciliation	89.2	5.4	0	4.3	2.1	5.74	6
Mediation	81.7	7.5	0	10.6	2.1	8.74	5
Negotiation	7.7	1.9	0	38.5	51.9	69.00	2
Mini-trial	90.3	5.4	0	0	2.2	2.65	8
Mediation-arbitration	89.1	3.2	0	6.7	0	4.46	7

Table 5 Shows that adjudication is overall the most popular method and mini-trial the least. Litigation and arbitration are arbitration is still popular while adjudication is the most commonly used ADR method. The results also showed that arbitration and litigation are still popular while adjudication and negotiation are the only ADR methods in common use. The fact that litigation and arbitration, in spite of their documented shortcomings, are still popular in South African

construction industry points to the fact that ADR is yet to gain common acceptance.

The major hindrances to widespread adoption of ADR methods are general lack of awareness of their existence and unfamiliarity with their working among stakeholders in the industry. (Table 6 below)

Table 6: Obstacles to widespread use of ADR

Factor	1	2	3	4	5	Severity Index (%)	Rank
Lack of awareness	4	5.1	7.5	5.3	86.1	108.00	1

Nonbinding nature of ADR	6.9	2.2	50.0	15.2	26.1	100.0	3
Resistance to change	1.6	2.4	31.9	19.1	6.4	98.0	4
Unfamiliarity with ADR	0.3	3.3	10.6	12.8	72.3	99.00	2

A majority of the respondents of 59% actually indicated that they had a poor understanding of ADR (Table 7 below).It is hoped that this will change for the better with the current drive by construction industry professionals and institution as well as other local and international bodies to promote the use of ADR in South Africa.

Table: 7 Awareness/Understanding of ADR by respondents

Level of awareness and understanding	Frequency	Percentage	Cumulative Percentage
Strongly disagree	0	0	0
Disagree	42	58.3	59.3
Agree	17	21.7	79.0
Strongly agree	2	2.5	81.5
Neutral	18	17.5	100.0
Total	79	100.0	

Conclusion of Findings

Disputes have been responsible as one of the factors responsible for the poor performance of the South Africa construction industry. While a questionnaire survey of industry participants, the paper investigates the causes of construction disputes as well as the techniques commonly employed in resolving them in South Africa. The finding of results indicates that the major causes of disputes were delayed in payment by owner, as well as contractual claims and contractors poor workmanship on the construction projects. It is therefore indicated that owner/client must improve their cash flow system in other to minimise payment delays. Contractor on the other hand should improve the poor quality of work supervision which is the major causes of poor workmanship. Architect/Designers could also help to minimized contractual claims and their impact by providing adequate project information. The construction industry must change from the currently

prevalent adversarial traditional procurements system to more cooperative and partnering methods. In line with this, although arbitration and litigation are more pronounce in the industry, while the use of ADR will gain widespread acceptance in the very near future with the efforts being made by the government (by way of future ADR legislation).

Recommendations

It's therefore suggested that studies should be done on the area of cost of the disputes and the use of traditional disputes of resolution techniques in the South Africa Construction industry as a way to encourage the industry to improve ADR. The studies should also aim to measure the impact of the effects being made to promote widespread use of ADR in the South Africa Construction Industry.

References

- [1] AfDDB/OECD (2015), African economic outlook, African Development Bank, pp. 247-67, www.chathamhouse.org.uk/pdf/research/Africa/Nigeria.pdf, [Accessed 22-10-2017]
- [2] Binnington, C. 2005. Arbitration – a cost effective mechanism? Legal matters. *Civil Engineering Contractor*, 39(11), p. 49-50, September.
- [3] Brooker, P. (2002). Construction lawyers' attitudes and experience with ADR. *Construction Law Journal*, 18(2), 97–116
- [4] Butler, D.B. and Finsen, E. 1993. *Arbitration in South Africa: law and practice*. Cape Town: Juta
- [5] CETA, (2008) Construction Education Training Authority 'Overview of construction sector, construction education and training authority' <http://www.ceta.org.za>
- [6] Cheung, S.O. and Yiu, T.W (2006) Are construction disputes inevitable? *IEEE Transaction on Engineering Management*, 53(3)456-170. [Accessed 28-10-2017].
- [7] Chen, W. T., & Chen, T. T. (2007). Critical success factors for construction partnering in Taiwan. *International Journal of Project Management*, 25, 475–484.
- [8] Cheung, S. O. (2007). Bounded rationality, opportunism and trust in co-operative contracting. In Proceedings of the Fourth International Structural Engineering and Construction Conference (ISEC-4), Melbourne, pp. 1537–1542.
- [9] Cooper, D. R., and Schindler, P.S. (2003). *Business Research Methods*. New York: McGraw-Hill/Irwin
- [10] Conlin, G. J., Lanford, D. A., & Kennedy, P. (1996a). The relationship between construction procurement strategies and construction contract disputes. In R. Taylor (Eds.), GCIB W92 "North meet south" Procurement Systems Symposium Proceedings, Durban, South Africa, pp. 66–82.
- [11] Conlin, J., Lanford, D. A., & Kennedy, P. (1996b). The sources, causes, and effects of construction disputes: A research project. CIB Report 0254-4083, Construction Industry Board, London.
- [12] Construction Industry Review Committee (CIRC) (Ed.) (2001). Construct for Excellence, Report of the Construction Industry Review Committee. Hong Kong, Hong Kong SAR Government.
- [13] Department of P UBLIC Works, (1999) The White Paper on Creating an Enabling Environment for Reconstruction, Growth and Development of Construction Industry 'Prepared for the Minister of Public Works, Government Printing Works, Pretoria South Africa.
- [14] Eisenberg, M. A. (2001). The theory of contracts. In P. Benson (Ed.), the theory of contract law (pp. 213–222). Cambridge: Cambridge University Press.
- [15] Eilenberg, I. 2002. *Dispute Resolution in Construction Management*. Sydney: UNSW.
- [16] Elhag, T.M.S and Boussabaine, A.H (1999), Evaluation of construction cost and time attributes, in Hughes, W. (Ed) Proceedings of the 15th ARCOM Conference. Vol. 2, ARCOM, Liverpool John Moors University, 15-17 September 2008, pp 473-480.
- [17] Fenn, P., Lowe, D., & Speck, C. (1997). Conflict and dispute in construction. *Construction Management and Economics*, 15(6), 513–518.
- [18] Finsen, E. 1999. *The building contract: A commentary on the JBCC Agreements*. Cape Town: Juta.
- [19] Finsen, E. 2005. *The building contract: A commentary on the JBCC Agreements*, 2nd ed. Cape Town: Juta.
- [20] <http://www.ijceonline.com/Engineering-and-Management-Dispute-Review-64-679>
- [21]] Heath, B. C., Hills, B., & Berry, M. (1994). The nature and origin of conflict within the construction process. In Proceedings of the CIB TG15 Conference, Kentucky, USA, CIB publication 171, pp. 35–48.
- [22] Hewit, J. (1991). *Winning construction disputes—Strategic planning for major litigation*. London: Ernst and Young.
- [23] Hibberd, P. and Newman, P. 2001. *ADR and Adjudication in Construction Disputes*. Oxford: Blackwell Science.
- [24] Idrus, A.B and Newman, J.B (2002), Construction related factors influencing choice of concrete floor system' *Construction Management and Economics*, 20(1), pp13-19
- [25] Joint Building Contracts Committee (JBCC). 2004. *Principal building agreement*. 4th ed. Houghton: Joint Building Contracts Committee Inc. (Series 2000 Code 2101), March, p. 30.
- [26] Joint Building Contracts Committee (JBCC). 2005. *Adjudication Rules: for use with the JBCC Principal Building Agreement and Nominated / Selected Subcontract Agreement*. Ed. 4.1, cl. 1.1 3.2, 6.0-7.0. Houghton: Joint Building Contracts Committee Inc. (Series 2000 Code 2019), March.
- [27] Joint Building Contracts Committee (JBCC). 2007. *Adjudication Rules: for use with the JBCC Principal Building Agreement & Nominated / Selected Subcontract Agreement*. 5th ed.1-7. Houghton: Joint Building Contracts Committee Inc. (Series 2000 Code 2101).July.1-7.p.30-31.
- [28] Kumaraswamy, M. H. (1997). Conflicts, claims and disputes in construction. *Engineering, Construction and Architectural Management*, 4(2), 95–111
- [29] Loots, P. 1991. Alternative methods of dispute resolution in the construction industry. *SA Builder*, p. 8-13, May.
- [30] Mackie, K.J. 1991. *A handbook of dispute resolution: ADR in action*. London & New York: Routledge and Sweet & Maxwell.
- [31] McKenzie, H.S. and McKenzie, S.D. 2009. *The law of building and engineering contracts and arbitration*. 5th Ed. South Africa: Juta.
- [32] Mitropoulos, P., & Howell, G. (2001). Model for understanding, preventing and resolving project disputes. *Journal of Construction Engineering and Management*, 127(3), 223–231.
- [33] Quail, P. 1978. *Die boukontrak*. Pretoria: Boupublikasies.
- [34] Rameezdeen, R., & Gunarathna, N. (2003). Disputes and construction industry cultures. *AACE International Transactions*, CDR.24.1–CDR.24.8.
- [35] Semple, C., Hartman, F., & Jergas, G. (1994). Construction claims and disputes: cause and cost/ time overruns. *Journal of Construction Engineering and Management*, 120(4), 785–795
- [36] Sheridan, P. (2003). Claims and disputes in construction. *Construction Law Journal*, 12(1), 3–13.
- [37] Spittler, J. R., & Jentzen, G. H. (1992). Dispute resolution: Managing construction conflict with step negotiations. *AACE International Transactions, Accounting & Tax Periodicals*, 1(1), 9.1–9.10.
- [38] South Africa. 1969. *The Arbitration Act, Act 42 of 1969*. Pretoria: Government printer.
- [39] Sykes, J. (1996). Claims and disputes in construction. *Construction Law*

- Journal, 12(1), 3–13.
- [40] Tiruneh, G.G., Verster, J.J.P. and Kotzé, B.G. 2007. A study on the application of alternative dispute resolution (ADR) methods in South Africa. Proceedings of Pacific Association of Quantity Surveyors (PAQS) 2007 Congress: Construction from a different perspective. Auckland, New Zealand, June.
- [41] Totterdill, B. W. (1991). Does the construction industry need alternative dispute resolution? The opinion of an engineer. *Construction Law Journal*, 7(3), 189–199.
- [44] Verster, J.J.P., Ramabodu, M.S. and Van Zyl, C.H. 2010. Construction dispute resolution as seen by Quantity Surveyors and Construction Managers. Proceedings of the 7th International Cost Engineering Council World and 14th Pacific Association of Quantity Surveyors Congress. Singapore. 23-27 July.
- [45] Wathne, K. H., & Heide, J. B. (2000). Opportunism in interfirm relationships: Forms, outcomes, and solutions. *Journal of Marketing*, 64(4), 36–51.
- [46] Watts, V. M., & Scrivener, J. C. (1993). Review of Australian building disputes settled by litigation. *Building Research and Information*, 21(1), 59–63.
- [47] Yates, D. J. (1998). Conflict and dispute in the development process: A transaction cost economic perspective. <http://www.pres.net/proceedings/proceedings1998/Papers/Yates3Ai.PDF> (March 31, 2011).
- [48] Yiu, T. W., & Cheung, S. O. (2004). Significant dispute sources of construction mediation. In Proceedings of the First International Conference on World of Construction Project Management. Toronto, Canada, pp. 596–604.
- [42] humbiran, I (2015) Summary: Prompt Payment, A paper presented to adjudication delegates at the University of Pretoria. [Accessed 23-10-2017].
- [43] Verster, J.J.P. 2007. Managing cost, contracts, communication and claims: A Quantity Surveying perspective on future opportunities. In: Proceedings of 1st ICEC & IPMA Global Congress on Project Management, 5th World congress on Cost Engineering, Project Management and Quantity Surveying. Ljubljana, Slovenia, 23-26 April.



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