



**JUDICIAL EVALUATION MODEL AND RESOLUTION OF CONTRACTUAL DISPUTES IN CONSTRUCTION PROJECTS: THE CASE OF ROAD CONSTRUCTION PROJECTS IN KENYA**

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**Accepted: October 19, 2020**

**ABSTRACT**

*This study examined the influence of Judicial Evaluation Model in resolving contractual disputes in road construction projects in Kenya. Specifically, the study addressed two research questions: What is the influence of civil litigation process, as a component of judicial evaluation model, on resolution of contractual disputes in road construction projects in Kenya? What is the influence of Alternative Dispute Resolution (ADR) mechanism, as a component of judicial evaluation model, on resolution of contractual disputes in road construction projects in Kenya? A correlation design was adopted. Descriptive statistics, mode, mean and standard deviation were used for the analysis of primary data collected from senior monitoring and evaluation staff of the contracting parties. Analysis of Variance and Regression models were deployed for inferential analysis. The study found that resolution of contractual disputes has strong positive correlation with ADR mechanism ( $r = 0.695$ ,  $p = 0.01$ ) and a weak negative correlation with civil litigation process ( $r = -0.041$ ,  $p = 0.01$ ). The regression analysis showed that a unit increase in civil litigation process resulted into -0.26 units increase (which is actually a decrease) in resolution of contractual disputes, while a unit increase in ADR mechanism yielded 0.510 units increase in resolution of contractual disputes. The study concluded that civil litigation process should be used as a last resort for resolving contractual disputes because it does not support consensus building between the parties and ADR mechanism is best suited for consensus building in resolution of contractual disputes. The study recommended a hierarchical use of ADR mechanism (Adjudication, Arbitration and Mediation) based on their influence on desired outcomes of dispute resolutions which are; speedy resolution of the disputes, minimum cost of resolving dispute, impartiality of the resolution process and enforceability of the resolution outcome.*

**Keywords:** *Judicial Evaluation Model, Litigation Process, ADR mechanism, Resolution of Contractual Disputes*

**CITATION:** Okeyo, M. P., Rambo, C. M., & Nyonje, R. O. (2020). Judicial evaluation model and resolution of contractual disputes in construction projects: The case of road construction projects in Kenya. *The Strategic Journal of Business & Change Management*, 7(4), 527 – 540.

## INTRODUCTION

Road construction projects are governed by contractual relationship between the employer (owner of the development project) and the contractor (the executor of the project); both of whom are the parties to the Contract. The overriding interest of the employer is to access utility of the development within time, cost and scope definitions specified in the contract; whereas that of the contractor is to get commercial value (profits) on his investment. The two interests are often at conflict (Crabbe and Leroy, 2008) because high utility preferred by the employer is usually costly to the contractor, while the high profit desired by the contractor, ordinarily pre-empts cost minimization behaviors that often undermine utility of the development.

Studies such as (Murali and Soon, 2006) of causes of disputes in Malaysian road construction sector found out that performance evaluations of obligations by parties have often given conflicting and biased results which entrench positions of the party sponsoring/doing evaluation. This is common in cases where the party's failure to perform would invoke contractual remedy against him. A similar study carried out in Ghana (Frimpong, Olowoye and Crawford, 2003) concluded that this entrenched biases often result into disputes that usually impact the progress of road projects by deterioration of relationships and delays in the execution of works resulting to high cost of projects.

The traditional approach to resolving contractual disputes in road construction projects has followed the Expert-Oriented Evaluation Model. This model is premised on the assumption that evaluation is synonymous with professional judgment (Stake, 1975) and therefore a professional is often sourced as 'a meta-evaluator' to resolve the contractual dispute. However, in the construction industry in general, the model has been widely criticized as elitist and impartial (Elyamany, Ismail, Zayed, 2007; Faridi and Sayeges, 2006) because the outcome is solely dependent on the professional. The model has also been associated with the classical project

administration philosophy, which industry players consider rigid, as opposed to project management methodologies which practitioners consider to be more dynamic and vibrant (Enshassi, Mohamed, Mustafa and Mayer, 2007). Evaluation theorists like Hamlin and Kirpatrick cited in (Nyonje, Ndunge and Mulwa, 2012) also agree that the main goal of evaluation in projects is learning as opposed to judgment per se; and since learning is an interactive process, evaluation should, as much as possible, be inclusive and collaborative.

The criticisms of traditional approach to resolution of contractual disputes have resulted into emergence of several other evaluation approaches to resolve contractual disputes in road construction projects; which includes objective-oriented model, management-oriented model, consumer-oriented model and judicial evaluation model (JEM), among others. However, the JEM has gained much ground in resolving contractual disputes in road construction projects. JEM assumes that the potential for evaluation bias by a single evaluator cannot be ruled out (Worthen, 1990), and therefore, each side should have a separate evaluator to make their case. A hearing of some sort is conducted where each evaluator makes his or her case regarding the evaluation. Judicial evaluation model thus has a built-in meta-evaluation (Nyonje et al, 2012). This property makes it appropriate for use in construction projects to resolve contractual disputes because it seeks to be inclusive and gives opportunity for objective hearing by an independent evaluator. The duty of an independent evaluation is to re-establish the contractual equilibrium through the dictum of impartiality (Okeyo, 2011). The objective of the independent evaluation is to resolve an evaluation dispute impartially, timely and with minimum cost to ensure that the rights of the respective parties are not infringed; and the interest of the contract, as opposed to those of the parties, is upheld.

Judicial Evaluation Model has two broad components. The first one is civil litigation process under local or international courts. This process

starts with the filing of an evaluation dispute in court, constitution of a dispute panel/judge, submissions by the disputants, determination of dispute by the panel/judge and finally appeal or enforcement of the determination. The other component of JEM is the Alternative Dispute Resolution (ADR) Mechanism; which encompasses arbitration, adjudication, mediation and conciliation. Application of JEM in resolving contractual disputes in road construction projects seeks to achieve some industry-desired results/outcome of dispute resolution process which include timeliness in resolving contractual disputes, cost effectiveness of dispute resolution, impartiality, and enforceability of the resolution. However, the degree and the direction of the influence of components of JEM on time, cost, impartiality and enforceability of dispute resolution are not the same. Some components exert more influence on the particular industry- desired outcome than the others. This scenario presents the need and the challenge for scholars of the judicial evaluation model to establish hierarchy in the application of the components based on their influence on industry desired results/outcome. The hierarchy established is essential for optimizing application of JEM in resolution of disputes and could lead to more methodical use of the model and best outcome of contractual dispute resolution. Optimization of JEM for resolution of contractual disputes in the construction projects should bring about standardization, which is still lacking, in application of JEM components. The purpose of the study was to investigate the influence of JEM on resolution of contractual disputes and to explore the missing hierarchy of application. The study also intended to contribute to the limited literature on judicial evaluation model and its application in construction projects.

#### **LITERATURE REVIEW**

Evaluation in construction industry has gained considerable grounds in the last decade among scholars and industry players. Scholars (Dorin, Demning and Gabel, 1990; Alkin and Christie, 2004;

and Ogul, 2002) have concentrated in the development of evaluation theories and models, while practitioners are pre-occupied with applying evaluation models that meet dynamic demands of construction projects (Gould, King and Briton, 2013). The emergence of total quality management philosophies and social advocacy for health and safety at construction work places, equity in resource distribution by gender and communities, environmental conservation, social corporate responsibility and government regulations requiring construction projects to be sensitive to the domestic economy and local culture, in addition to the traditional triple constraints of time, cost and scope have prompted the application of multiple evaluation models in project planning and management. Construction industry in particular has employed various evaluation models to evaluate project deliverables; among which judicial evaluation model offers several options and sub-options for resolution of contractual disputes such as civil litigation process and ADR mechanisms (arbitration, adjudication, mediation and conciliation).

A review of empirical investigations in Europe, Asia and Africa show that the road construction projects in these regions employ judicial evaluation model in resolution of contractual disputes, but the selection of its components widely varies. In Europe generally and UK in particular, the model is acknowledged to offer many components e.g. mediation, adjudication, litigation etc (Gould et al 2010; and Kennedy, 2006) for resolving disputes in the road construction sector. Over 80% of contractual disputes in the UK road construction since the year 2000, have been resolved through litigation while another 18% have been resolved by arbitration (Dacanster, 2008); leaving only 2% for the other components of judicial evaluation model. Whereas 90% of disputes in road construction sector handled by litigation have been perceived as successful as measured by parties' satisfaction with assertion of entitlements and enforceability of the awards, there seems to be agreement that

evaluation through litigation process took long time to settle contractual disputes, and resulted into poor relationship between the parties in road construction contracts. Contractual disputes that were referred to arbitration tended to take shorter time to resolve (Eversheds, 2005).

In the case of Asia; studies in Malaysia (Murali and Soon, 2006), in United Arabs Emirates (Faridi and Sayeges, 2006) and Saudi Arabia (Enshassi et al, 2007) show that litigation is least applied in resolving contractual disputes in road construction projects. 98% of disputes in road construction projects in this part of the world are resolved by either adjudication or dispute review boards while only 2% end up in litigation. However, in Korea and Japan, conciliation seems to be preferred. In India, the use of litigation to resolve contractual disputes in road projects stands at 40% (Iyer and Jha, 2005), and is used as the last resort after failure of other components of judicial evaluation model.

The African road construction industry is averse to litigation and arbitration, with the northern region of continent preferring adjudication and dispute review boards as seen in studies in Egypt and Morocco (Elyamany et al, 2007); this is similar to the Asian case. Studies in Sub-Saharan Africa countries such as Nigeria, Ghana and Tanzania (Okuwoga, 1998; Frimpong et al, 2003; and Samson and Lema, 2005) report that mediation and dispute review boards are the most common (at 88%) dispute resolution mechanisms in road construction projects. Studies in South Africa have reported arbitration and litigation as common in resolving road construction disputes (Ugwu and Haupt, 2007).

The literature review shows a differing preference for the model and its components in resolution of contractual disputes across the globe, which poses a challenge to international commerce in road construction sector. The first challenge is how to integrate and harmonize the different approaches of resolving contractual disputes in a sector which is increasingly becoming globalized under financing infrastructure that is dependent on bilateral and

multilateral agreements. These bilateral and multilateral engagements call for standard evaluation model and a method that is understandable among the engaging nations/parties. Furthermore, globalization of commerce coupled with stiff competition in domestic markets cause firms to look for new frontier regionally and overseas where approaches to resolving contractual disputes are radically different from what they are accustomed to at home. This scenario also calls for standardized procedures and methodologies of resolving contractual disputes as long as the local and international road construction markets continue to merge into one global economy. Such standardization is lacking in the industry. In Kenya, standardization of evaluation approaches to solving disputes in road construction is urgent because road development, and infrastructure in general, has been identified as key pillar of economic growth which now attracts huge financial investment by the Government and the private ventures, including Public Private Partnerships (PPPs).

## **METHODOLOGY**

The study used correlation design to allow for quantitative approach to data collection, processing and analysis. The target population of the study was 1,017 people drawn from contracts and project evaluation staff in road construction projects in Kenya and stratified into 3 categories of implementation stakeholders: The Employer, the Contractor and the Engineer. This study used Krejcie and Morgan formula for sample size determination at 5% significance level to arrive at a sample size of 279 respondents. A stratified random sample was drawn based on the number of projects for every class of road. The study used self-administered questionnaires to source information because it provided flexibility that the targeted participants would require given their complicated itineraries. The method enabled the respondents to fill in the questions at their convenience. The instrument was pilot-tested at Kisumu-Kakamega road project, Nyamasaria-Kisumu-Kisian road

project and Rodi Kopany – Karungu road project. The projects were chosen for piloting because they typically met the criteria for inclusion in the study as classes A, B and C roads respectively with similar contractual management. The pre-testing was important to ascertain the reliability and validity of data collection instruments and process.

Out of a total 279 questionnaires that were distributed, 250 were returned representing a return rate of 89.61%. Employer staff returned 86 out of 93 questionnaires which is 92.47% while return rate of questionnaires among Contractor staff was 80 out of 93(86.02%). Engineer staff achieved a return rate of 84 out of 93(90.32%).

Primary data was edited for completeness and consistency, coded and classified before feeding into software (Microsoft Excel and SPSS) for analysis. Descriptive statistics (mode, mean and standard deviation) and inferential statistics (analysis of variance - ANOVA and regression modelling) were used for analysis of data.

## RESULTS AND DISCUSSIONS

The results of the study were organized, interpreted and discussed under seven thematic areas. These included participants work experience, occurrence of contractual disputes, common areas of contractual disputes, desired outcomes of resolution of contractual disputes, use of civil litigation process and resolution of contractual disputes, use of ADR mechanism and resolution of contractual disputes, and influence of judicial evaluation model on resolution of contractual disputes. The themes were presented and discussed under the following subsections.

**Table 1: Occurrence of Contractual Disputes**

Occurrence of Contractual Dispute	Frequency	Percentage
Very rarely	0	0.0
Rarely	26	10.4
Sometimes	126	50.4
Frequently	98	39.2
Very frequently	0	0
Total	250	100.0

## Work Experience of Respondents

The respondents were asked to indicate the level of work experience in construction project management and evaluation on an ordinal scale of 1-3 years, 4-7 years, 8-10 years and over 10years. The study found out that that 52 out of 250 (20.8%) of the respondents had between 1-3 years of experience, 49 out of 250(19.6%) of the respondents were 4-7 years of experience, 45 out of 250 (18.0%) were 8-10 years of experience while 104 out of 250(41.6%) were over 10 years' experience. Across the categories, 198 out of 250(79.2 %) of the respondents had work experience of 4 years and above indicating that experience, as a characteristic, is homogeneous among respondents.

From the results, the study established that the respondents were not highly differentiated by work experience across the various categories. This characteristic improved the precision/reliability of the study since it was less likely that many responses would be statistical outliers, which would skew the data. Brayman and Bell (2011) recommends that differentiation among respondents should be kept as low as possible (under 30%) to control large variances within the data and to minimize stratification into several layers of common characteristics.

## Occurrence of Contractual Disputes

To establish the frequency of occurrence of contractual dispute, the respondents were asked to state how often contractual disputes between the Contractor and the Employer occur during the execution of the road projects. The finding is as shown in Table 1.

The findings showed that all the respondents agreed that contractual disputes occur in the road construction projects with none reporting 'very rarely' and 'very frequently'. Over 89.6% of the respondents reported occurrence of contractual disputes at the scale of 'Sometimes' and 'Very frequently'. The findings underscored importance of resolution of disputes; and confirmed the findings of (Elyamany et al, 2007) that contractual disputes in road construction projects are frequent

and resulting for over 60% of suspension and termination of projects.

### Common areas of Contractual Disputes

On common areas of contractual disputes in road construction projects including project schedule, project payment, project quality and project scope variations; the results of the study were as shown in Table 2.

**Table 2: Common areas of Contractual Disputes**

	Common Areas of Contractual Disputes and % Frequencies							
	Schedule	(%)	Payment	(%)	Quality	%	Variations	%
Very rarely	14	(5.6)	0	(0)	0	(0)	14	(5.6)
Rarely	26	(11.2)	105	(42.0)	109	(43.6)	34	(13.6)
Sometimes	56	(22.4)	98	(39.2)	111	(44.4)	92	(36.8)
Frequently	122	(48.8)	42	(16.8)	29	(11.6)	73	(29.2)
Very Frequently	30	(12.0)	5	(2.0)	1	(0.4)	37	(14.8)
Total	250	(100)	250	(100)	250	(100)	250	(100)

The results indicated that schedule frequently caused contractual disputes scoring 122 out of 250 (48.8%). Although 109 out of 250 (42.0%) of the respondents reported that contractual disputes were rarely caused by payment, a significant 98 out of 250 (39.2%) reported that disputes sometimes occurred as a result of payment. Quality is another area of dispute in the road construction project scoring highest 111 out of 250 (44.4%) that disputes sometimes occur in road construction projects. Similarly, variations scored 92 out of 250 (36.8%). These findings led to the conclusion that project schedule, payment, quality and variations cause contractual disputes in road construction projects hence concurring with Faridi and Sayeges (2006) who identified schedule, payment, quality and variation as the leading causes of contractual dispute in construction projects. However, schedule delay is the most common, which is in

agreement with the finding of Okeyo (2011) on a study of effects of contractual delay on completion of Sondu-Miriu Hydropower Project.

### Desired Outcome of Resolution of Contractual Disputes

Disputes in construction projects should be resolved in time (with speed) and at minimum cost. The dispute should also be resolved with impartiality and the outcome should be enforceable. The study sought to establish what industry players desire as outcomes of resolution of contractual disputes. Desirability of indicators of resolution of dispute (timeliness, cost, impartiality and enforceability) were analyzed on a Likert Scale of 1-5 where Very undesirable (VU) = 1, Undesirable (U) = 2, Sometimes Desirable (SD) = 3, Desirable (D) = 4, Very desirable (VD) = 5. The results were as presented in Table 3.

**Table 3: Desired Outcome Resolution of Contractual Disputes**

Desirability statements	n	VD	D	SD	U	VU	Mean	Std. (±)
resolution of contractual dispute should be fast/speedy	250	167 (66.8%)	63 (25.2%)	20 (8.0%)	0 (0%)	0 (0%)	4.59	0.636
Resolution of contractual dispute should be cost effective	250	196 (78.4%)	54 (21.6%)	0 (0%)	0 (0%)	0 (0%)	4.78	0.412

Resolution of contractual dispute should be impartial	250	233 (89.2%)	11 (4.4%)	16 (6.4%)	0 (0%)	0 (0%)	4.83	0.521
Resolution of contractual dispute should be enforceable	250	159 (63.6%)	47 (18.8%)	16 (6.4%)	12 (4.8%)	16 (6.4%)	4.27	1.180

The first item sought to find out whether resolution of dispute should be done speedily/fast. An affirmative 167 out of 250 (66.8%) said that speedy resolution of contractual dispute was very desirable, 63(25.2%) felt that it was desirable while 20(8.0%) said that speedy resolution of disputes was sometimes desirable. No respondent found speedy resolution of contractual disputes to be undesirable or very undesirable. The mean of 4.59, as a measure of central tendency, indicated the unanimity among the respondents on desirability of speedy resolution of contractual disputes. The standard deviation of  $\pm 0.636$  showed how minimal the spread from the mean (3.954 to 5.226) of the responses and indicates a high level of agreement among the respondents on time/speed as a desirable characteristic/outcome of resolution of contractual dispute. These findings are in line with Murali and Soon (2006) who, in a study of construction disputes in Malaysia, found out that much construction time was being lost in disputes and industry players were desirous for timely/speedy resolutions.

The second item inquired whether resolution of contractual disputes should be cost effective. 100% of the responses indicated that it is desirable or very desirable that contractual disputes should be effective. 196 out of 250 (78.4%) felt that cost effective resolution is very desirable while 54 out of 250(21.6%) reported that cost effective resolution is desirable. The response scored one of the highest mean of 4.78 and the least standard deviation of  $\pm 0.412$ . The findings are therefore affirmative that cost effectiveness in a desirable indicator of resolution. Ahmed et al (2009) in a study of delay in construction projects agree that time and money are important resources in construction projects and affect public perception on deliverability of projects. Any effort that saves time and money of

construction projects improves projects' availability and utility.

The third item assessed whether resolution of contractual disputes should be impartial. The results indicate that 233(89.2%) of the respondents were of the opinion that it was very desirable that resolution of the dispute is impartial, 11(4.4%) said it was desirable while 16(6.4%) reported that it was sometimes desirable. No respondent reported 'undesirable' and 'very undesirable'. The mean was 4.83 with a standard deviation was  $\pm 0.521$ . This means that there was strong agreement among the respondents that impartiality in resolving contractual disputes is highly desirable. This conclusion supports that of Murali and Soon (2006) who ranked impartiality as the top industry-desired outcomes of resolution of contractual disputes.

The fourth item tested whether resolution of contractual disputes should be enforceable. The findings show that 159(63.6%) of respondents indicated very desirable, 47(18.8%) stated that it was desirable, 16(6.4%) of the respondents said that it was sometimes desirable while 12(4.8%) and 16(6.4%) reported undesirable and very undesirable respectively. The mean was 4.27 and standard deviation was  $\pm 1.18$ . The results show that the desirability level was widely spread along the Likert scale (high standard deviation of  $\pm 1.18$  and the lowest mean of 4.27). However, majority of the respondents (82.4%) were of the opinion that the enforceability of resolution of contractual dispute was either desirable or very desirable. Among the four statements that were used to assess resolution of contractual disputes, this is the only statement that recorded undesirable (4.8%) and very undesirable (6.4%) levels of Likert scale. Although their combined percentage (11.2%) is small, it shows that some respondents are averse to subjecting contractual disputes to the legal force.



(Agarwal and Owasonoye, 2011; Ayudhya, 1991) agree that legal force as found in judicial courts leads to adversarial relationship between contracting parties and should only be used as a last resort. It was therefore concluded that resolution of contractual disputes is generally very desirable.

### Raking of Outcome of Resolution of Contractual Disputes

**Table 4: Ranking of Indicators of Resolution of Contractual Disputes**

Desirability statements	n	Mean	Rank (based on mean)	Std.Dev (±)	Rank (based on std.)
a. Resolution of contractual dispute should be fast/speedy	250	4.59	3	0.636	3
b. Resolution of contractual dispute should be cost effective	250	4.78	2	0.412	1
c. Resolution of contractual dispute should be impartial	250	4.83	1	0.521	2
d. Resolution of contractual dispute should be enforceable	250	4.27	4	1.180	4

The findings showed that impartiality in resolution of contractual disputes, item (c), ranked first using the mean and second using the standard deviation. Conversely cost effectiveness of resolution of contractual disputes, item (b) was ranked first by standard deviation and second by the mean. This means that the two indicators of resolution of contractual disputes are equally essential. Speedy resolution of contractual disputes, item (a), and enforceable resolution of contractual disputes, item (d) were ranked third and fourth respectively using both mean and standard deviation showing how the two variables are similarly essential. However, all the means were above 4.0 showing that majority of the respondents felt that all the indicators were

The study ranked the indicators using the measure of central tendency (mean) and measure of dispersion (standard deviation). The ranking conceptualized that the higher the mean, the higher the rank in terms convergence/agreement of the respondents while lower the standard deviation the higher the rank in terms of respondent's convergence. Table 4 showed the findings.

very desirable hence essential for resolution of contractual disputes in road construction in Kenya.

### Civil Litigation Process and Resolution of Contractual Disputes

The study interrogated the use of civil litigation in resolution of contractual disputes. The respondents were asked to state how often civil litigation is used in resolving contractual disputes on a Likert Scale of 'Very frequently used' (VFU), 'Frequently used' (FU), 'Sometimes used' (SU), 'Rarely used' (RU) and 'Very rarely used' (VRU) corresponding to values of 5, 4, 3, 2 and 1 respectively. Results were as given in Table 5.

**Table 5: Use of Civil Litigation in Resolution of Contractual Disputes**

Use of Civil Litigation	Frequency	Percentage
Very rarely used	0	0.0
Rarely used	88	35.2
Sometimes used	138	55.2
Frequently used	24	9.6
Very frequently used	0	0.0
Total	250	100.0

The results show that most respondents 138 out of 250 (55.2%) reported that civil litigation was sometimes used in disputed resolution. 88 out of 250 (35.2%) of the respondents said that civil litigation was rarely used while 24 out of 250(9.6%) of respondents reported frequent use of civil litigation. No respondents reported 'very frequent use and 'very rarely' use of civil litigation. This finding shows that all respondents agree that civil litigation has a role in resolution of contractual disputes. However, it should not be overused (very frequently used = 0%) nor ignored (very rarely used = 0%).

### ADR Mechanism and Resolution of Contractual Disputes

The study investigated the use of ADR (Arbitration, Adjudication and Mediation) in resolution of contractual disputes. The respondents were asked to state how often ADR is used in resolving contractual disputes on a Likert Scale of 'Very frequently'(VF), 'Frequently'(F), 'Neutral(N), 'Rarely'(R) and 'Very rarely '(VR) corresponding to values of 5, 4, 3, 2 and 1 respectively. The results were as given in Table 6.

**Table 6: Use of ADR Mechanism in Resolution of Contractual Disputes**

Statements	n	VF 5	F 4	N 3	R 2	VR 1	Mean	Std. (±)
Use of Arbitration to solve contractual disputes	250	29 (11.6%)	42 (16.8%)	179 (71.6%)	0 (0%)	0 (0%)	3.40	0.69
Use of Adjudication to solve contractual disputes	250	0 (0%)	104 (41.6%)	69 (27.6%)	61 (24.4%)	16 (6.4%)	3.04	0.96
Use of Mediation to solve contractual disputes	250	15 (6.0%)	89 (35.6%)	57 (22.8%)	73 (29.2%)	16 (6.4%)	3.06	1.07

The use of Arbitration was reported as very frequent by 29 (11.6%) respondents, frequently used by 42 (16.8%) respondents while 179(71.6%) respondents were neutral. No respondents reported rare or very rare use of arbitration in resolution of contractual disputes. Use of adjudication was reported to be very rare by 16 respondents (6.4%), rare by 61 respondents (24.4%), neutral by 69 (27.6%) and frequent by 104(41.6%) respondents. However, no respondent reported use of adjudication to be very frequent (0%). Use of mediation attracted responses across the scale with 15(6.0%) respondents saying that it was very frequent, 89(35.6%) frequent, 57(22.8%) neutral while rare and very rare recorded 73(29.2%) and 16(6.4%) respectively.

The means of responses across the variables were 3.4, 3.04 and 3.06; all tending to neutral (3) which indicate that use of arbitration, adjudication and mediation were equally likely to be deployed or not deployed in resolution of contractual disputes. However, the variability in the standard deviation is

such that arbitration has the smallest dispersion from the mean ( $\pm 0.69$ ) which could qualify arbitration as the most likely consideration for resolution of contractual disputes. These findings concur with those of Glenn (2009), that the influence of ADR mechanism on resolution of contractual disputes differ but can be ranked in a continuum to optimize the dispute outcome.

### Judicial Evaluation Model of Resolution of Contractual Disputes

The study investigated the relationships between judicial evaluation model and resolution of contractual disputes using Pearson's correlation analysis (*r*). The analysis established the strength and the direction of the relationship. Regression models were deployed to study the partial influence of components of the model (civil litigation process and ADR mechanism, separately) and influence of the entire model (civil litigation process and ADR mechanism, combined) on resolution of contractual disputes. Table 7 is the output of correlation analysis

**Table 7: Judicial Evaluation Model and Resolution of Contractual Disputes**

	Resolution of Contractual Disputes	Civil Litigation	ADR Mechanism
Resolution of Contractual Disputes	1		
Civil Litigation process	-.041	1	
ADR Mechanism	.695**	.008	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 8 showed that resolution of contractual disputes has a strong positive correlation with ADR mechanism ( $r = 0.695$ ,  $p = 0.01$ ) and a weak negative correlation civil litigation process ( $r = -0.041$ ,  $p = 0.01$ ). The results indicate that the more ADR mechanism is deployed in resolution of disputes, the more likely it is to attain resolution of disputes. However, the more civil litigation process is deployed, the less likelihood of attaining resolution of disputes.

A simple linear regression analysis was performed of resolution of contractual disputes on civil litigation process to establish the linear relationship and test the null hypothesis a 95% confidence level that:

$H_0$ : Civil litigation process has no significant influence on resolution of Contractual disputes in road construction projects in Kenya.

**Table 8: Linear Regression of Civil Litigation Process and Resolution of Contractual Disputes**

Model	Unstandardized Coefficient		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	18.517	1.481		12.500	.000
1 Civil litigation Process	-.023	.035	-.041	-.644	.0520

Dependent Variable: Resolution of Contractual Dispute

The results showed that the linear relationship of the form,  $y = a + bx$ , between the resolution of contractual dispute and civil litigation process is defined by:

*Resolution of Contractual Dispute = 18.517 - 0.023 of Civil Litigation Process*

The results suggested that a unit increase in civil litigation process results into -0.023 units increases (which is actually a decrease) in resolution of contractual disputes. This means that resolution of contractual disputes reduces by 0.23 units for every unit increase civil litigation process. The negative relationship between the dependent and independent variables suggests the inability of civil litigation process to support consensus in a

resolution of disputes. This finding supported those of (Wolf, 2009; Thudson, 2008; and Popham and Carlson 2013) which stated that civil litigation process is characteristically elaborate, inquisitorial and adversarial. Likewise, Ghada (2012) observes that; being strongly anchored on evidentiary records, litigation propagates injustices in many cases where the truth is non-evidentiary. Since the disputants initiate legal action against one another, there is a natural tendency for them to view each other as enemies which makes it difficult to achieve resolution over dispute. The objectivity of litigation process and the value-orientation of consensus were converse and therefore exhibited negative relationship.

**Table 9: Regression Model Summary for Civil Litigation Process and Resolution of Contractual Disputes**

Model	R	R Square	Adjusted R Square	Std. Error the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F change
1	.041 <sup>a</sup>	.002	-.002	2.470	.002	12.100	1	248	.520

a. Predictors: (Constant), Litigation

The model gave R value = 0.041 which suggested a low degree of correlation (simple correlation, whether negative or positive) and R-square value = 0.002 which indicated that only 0.2% change in resolution of contractual disputes is explained by civil litigation process. The ANOVA F statistic; F (1, 248) = 12.100 at  $p = 0.520$ , showed that the regression of civil litigation process is not a significant predictor (since  $p > 0.05$ ) of resolution of contractual disputes. Therefore, the study failed to reject the null hypothesis and concluded that civil litigation process has no significant influence on

resolution of Contractual disputes in road construction projects in Kenya.

To determine the influence of ADR mechanism on Resolution of contractual disputes, a linear regression analysis was undertaken to establish the linear relationship and test the null hypothesis a 95% confidence level that:

*H<sub>0</sub>: ADR mechanism has no significant influence on resolution of Contractual disputes in road construction projects in Kenya.*

The results were as shown in Table 10.

**Table 10: Linear Regression of ADR Mechanism and Resolution of Contractual Disputes**

Model		Unstandardized Coefficient		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.154	1.065		16.106	.000
	ADR Mechanism	0.520	.031	.695	.393	.019

Dependent Variable: Resolution of Contractual Dispute

The results showed a standardized beta of 0.520 and a constant of 17.154 which when presented in linear relationship of the form,  $y = a + bx$ , becomes;

*Resolution of contractual dispute = 17.154 + 0.520 ADR Mechanism.*

The results implied that a unit increase in use of ADR Mechanism results into 0.520 units of

improvement in resolution of contractual disputes. Therefore, increase in the use of ADR mechanism results into a positive improvement in resolution of contractual disputes. Table 11 presented the model summary of the regression of resolution of contractual disputes on ADR mechanism.

**Table 11: Regression Model Summary for ADR Mechanism and Resolution of Contractual Disputes**

Model	R	R Square	Adjusted R Square	Std. Error the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F change
1	.695 <sup>a</sup>	.583	.490	2.471	.001	15.400	1	248	.019

a. Predictors: (Constant), ADR Mechanism

The R value of 0.695 suggested a high degree of correlation (negative or positive) and R Square value of 0.583 percent indicated that use ADR mechanism explains a significant 58.3% of resolution of contractual disputes. The remaining 42.7% was explained by other factors. This implied that relationship between ADR mechanism and resolution of contractual disputes is positive and strong. The ANOVA F statistic;  $F(1, 248) = 15.400$  at  $p = 0.019$ , showed that the regression of ADR mechanism is a significant predictor (since  $p < 0.05$ ) of resolution of contractual disputes. Therefore, the study rejected the null hypothesis and concluded that ADR mechanism has significant

influence on resolution of Contractual disputes in road construction projects in Kenya.

To determine the influence of entire judicial evaluation model (civil litigation plus ADR mechanism) on resolution of contractual disputes, a multiple (bivariate) regression analysis was carried out to establish the relationship and test the null hypothesis that

*H<sub>0</sub>: Judicial evaluation model (civil litigation process plus ADR mechanism) has no significant influence on resolution of contractual disputes in road construction projects in Kenya.*

The results were as given in Table 12.

**Table 12: Multiple Regression of Judicial Evaluation Model and Resolution of Contractual Disputes**

Model	Unstandardized Coefficient		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	18.102	1.695		10.683	.000
1					
Civil Litigation	-.026	0.35	-.046	-.720	.473
ADR Mechanism	.510	.320	.033	.508	.612

Dependent Variable: Resolution of Contractual Dispute

The results showed a standardized beta values of -0.026 for civil litigation process and 0.510 for ADR mechanism and a constant of 17.154 which when presented in bi-variate regression model of the form,  $y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon$ , where  $\beta_0$  is a constant,  $\beta_1$  and  $\beta_2$  are coefficients of the first and second independent variables  $X_1$  and  $X_2$  respectively, and  $\epsilon$  is the error factor; becomes;

*Resolution of contractual dispute = 18.102 + 0.510 ADR mechanism – 0.026 civil litigation process.*

This means that a unit increase in ADR mechanism results into 0.510 units improvement in resolution of contractual disputes while a unit increase in civil litigation process results into 0.026 units of decrease in resolution of contractual disputes

**Table 13: Regression Model Summary for Judicial Evaluation Model and Resolution of Contractual Disputes**

Model	R	R Square	Adjusted R Square	Std. Error the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F change
1	.520 <sup>a</sup>	.400	-.005	2.474	.003	10.500	2	247	.004

a. Predictors: (Constant), Alternative Dispute Resolution, Litigation

The R value of 0.520 indicated moderate degree of correlation (negative or positive) and R Square

value of 0.400 indicated that use judicial evaluation model accounts for 40.0% of resolution of

contractual disputes. The remaining 60.0% is accounted for by other factors. A judicial evaluation model combines both civil litigation and ADR mechanism, whose individual relationship with resolution of contractual disputes, are opposite. The results show that Civil litigation (-ve relationship) and ADR mechanism (+ relationship) have a diluting influence when used together as a model in resolution of contractual disputes. However, the ANOVA F-statistic;  $F(2,247) = 10.500$  at  $p = 0.04$  showed that the regression of judicial evaluation model is a significant predictor ( $p < 0.05$ ) of resolution of contractual disputes; attributable to the +ve influence of ADR mechanism. Therefore, the study rejected the null hypothesis and concluded that judicial evaluation model (civil litigation process plus ADR mechanism) has significant influence on resolution of Contractual disputes in road construction projects in Kenya

## CONCLUSION

Judicial Evaluation Model influences resolution of contractual disputes in road construction projects. However, the influence differs across the components of the model; that is civil litigation process and ADR mechanism. Civil litigation process does not support resolution of disputes. The correlation between the two variables is negative hence the process is not able to build consensus. It significantly decreases the chances of resolving disputes amicably and consensually. Civil litigation process should therefore be deployed as a last evaluation tool in resolution of contractual disputes when the other methods have been exhausted. The correlation between ADR mechanism and resolution of contractual disputes is positive and strong. ADR mechanism supports consensus in resolution of contractual disputes with high chances of satisfactory and/or amicable settlement.

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