JUDICIAL EVALUATION MODEL, BUSINESS STRATEGY, CONTRACT OPERATIONAL ENVIRONMENT AND RESOLUTION OF CONTRACTUAL DISPUTES IN ROAD CONSTRUCTION PROJECTS IN KENYA.

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Thesis Submitted in Partial Fulfillment of the Requirements for the Award of the Degree of Doctor of Philosophy in Project Planning and Management (Project Monitoring and Evaluation Option) of the University of Nairobi.

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DECLARATION

This thesis is my original work and has not been presented for any award in any other University.

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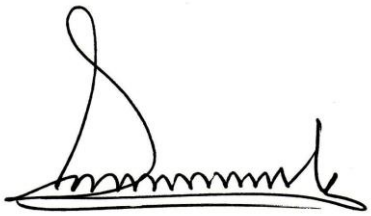
This thesis has been submitted for examination with our approval as University Supervisors.



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DEDICATION

The work is dedicated to my mother, Gawdencia Achieng and my wife Betty Adhiambo whose care and love for me were immeasurable. Thanks to my wife for standing firmly beside me in all storms of adulthood. I feel the love and great inspiration from mom several years after her demise. The sacrifices these two women made in life for my sake has yielded returns. I am greatly indebted to my father Joseph Okeyo whose dream of having a scholar in his lineage is fulfilled and, though posthumously, shall certainly give him peace in the eternity. It was a fulfilling responsibility to receive that button and to complete the academic race he started. My sons Modix Okeyo and Ernest Okeyo would spare nothing to see my progress; Modix became my SPSS guide while Ernest's excitement to have a father climbing the academic latter was both live and inspiring. My daughters; Wendy Akinyi could not just wait for the day, and Maya Achieng Nyamaseno was the crown of my joy, the ultimate fulfilment. It was real impetus whenever the climb became heavy and my own energy became wanting. It was true inspiration to set the foundations and demonstrate the trajectory of scholarism for my family and indeed my community.

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LIST OF ABBREVIATIONS AND ACRONYMS

ADR	Alternative Dispute Resolution
ANOVA	Analysis of Variance
EPC	Engineer Procure and Construct
FIDIC	Federation Internationale Des Ingenieurs –Counseils
JEM	Judicial Evaluation Model
KeNHA	Kenya National Highways Authority
PAP	People affected by Project
Ph.D	Doctor of Philosophy
RII	Relative Importance Index
SD.	Standard Deviation
SPSS	Statistical Package for Social Scientist
UNITAR	United Nations Institute of Training and Research

ABSTRACT

Contractual disputes in road construction projects emanate from the fact that construction contracts create responsibilities and obligations to contracting parties. Parties are held accountable in cases of failure of responsibilities or breach of contractual obligations. Compliance is therefore routinely monitored and periodically evaluated to guarantee quality, time, and scope of projects. Parties often adopt strong positions to avoid liabilities and present conflicting evaluations in cases of schedule and cost overruns, scope overshoots and unmet quality standards. This results into contractual disputes that call for meta-evaluations. This study examined the use of Judicial Evaluation Model as an evaluation methodology for resolution of contractual disputes in road construction projects. The purpose of the study was to examine the influence of judicial evaluation model on resolution of disputes in road construction projects. The objectives of the study were; to establish the extent to which use of civil litigation process influences resolution of contractual disputes in road construction projects in Kenya, to assess how alternative dispute resolution mechanism influences resolution of contractual disputes in road construction projects, to examine the influence of judicial evaluation model on the resolution of contractual disputes in road construction projects, to determine the mediating and moderating influence of business strategy and contract operational environment respectively on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects. The target population of the study was 1,017 people drawn from project evaluation staff in roads (classes A, B and C) construction projects in Kenya. The study was founded on pragmatism paradigm which allowed for mixed method approach of investigation anchored on correlational and cross-sectional designs. A sample size of 279 was used in the study. Research instrument used was self-administered questionnaire with open and closed ended questions to collect qualitative and quantitative data respectively. Quantitative data was analyzed using descriptive statistics, correlations analysis and regression models while qualitative data was subjected to thematic analysis. Out of five null hypotheses tested, four were rejected while the study failed to reject one. With $F(1,248) = 14.5$, $p = 0.520 > 0.05$, the study failed to reject the null hypothesis and concluded that civil litigation process has no significant relationship with resolution of contractual disputes. $F(1,248) = 15.4$, $p = 0.019 < 0.05$ the study rejected the null hypothesis and concluded that alternative dispute resolution mechanism has significant relationship with resolution of contractual disputes. $F(2, 247) = 13.6$, $p = 0.004 < 0.05$, the study rejected the null hypothesis and concluded that judicial evaluation model has significant relationship with resolution of contractual disputes. $F(3, 246) = 7.88$, $p = 0.043 < 0.05$, the study rejected the null hypothesis and concluded that business strategy has significant mediating effect in the relationship of judicial evaluation model and contractual disputes. $F(3, 246) = 5.48$, $p = 0.050$, the study rejected the null hypothesis and concluded that contract operation environment has significant moderating effect on the relationship between judicial evaluation model and resolution of contractual disputes. Conclusions of the study were that litigation process is not appropriate method for resolution of contractual disputes, alternative disputes resolution mechanism leads to consensus in and reasonable cost of resolving contractual disputes, judicial evaluation model can be optimized such that alternative dispute resolution mechanism is used in the first instance and civil litigation process is used as a last resort of resolving contractual disputes. It was also concluded that business strategy influences the choice of contractual dispute resolution approach based on whether parties want long, or short-term business relationship and that contract operational environment determines selection of dispute resolution method. The study was significant because that the finding, if implemented, would help construction practitioners in choosing suitable dispute resolution methods. The study recommended structured use of judicial evaluation model prioritizing alternative dispute resolution mechanism in the first instance and civil ligation as the last resort of resolving contractual disputes. Capacity building on the use of alternative disputes resolution mechanism, being a new frontier, was also recommended. The study further recommended that parties explore business strategies that seek avoidance of disputes or advocates consensus. Contract drafters also should not be over-prescriptive on the method of resolving disputes to allow practitioners to explore various flexible methods presented by judicial evaluation model. For further research, the study has suggested a concordance analysis to optimize the model, studies on other variants on alternative disputes resolution like conciliation, review boards and amicable settlement. Replication the study to the entire construction industry and other non-construction contracts has also been suggested.

CHAPTER ONE
INTRODUCTION

1.1. Background of the Study

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 construction contract. The overriding interest of the employer is to access utility of the development within time, cost and scope definitions (Ursula,2011; Kernzer,2004) specified in the contract, whereas that of the contractor is to get commercial value (profits) on his investment (Khanna,2011). The two interests are often at conflict (Omoto, 2011; 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 (Arthur,2011; Kernzer,2009). Therefore, road construction contracts are designed to bring equilibrium in the opposing interests such that the interests are derived in a balanced and reasonable manner.

However, Nicholas and Herman (2011), observe that there is inherent behavior by the contracting parties to destabilize and/or shift the contractual equilibrium in their favour. This is evident during internal evaluations of the road projects wherein the respective parties evaluate their own compliances with the obligations assigned to them under the contract. Studies such as that of Murali and Soon (2006) on causes of disputes in Malaysian road construction sector found out that such evaluations have often given conflicting and biased results which entrench positions of the party sponsoring/doing evaluation; particularly in cases where the party's failure to perform would invoke contractual remedy against him. A similar study carried out in Ghana by 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.

Cases of disputes in road construction have been documented in several infrastructure development evaluation reports. United States of America Court of Claims (2002) reported dispute involving Laburnum Construction Corporation (Contractor) verses United States Government (Employer) in the road projects within the United States Naval Base in Norfolk,

Virginia. The scope of the dispute was about contractor's evaluation and claim that the Employer had caused delay of the project by 334 days resulting from errors in specifications prepared by the Employer and tardiness in correcting the errors. The Contractor asserted his entitlement to claim damages and compensation of costs incurred by keeping resources idle during the period of delay caused by the Employer. The assertion resulted into dispute.

Building Law Report (2000) details dispute involving Ellis-Don Ltd. (Contractor) verses the Parking Authority of Toronto, Canada (Employer). The scope of the dispute was over Construction of road and new car parks at 50 Cumberland Street, Toronto. The Contractor did not complete the work until some 32 weeks after the contractual completion date. During the project evaluation, the Contractor stated that the Employer had caused delay by failing to obtain excavation permit pursuant to provision of Section 1-A, 38 of the Contract. The contractor wanted the Employer to take liability for time and cost of the delay. On the other hand, the Employer contended that the Contractor should have been aware during tendering that no excavation permit had been issued and that such permit would not be issued until detailed drawing had been provided. The provision of these documents was a responsibility of the Contractor. The Employer therefore launched a counterclaim for damages in respect of breach of contract by the Contractor in respect of the 32-week delay in completion.

In Kenya, cases of disputes in road construction the construction also exists. Mombasa-Kwa Jomvu road project has faced several challenges of disputes filed in courts including by people affected by the project (PAP) who had encroached into road reserve and are now required to relocate or be evicted. The dispute revolves around whether they should be compensated, the quantum of compensation and validity of the titles some of them hold. Another set of disputes in this project is about the compulsory acquisition of land to support the expansion and dualling of the road. This exercise has been opposed by some affected industrial investors on the basis that the compensation regime under compulsory acquisition is not restorative of loses they would incur if relocated. These disputes are delaying the construction works because the site is not wholly available for the contractor. The contractor is therefore suffering idle capacity in equipment and human resource and has submitted to the employer claims for extension of time

and additional cost which if not quickly resolve, portends a contractual dispute (Sai and Cas, 2018).

The traditional approach to resolving contractual disputes in road construction projects has followed 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 (Ursula,2011) to resolve disputes in road construction projects and the industry. These include 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, 2008), 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, Ndunge and Mulwa, 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 (Omoto, 2011). The objective of the independent evaluation is to resolve evaluation dispute impartially, timely and cost-effectively 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 (Cheung and Suen, 2002). Application of JEM in resolving contractual disputes in road construction projects seeks to achieve some industry-desired results 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 industry- desired results than the others. This scenario presents the need and the challenge for scholars and practitioners of the judicial evaluation model to establish hierarchy among the components based on their influence on industry desired results of contractual dispute resolution. The hierarchy established is essential for optimizing application of JEM in resolution of dispute in road construction projects and could lead to best results and 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 (Arthur, 2011; Ashworth, 2006).

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 United Kingdom in particular, the model is acknowledged to offer many components, for example, conciliation, mediation, adjudication, arbitration and litigation. (Gould, King and Britton, 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 seem to be agreement that evaluation through litigation 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, Ismail and Zayed 2007); this is similar to the Asian case. Studies in Sub-Saharan Africa countries such as Nigeria, Ghana and Tanzania (Okuwoga, 1998; Frimpong Olowoye and Crawford, 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).

1.1.1 Resolution of Contractual Disputes in Road Construction Projects

This is the dependent variable of the study. Stakeholders in road construction projects desire fair and agreeable resolutions of contractual disputes that arise from failure of the parties (employer and contractor) in their respect obligations and responsibilities spelled out in the construction contracts (Thomas, 2001). A fair and agreeable resolution of disputes include timeliness, cost-effectiveness, impartiality, of the resolution process and enforceability of dispute resolution outcome. Resolution of contractual disputes in road construction projects has adopted various

evaluation models for, example expert; oriented model, objective oriented model, and judicial evaluation (adversary oriented) model.

However, judicial evolution model seems to gain more popularity than the rest. This is attributed to the many options it offers (Murali and Soon, 2006) which come with various industry-desired outcomes such as speed, reasonable costs, impartiality, and enforceability of the resolutions through litigation and alternative dispute resolution approaches like arbitration, adjudication, mediation, and conciliation. Resolution of contractual disputes in road construction projects is an important aspect of project management because unresolved disputes are capable of delaying or even stalling the projects (Gillian and Paul,2010). Judicial evaluation model presents two broad avenues of resolution of contractual disputes; these are 1) civil litigation process and 2) ADR mechanisms which encompasses arbitration, adjudication, dispute review boards, mediation, and conciliation.

1.1.2 Judicial Evaluation Model (JEM)

Judicial Evaluation Model is the dependent variable of the study which consists of Civil Litigation Process and ADR mechanism. The study conceptualizes that the time/speed, cost, impartiality, and enforceability of dispute resolution, which are the industry desired outcome (Murali and Soon, 2006), depend on which model component between civil litigation process and ADR mechanism is deployed to resolve a contractual dispute.

1.1.2.1 Civil Litigation Process

Civil Litigation process is the first independent variable of this study as a component of judicial evaluation model. It is a process where an evaluation to resolve a contractual dispute is done through a court process either in the local or international jurisdiction. Civil litigation process involves filing of the dispute in a court of law, constitution of a panel/judge to hear the dispute, submissions by the disputants during hearing, determination of the dispute by the panel/judge and appeals or enforcement of the determination. Where the determination has been appealed by one of the disputants or an interested party, civil litigation process cycle commences again at a higher court. Scholars and practitioners of evaluation of contractual disputes in road construction projects agree that evaluation by litigation guarantees enforceability of the outcome

of dispute resolution since it is done under legal court systems. Furthermore, Gillion, Fredric and Fenwick (2011) see evaluation by litigation as an impartial process. However, it is also viewed as expensive and adversarial, and therefore its application may lead to deterioration of relationship between the employer and contractor. As a component of judicial evaluation model, ligation has been described by some scholars as capable of rendering impartial resolution of disputes grounded in law (Omoto and Toshihiko, 2011). It has also been argued that cost and time of resolving contractual dispute under evaluation by litigation vary with local and international jurisprudence (Chern and Cyril, 2014).

1.1.2.2 Alternative Dispute Resolution (ADR) Mechanism

Alternative Dispute Resolution (ADR) mechanism is the other component of judicial evaluation model and the second independent variable of this study. The term 'Alternative' in Alternative Dispute Resolution is used to depict 'alternative to litigation'. ADR mechanism presents several forms including arbitration, adjudication and mediation. Others forms of ADR are conciliation and dispute review boards. It offers various options to choose from to resolve contractual disputes. Road construction project experts (Bekele, 2005) argue that most of the ADR approaches offer inclusivity for disputants to participate and arrive at their own solutions which are more acceptable than solutions imposed by litigation. ADR is viewed to protect relationship between employers and contractors by favouring a win-win situation. ADR may also take less time and expenses. However, a number of ADR approaches are not enforceable by law and therefore must explore the good will of the disputants to implement resolutions.

The components of ADR (Arbitration, Adjudication and Mediation) are in themselves differentiated based on whether the model empowers the disputants to arrive at their own solutions (Gillion, Fredric and Fenwick, 2011) or whether decisions are guided or suggested by third parties (Bekele, 2005). They are also differentiated based on the influence they have on resolution contractual disputes.

1.1.3 Business Strategy

This is the intervening/mediating variable of the study. Business strategy is a long-term plan designed to achieve objectives and goals (Cheung, 1999). According to Robinson and John

(2011), client retention and cost minimization/profit maximization are often long-term plans that ensure survival of the business. When disputes are imminent in a road construction project, business strategy intervenes in choosing component(s) of judicial evaluation model to deploy for resolution of a contractual disputes based on the process and the desired outcome of the dispute resolution by that component. Parties tend to go for non-adversarial options of the model which preserve good business relationship and good will for client retention (Rogers, 2000). JEM components which are deemed costly may be avoided as businesses seek cost minimization/profit maximization.

1.1.4 Contract Operational Environment

Contract operational environment is the moderating variable of the relationship between independent and dependent variable. It consists of external factors that confound the choice of judicial evaluation model in its entirety or its components to be applied in resolution of contractual dispute in road construction projects. Some forms of road construction contracts may not provide for certain evaluation models or may define a hierarchy/precedence of application of the components of judicial evaluation model. Construction contracts operate under a legal framework of the country where the development is being done (Gramberg and Teacher, 2005). A country's legal system is normally supreme and above all other instruments of engagements. Some legal systems may compel some contractual disputes to be solved by other evaluations models outside the judicial model family, for example, expert judgment. Alternatively, the legal framework may prefer one variant of judicial evaluation model to the other; for example, many jurisdictions have institutes of arbitration to provide evaluation solutions outside the formal courts. Type of contract in construction industry for example, the FIDIC forms, the European Union (EU) forms, and the World Bank forms have different preferences on how contractual disputes should be evaluated and resolved (Rajiv, 2010) and as such, may prescribe a preference of a model or a variant of the model.

1.1.5 Contractual Disputes in Road Construction Projects in Kenya

Several cases of contractual disputes in the road construction sub-sector have been documented. Sinohydro (2015) evaluation report details a dispute between Sinohydro Corporation (Contractor) and Kenya Airports Authority (Employer) over the Construction of Kenya Airport

Roads, Runways and Cargo Apron. This dispute was related to the Employer's failure to give specific instruction for the Contractor to proceed with Phase II of the contracted works. The Employer's failure caused the Contractor's resources to stay idle thus incurring additional costs. In addition, the Contractor also had entered into subcontracts with other local contractors to execute parts of the works and was likely to lose advance payment he had made to the subcontractors if the Employer did not confirm Phase II of the works. Meanwhile the Employer remained silent on all the Contractor's evaluation reports because Employer's senior officers were all on acting capacity and did not have substantive authority to confirm Phase II of the works. The Contractor declared a dispute whose resolution is still pending to date; year 2017.

The dispute between Kenya Electricity Generating Company (Employer) and Hyundai Toyota Tsusho Consortium (Contractor) recorded in KenGen (2016) project report is another case. In this dispute, the Contractor claimed KSh 4 billion in respect of two projects at Olkaria Geothermal Plant involving plant installation and facility road works. The Claim arose from several delay events which the Contactor asserted to be Employer's Risks. However, the Employer objected to the claim stating that some of the delay events were responsibility of the EPC Contractor while other delays were concurrent and therefore responsibility is sharable. This dispute was referred to a dispute adjudication board to independently evaluate and foster resolution. In general, Kenya records that less than 1% of its annual road construction disputes proceed to court litigation (Rogo. 2008). The low percentage of disputes that proceed to litigation does not necessary mean that there is good relationship between the contractors and the employers in the Kenyan road construction industry. It may be attributable to the slow process of litigation and industrial power game where the Employer can assert a lot of power including blackmailing the contractors with threats of blacklisting contractors who take disputes to courts. In a competitive construction market such as Kenya, such blacklisting destroys the firms' potential for further business particularly with the Government agencies which owns of over 80% of the road infrastructure.

The Kenya National Highway Authority (KeNHA), as the Client (Employer) on behalf of the Kenyan Government of Kenya has several road projects under execution by various contractors. The projects include highway pavement works and highway drainage structures such as bridges,

box culverts, cross and access culverts. According to KeNHa (2015) there are 113 ongoing construction projects for highway road pavements and associated structures countrywide. It is also reported (KeNHa, 2015) that all the projects have disputes of one form or the other, but the disputes differ in both magnitude and severity.

The disputes are about cases of delayed payment by to the contractor by the employer, delay delivery of milestones by the contractor, pending claims for extension of time and/or additional cost, changes in scope of works, unmet quality specifications and several interfaces with other works of the employer. For example, Mombasa-Kwa Jomvu road project has several disputes filed in courts by people affected by the project (PAP) who had encroached into road reserve and are required to relocate or be evicted. The dispute is on whether they should be compensated, the quantum of compensation and validity of the titles some of them hold. Another set of disputes in the project is on the compulsory acquisition of land to support the expansion and dualling of the road. The exercise has been opposed by affected industrial investors sating that compensation regime under compulsory acquisition is not restorative of loses they would incur if relocated. These disputes are delaying the construction works because the site is not wholly available for the contractor. The contractor is therefore suffering idle capacity in equipment and human resource and has submitted to the employer claims for extension of time and additional cost which if not quickly resolve, portends a contractual dispute (Sai and Cas, 2018).

The reports acknowledge that projects disputes lead to delay in delivery, high cost and sometimes protracted legal engagements as parties try to resolve them. In many of the disputes, attempts are made to resolve them on site while several are referred to external evaluators. On site resolution are achieved through expert (engineer)-aided conciliation while those beyond conciliation are referred to dispute adjudication board and arbitration in accordance with provision of the Contract. Rogo (2008), reports that about 5% of these disputes proceed to litigation.

This study addresses how various components of the judicial evaluation model and combinations thereof influence resolution of contractual disputes to bring about the industry-desired results such as timeliness, cost, impartiality, enforceability of resolution of contractual disputes in road

construction projects. The study propositions a hierarchy or precedence in the application of JEM components to achieve desired results based on the degree and the direction of their influence on the industry desired results; from which a criterion for optimization of JEM can be constructed to derive maximum benefits. It is further conceived that there are moderating and intervening/mediating factors that confound the relationship. The moderating factors are external to both the evaluation model and the parties to the contract. These include the type of contract and the legal jurisdiction of the contract collectively referred to as 'contract operational environment'. The intervening/mediating factors arise from within the parties and constitute business strategy comprising client retention and cost minimization/profit maximization. These confounders may influence choice of a component of judicial evaluation model to be used in resolution of contractual disputes in road construction projects. Finally, the study conceptualizes a desirability-based ranking of the components of the model to establish precedence and provide a continuum of application that informs the choice of scale and sequence of use of the components (Francesco, 2008).

1.2. Statement of the Problem

Preference for application of judicial evaluation model or any of its components in resolution of contractual disputes in the road construction sector differs across the globe. Africa, Europe and Asia have different preferences either for evaluation by litigation or evaluation by ADR mechanisms. Even within ADR family (arbitration, adjudication and mediation), the divergent global preferences for their application persist (Gould et al, 2010; Kennedy, 2006; Decanster, 2008; Eversheds, 2005). This is because industry players view the benefits (timeliness, cost, impartiality and enforceability) that accrue from the components of judicial models differently.

The road construction sub-sector in Kenya is not any different; road construction projects use different approaches in resolving contractual disputes ranging from litigation, arbitration, adjudication to mediation. (Rogo, 2008) notes that the dispute that existed in the Kisii-Chemosit Road was decided through protracted court litigation which also issued order that the road could not be retendered until the dispute was resolved. The dispute between the Government of Kenya and Straberg Ltd over contractual issues in Sultan Hamoud- Mtito Andei Road project, were resolved through adjudication and conciliation, whereas in Ndori-Owimbi – Lwanda Kotieno Road project, the dispute that pitied Put Sarayevo Ltd against the Kenyan Government was

resolved by Arbitration. Other examples where disputes have occurred in the construction industry in Kenya include the Sondu-Miriu Hydropower Project (Project Advisory International Inc, 2003) which was resolved by arbitration, and Olkaria Geothermal Project (KenGen, 2016) which was resolved by mediation/conciliation.

The differing preference for the model and its components in resolution of contractual disputes across the globe 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 require standard evaluation model and a method that is understandable among the engaging nations/parties. Furthermore, globalization of commerce coupled with stiff completion in domestic markets cause firms to look for new frontier regionally and overseas (Gramberg and Teacher, 2005) 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 has been identified as key pillar of economic growth which now attracts huge financial investment by the Government and the private ventures. Without the standardization, it is difficult to evaluate and resolve disputes because various stakeholders in the industry adopt or subscribe to various evaluation methods that suit their partisan interest at the disadvantage of others. This undermines the contractual equilibrium and fairness between parties which supports the success of road construction projects.

Construction industry prefers a dispute evaluation model or a component which resolves disputes in timely manner with least costs. The evaluation model should also offer impartial and enforceable resolution. However, judicial evaluation model does not offer all these characteristics in one component. Therefore, a decision must be made on which characteristics are desired for a dispute resolution and which component of judicial evolution model is applicable in pursuit of the characteristics. Alternatively, there should be a definite

precedence/order in the application of the model which incrementally achieves the desired characteristics. This precedence/order is lucking, and the road construction sector continues to address disputes in haphazard manner (Murali and Soon, 2006; Faridi and Sayeges, 2006; Enhassi *et al*, 2007; Iyer and Jha, 2005) which leads to even bigger losses in time, money and commercial relationships in the project.

In the local scene, road construction projects have been awarded to foreign contractors from China and Europe whose perceptions of and approaches to resolving contractual disputes are discordant among themselves (Elyamany et al 2007; Okuwoga, 1998; Fringpong et al, 2003; Samson and Lema, 2005; Ugwu and Haupt, 2007) and with the Kenyan perceptions and approaches. Such discordance may lead to delays in completion and increased costs that deny Kenyans the desired utility of the projects (Okeyo, Rambo and Odundo, 2011).

This study seeks to solve this problem by measuring the influence of each component of judicial evaluation model on resolution of contractual disputes in road construction projects and proposing standards in application of the model in terms of hierarchy/order of using the components together with benefits which each component brings in dispute resolution process. The influence is measured on time, cost, impartiality, and enforceability of the resolution of contractual disputes and using that information to establish a methodical application of the components of the model in a manner that optimizes commercial and contractual benefits of JEM to its users.

1.3. Purpose of the Study

The purpose of the study was to establish how Judicial Evaluation Model (civil litigation process and alternative dispute resolution) influences resolution of contractual disputes in road construction projects in Kenya. The study was also establishing moderating and intervening influence of contract operational environment and business strategy respectively on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects.

1.4. Objectives of the Study

The study was guided by the following objectives:

i. To establish the extent to which civil litigation process influences resolution of contractual disputes in road construction projects in Kenya.

ii. To assess how Alternative Dispute Resolution mechanism influences resolution of contractual disputes in road construction projects in Kenya

iii. To examine how judicial evaluation model influences resolution of contractual disputes in road construction projects in Kenya.

iv. To establish the mediating influence of business strategy on the relationship between judicial evaluation model and resolution of contractual disputes in road construction project in Kenya.

v. To examine the moderating influence of contract operational environment on the relationship between judicial evaluation model and resolution of contractual disputes in road construction project in Kenya.

1.5. Research Questions

The study sought and answered the following questions:

i. To what extent does civil litigation process influence resolution of contractual disputes in road construction projects in Kenya?

ii. How does Alternative Dispute Resolution mechanism influence resolution of contractual disputes in road construction projects in Kenya?

iii. How does judicial evaluation model influence resolution of contractual disputes in road construction projects in Kenya?

iv. What is the mediating influence of business strategy on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya?

v. What is the moderating influence of contract operational environment on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya?

1.6. Research Hypotheses

The study tested the following null hypotheses:

i. There is no significant relationship between civil litigation process and resolution of contractual disputes in road construction projects in Kenya.

ii. There is no significant relationship between Alternative Dispute Resolution mechanism and resolution of contractual disputes in road construction projects in Kenya.

iii. There is no significant relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya.

iv. There is no significant mediating effect of business strategy on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya

v. There is no significant moderating effect of contract operational environment on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya.

1.7. Significance of the Study

This study is undertaken to establish the influence of various components of judicial evaluation model on resolution of contractual disputes in road construction projects and in turn come up with a ranking index and optimization for their application.

It is hoped that the findings of the study will be useful to construction project managers and contracting parties in choosing components of the judicial evaluation model that would maximize the desired outcome of contractual disputes. It is also hoped that the ranking established will help the road construction industry to standardize the use of judicial evaluation model in the resolution of contractual disputes particularly in the light of globalization and foreign investment in the road sector.

Given the huge financial resources that go into dispute resolution in construction industry in general and road construction projects by way of preparation of submission and fees to

evaluators and lawyers, it is significant that projects disputants target components of judicial evaluation models that give high and positive influence on timeliness, cost-effectiveness, impartiality, and speed of dispute resolution. It is hoped that the findings of this study will generate accurate metrics of influences of the judicial evaluation model on resolution of contractual disputes that can be used to construct an optimized model which is crucial in making commercial decisions.

1.8. Basic Assumptions of the Study

The study assumed that the opposing interests of the contracting parties (whether the respondent is from the contractor, engineer, or the employer) did not compromise the objectivity of respondents in answering questions in the research instrument. It is also assumed that disputes have either occurred or are likely to occur in the road projects under study.

1.9. Delimitation of the Study

The study is delimited to road construction projects, although contractual disputes can emanate from all types of projects governed by contractual arrangements. The study was carried out on selected classes of roads in Kenya, that is; classes A, B and C managed by the Kenya National Highways Authority (KeNHA). The study was restricted to management level industry players because contractual disputes arise from the contract which is an instrument created by management. Judicial evaluation model is composed of civil litigation process and ADR mechanism. The ADR mechanism has various variants, but this study was delimited to adjudication, arbitration, and mediation. The study used both quantitative and qualitative methodologies for reciprocal analysis of data, which qualifies it to be a mixed model study.

1.10. Limitations of the Study

Some respondents took long to fill in the questionnaires while some did not return the questionnaires. This problem was overcome through constant follow up to achieve sufficient return rate that support the study. The fact that most respondents came from the contractor/employer divide may have caused them to have entrenched contractual biases. This might have skewed the responses. Statistical weighting and calculation of relative importance index and concordance coefficients were used to address this limitation. Since the study is taken

in Kenya, it could be arguable whether the findings could be generalized for the entire industry. However, the study focused into classes A, B and C roads whose construction projects were attracting globalization through international contracting and huge presence of foreign investors from Asia and Europe. The contractual dynamics of road projects in Kenya were therefore typical of the global scene, hence the findings were generalizable on global scale.

1.11. Definition of Significant Terms used in the study

The significant terms used in this study are:

Judicial evaluation model: This is a project evaluation model consisting of civil ligation process and/or alternative dispute resolution (ADR) mechanisms which are the indicators of its measurement. The model is anchored on the maxim that potential for bias by a single evaluator cannot be ruled out (Worthen, 2008), and therefore, each side should have a separate evaluator to make their case. The model seeks to be inclusive and gives opportunity for objective hearing of contractual disputes.

Civil litigation process: A component of judicial evaluation model employing a court process to evaluate and resolve contractual disputes in road construction projects. The process comprises filing of evaluation dispute in a court of law, constitution of a panel/judge for hearing, submission by the disputants during the hearing, determination of dispute and appeal or enforcement of the determination. Scholars and practitioners of project evaluation find civil litigation results to be impartial and enforceable because it is anchored in law. It is however deemed to be expensive, adversarial, and time-consuming process.

Alternative Dispute Resolution (ADR) mechanism: This is a component of judicial evaluation model that evaluates and resolves contractual disputes in road construction projects by approaches other than litigation. It includes arbitration, adjudication, mediation and conciliation which constitute the indicators of measurement. This component of JEM removes legalistic determinism from dispute resolution and encourages a win-win outcome. It has been touted in the construction industry as less adversarial and one that maintains cordial relationship between Employer and the Contractor.

Resolution of Contractual Disputes in Road Construction Projects: this is defined as the process of solving disagreement between the employer and the contractor, both being parties to a road construction contract, over evaluation of project scope, quality, cost or time including administrative issues of the project whose execution and/or evaluation are not apparently agreeable between the parties. The resolution process requires a structured format in which the rights and the entitlements of both parties are guaranteed, respected and protected in a fair manner. Parties to e disputes seek consensus for resolutions that are timely, cost effective, impartial and enforceable. These attributes are the indicators that measure contractual dispute resolution outcome.

Business Strategy: This is a body of factors which are intrinsic to the parties for trade relationship and offers long term survival and profitability in competitive commercial market. Client/Customer retention and cost minimization/profit maximization are strategic approaches which play critical role, as business strategy, in contractual relationship between employer and contractor of road projects. They are the drivers of proximate philosophies and politics that endear the contracting parties to each other at near or total exclusion of other potential competitors. Business strategy often intervenes in the choice of an evaluation model to resolve a contractual dispute in road construction projects as parties pursue relationships that give them competitive edge.

Contract Operational Environment: These are factors which moderate the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects. They may also determine the choice of judicial evaluation model variants. Their indicators of measurements include legal environment of the contract and the type of the contract.

1.12. Organization of the Study

This study is organized in five chapters. Chapter one provides the background of the study, statement of the problem, purpose of the study, objective of the study, research questions, research hypothesis, significance of the study, assumptions, limitation, delimitations of the study, and definition of significant terms used in the study. Chapter two examines general and empirical

literature related to the study and gives thematic presentation of the literature documenting concepts of judicial evaluation model, civil ligation process, alternative dispute resolution mechanism, business strategy and contract operational environment and their relationship with resolution of contractual disputes in road construction projects. Theoretical and conceptual frameworks guiding the study are presented. Knowledge gaps arising from the literature review are also identified. Chapter three describes research methodology that was used to collect, process and analyze data. It includes research paradigm, research design, target population, sample and sampling procedure, research instrument, validity and reliability of the instrument, data collection procedures, data analysis techniques, ethical issues and operationalization of the variables. Chapter four contains data analysis, presentation, interpretation and discussions while in Chapter five, contains summary of findings, conclusion, recommendation, suggestions for further research and contribution of this study to the body of knowledge.

CHAPTER TWO
LITERATURE REVIEW

2.1. Introduction

This Chapter reviews general and empirical literature related to the study. The themes used to review are drawn from the objectives of the study. They include: resolution of contractual disputes in road construction projects, Judicial Evaluation Model, civil litigation process and resolution of contractual disputes in road construction projects, Alternative Dispute Resolution Mechanisms and resolution of contractual disputes in road construction projects, Business Strategy and resolution of contractual disputes in road construction projects, Civil litigation process, ADR and resolution of contractual disputes in road construction projects, theoretical framework, conceptual framework, summary of literature and knowledge gaps.

2.2. Resolution of Contractual Disputes in Road Construction Projects

Disputes occur in construction projects. The genesis of disputes is generally non-performance of contractual responsibilities and obligations contracted between the Employer and the Contractor (Thomas, 2004). The Contractor may fail to deliver the project in time, in quality or in scope as contracted. Often contractors blames Employers for impeding them from fulfilling responsibilities and obligation, for example, according to Ezeokoli, Ogochukwa, Ilozulike and Agu (2004), contractors have blamed the employers for failure of or delay in honouring interim payments which results into weak cash flow that can not support progress of works, quality and scope of the project. Lack of access to site by contractor as a result of employer failing to compensate persons affected by projects (PAPs) is another reason that has been documented by contractors to impede performance. Chan and Suen (2005) state that some contractors have blamed the employers for poor designs that leads to numerous variations.

In turn, the employers blame the contractors for slow mobilization of construction resources, poor quality control protocols, incompetent staff, poor working methods and unreasonable claims (Mario and Mario, 2018). The claims are deemed exaggerated to give the contractor avenues for additional payments beyond the contracted cost of the works.

The protracted accusations and counter accusations result into contractual disputes which if not resolved in time, may aggravate the work relations, delay in project delivery or termination of the contracts/project. Dispute resolution process should also take cognizance of the cost of resolution in terms of preparation, referral to third parties (adjudicators, arbitrators or mediators or courts), hiring of evaluators, lawyers, and experts. Impartiality of third parties in a cardinal requirement of dispute resolution process. The adjudicators, arbitrators, mediators, and judges should have no biases towards any side of the dispute. They should guide the process and render resolution fairly based on the evidences and facts around the disputes (Ezeokoli *et al*, 2004). Enforceability of disputes resolution has become important because parties must implement the decisions, awards or consensus arrived at during dispute resolutions. Road construction projects have deployed several dispute resolution methods, including expert's decision, project auditing (objective oriented model) and judicial evaluation model, among others. Of these options, judicial evaluation model has gained grounds in resolution of contractual disputes because it is robust and offers a range variants/options for dispute resolution; from conciliation, mediation, adjudication, arbitration to litigation (Mario and Mario, 2018).

From the foregoing, it is pertinent that resolution of contractual disputes in road constructions projects should be conducted in a manner that allows the projects to be implemented within time specifications so that the stakeholders are not denied time utility of the project. Resolution of dispute should be sensitive to cost such that the process should not only be short but also affordable and within the project budget to avoid cost over-runs that would constrain cashflow into the actual work. The evaluators of dispute and the process of dispute resolution itself should be impartial to inspire confidence from both sides of the dispute, that their respective positions are being taken into consideration towards the eventual decision, awards, or agreements. The outcomes should be enforceable to avoid defaults by parties on what has been decided/agreed/awarded and to ensure that entitlements of parties are also protected. However, Marra, Martinez and Galloway (2012) observe that speed and cost of resolving contractual disputes is a function of the nature of the dispute, its complexity and good will of the parties. A dispute about a procedural matter in the contract may be faster and less costly to solve than a dispute about a technical matter that requires experts' opinions, site visits and verifications.

Furthermore, where there is good will/relationship between the parties, resolutions are fast and within reasonable cost.

2.3. Concept of Judicial Evaluation Model

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) 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, 2010). 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 (Nyandemo and Kongere, 2010). 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).

Nyonje, Ndunge and Mulwa (2012) states that Judicial (judgmental) or adversary-oriented evaluation model is based on the judicial metaphor. Further, Gore (2013) is definitive that judicial metaphor are instruments through which, judges hand down judicial decisions by rational discourse and literal language while Jackson (2007) advances a technical explanation that in cognitive science, metaphors are not just rhetorical flourishes and ornaments used to embellish discourse; as language determines how we see reality; and metaphors in particular affect our perceptions and understanding of phenomena around us. Not only is metaphor pervasive in language, but metaphor cannot be separated from language or from the cognitive processes that create language. Metaphor thus both reflects and affects our thought processes regarding that which we endeavor to describe (Cole, 2002). Judicial evaluation model employs the power of language to describe and create metal picture or simulations that appeal to the

opposing parties to recognize their similarities and differences thus fostering concurrence over a disputed or conflicting evaluation.

Further to foregoing theories underscoring the nexus between the metaphors and judicial evaluation, Alkin and Christie (2004), sees the ontological dimension of adversary (judicial) approach as one which reflects a valuing orientation. The approach developed in response to the dominant objectifying approaches in policy evaluation and is based on the notions that: 1) no evaluator can be truly objective, and, 2) no evaluation can be value-free. To this end, the approach makes use of teams of evaluators who present two opposing views (these teams are commonly referred to as adversaries or advocates). These two sides then agree on issues to address, collect data or evidence which forms a common database, and present their arguments. A neutral party is assigned to referee the hearing and is expected to (help parties) arrive at a fair verdict after consideration of all the evidence presented.

In construction projects, the contractual relationship between the parties is reminiscent to Employer-Employee relationship in which the owner of the development is the "Employer" and contractor is the "Employee." Either party becomes de-motivated with the job and the other party when they feel that their inputs are greater than the outputs: the Employer will be discouraged with a project in which he expends more money than the utility he derives from it, while the Contractor will have no motivation with a project in which he utilizes more resources beyond the profit he can accrue. Adam's Equity Theory explains that where such imbalance exists, there occurs disgruntlement, conflict (Abdelghafour and Faisal, 2012) and in extreme cases, disruption of the projects. The judicial evaluation model is thus an adaptation of legal procedures for an evaluative framework aimed at removing perceived imbalances in contractual obligations of the parties towards each other. Unlike legal hearings, the general objective of this approach is not to win per se, but rather to provide a comprehensive understanding of the dispute in question and to maintain the equilibrium required for performance of the contract (Omoto, 2011).

Four stages of judicial evaluation have been proposed by Thurtson (2008), which are: issue generation stage, issue selection stage, preparation of arguments stage, and hearing stage. Popham and Carlson (2013) provide a more detailed description of the hearing stage. They identify characteristics of this aspect of the model to include that; procedural rules must be

flexible; there are no strict rules for the assessment of evidence. The only requirement is that the evaluator must determine beforehand whether evidence is admissible or not; the parties may be asked before the hearing to present all relevant facts, pieces of evidence and names of witnesses/experts to the evaluator; a copy of the complaint must, before the public hearing takes place, be presented to the evaluator and the defense; witnesses are able to speak freely and may be subjected to cross-examination; experts may be summoned for statements before or during the hearing; meetings of all parties involved with the evaluators prior to the public hearing tend to soften the debate and can be conducive to a joint striving to get to the truth of the matter on the basis of relevant facts. Besides the two parties involved, other stakeholders may also be allowed to participate. The foregoing schema by Thurtson (2008), can pass as a standard schema for judicial evaluation model as supported by Popham and Carlson (2013). However, the schema still stands rigid and fits only few typologies of judicial model e.g. litigation.

Several scholars like Bekele (2005) in a study of alternative dispute resolution methods in construction industry in Ethiopia, Osama, Sadi and Naji (2000) in a study of contractual methods for dispute avoidance and resolution in Saudi Arabia, and Mara, Martinez and Galloway(2012) while studying dispute resolution under *Federation Internationale Des Ingenieurs –Counseils* (FIDIC) forms of contracts, give the components of judicial evaluation model as Litigation (Local and International Litigation) and Alternative evaluation Dispute Resolution(ADR) mechanism (Arbitration, Adjudication, Dispute Review Board, Mediation and Conciliation).

2.4. Civil Litigation process and Resolution of Contractual Disputes in Road Construction Projects

Evaluation by Litigation follows a court process approach (Chikati,2009), guided by legal jurisprudence to resolve contentious matters of evaluation. It is characteristically elaborate (Thurtson, 2008), and Popham and Carlson 2013), inquisitorial and adversarial; the disputants initiate legal action against each other by going to the local or international courts. Civil litigation process has several stages; 1) Filling the disputes which involves the disputant filing the case in a court of law. The file details out the contentious evaluation issues and names the respondents to the disputes. 2) The courts thereafter constitute a panel of judge(s) to hear the dispute for resolution/determination. 3) The disputing parties are then invited / summoned to

give submissions for and in defense of the substances of the disputes. 4) The panel examines submissions and issues a binding determination. 5) The last stage is to enforce the determination or the loser to appeal the determination in a higher court. Such appeal would trigger the cycle again.

As a component of judicial evaluation model, ligation has been described by some scholars as capable of rendering impartial resolution of disputes grounded in law (Cheung and Suen, 2002). Impartiality is understood by (Peck and Dalland, 2007) as maintaining equidistance from the parties and having responsibility to ensure that evaluation is fair and free from bias. Proponents of litigation argue that the process is based on scientific logic and objectivity. They also advance that a well executed litigation process, whether in local or international jurisprudence, can be very timely and cost effective (Fenn and O'shea (2014); a preposition which has been challenged by opponents of litigation (Agawal and Owasonoye, 2001; Donald and Fasken, 2003) both of whom agree that over 90% of disputes decided through litigation process are inordinately expensive both in time; because of many stages and process of litigation, and in cost; due to high fees charged by defense teams representing the litigants. The foregoing arguments have led to theorization that evaluation by litigation increases time and cost of resolution of contractual disputes in construction projects while rendering impartial and enforceable decisions. It has also been argued that cost and time of resolving contractual dispute under evaluation by litigation vary with the scale or size of the project and whether the resolution is under local or international jurisprudence (Fenn, Lowe and Speck (1997).

Nevertheless, scholars and practitioners concur that due to high cost, rigidity, publicity, long processes and adversarial relationships, civil litigation process should be used as the last resort upon failure of all other methods (Agarwal and Owasonoye, 2011; Ayudhya, 2001). Litigation is deemed by its proponents as value free and founded on objective truth supported by law and therefore avails justice. Moreover, the courts have capacity for enforcement making the evaluation awards final and binding (Tucker, 2005 and Wayal, 2006). However, Ghada (2012) is of differing opinion that being strongly anchored on evidentiary records, ligation propagates injustice in many cases where truth is non-evidentiary. They see evidence presented by the litigants and their agents as value-bound and not the carrier of the objective truth. Moreover, the

lawyer's role in the adversary system frequently calls for conduct that appears to thwart truthful or just outcomes. Acting as an advisor, the lawyer certainly may, and arguably must, provide his or her client with supporting advice, even when he or she reasonably believes that doing so will cause them to withhold or suppress truthful evidence.

Critics of litigation advocacy contend that lawyers make no contribution to truth (Donald and Fasken, 2003); given the lawyer's freedom or obligation to make partial and even affirmatively misleading evidentiary presentations. Critics argue that lawyer's obligations of zeal and confidentiality require or permit him or her to engage in a host of dubious activities: withholding evidence, even when the resulting record is radically incomplete; presenting documents or testimony that he or she is aware to be false; discrediting through cross-examination even witnesses he or she knows to be truthful; and arguing for inferences from the evidence that he or she knows are unwarranted. Amidst the foregoing attack on the effectiveness of litigations, defenders (Hogan, 2007) still maintain that lawyer-aided adversary fact-finding is more likely, than the alternatives, to produce an accurate decision because it leads to a better evidentiary record. According to this school of thought, existence of a phenomenon is evidential, and both the phenomenon and its evidence embody the truth. This school analyzes lawyer’s advice on the assumption that each party has exclusive access to its own information and that the sole function of lawyers is to assist parties in selecting which information to present for hearing so that the dispute at hand is resolved in an objective and non-partisan manner.

From the ensuing divergent opinions among scholars of litigation, it is unanimous that civil litigation process is anchored in the law and therefore resolutions reached through this process are enforceable. However, the process is both public and protracted due to argumenst and cross examinations by lawyers which makes it portent of destroying business relationship. Wimalachndra(2007) agrees that time and cost of resolving contraction disputes by civil litigation process vary with the complexity of the disputes. But it is also evident from these arguments that impartiality of the civil litigation process depends on the integrity of the individual judges and the value a judge may attach to the course of dispensing justice objectively. Lawyers representing the two sides are inherently biased to whichever side they represent and are a threat to the very impartiality that the process seeks to achieve. The strength

of civil litigation process is drawn from the legal system and this makes it a suitable last resort of dispute resolution to promote and restore order in compliance with contractual obligations.

2.5. Alternative Dispute Resolution mechanism and Resolution of Contractual Disputes in Road Construction Projects

The debate on the suitability and effectiveness of litigation in evaluating disputes has resulted into alternative view that forms a body of theory and framework called Alternative Dispute Resolution (ADR) mechanism. ADR mechanism encompasses all methods of resolving contractual disputes other than by litigation (Muralli and Soon, 2006), Sweis, Sweis, Hammad and Shboul (2007) have stated that the emergence of ADR mechanism is a response to the perceived negative influence of evaluation by litigation on resolution of contractual disputes in construction projects. This has brought up a proposition which is a corollary to the theorization on evaluation by litigation that: evaluation by ADR mechanism reduces time and cost of resolving contractual disputes while rendering partial and unenforceable decisions towards resolution of contractual disputes (Flake and Perin, 2003). There seems to be a concurrence among scholars of ADR that partiality does not necessarily mean negative influence but rather an acceptable philosophy of value-bound evaluation (Uher and Brand, 2005) and consensus building among the parties who accept that a win-win model is not necessarily a 50:50 outcome. They further converge that this philosophy, if acceptable by the parties, neither depends on nor requires to be enforced by the law (Kumaraswami, 1997).

The components of ADR (Arbitration, Adjudication and Mediation) are in themselves differentiated on the basis of whether the model empowers the disputants to arrive at their own solutions (Love, Davis, Jefferies, Ward and Chesworth, 2007) or whether decisions are guided or suggested by third parties (Bekele, 2005). They are also differentiated on the basis of the influence they have on resolution contractual disputes. It has been observed that ADR components offer various desirable influences in a continuum or combination that the industry can exploit to optimize dispute resolution process leading to proposition that influence of evaluation by ADR mechanism on resolution of contractual disputes differ but can be ranked in a continuum that optimizes resolutions of disputes (Waddikkara, 2003; Madden, 2001).

Glenn (2009) views ADR process as more effective, more efficient, less costly and timelier than the standard process through courts. He argues that parties in construction projects desire resolution of disputes in timely and efficient manner, which are considerably met by use of ADR mechanisms. Proponents of litigation also accept that ADR mechanisms have a place in resolving contentious issues in evaluation but as a precursor rather than substitute of litigation (Glenn, 2009; Bekele, 2005; and Hichey, 2012). It is generally agreed across the protagonists of Litigation and ADR theories that due to non-binding nature of ADR, courts may be asked to review the validity of ADR methods and outcomes, but Chan and Suen (2005) observe that courts will rarely overturn ADR decisions and awards if the disputing parties formed a valid contract to abide by the decisions.

The common them across the litigation/ADR mechanism divide is pointing to need for scholars and practitioners of evaluation to explore the complementarity of Litigation and ADR alongside the proposition that the former reinforces the latter in resolution of disputes. In deed Hichey (2012) finds no need to dichotomize litigation and ADR; he sees ADR as having resolved some of the weakness of litigation such as adversarial relationships, lack of confidentiality, high cost and long time of evaluation while litigation has remained relevant in ensuring that dispute resolutions under ADR become enforceable, particularly when disputants appeal against decisions.

The variability in nature of conducting ADR has resulted into identification of sub-typologies which include arbitration, adjudication, and mediation as major approaches; others are conciliation and dispute avoidance/review boards. The concept of arbitration has evolved to remove legal jurisprudence associated with litigation. Bekele (2005) conceptualizes arbitration as settlement of dispute by decision not of a court of law but of one or more persons chosen by the disputants or assigned under the contract to be the Arbitrator thus acting as a judge. The arbitral award is binding and can be enforced by courts. Ogunbayo (2003) on the other hand describes arbitration as a dispute resolution system in which parties make presentation to mutually agreed neutral party and commits themselves to abide by that person's decision recognizing it as final and binding. (Glenn, 2009) states that the jurisdiction of arbitrator arises from the intention of the parties in the arbitration agreement and /or arbitration statute. The intention of the parties

on the other hand, is determined through the signing arbitration agreement or the provisions of the contract between the parties if one exists. Overtime, arbitration has grown into a discipline governed by arbitration laws and procedural rules. Countries have developed their own arbitration institutes and statutes that regulate and govern the practice. The problem of this development as recognized by Chan and Suen (2005) is that of adapting the arbitration laws in various nations throughout the world to conform to an increasing global economic market across differing legal jurisprudences and jurisdictions. It can therefore be concluded that whereas, legal systems recognize arbitration as feasible alternative method of resolving contractual disputes, the enforceability of the outcome is not uniform across jurisdictions because of different legal philosophies(jurisprudence) across the world.

Scholars of ADR have advanced a blanket claim that ADR mechanisms including arbitration are faster and less expensive than litigation. However, concerns have emerged that arbitration is becoming increasingly expensive and complex (Roebuck, O'Reilly, Blanke, Brown, Dundas, Herved and Tamara, 2009). They see the assumption that arbitration is more effective than litigation as purely theoretical. This category of scholars is however more pragmatic in advancing the proposition that arbitration has potential to be time and cost efficient. Agawal and Owasonoye (2001) while presenting findings of a research commissioned by United Nations Institute of Training and Research; (UNITAR) demonstrate that arbitration is potent with flexibility which is in-built in the procedure unlike litigation. This flexibility enables the creation of tailor-maid procedures fitted, to the greatest extent possible, to the needs of a given case and parties and therefore affords value and context to the evaluation process making it less confrontational and less adversarial.

Adjudication is an ADR process which is quite similar to arbitration in that they are both governed by statutes and procedural rules. However, the time frame for adjudication is much shorter than arbitration. Adjudication is a short-term type of evaluation of dispute used extensively in the construction industry, which allows party access to an 'adjudicator' who hears the outline arguments of both sides and makes a fast decision to allow both parties to advance quickly with their project. The scope of Dispute Adjudication Boards (DAB), which has been strictly to adjudicate disputes referred to it, has changed overtime to include dispute avoidance,

and they have become to be known as Dispute Avoidance and Adjudication Boards(DAAB) with proactive mandate to minimize disputes (FIDIC, 2017). According to Maiketso and Maritz (2012) adjudication and arbitration are similar concepts because both operate outside the usual legal system. They also share several important characteristics; principle among them is that both can only be used through the agreement of both parties. As they require using a system outside the normal court system, both parties to a dispute must agree to use an alternative form of dispute resolution. Both arbitration and adjudication are confidential, allowing parties to a dispute to air their grievance outside the public eye thus protecting the reputations of both parties. Whereas the decisions of arbitration and adjudication are binding, and in most circumstances are enforceable in law, it is worth noting that the decision of an adjudicator is perhaps less binding and may be more easily challenged in court. Adjudication in construction disputes also requires that a decision be made within 28 days and that parties to a construction contract are not allowed to contract out of or using adjudication. In UK, for adjudication to apply, contracts before 1 October 2011 must have been made in writing (Roebuck *et al*, 2009).

The concept or adjudication has been expanded, in cases where arbitration itself is deemed undesirable, to institute had hoc derivative of arbitration called Dispute Resolution Board. DRB is distinguished from arbitration by the fact that the former shall always consist of three members unlike the sole or more arbitrator(s) found in the latter (Agawal and Owasonoye, 2001). Secondly, both the Employer and the Contractor (contracting parties) have a right to nominate one member each to DRB but the nominee of one party must be approved by the other party. The two nominees then agree on the third member of the board who becomes the chairman after approval of the parties. All the nominees must sign Declaration of Acceptance before they can start evaluation process. This process ensures that the board is constituted by both parties to the contract and with their mutual consent. The approvals at every stage are purposed to inspire faith and confidence of the parties on the DRB itself and on its recommendations.

Another distinguishing feature is that all the procedures of DRB are time bound as prescribed in the contract. FIDIC (2006) explains that DRB has powers only to make recommendations to the parties and the recommendations have the binding force unless/until they are appealed. The parties have the liberty to disagree with the recommendation of the board and seek remedy in

arbitration. If either party does not express disagreement within 14 days of receipt of recommendations, they become final and binding on the parties to the agreement. DRB are not secret or confidential and there are provisions that the recommendations of the board shall be admissible as evidence in any subsequent judicial or legal proceedings e.g. arbitration or litigation. Another distinguishing feature of DRB from arbitration outlined by Chan and Chan (2004) is that no country in the world has legal framework for DRB. It is also not administered by any international or national institution. The DRB is ad hoc and purely a contract institution and therefore the agreement must be as comprehensive as possible to stand as an independent framework of evaluation and resolution of contractual disputes.

From the foregoing, the contrast between arbitration and adjudication lies in the time of resolving dispute which on a comparative scale, is shorter in adjudication than in arbitration. Another contrasting feature is the formation of adjudication board compared to constituting an arbitration panel. Adjudication board membership is appointed and agreed upon by the disputing parties which gives the parties equal and adequate control of the dispute process, while arbitration panel is constituted by the institution of arbitration in accordance with the applicable laws/procedures without involvement of the parties (Coggins, 2011). This distinction is import as it helps parties to evaluated how fast and the level control, they prefer in a dispute process and hence make relevant choice of resolution mechanism. Control of both parties is important to dispute resolution process and is higher when the arbiters of the dispute are agreed between the disputants, as in adjudication, than when he/she is imposed by a third party, as in arbitration.

The underlying philosophy of mediation is that the parties have bargaining power and that the continuing relationship is essential after dispute. Mediation is therefore seen to be driven by actions of good faith when the parties are ready to discuss disputes with openness and honesty. Duff and Bennet (2010) states that in mediation, the mediator controls the process while the parties control the outcome. The mediator does not impose a decision on the parties. It could be said that mediation upholds confidentiality while exploring good faith and trust. The deliberations of mediation are not admissible in subsequent proceedings because they are confidential and without prejudice. Coggins (2011) agrees that usually in disputes, there are varying degrees of interest that call for a trade off in a creative manner which a legal court may

not consider. Mediation theorists (Duff and Bennet, 2010) believe that mediation affords parties opportunity to generate creative solutions to their dispute in a manner that focuses on the future and not the past. Mediation thus could be a long or a short process but most importantly, the resolution of conflict is more agreeable, more stable and preserves the relationship between the disputants. The mediator is agreed upon by the parties as someone independent and impartial and with moral grounds to mediate. It is often necessary for the mediator to meet with parties separately in confidential caucuses to assess position, identify real interest, consider alternatives, or help generate solutions. Several sessions may be held before solution is reached.

Conciliation has been defined by Agawal and Owasonoye (2001) as a mechanism used to discover whether there is room for parties in the dispute to make up. A third party, the conciliator is appointed who discusses the disputes with the parties and then prepares a solution based on what he or she as conciliator considers being a just compromise (Sweis *et al*, 2007). The solution presented to the parties is reviewed with all relevant documents after which the conciliator meets with the parties separately for oral presentation of their cases (Coggins, 2011). The conciliator may consult the parties privately as often as necessary to reach a solution. The conciliator tries to satisfy both parties. In doing so he or she looks for a consensus while not dictating solution to the parties; nevertheless, crafts one for them. The conciliator may thus be regarded as a designer of solution unlike in mediation where parties are guided to design their own solution. Conciliation proceedings are secret and confidential and cannot be disclosed in any legal or judicial proceeding between parties. The theoretical concepts and functional distinctions of various variants of the judicial evaluation model (mediation, adjudication, arbitration, and litigation) are summarized in Appendix 1.

2.6. Business Strategy and Resolution of Contractual Disputes in Road Projects

Business strategy is a set of processes investors use to identify, acquire, and nurture/retain clients and business opportunities to drive growth and profitability (Iyer and Jha, 2005). It is the creation of long-term value for an organization from customers, markets, and relationships. In a highly competitive commercial environment, people are keen in preservation of business relationships by employing business strategies of survival against their market competitors. Client/Customer retention and cost minimization/profit maximization are strategic measures in

business environment. Rather than allowing valuable relationships to be destroyed by disputes and lose clients/customers, Alaknanda and Pimplikar, (2012) argue that business people seek to resolve their differences and build upon their common grounds; improve business alliance by identifying the benefits, responsibilities, and interests of partners. Angus and Robert (2007) have identified some of the disputes in business that require strategic intervention as those related to payment terms, letter of guarantee, documentation error, and contract drafting. In construction industry, the official relationship between the Contractor and the Employer is defined by the construction contract. However, beyond this contract, there is non-formal and non-contractual, but perhaps the more important relationship that defines strategic behavior of the parties (Dancaster, 2008). The employer is interested in working with a contractor who understands the commercial dynamics (Ahmed, Castillo, Kappangantula, 2007) beyond what is written in the contract. For example, the contract may provide for interest on delayed payments charged every day later than the due date for payment. In fact, many contracts allow the contractor to suspend works due to prolonged non-payment. However, the Employer expects the contractor to be realistic to the dynamics that result into such delayed payments and not rush into invoking suspension clauses just because it is his right under the contract (Gmmell and Entwistle, 2010). On the other hand, Gaustkil (2007) recognizes that commercial competition among the contractors is very stiff. Whereas this has left the contractors rather desperate to preserve business relationships in order to stay afloat, the Employer's position has become stronger because he has many contractors to choose from, most of whom are able and willing to work with him. This scenario affects evaluation of contractual disputes and puts the Employer's influence higher than the Contractor's.

Alongside the preservation of clients/customers, cost minimization strategy by the parties may accelerate the decision-making process and even the choice of dispute resolution model. Cost minimization and customer retention strategies often influence parties' willingness to conclude the disputes amicably using less adversarial models thus help in keeping business relationship (Hill and Wall, 2008). It can therefore be advanced those business strategies by construction firms influence the choice of judicial evaluation model option for resolution of contractual disputes. Because of strategic reasons (Angus and Robert, 2007) explain that business prefer resolution of dispute by ADR mechanism, not just because of speed and cost but also the fact

that it offers less formal and simplified form if dispute resolution in which parties can negotiate and achieve a more flexible and creative decision. As much as parties tend to ignore the possibility of disputes when beginning a business endavour, disputes often arise. Contracts that include choices for dispute resolution methods can salvage business relationship which parties have worked so hard to cultivate. In comparison to litigation, (Dancaster, 2008) states that ADR mechanism is frequently a much cheaper way to resolve business disputes, it is faster and achieves more creative settlement.

From the foregoing literature, there seems to be concurrence among business scholars that good relationship is a strategic factor for business growth. This important relationship is however threatened by inherent disputes. Business people are awake to this fact and seek creative ways of resolving disputes, which ADR offers arrange of such ways than litigation which happens in public environment with no confidentiality and with potential acrimony. Gautskil, (2007) further adds that most dispute arise from misunderstanding of contract terms, and the key to minimizing complications is to draft arbitration agreement at the onset of negotiation, before conflicts arise.

2.7. Contract Operational Environment and Resolution of Contractual Disputes in Road Construction Projects

There are external factors that may affect the functioning of judicial evaluation model (Mulwa, 2008). Construction contracts operate under a legal framework of the country where the development is being done (Gramberg and Teacher, 2005). A country's legal system is normally supreme and above all other instruments of engagements. Legal systems may compel some contractual disputes to be resolved by other evaluations models outside the judicial model family, for example, expert judgment. Alternatively, the legal framework may prefer one variant/component of judicial evaluation model to the others. For example, many jurisdictions have institutes of arbitration which provide evaluation solutions outside the formal courts (Kodagoda, 2008). This leads to conceptualization that the legal context of the contract influences the choice and operation of judicial evaluation model and its influence on resolution of contractual disputes.

Illankoon, Tam, Khoa and Ranadewa (2019) explain that legal jurisdictions are not always prescriptive of dispute process or methods if the processes/methods are in themselves moral and legal. In this regard dispute resolution process is deemed not legal if intimidation, coercion, and threats abound. The processes are expected to observe the cardinal principles of fairness, equity and respect for morals and law. The function of applicable law is therefore deemed to provide a reliable environment for any method of dispute resolution including litigation. The law is seen to be an enabler rather than a player in dispute resolution processes.

International treaties and protocols that regulate the use and exploitation of natural resources that are shared across nations can cause disputes and at the same time influence resolution of disputes (Acharya, Lee and Im, 2006). An example is the case of Nile dispute where Ethiopia's construction of a US $4 billion 6,000 megawatts Grand Renaissance Dam on the Blue Nile River in causing disquiet in the region. Whereas Ethiopia's position remains that the development will avail electric power to 65 million Ethiopians who lack regular power, Egypt and Sudan which are downstream, fear that the dam will greatly reduce their access to water. Egypt and Sudan have therefore accused Ethiopia of violation of Nile Treaty of 1902 with its amendments in the years 1929, 1959 and 2015 on the use of the shared resource. Mediation attempts, as defined in the treaty, headed by the African Union and United States of America have not yielded resolution yet (Al- Monitor, 2020) and Egypt has maintained that future negotiations would focus on developing a binding legal agreement on the rules for filling and operating the dam. This conflict is now a threat to diplomatic relationship among the three states and to peace in the region.

It evident in the Nile Basin conflict that the treaty preferred mediation to be the method of dispute resolution. However, some stakeholders have developed the view that mediation is not strong and binding and therefore lacks enforceability to stop Ethiopia from aggressing stakeholders of the Nile Basin. They are now seeking a binding legal engagement that can protect the downstream stake from activities of Ethiopia along the River Nile. The treaty being a contract among stakeholders preferred mediation but with time, but with time, the stakeholders are now championing for litigation as a better and reliable method.

In addition to legal environment, construction contract formation follows several standard forms often referred to as 'types of contracts' (Emre and Pinar, 2014). The formations are designed for various Employer-Contractor engagement models such as Re-measurement contracts, Design-built Contracts, Engineer, Procure and Construct (EPC) contracts, Public Private Partnerships (PPP) among others (SKM Advisors, 2017). Prasanna (2008) explains that these engagements call for appropriate forms of contracts. The contracts include the FIDIC forms, the European Union (EU) forms, and the World Bank forms among many. The forms of contract have different preferences on how contractual disputes should be evaluated and resolved (Medden, 2001) and as such, may prescribe a preferred evaluation model or a variant of the same.

It has been observed that in Europe, the forms of contracts prefer adjudication, arbitration and litigation deployed in that order to resolve contractual disputes. in the eastern world (Far East and South-East Asia), the practice is to explore mediation and conciliation for dispute resolution while in the middle east, mediation premised on religious norms (Islam) is prevalent in dispute management. Noushad (2006) opines that external environment is a key factor in the choice of dispute resolution approach because it defines, within the contract, the first response parties adopt towards solving a dispute. The most common immediate responses are adjudication and arbitration. However, construction industry is increasingly becoming cognizant of the mediation and conciliation as important amicable settlement solutions.

2.8. Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

Civil litigation process and ADR mechanism are the two components of judicial evaluation model. Whereas the two components of JEM can be independently applied in the resolution of contractual disputes, a proposition (Omar, 2007) has been advanced to use their combination for better results. A correlation study of the influence of various components of judicial evaluation model on resolving contractual disputes provides statistics which can be used for optimization of the application of the model. Resolution of contractual disputes is understood to be partial function of Litigation and ADR mechanism (Peck and Dalland, 2007) as supported by the theory of complementarity put forward by Glenn (2009) and Hichey (2012). Complementarity is an

element which makes it possible to cope with the incompleteness and difference among independent functional components.

A linear regression of resolution of contractual dispute on civil litigation process and ADR mechanism can provide adequate optimization criterion (Seifert, 2005) for application of judicial evaluation model. The following form of multiple regression model can be used for optimization:

$$Y = A+\boldsymbol{\beta}X +\boldsymbol{\alpha}Z + \xi,$$

where:
Y is outcome of the resolution of contractual dispute (dependent variable),
X is influence of evaluation by civil litigation process on resolution of disputes (first independent variable),
Z is the influence of evaluation by ADR mechanism on resolution of disputes 9 second independent variable),
β and **α** are partial regression co-efficient of X and Z respectively,
A is the intercept of regression plane on y-axis and
ξ is the model error)

Regression is a predictive model of outcome of resolution of contractual disputes through civil litigation process or ADR mechanism or combination of both civil litigation and ADR mechanisms. The model is capable of supporting decisions (Ling, 2014) on the method of dispute resolution (civil litigation process or ADR mechanism) to deploy in resolving contractual disputes dispute. Regression also helps in establishing relationships and hypothesis testing (Kayongo, Certo and Launcelot, 2006) and therefore can correct errors and give new insights in the efficiency of dispute resolution process.

Influence of civil litigation process and ADR mechanism on resolution of contractual dispute may be positive or negative. A positive relationship means affordable cost and speedy resolution of disputes contractual disputes. it supports impartiality and enforceability of the process and out come of dispute resolution. On the other hand, a negative relationship means high cost and slow

process, lacking impartiality, and enforceability. Seifert, (2005) supports that the strength of relationship is a measure of the extent of negative or positive influence measured in percentage scale of 0% to 100% ($0\% \leq x \leq 100\%$) of ratio scale 0 to 1 ($0 \leq x \leq 1$). Relationship above 50% or 0.5 is deemed strong.

The regression model of resolution of contractual disputes on judicial evaluation model may vary due to other factors that confound the relationship. The confounders may have mediating or moderating influence on the relationship. The mediating factors come from within the relationship and includes business strategy for client retention and profit maximization. The moderating factors come from the environment such as the applicable law under which the construction contract is transacted and the form of contract administering the construction.

2.9. Judicial Evaluation Model, Business strategy Contract Operational Environment, and Resolution of Contractual Disputes in Road Construction Projects

The outcome of a contractual dispute resolution depends on the interplay of several variables. The ideal environment is where the variables act independently with mutual exclusivity (Abeyaratne, 2006). However, in real world the variables act inclusively to bring about industry and disputants' satisfaction with the cost of the disputes, time taken to reach resolution, impartiality of the dispute resolution process and enforceability of the outcome. Whereas both civil litigation process and ADR mechanism have independent ability to resolve contractual disputes, the need to satisfy the disputants often calls for a combination of both in some methodical approach (Wimalachndra, 2007). This combination is generally a linear one, but other variables often confound the relationship. The confounders are conceived to be the intervening/mediating influence of business strategy (Tea, 2008; that is, customer retention and profit maximization, and the moderating influence of the contract operational environment (Kunwar, Singh and Nyandemo, 2007) which includes legal framework and types/form of contracts used in the road construction projects.

2.10. Theoretical Framework

This section presents theoretical formulations explain the influence of judicial evaluation model on resolution of contractual disputes in road construction projects. The main theory on which

study is anchored is the Theory of Justice propounded by Harvard philosopher John Rawls (1921-2002) in 1971 and revised in 1975 and 1999. In the theory of justice, Rawls attempts to solve the problem of distributive justice and fairness from which he derives his two principles of justice: the liberty principle and the difference principle. According to (Arthur, 2011), the theory of justice draws significant support from Dual Concern Theory which states that in conflict resolutions individuals vary on a scale from meeting one's own goal to concern for others, and finally, to maintaining healthy relationship. The study is also guided by rational choice theory that seeks to make choices that produces maximum benefits in terms of timeliness, cost, impartiality, and enforceability of resolutions reached through judicial evaluation model.

2.10.1. Theory of Justice

The proponent of this theory was John Rawls in 1971. The theory assumes that each person has equal right to the most extensive basic liberty compatible with similar liberty for others. According to Rawls, justice is what free and equal persons would agree to as basic terms of social cooperation in conditions that are fair for this purpose. Rawls favours what he calls "lexical priority rankings." If one value has lexical priority over another, the first one trumps the second. That we should do everything we can to achieve the top-ranked value to the greatest degree possible and devote resources to achieving the lower-ranked value only when doing so does not lessen even in the slightest degree the extent to which we achieve the top-ranked value.

This theory underpinned the first and the second objectives of the study about how judicial evaluation model's attempts to resolve contractual dispute in road construction projects. Both civil litigation process and ADR mechanisms affords disputants (contractor and the employer) equal rights and liberty to present their cases before evaluators who are expected to be fair and impartial as they exercise the duties of evaluation in form judgement, adjudication, arbitration and mediation. Whereas the model desires to provide timeliness, cost effectiveness, impartiality, and enforceability in resolution of contractual disputes, these characteristics of dispute resolution are not achievable at once because any one component of judicial evaluation model does not exhibit all the characteristics. The disputants must make choices based on desirable outcome(priority) characteristics in every dispute. The choice is guided by ranking the desirable characteristics of the model in line the lexical priority ranking, as theorized by Rawls, and

devoting resources to achieve the highly ranked ones before addressing the lowly ranked characteristics.

2.10.2. Dual Concern Theory

The foregoing theory of justice is corroborated by the Dual Concern Theory propounded Blake and Mouton in 1964 and modified by Sorenson, Morse and Savage in 1999. The theory states that dispute resolution requires balancing the concern of meeting one's own goals and the concern for other people and maintaining healthy relationships (Ashworth, 2006). Individuals may vary on the scale between these two concerns, where people will usually use one or more of the following fundamental approaches to conflict management: Competition, Avoidance, Compromise, Accommodation and Collaboration (Gould, 2003).

This theory underpinned the fourth objective of the study that the contractor and the employer have competing interest of profit and utility respectively and this interest inherently cause disputes and skew their approach to dispute resolution. This requires balancing strategy so that a healthy contractual relationship is maintained for the success of the project and long-term business. This balancing ensures that the resolution of a dispute is impartial, and all parties are satisfied and conformable with each other in future business opportunities.

2.10.3. Rational Choice Theory

This theory was propounded by George Homans in 1961. The theory states that individuals always make prudent and logical decisions which provide them with the greatest benefit or satisfaction - given the choices available -and are also in their highest self-interest. That all action is fundamentally 'rational' in character and that people calculate the likely costs and benefits of any action before deciding what to do. According to Levin and Milgrom (2004), this rational choice model is an optimization-based approach.

This theory supports optimization of judicial evaluation model by use of regression analysis. JEM provides options of resolution of contractual disputes for the disputants to choose from. The choice between civil litigation process and ADR mechanism, and the choice withing the ADR mechanism options of adjudication, arbitration and mediation should be prudent and

logical in order to derive maximum benefits with respect to time of resolution of the dispute, cost of the resolution of dispute, impartiality and enforceability of the resolution. The disputants should make choices of the options provided by the judicial evaluation model such that the outcome of the dispute is optimized.

2.10.4. Theory of Conflict Resolution

Theory of Conflict was propounded by Karl Max (1818-1883) with the following assumptions: 1) Interactions – that human interaction results in conflict, 2) Change – that conflict and change are normal and inevitable in society, 3) Competition – that competition over scarce resources (such as money, leisure, sexual partners, excreta) is part of all social groups. Competition rather than consensus is characteristic of human relationships. If everyone had the resources they needed, conflict would not exist, 4) Structural Inequality – that inequalities in power and rewards are built into all social structures. Resources are scarce and groups will always compete over these resources, 5) Degree of Inequality – that inequality exists in varying degrees with people having different amounts of resources; hierarchies exist, 6) Revolution - that macro changes occur as a result of conflict between competing interests rather than through adaptation. It is often abrupt and revolutionary rather than evolutionary.

Ross (2009) states that committed group members attempt to resolve group conflicts by actively communicating information about their conflicting motives or ideologies to the rest of group. Dimensions of resolution typically parallel the dimensions of conflict in the way the conflict is processed. Cognitive resolution is the way disputants understand and view the conflict, with beliefs, perspectives, understandings, and attitudes. Emotional resolution is in the way disputants feel about a conflict, the emotional energy. Behavioral resolution is reflective of how the disputants act, their behavior. That the resolution of a conflict is inevitable in the short or long run through forcing, collaborating, compromising, withdrawal and smoothening/collaboration depending on the choice of approach and factors influencing the conflict.

This theory underpinned the firth objective if the study that the contractual disputes are normal and arise from interaction between committed persons bound by the contract but with competing

interests. The choice of methods of resolutions of contractual disputes depends on the nature and the stage or degree of the disputes and should respond to cognitive, emotional, and behavioral disposition of the disputants, that is, how the disputants view time, cost, impartiality and enforceability of the outcome of a dispute. Certain disputes can be solved by litigation process while others by ADR mechanisms depending on the disposition of the parties to the environment of the contract. The action or behavior of the disputants will depend on the strategies and environment of the business. Some of the resolution like litigation are non-consensual (forcing/imposing) which yields dissatisfaction and withdrawal of the loser, while others like ADR mechanisms are deemed consensual yielding a win-win position, collaboration, and compromise. Dispute resolution in construction industry is changing from highly legal and rather rigid litigation process to more creative and flexible ADR mechanism. However, the change is more of evolutionary rather than revolutionary, contrary to the last part of the theory.

2.11. Conceptual Framework

Conceptual framework is a hypothesized model identifying the concepts and their relationships (Mugenda and Mugenda, 2003). In this study, influence of judicial evaluation model on resolution of contractual disputes is conceptualized such that resolution of contractual disputes through civil litigation process or alternative dispute resolution seeks to achieve timeliness, cost effectiveness, impartiality, and enforceability. However, the concept of the relationship between judicial and evaluation model and resolution of contractual disputes is intervened by business strategy which influences the choice of dispute resolution method driven by commercial considerations of customer retention or profit maximization. External factors also moderate the concept where contract operational environment may prescribe the method of dispute resolution through applicable law or the form of the contract itself. The Conceptual framework of the study is as given in Figure 1.

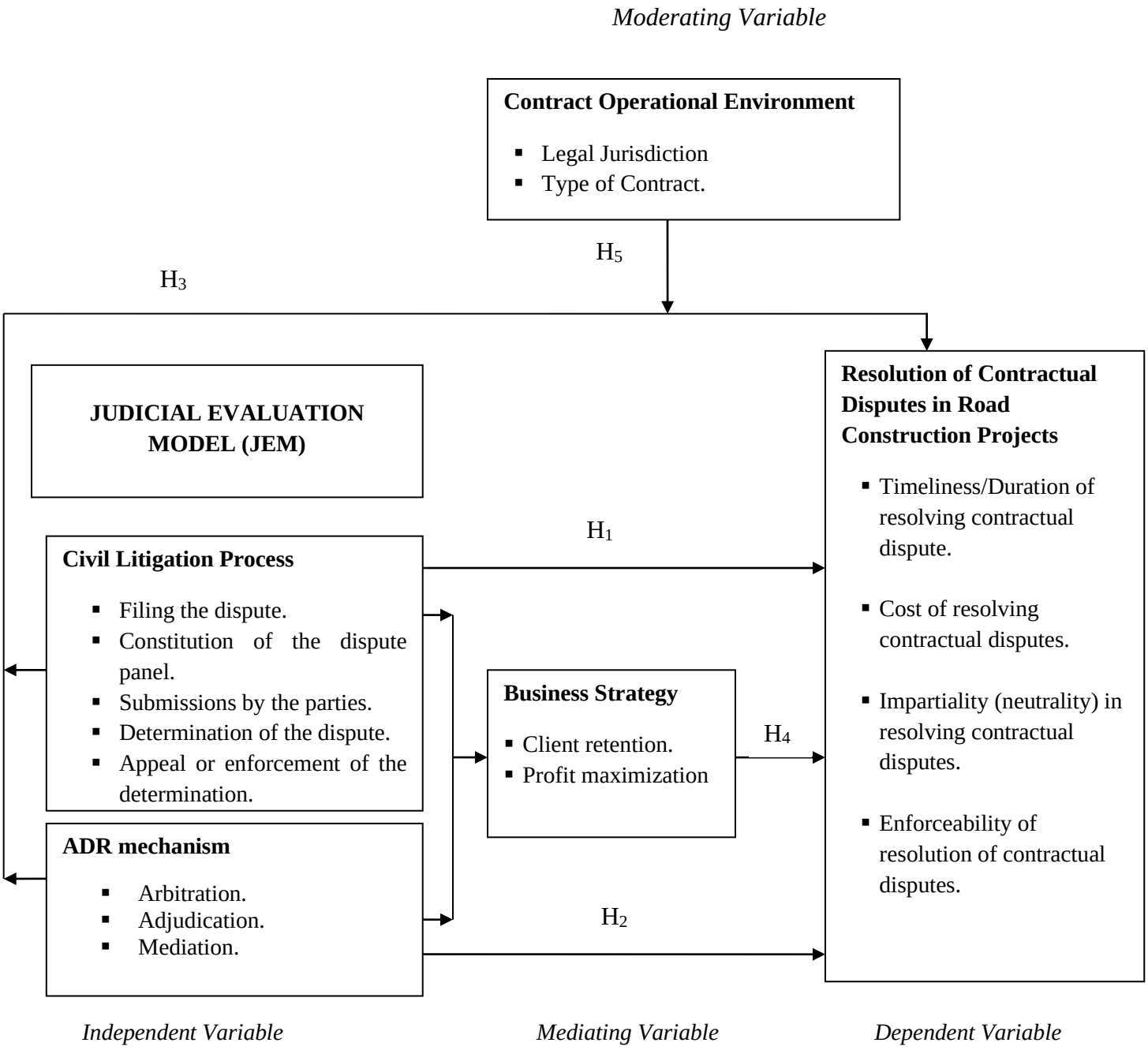


Figure 1: Conceptual Framework for Judicial Evaluation Model, Business Strategies and Contract Operational Environment on Resolution of Contractual Disputes in Road Construction Projects.

Figure 1 shows that Judicial Evaluation Model (JEM) has two broad indicators which are conceptualized to be the independent variables. The first indicator is Civil Litigation Process which is understood to be a court process either through local or international jurisdictions of resolution of contractual disputes. This process involves filing the disputes, constitution of

dispute panel, submissions by the disputant, determination of disputes, appeal or enforcement of the determination. The second indicator is a group of methods seen as alternative to litigation process and are thus collectively referred to as Alternative Dispute Resolution (ADR) mechanism. This group encompasses arbitration, adjudication, dispute resolution boards (DRB), mediation and conciliation.

The choice of any indicator of the model, or sub-indicators thereof, depends on whether and how that indicator/sub-indicator, while being applied to resolve contractual disputes, influences some industry-desired immediate outcome of the dispute resolution process such as; time (speed) of the resolution process, cost resolution process, impartiality (neutrality) of resolution, and enforceability of resolution. The magnitude and the direction of the influence on the industry desired outcome of dispute resolution are the drivers that are perceived by the industry to be enablers of judicial evaluation model to maintain contractual equilibrium necessary for parties to meet their contractual obligations.

However, there are factors which emanate from within the parties to the contracts and intervene/mediate in the relationship; for example, business strategy such as client/customer retention and profit customization can influence the parties' choice of a model or a variant that ensures privacy to maintain good relationship or one which is public. Customer/client retention strategy can drive common goodwill (Gido and Clement, 2003) which makes it simple to resolve contractual disputes; sometimes even in boardroom meetings as opposed to seeking solutions through structured models.

Similarly, the relationship between judicial evaluation model and resolution of contractual disputes may also be moderated by the environment outside the contracting parties. Contract Environmental factors such as the legal frame work of the country hosting the project and the type of the contract in force could influence the choice of judicial model or its variants. Construction contracts recognize that their interpretation must be in line with the supreme law of the land (Suhami, Sahira, Emma and Sellah, 2012). This recognition makes the legal environment be a major player in decision making, because awards under certain evaluation models may be legally challenged if they (the awards or the models) are not consistent with or

recognized under the supreme law. Also, the contract being the bigger framework which created obligations which if violated results into a contractual dispute, may institutionalize the use of judicial model (or one of its variants) while other types of contracts may not have a provision for the same (Larson, Erik and Gray, 2011).

Whereas in the literature reviewed, each variants of the judicial evaluation model and their components have been associated with strengths and weaknesses against desired contractual dispute outcome such as speed and cost of dispute process, impartiality and enforceability of the outcome, no one variant or a component thereof can claim all the desired characteristics (Cleland,1999). This study presupposes a priority or precedence/a continuum in application of the variants of the model and in its components. Also, study hypothesizes that, there is a ranking of the two model options and their components whose statistical concordance among the parties can be analyzed objectively. The conceptual framework also presupposes a correlation between influence of evaluation by Litigation and evaluation ADR mechanisms on resolution contractual disputes.

It has been proposed by Miller and Butler (2008) that in resolving contractual disputes, the disputants should remain open to both the options of Litigation and ADR depending on the external and internal factors; that is, the moderating and intervening variables, respectively. This implies that resolution of contractual disputes may be modeled into a function of both Litigation and ADR mechanisms. Thus, in addition to correlation, the conceptual framework portends a regression analysis for estimation and optimization of the desirable effects of the judicial evaluation medal.

2.12. Summary of Literature Reviewed

The literature review has demonstrated that the components of judicial evaluation model have different influence on resolution of contractual disputes and the influences are also moderated by other factors from within and without the model. In reviewing the literature on judicial evaluation model, it is acknowledged that the choice and usage of any of its variants is a function of its ability to influence industry-desired immediate outcome such as time, cost, impartiality and enforceability of the resolution of a dispute. The competing concepts of whether judicial

evaluation model should preserve business relationship (client/customer retention) or enforce the parties' entitlements has not been agreed on by scholars of the model and remains open to social and regional practices in various jurisdictions. It is this aspect of the model that faces challenges related to the need of standardization of dispute resolution approaches in the global construction market.

Whereas theoretical concepts have been advanced about litigation and alternative dispute resolutions (ADR) as broad variations of judicial evaluation model, functional concepts have led to postulations and a range of theorizations. Firstly, that evaluation by litigation increases time and cost of resolving contractual disputes in construction projects while rendering impartial and enforceable decisions. The second one is that cost and time of resolving contractual dispute under evaluation by litigation vary with local and international jurisprudence, while the third proposition is a corollary to the fist one: evaluation by ADR mechanism reduces time and cost of deciding contractual disputes while rendering partial and unenforceable decisions. However, none of the reviewed literature has presented an objective methodology or quantitative approach to support the findings that have led to the concepts and theories. They have explored qualitative approaches to reach the findings. Whereas the validity of the qualitative approaches employed is not in doubt, a mixed approach would have given a better corroboration and holistic theorization.

The influence of components of evaluation by ADR mechanism on resolving contractual disputes has been conceptualized to differ and could be ranked in a continuum to optimize the resolution. Again, none of the literature reviewed has given a rank-dependant precedence of application. The researcher believes that the scenario propagates the haphazard application of judicial model. The review has also portended that business relationship between the disputants (business strategy) influences the choice of judicial evaluation model and its effects on deciding contractual disputes. The other finding of the literature review on the relationship of the two variables is that the contract operational environment, such as legal context and form of contract, influences the choice and operation of judicial evaluation model and its variants for resolving contractual disputes. The literature has provided a pointer to regression modeling of the relationship between the two variables. This study subjects the concepts and relationships reviewed in literature review and presented in the conceptual framework to an empirical

investigation to objectively validate and generalize the influence of judicial evaluation model on resolution of contractual disputes.

2.13. Knowledge Gaps

Table 2.1 gives a summary of gaps identified in the literature review and analysis in the study. The gaps outlined are in the methodology and findings of various empirical literatures analyzed during the review.

Table 2.1. Gaps in methodological approaches and findings of empirical literature

Variable	Authors (Year)	Title of the study	Findings	Knowledge Gaps
Civil Litigation Process *(First Independent Variable)*	1. Cheung and Suen (2002)	A multi-attribute utility model for dispute resolution strategy selection	Litigation process renders impartial resolution of contractual disputes.	The study has made this conclusion based on qualitative data obtained from expert's opinions which is not a representative sample of the construction industry players. The findings are not supported by quantitative data obtained from across the construction contract stakeholders (contractor, employer, engineer). Lack of corroboration of qualitative data with quantitative data and lack of representativeness of the sample leaves a knowledge gap.
	2. Fenn and O'shea (2014)	Adjudication: tiered and temporary binding dispute	Litigation process can be timely and cost effective in resolving contractual disputes if the judges were	The conclusion is hypothetical; *(litigation can be timely and cost effective…)*, and conditional; *(…if the judges were*

		resolution in construction and engineering	committed to the course of justice and if lawyers avoided adversarial approach.	*committed).* The conclusion has been challenged by (Agawal and Owasonoye, 2001; Donald and Fasken, 2003) who state that 90% of litigation processes are inordinately expensive. The study has made no objective attempt to demonstrate that litigation process takes less time and cost than ADR mechanism. The study has used exploratory designs, using existing literature, and recommends correlation design to measure the influence of litigation on resolution of disputes to provide validation of the findings.
	3. Ayudhya (2011)	Common disputes related to public works projects in Thailand.	Litigation should be used as the last resort upon failure of all other methods because of its negative influence on relationship of the parties, high cost and time of resolving contractual disputes.	The study conclusion has a ranking concept, yet it has not addressed the issue of precedence/ ranking of application of components of judicial model. Although the study proposes litigation as the last resort, it has not demonstrated hierarchy of use of JEM components or regression analysis to validate the findings. The study is devoid quantitative models that would give it power to carry out regression and rank

				analyses. This is the gap that this study seeks to fill.
Alternative Dispute Resolution Mechanism *(Second Independent Variable)*	1. Fleke and Perin (2009)	Mediation in Construction Disputes	ADR mechanism reduces Time and Cost of Dispute Resolution. ADR Mechanism renders partial and unenforceable decision in resolution of contractual disputes.	The study findings are based on comparing ADR as a single concept and with civil litigation process. But ADR has components such as arbitration, adjudication, mediation etc. which are applied independently in resolving disputes. The study does not show derivation of a single indicator to compare with civil litigation process. The study cannot answer questions such as: what is the influence of mediation, adjudication, arbitration etc on resolution of contractual disputes, how do such influences compare? What is the combined influence?
	2. Kumaraswami (1997)	Conflicts, claims and disputes in	Lack of impartiality in ADR mechanisms does not mean negative influence but is a	There is no evidence of hypothesis tests to support the conclusion that a win-win model is not a 50:50 outcome.

		construction.	demonstration of the acceptable philosophy of value-bound evaluation and consensus building between parties who accept that a win-win model is not synonymous with a 50:50 outcome. That if the philosophy is acceptable to the parties, then the outcome of dispute resolution does not need to be enforced by law.	The study has confined ADR evaluation to only value-bound(qualitative) evaluation yet studies like Muralli and Soon (2006) have presented quantitative evaluation data from ADR mechanism. The study is a qualitative design but has made conclusions that should have been more objectively validated by hypothesis tests and concordance analysis of the components of ADR mechanisms.
	3. Madden (2001)	Recipe for Success in Construction Mediation	Components of ADR mechanism differ but can be ranked in a continuum to optimize dispute resolutions.	The study has used measures of association (mean statistic) to do the ranking of the influence of ADR components on resolution of contractual disputes. The study has not used stronger statistical models like Relative Importance Index (RII) and Kendal's Concordance to establish a raking that would define the continuum of application of components of ADR mechanism.

	4. Roebuck et al (2009)	Arbitration	ADR mechanism, more so arbitration, is becoming increasingly expensive and complex. That the assumption that ADR is more effective than Litigation process is only theoretical. The study concludes that ADR mechanisms has potential to be time and cost effective, but the hardline conduct of evaluators during evaluation process and the commercial mentality of the lawyers representing the parties make that potential remain unrealized.	The study has not demonstrated a trend analysis to support the findings that ADR mechanisms is increasingly becoming expensive. There is no evidence of use of longitudinal design that would provide basis of such finding by demonstrating an increasing pattern of high expenses and complexity. The study fails to recommend a predictive model such as linear regression model to allow for time-based projections of expenses and complexities of ADR mechanism.
Business Strategy *(Intervening Variable)*	1. Dancaster (2008)	Construction adjudication in United Kingdom: past, present, future.	Beyond the formal construction contract, there is non-formal, non-contractual but perhaps the more important relationship that define strategic behavior of the parties and influence commercial dynamics of dispute resolution. the strategic behavior avoids disputes resolution that destroy	The study findings are empirical and demonstrate that business strategy influences relationship between contracting parties. The objective of business strategy is to maintain relationship as long as that relationship makes business sense. However, the study has defined business sense only in terms of profit maximization. The study does not explore whether business strategy

			business relationships.	would slow down or accelerate dispute resolution process, whether it would increase or reduce cost of resolution or how it would influence impartiality and enforceability of resolution outcome.
	2. Gmmell & Entwistle (2010)	The 2009 Construction Act. The future of adjudication	Employers do not like Contractor's that exert/invoke their rights under the Contract and law. Employers often are averse to decisions/resolution that are enforceable because of fear of damages incase of default and lack of opportunity to negotiate in case of delays to fulfil obligations because of strict orders of enforceable awards. The Employer expect realistic and flexible solutions to disputes.	The study has looked at enforceability as an element of dispute resolution but only from Employer's perspective. It has not explored the subject from Contractor's perspective, and this makes its conclusion skewed to only one group of stakeholders in construction disputes. Enforceability may be preferred by the Contractors seeking to be protected from Employers who do not obey the outcome of dispute resolution and default in effecting awards to the Contractor's.
	3. Hill and Wall (2008)	Adjudication: Temporary binding and	Cost minimization and customer retention often influence parties'	Cost minimization is a philosophy of business favourable to the Employer (buyer of goods and services).

		tiered dispute resolution in construction and engineering	willingness to conclude disputes amicably using less adversarial models; thus, help in keeping business relationship. It concludes that business strategy influences the choice of dispute resolution approach.	The philosophy is detested by the Contractor (seller of goods and services). The study has not dealt with this dichotomy which therefore skews its findings to one side of the commercial disputant. The study should have sought a balanced approach by considering cost optimization as a variable to replace cost minimization.
Contract Operational Environment *(Moderating Variable)*	1. Kodagoda(2008)	Victim-Offender Mediation in Sri Lanka	Contracts operate within in a legal environment which determines the choice of method of resolving contractual disputes. Many Jurisdiction have arbitration to provide resolution outside the formal court system.	The study does not bring out the observation that ADR mechanism is often not prescribed by legal environment. The mechanism is alternative to legal approach to resolving disputes and are the first line of attempting a resolution before going through litigation as the last resort when ADR fails. However, situation arise where the courts may advise commercial dispute to be resolved outside court. The study has not examined

				factors that influence such advice.
	2. Madden (2001)	Recipe for success in construction mediation	The Form of Contract such as FIDIC, EU and World Bank have different preferences on how contractual disputes should be evaluated and resolved and hence may prescribe a certain evaluation model or variant.	The findings are drawn from qualitative information collated from various literature. Corroboration of quantitative work is lacking.
	3. Noushad (2006)	A construction Industry payment and Adjudication Act: reducing default and increasing dispute resolution efficiency in construction	External environment is a key factor in the choice of disputes resolution approach because it defines it defines the first approach the parties adopt towards resolving a dispute.	The study has not defined the variables within the external environment concept. The term 'external environment' is a construct that cannot be measured on its own. The study ought to have broken down the construct to measurable units so that its influence on parties to adopt a particular dispute resolution approach can be more discernable
Resolution of Contractual Disputes *(Dependent*	1. Peck and Dalland (2007)	The benefits of dispute resolution boards for	Resolution of Contractual Dispute is understood to be a partial function of	This conclusion invites a quantitative validation which the study does not provide. A correlation study together

Variable)		issue management of medium to large scale construction projects.	Litigation and ADR mechanism. Use of combination of JEM variants provide better results.	with regression analysis would have provided as strong quantitative models to support the findings.
	2. Abeyaratne (2006)	Establishing and Organizing of Commercial and Construction Arbitration Tribunal	In real world, litigation ADR mechanism with other intervening factors act together to bring about the satisfaction in cost of disputes, time for resolution, impartiality, and enforceability of the resolution process.	The study has not outlined the intervening factors, neither has it demonstrated how the factors combine with ADR towards satisfying stakeholders need for reasonable cost and time for resolving disputes, impartiality and enforceability of dispute process and outcome.
	3. Tea (2008)	Adjudication: Singapore Perspective	The linear relationship between resolution of contractual disputes, litigation process and ADR mechanism are often confounded by other strategic and environmental factors	The study has used regression to construct the relationship between resolution of contractual disputes, litigation, and ADR mechanism. But the model has not gone further to build in the confounding influence of strategic and environmental factors. The conclusion on the confounders is therefore not corroborated by quantitative model.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1. Introduction

This chapter discusses the research paradigm and design that inform the study. It further provides information on the target population, sample size and sampling procedures, research instrument, validity of instrument, reliability of instruments, data collection procedures and data analysis techniques that the study has adopted. The chapter finally presents the ethical considerations that guided the study and operationalization of the variables.

3.2. Research Paradigm

This study adopted pragmatism paradigm which allowed it to apply mixed method approach. Research paradigm is a cluster of beliefs and dictates that influence what should be studied, how research should be done and how results should be interpreted (Kuhns, (1970) cited in Bryman and Bell, (2011)). Taylor, Kermode, and Roberts (2007) sees paradigm to be a broad view or perspective of something, while Weaver and Olson's (2006) states that paradigms are patterns of beliefs and practices that regulate inquiry within a discipline by providing lenses, frames and processes through which investigation is accomplished. Therefore, paradigms are world views anchored on certain philosophical foundations.

Four philosophical dimensions that distinguish research paradigms have been described by Creswell (2012) as; *ontological*, *epistemological*, *Axiological* and *Methodological* dimensions. Ontology is researcher's belief in the nature of reality and its characteristics as to whether such reality is single or multiple. Epistemology considers how the researcher uncovers the reality: either by keeping an objective distance or being subjective part of the research. Axiological belief is about values researchers make known in the study. Methodology is the method used in the research which shapes the researcher's approach in collecting and analyzing the data.

The philosophical approaches to research are either quantitative or qualitative in nature with their respective distinct epistemology and ontology. Quantitative approach subscribes to positivism epistemology; that methodologies of natural science research are equally applicable for study of social science. There is single external reality which can be ontologically studied through

objectivism. The axiology of this paradigm is that a study should be value free of researcher's opinions and biases. Statistical analyses are applied to describe the occurrences of and relationships among phenomena and to make inferences.

On the other hand, Creswell (2003) observes that qualitative approach is associated with constructivism epistemology which is the converse of positivism. This philosophy detaches methodology of obtaining acceptable knowledge in social science from those of natural science. It views reality as multiple as constructed by social actors, that is, realism and interpretivism. This paradigm describes the ontology of objectivism as simplistic and not capable of discerning meanings of phenomena. Knowledge must be value bound so as to obtain deep meaning of constructs and concepts of/in the social world. This resonates with the assumption that human beings engage with their world and make sense of it based on historical and social perspective.

Most researchers find it difficult to strictly pursue philosophy of one paradigm at the exclusion of the other (Bryman and Bell, 2011). This phenomenon has resulted into a third approach called mixed method associated with epistemology of pragmatism which ignores the paradigm divide inherent in the philosophies of natural and social sciences. Mixed method approach undermines the barriers between quantitative and qualitative research by advancing a reciprocal analysis approach. This approach theorizes that research findings are significantly improved both in their meaning and description if 'qualitative analysis of quantitative data' and 'quantitative analysis of qualitative data' are employed simultaneously in a study (Cooper and Schindler, 2008): a scenario that has become known as reciprocal analysis.

The choice of pragmatism paradigm allows the study to apply mixed method approach and enables the study to focus on the problem and use of all methods available (Nyonje, Ndunge and Mulwa, 2012) for data collection, analysis and presentation of the findings towards finding solution to the problem. This approach enables the study to collect both qualitative and quantitative data. It also allows reciprocal analysis where quantitative information is used to qualify or falsify qualitative information. The approach uses qualitative questions (open ended) in the instruments to corroborate quantitative questions (closed ended). Concurrent mixed method is used to merge quantitative and qualitative data to provide a comprehensive analysis of

the research problem. This study therefore sees research philosophy as a continuum, rather than options that stand in opposite positions, it treats objectivist and subjectivist perspectives as being not mutually exclusive. The mixture of ontology, epistemology and axiology embraced by this study is acceptable approach to understanding the phenomenon under investigation. Since pragmatism favours working with both quantitative and qualitative data, it allows this study to test the hypotheses set out in section 1.6 by checking the significance of influence of the variants of judicial evaluation model on resolution of contractual disputes in road construction projects and to compare the same with qualitative measures of influence obtained from content analyses of empirical literature. It enables the study to report quantitative findings, make inferences and generalizations alongside qualitative observations for purposes of corroboration.

3.2.1 Research Design

Research design is the structure of investigation conceived to obtain answerers to research questions (Cooper and Schindler, 2008). The study employed both correlational and cross-sectional designs to statistically and thematically describe the relationships among the variables. This is supported by Oso and Onen (2009) which state that correlation studies are appropriate when the researcher wants to statistically establish the degree to which the variables are related, while Kate (2006) avers that cross-sectional study design is used with descriptive statistics to analyze data from a population or its sub-set at a particular point in time. Regression Analysis was used to analyze the influence of individual and combination of JEM on resolution of contractual disputes in road construction projects and the influence of intervening and moderating factors in the relationship between dependent and independent variable. It was also used to establish and optimization model for structured/ordered use of JEM. ANOVA F-Statistic was used for hypothesis testing. Rank Analyses was employed to study resolution of contractual disputes based on industry desired outcomes; that is, time (speed), cost of resolution process, impartiality and enforceability of the resolution. Measures of central tendency, that is, mean and mode were used to describe the variables while measures of dispersion, that is, standard deviation was used to estimate the level of unanimity on the character of a variable among the sample respondents. Rank Analysis was carried from mean and standard deviation.

3.3. Target Population

Target population is the collection of elements that possesses information sought by the study (Oso and Onen, 2005). The target population of the study was 1,017 people drawn from contracts and project evaluation staff in road (classes A, B and C) construction projects in Kenya. The target population was composed of the 3 categories of implementation stakeholders, that is; the Employer (the owner of the project; – often the Government), the Contractor (foreign or local company awarded the tender for construction of the road) and the Engineer (a foreign or local company awarded the tender for design and supervision of the road). According to KeNHa (2015) there were 113 ongoing construction projects for highway road pavements and associated structures countrywide. Each party in the project (Employer, Contractor and Engineer) was required, under the contract, to have 'Project supervision, monitoring and evaluation department' with at least 3 responsible persons (staff) at management level assigned for monitoring and evaluation of the projects. Therefore, each project had 9 monitoring and evaluation managers which means that there were 1,017 (that is 9x113), managers who formed the target population. Table 3.1 shows the target population forming the sample frame.

Table 3.1. Target Population

Contracting Party	Evaluator per Party	No of Road Construction Contracts	Target Population
Employer	3	113	339
Contractor	3	113	339
Engineer	3	113	339
Total	9	113	1,017

Each of the 113 road construction projects/contracts has 9 evaluators, three from each party (Employer, Contractor and Engineer) giving a total of 1,017 as the target population.

3.4. Sample Size and Sampling Procedure

Sampling is selecting a number of individuals/subjects for a study in such a way that the individuals/subjects selected represent the large population from which they were selected (Kothari, 2009). Sampling is important as noted by Kombo, Kisilu and Tromp (2009) that working with sample reduces the length of time needed to complete research, cuts cost, is

manageable and is almost a mirror of the target population. This section describes the sample size and sampling procedure for this study.

3.4.1. Sample Size

This study used Krejcie and Morgan formula for sample size determination. According to Terry (2002) Krejcie and Morgan (1970) theorize that where time and cost are constant, sample size is dependent on objective and scope of the study, nature of the population, sampling technique, estimation procedure, variability and the size of the population. They also advance that a sample size equal to or greater than 30 is large enough for parametric analysis. Accordingly, they propose the following formula for sample size calculation:

$$n = \chi^2 NP(1-P)/\{d^2(N-1) + \chi^2 P(1-P)\}$$

Where; n = the required sample size.

χ^2 = the table value of chi-square for 1 degree of freedom at desired confidence level (3.841)

N = the population size.

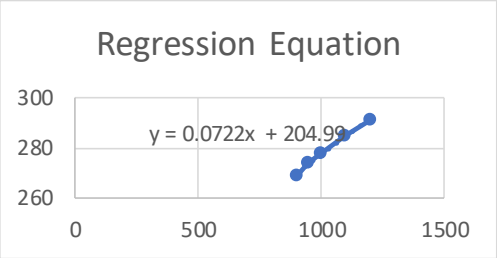
P = the population proportion assumed to be 0.5 since this would provide the maximum sample size.

d = the degree of accuracy, significance level

Computed sample sizes, as per the formula, for various population sizes is given in Appendix 4.

The formula is suitable for this study because the target population has low variability; being management level staff. This study has a target population of 1,017; at the desired significance level is 5%, the interpolated value 279. The interpolation is confirmed by modeling Krejcie Table into regression model as shown in Table 3.2 and calculating the sample size from the regression formula.

Table 3.2. Krejcie Table and its Regression Model

Population *(N)*	Sample Size*(S)*	Regression model
900	269	
950	274	
1000	278	
1100	285	
1200	291	

The regression Model is Y = 0.0722x + 204.99, where:

Y is the calculated sample size.

x is target population (1,017).

Therefore, Y = 0.0722(1,017) + 204.99

= 278.417.

But since there is no 0.417of a person, this was approximated to 1 person.

The calculated sample size from the regression model was therefore the same as interpolated sample size from Krejcie Table equals to 279.

3.4.2. Sampling Procedure

In order to achieve the desired representation from the various groups in the target population (Employer, Contractor and Engineer), stratified random sampling was used. This is supported by Mugenda and Mugenda (2003) and Saleemi (2008) where they underscore that in stratified random sampling, subjects are selected in such a way that the existing subgroups in the population are more or less reproduced in the sample. The stratification and randomization procedure were done in 2 steps as follows:

In the first step three strata were created comprising of Employer, Engineer and Contractor. Since each stratum was required to have three evaluators in every contract, the ratio of Employer

: Engineer : Contractor was 3:3:3 which was simplified to 1:1:1. This means that the parties had equal chance to be represented in the sample of 279. Each stratum therefore had one third of the sample which gave 279/3 = 93 respondents for each stratum.

In the second step, it was considered that there were 113 road projects in the country falling into the category of classes A, B and C. From KeNHA Report of 2015, the distribution of the projects was such that 35 projects were ongoing in class A roads, 36 projects in class B roads and 42 projects in class C roads. The number of respondents in each class of roads, for every stratum, that is, (employer, contractor, and engineer), was obtained by statistical weighting, based on the total number of projects in class A, class B, and class C roads, and the results were summarized in Table 3.3.

Table 3.3. Sampling Procedure - stratified random sampling.

Road Construction Projects		**Sample Sizes**			
Class of Road	No. of Projects	Employer	Contractor	Engineer	TOTAL
Class A	35	29	29	29	87
Class B	36	30	30	30	90
Class C	42	34	34	34	102
TOTAL	113	93	93	93	279

Source of number of projects: Kenya National Highways Authority Report (2015).

The sample sizes for respondents to be interviewed on classes A, B and C road projects were respectively 87, 90 and 102 as obtained by statistical weighting. For example, sample size for class A road was calculated by taking the weight of 35/113 and multiplying by the sample size of each stratum which was 93 to give 29 respondents per stratum. The weights for B and C were 36/113 and 42/113 respectively which when multiplied by 93 gave 30 and 34 respondents per stratum.

The study also spread the respondents proportionately to the 8 regions (Western, Nyanza, Rift Valley, Nairobi, Central, Eastern, Coast, and North Eastern) of the country based on the number of projects per region as shown in Table 3.4.

Table 3.4 Sampling Procedure - Distribution by Regions

Regions	No. of on-going Projects	Weighted Sample Size of respondents	Respondents in Class A Roads	Respondents from Class B Roads	Respondents from Class C Roads
Western	11	27	8	9	10
Nyanza	15	37	12	12	13
Rift Valley	20	49	15	16	18
Nairobi	14	34	11	11	12
Central	16	40	12	13	15
Eastern	15	37	12	12	13
Cost	12	30	9	9	12
North Eastern	10	25	8	8	9
TOTAL	113	279	87	90	102

Source of number of on-going projects: Kenya National Highways Authority Report (2015).

The weighted sample size per region was based on the number of road projects in that region as a proportion of the total number of road projects in the country. For example, in Nyanza region, there were 15 road projects out of 113. The number of respondents from Nyanza region was thus represented by this proportion multiplied by the total number of respondents which is 279, that is, (15/113 x 279) = 37 respondents. The 37 respondents were distributed in the ratio of 87:90:102 for classes A, B, C roads respectively, giving 12 respondents for class A road projects, another 12 respondents from class B road projects and 13 respondents for class C road projects.

3.5. Research Instrument

The study used self-administered questionnaires for data collection. The study preferred the use of questionnaires because it is designed specifically to be completed by the respondent and therefore eliminates intervention of the researcher thereby improving objectivity of the responses (Oso, 2015). Self administered questionnaires are also quick to collect data and it can be easily mailed or delivered to the respondents (Kombo and Tromp,2009). The instruments had closed ended questions for generation of quantitative data and open-ended questions for generation of qualitative data or for purposes of clarification of the quantitative data. The questions in the instrument were the same for all groups to allow credible comparative analysis of information sought from management of different contracting parties. Nominal, ordinal, and interval scales were used in structuring the questions depending on the nature of information sought and the statistical analysis proposed for processing the data to meet objectives.

The structure of the instrument was such that Part I was entitled General Information and sought to record background information such as the respondent's highest education attained and years of experience working in road construction projects evaluation is also sought. The second part of the instrument was entitled Occurrence of Disputes in Road Construction Projects and sought to establish the background of disputes - that disputes occur in projects and the causes of the disputes. The third part was on Resolution of Contractual Disputes in Road Construction Projects and rated the indicators of dispute resolution outcomes such as speed, cost and impartiality and enforceability. It also obtained data on Civil Litigation Process, ADR mechanism, Business Strategy and Contract Operational Environment. Part IV hard open-ended questions for qualitative data. A sample of research instrument for the study is given in Appendix 3.

3.5.1. Pilot Testing of Instrument

The instrument was discussed by experienced supervisors to locate any weaknesses. A pilot study of the instrument was conducted in Kisumu-Kakamega (Class A) road project, Nyamasaria-Kisumu-Kisian (Class B) road project and Rodi Kopany – Karungu (Class C) 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, being implemented by foreign and local road construction experts. The piloting helped in identifying weaknesses in the design and instrumentation and data collection tool (Cooper and Schindler, 2008). Where weakness was discovered, corrections were done to improve the instrument.

Nine evaluation experts were taken each from the class A road, class B road and class C road, totaling to 27 in number to be the respondents for the piloting. This sample for piloting conformed with Mugenda and Mugenda (2003) which recommends a pilot sample of at least 10% of the target population of the study (10% of 279 = 27.9 ≈ 28). Test-retest method was used to assess consistency of the instrument whereby questionnaires were delivered to respondents by the research assistant and respondents were requested to return the completed questionnaires in three days. Where such duration was deemed short, a reasonable period was agreed. On return, the instruments were checked by the researcher and supervisor and revised for completeness of the scripts and control of extraneous environmental conditions. The exercise was repeated, and the instrument revised until it was felt that the errors were adequately controlled. The reliability

of the instrument was found satisfactory with a coefficient of stability of 0.82 as described in section 3.5.3 of this study.

3.5.2. Validity of Instrument

Validity has been categorized by various scholars (Mugenda and Mugenda, 2003; and Bryman and Bell, 2011) into content validity, construct validity and criterion validity. Validity is the accuracy and meaningfulness of inferences based on research results. It measures how accurate the findings obtained from a study represents the variables of the study (Mugenda and Mugenda, 2003). A valid instrument accurately measures what it is supposed to measure.

Content validity is the degree to which data collected using an instrument represents a specific domain of indicators or a particular concept. Content validity of the instrument was ensured by discussing the questionnaire with research experts and supervisors to align the questions with the objectives. Construct validity is the measure to which data obtained from an instrument meaningfully and accurately represent a theoretical concept. The study consulted research experts and supervisors to fine-tune the instrument and to align it to the theoretical concepts of judicial evaluation model to obtain valid empirical data. Criterion validity refers to the use of a measure in assessing the subject behavior in a specific situation. For example, if an instrument purports to measure job performance, the subjects who score high in the instrument must also perform well in their jobs. The study instrument was peer reviewed by colleagues and the study supervisors who are research experts. The supervisors assessed the appropriateness of the questions in terms of language and relevance in answering the study questions.

3.5.3. Reliability of Instrument

A reliable instrument is that which yields consistent results after repeated measurements (Cooper and Schindler, 2008). The reliability of the instrument of this study was tested using Cronbach's Alpha method based on the data collected in the pilot study. Cronbach's alpha is often used to measure the internal consistency for scores which fall along a continuum. Statistical Package for Social Scientist (SPSS) was used to calculate Cronbach's alpha on data collected from the pilot study and a value equal to or greater than 0.7 was considered sufficient reliability (Nunnally, 1978).

The mathematical theory and statistical methods of Cronbach's Alpha has been given by Nunnally (1978) as follows:

Suppose we measure some quantity X which is a sum of K components of Y, this cab ne expressed as;

$$X = Y_1 + Y_2 + \cdots + Y_K.$$

Now Cronbach's α is defined as

$$\alpha = \frac{K}{K-1}\left(1 - \frac{\sum_{i=1}^{K} \sigma_{Y_i}^2}{\sigma_X^2}\right)$$

Where σ_X^2 is the variance of the observed total test scores, and $\sigma_{Y_i}^2$ the variance of component i for the current sample of subjects.

If the items are dichotomously scored from 0 and 1, being at nominal scale, a modified Cronbach's α formula is used as follow:

$$\alpha = \frac{K}{K-1}\left(1 - \frac{\sum_{i=1}^{K} P_i Q_i}{\sigma_X^2}\right)$$

Where P_i is the proportion scoring 1 on item i, and $Q_i = 1 - P_i$

Alternatively, Cronbach's α can also be defined as

$$\alpha = \frac{K\bar{c}}{(\bar{v} + (K-1)\bar{c})}$$

where K is as above, $\bar{v}$ is the average variance of each component (item), and $\bar{c}$ the average of all covariances between the components across the current sample of subjects (that is, without including the variances of each component).

The standardized Cronbach's alpha is defined as;

$$\alpha_{\text{standardized}} = \frac{K\bar{r}}{(1+(K-1)\bar{r})}$$

Where K is as above and $\bar{r}$ the mean of the $K(K-1)/2$ non-redundant correlation coefficients (that is, the mean of an upper triangular, or lower triangular, correlation matrix). Cronbach's α is conceptually related to the Spearman–Brown prediction formula. Both arise from the basic classical test theory result that the reliability of test scores can be expressed as the ratio of the true-score and total-score (error plus true score) variances:

$$\rho_{XX} = \frac{\sigma_T^2}{\sigma_X^2}$$

The theoretical value of alpha varies from 0 to 1, since it is the ratio of two variances. However, depending on the estimation procedure used, estimates of alpha can take on any value in the range of $-1 \leq \alpha \leq 1$. Higher values of alpha are more desirable. A reliability of 0.70 or higher (obtained on a large sample) is acceptable for this study.

Based on data collected during the pilot study, the reliability of the study questionnaire was tested using test retest. The target sample for pilot study was 27 evaluators from road construction projects. Data was collected from 21 out of the 27 respondents, representing 77.8% return rate. The overall reliability statistic was found to be 0.85 which is greater than the expected and acceptable limit of 0.70 (Nunnally, 1978). Table 3.5 illustrates the reliability analysis results of the study variables:

Table 3.5. Reliability Analysis of the variables

Variables	Cronbach's Alpha	Number of Items
Resolution of Contractual Disputes	0.75	20
Civil Litigation Process	0.95	21
ADR Mechanism	0.80	17
Business Strategy	0.94	18
Contract Operational Environment	0.78	15

Table 3.5 shows the reliability analysis giving alpha coefficient above the expected 0.70 for all the variables. For example, resolution of contractual disputes was measured by using 20 items and the reported reliability is 0.75; civil litigation process was measured using 21 items and the reported reliability is 0.95; ADR mechanism was measured using 17 items and the reported reliability is 0.80; business strategy was measured using 18 items and the reported reliability is 0.94; while contract operational environment was measured using 15 items and the reported reliability is 0.78.

3.6. Data Collection Procedure

The researcher recruited 16 research assistants in each of the 8 regions of the projects and took them through a training exercise on data collection and ethical issues expected of them in the field. The assistants were sent to hand-deliver the research instruments to the respondents in the sampled projects. The respondents were asked to fill in the questionnaires which had both open and closed ended questions, and the assistants would collect them after 3 days. Where such a period was inconvenient to the respondent, a suitable duration was agreed upon. Any necessary secondary data was obtained by the researcher from projects progress reports filed by KeNHA at their central library in Nairobi. Where there was delay is receiving back the questionnaires, follow-up was made by the researcher. After the questionnaires were received back, data analysis was commenced.

3.7. Data Analysis Techniques

Data analysis involves closely related operations which are performed with the purpose of summarizing collected data and organizing these in a manner that they answer research questions (Kothari, 2009). Primary data was edited for completeness and consistency, coded and classified before feeding into software for analysis. Care was taken to ensure that coding and data entry was done according to coding rules. Data were analyzed using Descriptive Statistics and inferential statistics, which are discussed further in the subsequent sub-themes. Microsoft Excel in combination with Statistical Package for Social Scientist (SPSS) were used to aid data analysis. Data analysis outputs were presented in tables.

3.7.1. Quantitative Data Analysis

Quantitative data was analyzed using descriptive and inferential statistics. Measures of central tendency (mode and mean) and measures of dispersion (variance and standard deviation) were used for analysis of non-parametric data to examine the first and the second objectives of the study. The arithmetic mean is the measure for central tendency while standard deviation is the measure of dispersion. Due to low variability among the respondents, the finite research population was expected to be homogenous and normally distributed. Data was expected to cluster around statistical means. Rank Analysis base on mean was done come up with order of precedence among components of Judicial Evaluation Model

3.7.2. Qualitative Data Analysis

The qualitative data obtained from open ended questions in all the objectives was analyzed using Thematic Analysis. This involved categorizing generated answers into outstanding themes and reporting in narrative forms. The qualitative data was used for triangulation of the information obtained from quantitative data.

3.7.3. Inferential Analysis

Data on variables and indicators in Table 3.6 was collected and used in the inferential analysis. The dependent variable - resolution of contractual disputes in road construction projects, had the following indicators: time/speed of resolution of contractual disputes, cost of resolving contractual disputes, impartiality in resolving contractual disputes, enforceability of resolving contractual disputes. indicators of first independent variable – civil litigation process were, filing the disputes, constituting the dispute panel, submission by parties, determination of disputes, and enforcement of determinations. Indicator of the second independent variable – ADR mechanism was arbitration. Client retention and cost maximization were indicators of business strategy which was the mediating/intervening variable while contract operational environment and type of contract were the indicators moderating variable – contract operational environment.

Table 3.6. Variables and indicators for Inferential Statistics

Variable		Indicators
1. Dependent Variable:	Resolution of Contractual Disputes in road construction projects (Y)	Time/speed of resolving disputes, cost of resolving disputes, impartiality in resolving disputes, enforceability of resolving disputes
2. Dependent Variable:	Civil Litigation Process (X_1)	filing disputes, constitution of dispute panel, submission by parties, determination of dispute, enforcement of determination
	ADR mechanism (X_2)	Arbitration, Adjudication, mediation
3. Mediating Variable	Business Strategy (X_3)	Client retention, cost minimization/maximization
4. Moderating Variable	Contract Operational Environment (X_4)	Legal Jurisdiction, Type of Contract

The correlation between the variables were tested using Pearson's *(r)* correlation coefficient analysis. This analysis revealed the existence, strength, and direction of the relationship between the variables.

The influence of independent variable on the dependent variable in all the five objectives and the corresponding hypotheses were tested using regression model. Coefficients, or the constants of the regressions were analyzed to reveal influence of predictor variables on the predicted variable. ANOVA F statistics from the model was used for analysis of hypotheses. The regression model used was a general equation of the form:

$$Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

This model was broken down for each objective as follows:

i. $Y = \beta_o + \beta_1 X_1 + \varepsilon$, was used to analyze and test the first hypothesis.

ii. $Y = \beta_o + \beta_2 X_2 + \varepsilon$, was used to analyze and test the second hypothesis.

iii. $Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$, was used to analyze and test the third hypothesis.

iv. $Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$, was used to analyze and test the fourth hypothesis.

v. $Y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_4 X_4 + \varepsilon$, was used to analyze and test the fifth hypothesis.

Where:

Y = Resolution of Contractual disputes

X_1 = Civil Litigation process

X_2 = ADR mechanism

X_3 = Business strategy

X_4 = Contract operational environment

β_o = Resolution of Contractual dispute when all other variables ($x_1 \ldots x_4$) are zero.

$\beta_1 \ldots \beta_4$ = coefficients of the predictor variables such that:

β_1 = Change in resolution of contractual disputes due to unit change in litigation process

β_2 = Change in resolution of contractual disputes due to unit change in ADR mechanism

β_3 = Change in resolution of contractual disputes due to unit change in business strategy

β_1 = Change in resolution of contractual disputes due to unit change in contract operational environment.

ε. = Margin of error, which is defined as unit change in resolution of contractual dispute that is not explained by unit change in any of the predictor variables.

3.8. Ethical Considerations

Ethical issues applicable to this research were observed by the researcher and the research assistants. Before undertaking the research, approval of the research proposal was obtained from the University of Nairobi: the proposal was presented before a academic panels of the department of Open Learning and School of Continuing and Distance Education and recommendations of the panelists were incorporated into the research process. The researcher sought permission from the National Council of Science and Technology which is a statutory body mandated by the Government of Kenya to regulate research works. The researcher also sought authority of the Kenya National Highways Authority (KeNHA) to be able to carry out the research in their projects. After obtaining permission from KeNHA the researcher informed project managements of projects included in the study of the intended research. The researcher inducted the assistants to exercise courtesy during collection of data and to thank the respondents thereafter for sparing time to give their responses. They questionnaire were issued to respondents with a covering letter requesting their participation and assuring them of confidentiality and respect for privacy, and that the data obtained from them would be used solely for purposes of academic research.

3.9. Operationalization of the Variables

The variables in each object were operationalized into its indicators, measurement, measuring scale, research approach, statistical analysis and models/tools of the analysis. This is summarized in Table 3.7.

Table 3.7: Operationalization of Variables

Objective	Variable	Indicator	Measurement	Measurement Scale	Research Approach	Data Analysis Technique	Tools of Data Analysis
	Dependent Variable: Resolution of contractual disputes in road construction projects	Timeliness of resolving disputes	Speed of resolution of disputes	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Rank Analysis Correlations Regression Analysis
		Cost of resolving disputes	Amount of money used in resolving disputes	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Rank Analysis Correlations Regression Analysis
		Impartiality in resolving disputes	Level of impartiality of dispute resolution	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Rank Analysis Correlations Regression Analysis
		Enforceability of resolving disputes	Level of enforceability of dispute resolution	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Rank Analysis Correlations Regression Analysis
1. To establish the extent to which civil litigation process influences resolution of contractual disputes in road projects in Kenya	**Independent Variable:** Civil litigation process	Filling of dispute	Time, Cost of filling dispute	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Rank Analysis Correlations Regression Analysis
		Constituting a dispute panel	Timeliness for constituting panel,	Interval	Quantitative and Qualitative	Descriptive statistics	Rank Analysis Correlations Regression Analysis

			Cost of the panel			Inferential Statistics	
		Submissions by parties	Timeliness for submissions, Cost of submissions	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Rank Analysis Correlations Regression Analysis
		Determination of Dispute	Level of Impartiality	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Rank Analysis Correlations Regression Analysis
		enforcement of the dispute	Level of Enforceability	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Rank Analysis Correlations Regression Analysis
2. To assess how Alternative Dispute Resolution mechanism as a judicial evaluation model influences consensual resolution of contractual disputes in road construction projects in Kenya	**Independent Variable:** Alternative Dispute Resolution mechanisms	Arbitration	Level of influence	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Rank Analysis Correlations Regression Analysis
		Adjudication	Level of influence	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Rank Analysis Correlations Regression Analysis
		Mediation	Level of influence	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Rank Analysis Correlations Regression Analysis

3. To determine the intervening/mediating influence of business strategy on the combined relationship between judicial evaluation model and consensual resolution of contractual disputes in road construction project in Kenya	**Mediating Variable:** Business strategy	Client/Customer retention	Level of influence	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Analysis of Variance Regression Analysis
		Cost minimization/Profit maximization perception	Level of influence	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Analysis of Variance Regression Analysis
4. To examine the moderating influence of contract operational environment on combined relationship between judicial evaluation model and consensual resolution of contractual disputes in road construction project in Kenya.	**Moderating Variable:** Contract operational environment	Legal Jurisdiction	Level of influence	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Analysis of Variance Regression Analysis
		Type of Contract	Level of influence	Interval	Quantitative and Qualitative	Descriptive statistics Inferential Statistics	Analysis of Variance Regression Analysis

CHAPTER FOUR
DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSIONS

4.1. Introduction

This chapter presents the study results which have been analyzed in line with the study objectives and themes. The thematic areas include questionnaire return rate, background information of respondents, statistical assumptions and Likert scale, descriptive analysis of the variables and resolution of contractual disputes. in line with the study objectives, results are discussed under the following themes; civil litigation process and resolution of contractual disputes in road construction projects, alternative dispute resolution mechanisms and resolution of contractual disputes in road construction projects, judicial evaluation model and resolution of contractual disputes in road construction projects, mediating influence of business strategy on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects, and the moderating influence of contract operational environment on the relationship of judicial evaluation model and resolution of disputes in road construction projects. Results of correlations analysis and hypothesis testing are also presented. Discussions are carried out on all findings.

4.2. Questionnaire Return Rate

The study had a sample size of 279 respondents. The study used self-administered questionnaires. The instruments were distributed to the 279 respondents drawn from contracts and projects evaluation staff in 113 road construction projects throughout the seven regions of the Republic of Kenya. The respondents were categorized as Employer, Contractor and Engineer which are the three parties involved in construction contracts. Each category was represented in the study by 93 respondents to whom the questionnaire was sent. Table 4.1(a) gives a summary of questionnaire return rate.

Table 4.1(a). Questionnaire Return Rate

Road Projects & Class of Roads	Questionnaire Distribution and Return Rate											
	Employer - distrubuted and returned			Contractor - distributed and returned			Engineer - distributed and returned			TOTAL - distrubuted and returned		
	Distributed	Returned	% response	Distributed	Returned	% Response	Distributed	Returned	% Response	Distributed	Returned	% Response
Class A	30	30	100.00	29	23	79.31	29	27	93.10	87	80	91.95
Class B	30	30	100.00	30	29	96.67	30	23	76.67	90	82	91.11
Class C	33	26	78.79	34	28	82.35	34	34	100.00	102	88	86.27
TOTAL	**93**	**86**	**92.47**	**93**	**80**	**86.02**	**93**	**84**	**90.32**	**279**	**250**	**89.61**

Out of a total 279 questionnaires that were distributed, 250 were returned representing a return rate of 89.61%. Projects under Class A Roads category returned 80 (91.95%) while Classes B and C roads returned 82 (91.11%) and 88 (89.61%) respectively. Employer staff returned 86 (92.47%) while return rate of questionnaires among Contractor staff was 80 (86.02%). Engineer staff achieved a return rate of 84(90.32%). The overall return rate was 250 (89.61%). Mugenda and Mugenda (2003) puts the sufficiency of return rate in a continuum of 'adequate to very good' such that 50% return rate is adequate for analysis and reporting, 60% return rate is good while 70% return rate is very good. Cooper and Schindler (2008) puts the adequacy of return rate at 70% to be good enough for inferential statistics.

The study was therefore considered to have achieved a higher return than the threshold. The high return rate was achieved through consistent follow-up of the respondents by the researcher and research assistants. Most respondents were enthusiastic and cooperated with the researcher which also contributed to the high return rate. The return rate therefore surpassed the criteria set forth in the three theories of Saunders, Lewis and Thornhill (2009), Cooper and Schindler (2008), and Mugenda and Mugenda (2003) which support 75% and 70% and 50% return rates respectively for adequate statistical analysis, inference and generalization.

The study also considered sample size distribution by regions of the Republic of Kenya to ensure that the research covered road projects in the whole country. Return rate per region is summarized in Table 4.1(b).

Table 4.1(b). Questionnaire Return Rate by Rigions in Kenya

Regions	Sample Size of respondents	Class A Roads			Class B Roads			Class C Roads			TOTAL		
		Distributed	Retuned	% response	Distributed	Retuned	% response	Distributed	Retuned	% response	Distributed	Retuned	% response
Western	27	8	7	87.50	9	8	88.89	10	9	90.00	27	24	88.89
Nyanza	37	12	11	91.67	12	11	91.67	13	12	92.31	37	34	91.89
Rift Valley	49	15	14	93.33	16	15	93.75	18	15	83.33	49	44	89.80
Nairobi	34	11	11	100.00	11	10	90.91	12	11	91.67	34	32	94.12
Central	40	12	12	100.00	13	12	92.31	15	13	86.67	40	37	92.50
Eastern	37	12	10	83.33	12	12	100.00	13	11	84.62	37	33	89.19
Cost	30	9	8	88.89	9	8	88.89	12	12	100.00	30	28	93.33
North Eastern	25	8	7	87.50	8	6	75.00	9	5	55.56	25	18	72.00
TOTAL	**279**	**87**	**80**	**91.954**	**90**	**82**	**91.111**	**102**	**88**	**86.27**	**279**	**250**	**89.61**

Return rate by region spread from 72.00% in the North Eastern Region to 94.12% in the Nairobi Region. Out of 87 questionnaires sent to Class A road projects, 80 (91.95%) were returned with Nairobi and Central regions recording 100% response. The least response was 87% recorded in North Eastern Region. Class B roads registered 82 (91.11%) return rate by regions with Eastern leading with 100% followed by Rift Valley with 93.75% while North Eastern recorded 75%. The Overall regional return rate for Class C roads was 88 (86.27 %) with North Eastern recoding the leased response rate of 55.56% and Cost regions giving the highest repose rate of 100% followed by Nyanza at 92.31%.

The findings established that the return rate was clustered at above 70% which is both statistically sufficient for analysis (Mugenda and Mugenda, 2003) and with a balanced spread throughout the regions of the country.

4.3. Background Information about Respondents

The study sought to establish education background and level of experience of the respondents across categories of staff. These variables were necessary for dispute resolution in the construction industry; Agawal and Owasonoye (2001) state that dispute resolution is a social science sub-discipline which requires command of knowledge of the subject and experience, particularly in construction projects. The scores of the variable were also important in determining the level of homogeneity of the respondents in terms of education and experience characteristics. These are further discussed in the subsequent sub-themes:

4.3.1. Distribution of Respondents by Level of Education

The respondents were asked to indicate their highest level of education on a scale of Pre-university level, Graduate Level and Post-graduate level. The results are shown in Table 4.2(a)

Table 4.2(a). Education Level of Respondents

Category	No of Respondents	Pre-University		Graduate Level		Post Grad. Level		TOTAL %
		Number	Percent	Number	Percent	Number	Percent	
Employer	86	0	0	36	41.9	50	58.1	100.0
Contractor	80	0	0	33	41.3	47	58.8	100.0
Engineer	84	0	0	37	44.0	47	56.0	100.0
TOTAL	**250**	**0**	**0**	**106**	**42.4**	**144**	**57.6**	**100.0**

The finding showed that none of the respondents who participated in the study were pre-university level while 106 (42.4%) were graduate level. Further analysis revealed that distribution of graduate level was employer 36(41.9%), contractor 33(41.3%) and engineer 37(44.0%). The findings further indicated that 144 (57.6%) respondents who participated in the study have post graduate level of education. The distribution of those with post graduate qualifications is 50 (58.1%) for Employer, 47 (58.8%) for Contractor and 47(56.0%) for Engineer. The study concludes that the respondents are homogenous in terms of education level because all of them are above pre-university level of education. This means that their responses to the questions in the research instrument is likely to be normally distributed with very few responses becoming outliers, which makes measures of central tendencies more representative for measuring the study variables, and inferences more statistically valid and generalizable to the target population.

4.3.2. Distribution of Respondents by Level of work experience

The respondents were also 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 results are in Table 4.2(b).

Table 4.2(b). Work Exprience Level of Respondents

Category	No of Respondents	1-3 years		4-7 years		8-10 years		Over 10 years		TOTAL %
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Employer	86	14	16.3	16	18.6	19	22.1	37	43.0	100.0
Contractor	80	22	27.5	15	18.8	11	13.8	32	40.0	100.0
Engineer	84	16	19.0	18	21.4	15	17.9	35	41.7	100.0
TOTAL	**250**	**52**	**20.8**	**49**	**19.6**	**45**	**18.0**	**104**	**41.6**	**100.0**

Analysis shows that out of 250 respondents who participated in the study 52 (20.8%) had between 1-3 years of experience, 49 (19.6%) had 4-7 years of experience, 45 (18.0%) had 8-10 years of experience while 104 (41.6%) had over 10 years of experience. Across the categories, 198 (79.2 %) of the respondents have work experience of 4 years and above indicating also that experience, as a characteristic, is homogeneous among respondents.

From the results in Table 4.2(a) and 4.2(b) the study found out that the respondents are not highly differentiated by education and 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 possibly skew the data. Bryman and Bell (2011) recommend 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.

4.4. Statistical Assumptions and Likert Scale

The study assumed normality, linearity, homoscedasticity, and collinearity in the data set. This section shows how tests were carried out to validate the assumptions and how Type I and Type II error in interpretation of data were controlled during tests of various statistics. The section further explains the use of Likert Scale in data analysis.

4.4.1. Test for Normality

A normally distribution data is an underlying assumption in parametric testing. Central limit theorem postulates that the sample mean of random samples drawn from a normal population is also normally distributed (Kothari, 2009). Lantz (2013) recommends use of both graphical method and statistical test to assess normality. Graphical method and Shapiro Wilk test were

undertaken using SPSS version 25. In graphical method, if distribution of data in histogram closely follows a normal curve (Gaussian curve) then data is normally distributed; similarly, if the Q-Q plot show data set are clustered close to diagonal line, then the data is normally distributed. A Shapiro Wilk test calculates significance level for difference from normality at 95% confidence. The results of the test are as shown in Table 4.3

Table 4.3 Shapiro Wilk Test for Normality

Variable	**Sample Size**	**Significance Level *(p)***
Civil Litigation process	250	0.105
Alternative Dispute Resolution	250	0.100
Business Strategy	250	0.156
Contract Operational Environment	250	0.530
Resolution of Contractual Disputes in road construction projects	250	0.850

The test shows that all the variables had $p > 0.05$ meaning that the data sets were normally distributed and therefore supports inferential statistics. This conclusion was supported by graphical method; for example, the graphical distribution of data for Civil Litigation is shown in Figure 2.

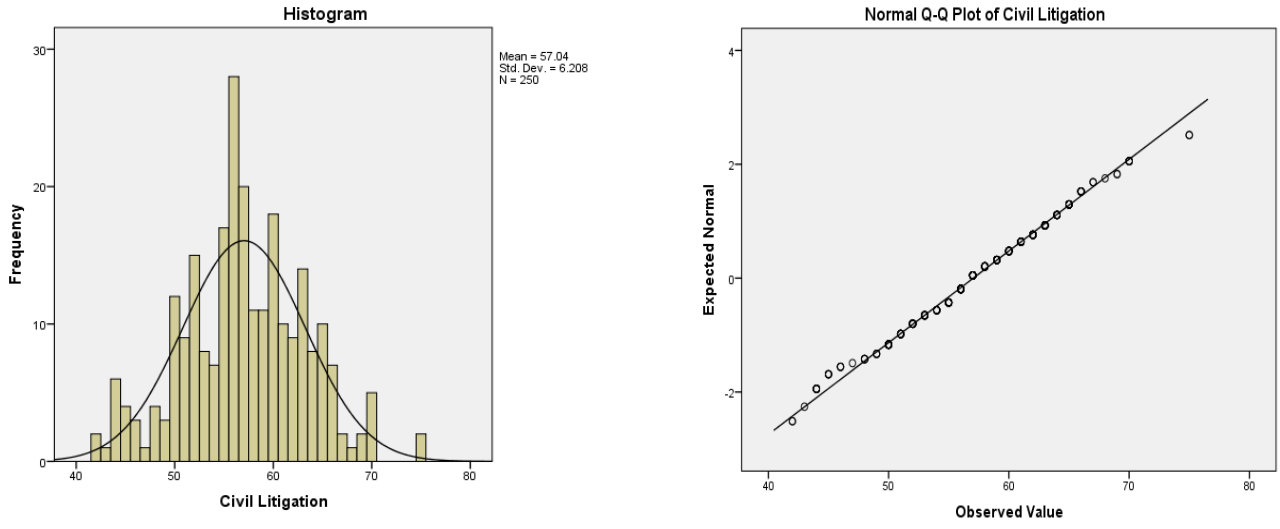


Figure 2: Graphical Tests for Normal Distribution

The Histogram for Civil Litigation fits the normal curve with symmetry around the mean, and therefore confirms normality of data while its Q-Q plots shows that the data points are close to the diagonal line and therefore reinforces the conclusion that the data is normally distributed. A Normally distributed sample data is both repetitive of the population characteristics and allows for inferences and generalization.

4.4.2. Test for Linearity and Homoscedasticity

Linearity means that two variables and are related by a mathematical equation $y = a + bx$, that is a straight line where, y is the dependent variable, x is the independent variable while *a* and *b* are constants of the relationship. Larry (2013) affirms that linearity is an important assumption in all multivariate techniques. Homoscedasticity refers to whether the residuals (error terms, or the differences between the observed value of the dependent variable and the predicted value) are equally distributed, or whether they tend to bunch together at some values which is a violation called Heteroscedasticity. Neuman (2011), observes that if residuals are normally distributed and are homoscedastic, the condition for linearity is automatically met. The study used examined P-P plots and scatter plots of the variables and the findings are given in Figure 3.

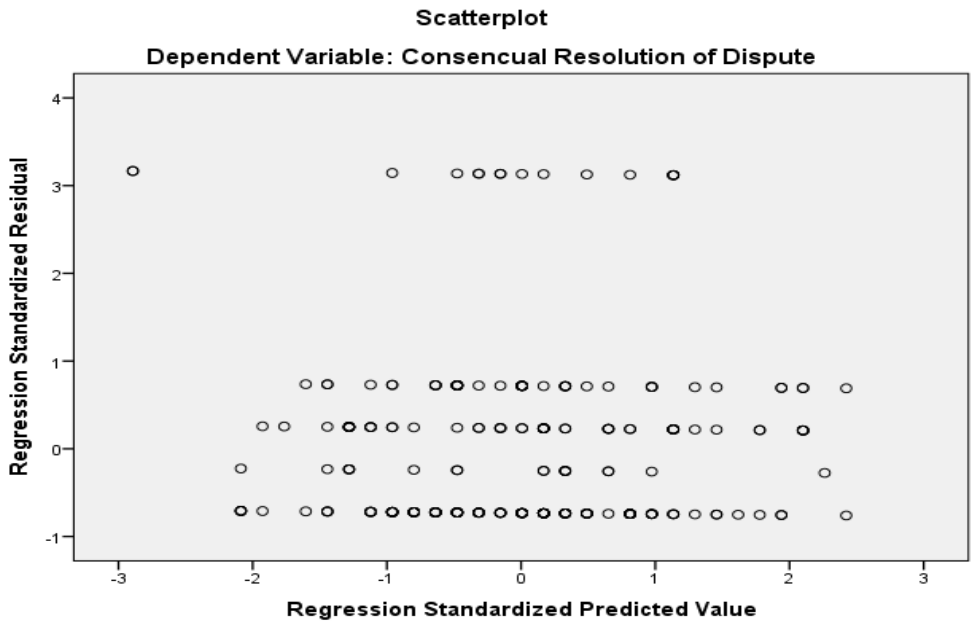


Figure 3: Scatter Plot for Homoscedasticity

The finding shows that the points are nearly equally distributed above and below zero on the y-axis, and to the left and right of zero on the x- axis. This graphical distribution confirms that the absence of Heteroscedasticity. This finding together with test of normality in section 4.4.1 leads to conclusion that the data set met conditions for linearity.

4.4.3. Test for Collinearity

Multicollinearity refers to when your predictor variables are highly correlated with each other hence the regression model will not be able to accurately associate variances in the variables with the correct predictor variable, leading to incorrect inferences. The assumption is relevant for a multiple linear regression, which has multiple predictor variables. The assumption is not important for a simple linear regression with one predictor. Multicollinearity is checked in two ways: correlation coefficients and variance inflation factor (VIF) values. Terry (2002) describes the use of correlation coefficients as inputting predictor variables into a correlation matrix and looking for coefficients with magnitudes of 0.80 or higher. If predictors are multicollinear, they will be strongly correlated. Table 4.4(a) shows correlation matrix of all the variables of the study generated from SPSS tool.

Table 4.4(a): Correlation Matrix of variables of the study

	Resolution of Contractual Disputes	Civil Litigation	ADR Mechanism	Business Strategy	Contract Operational Environment
Resolution of Contractual Disputes	1				
Civil Litigation process	-0.041	1			
ADR Mechanism	0.695**	0.008	1		
Business Strategy	0.165	0.092	0.580**	1	
Contract Operational Environment	0.305	0.011*	0.065	0.004	1

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

In the correlation matrix, none of the predictor variables (civil litigation process and ADR mechanism), intervening variable (business strategy) and moderating variable (contract operational environment) has a correlation coefficient among themselves of magnitude 0.8 and above, meaning that they are not highly correlated among themselves and therefore they are not multicollinear.

However, Kothari (2013) proposes use of VIF values. VIF values should be less than 10.00, but best case would be if these values were below 5.00. This study used the VIF method using SPSS version 25 and the results were as given in Table 4.4(b).

Table 4.4(b): Variance Inflation Factor (VIF) Test for Collinearity

Variable	**Sample Size**	**VIF- Collinearity Statistic**	**Sig. Level *(p)***
Civil Litigation process	250	1.00	0.850
ADR mechanism	250	1.00	0.690
Business Strategy	250	1.00	0.330
Contract Operational Environment	250	1.00	0.070

The results indicate that VIF collinearity statistic for all the predictor variables is 1 which is below 5 and therefore means that the variables are not highly correlated. This conclusion is supported by the results that in all the variables, $p > 0.05$ which gives 95% confidence that the variables are not highly correlated and therefore not multicollinear, therefore the test for collinearity is met.

4.4.4. Control of Type I and Type II Errors

For research findings to be valid, the researcher must control errors in statistical inferences. Type I error occurs when a researcher rejects a null hypothesis when he/she should fail to reject it while Type 2 error occurs when a researcher fails to reject a null hypothesis which should be rejected (Larry, 2013). This study minimized Type II error by fixing confidence level above 95% ($p \leq 0.05$) as proposed by Neuman (2011) and by having enough sample respondents of 250 (n =250) and suggested by Larry (2013).

4.4.5. Examination of Likert Scale

This study used Likert Scale to capture quantitative data using questionnaires. Correct interpretation of the scale determines the accuracy of the findings. The questions asked for respondents' agreement and/or opinions on various variables which elicited responses that could be mapped into interval scale ranging from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A) and Strongly Agree (SA). Questions were framed in both affirmative and negative statements to reduce the feel of monotone. During data analysis the scale on negative statements was reversed to achieve homogeneity of data. During definition and entry into SPSS, responses were assigned values in the following manner: 1 = SD, 2=D. 3=N, 4=A and 5=SA. Analysis and interpretation of results were done at a continuous scale range of $\{1.0 \leq SD < 1.5, 1.5 < D < 2.5, 2.5 < N < 3.5, 3.5 < A < 4.5$ and $4.5 < SA \leq 5.0\}$.

4.5. Resolution of Contractual Disputes in Road Construction Projects

To understand the background of disputes in road construction projects, the study first sought to establish the frequency of occurrence of contractual disputes in road construction projects, to validate that disputes exist and is a challenge/problem to the progress of construction works. The study then examined common areas of disputes and investigated the indicators of resolution of contractual disputes in road construction projects, which are timeliness of resolution of disputes, cost effectiveness of the resolution of dispute, impartiality of resolution of disputes and enforceability of resolution of disputes. These indicators are the industry-desirable characteristics of resolution of contractual disputes.

4.5.1. *Occurrence of Contractual Disputes in Road Construction Projects*

To establish the frequency of occurrence of contractual dispute, the respondents were asked whether contractual disputes between the Contractor and the Employer occur in road construction projects during the execution of the projects. The responses on a Likert scale of Strongly Disagree (SD), Disagree(D), Neutral(N), Agree(A), Strongly Agree (SA) were used as shown in Table 4.5.

Table 4.5: Occurrence of Contractual Disputes in Road Construction Projects

Occurrence of Contractual Dispute	Frequency	Percentage
Strongly disagree (SD)	0	0.0
Disagree (D)	26	10.4
Neutral (N)	126	50.4
Agree (A)	98	39.2
Strongly Agree (A)	0	0
Total	**250**	**100.0**

The findings showed that out of the 250 respondents who participated in the study none (0%) strongly disagreed, and none (0%) strongly agreed. 26(10.4%) disagreed, 126(50.4%) were Neutral, while 98(39.2%) agreed that disputes occur in the projects. Over 89.6% of the respondents were either neutral 126(50.4%) which means disputes may occur or frequently occur 98(39.2%). The study therefore confirmed that disputes occur in road construction projects and are a problem in construction contracts hence the need for dispute resolution. The findings resonate with those of Elyamanyet, Ismael and Zayed (2007) that contractual disputes in road construction projects are frequent and accounts for over 60% of suspension and termination of projects.

4.5.2. *Common Areas of Contractual Disputes in Road Construction Projects*

To explored areas of contractual disputes, the respondents were asked to rate causes of contractual disputes which are project schedule, project payment, project quality and project scope variations. Table 4.6 presents results of rating the opinion of the respondents on areas of contractual disputes.

Table 4.6: Common areas of Contractual Disputes in Road Construction Projects

	Common Areas of Contractual Disputes and % Frequencies							
Scale	Schedule	(%)	Payment	(%)	Quality	%	Variations	%
SD = 1	14	(5.6)	0	(0)	0	(0)	14	(5.6)
D = 2	26	(11.2)	105	(42.0)	109	(43.6)	34	(13.6)
N = 3	56	(22.4)	98	(39.2)	111	(44.4)	92	(36.8)
A = 4	122	(48.8)	42	(16.8)	29	(11.6)	73	(29.2)
SA= 5	30	(12.0)	5	(2.0)	1	(0.4)	37	(14.8)
Total	**250**	**(100)**	**250**	**(100)**	**250**	**(100)**	**250**	**(100)**

On schedule as cause of contractual dispute in road construction projects, out of 250 respondents who participated in the study, 14(5.6%) strongly disagreed, 26(11.2%) disagreed, 56(22.4%) were neutral, 122(48.8%) agreed, while 30(12.0%) strongly agreed. Schedule was therefore found to be a common cause of disputes in road construction project with a total of 152(60.8%) representing agree and strongly agree. On payment as a cause of disputes, out of 250 respondents none (0%) strongly disagreed, 105(42%) disagreed, 98(39.2%) were neutral, 42(16.8%) agreed and 5(2.0%) strongly agreed. A total of 145(58.0%) responses fell between neural, meaning disputes may occur, to strongly agree. Payment was therefore deemed a cause of disputes in road construction projects. On quality as a cause of disputes, out of 250 respondents who participated in the study, none (0%) strongly disagreed, 109(43.6%) disagreed, 111(44.4%) were neutral, 29(11.6%) agreed and only 1(0.4%) strongly agreed. A total of 141(56.4%) responses were between neutral to strongly agree and therefore quality was another source of disputes in road construction projects.

On variations as a cause of disputes, out of 250 respondents 14(5.6%) strongly disagreed, 34(13.6%) disagreed, 92(36.8%) were neutral, 73(29.2%) agreed while 37(14.8%) strongly disagreed. A total of 202(80.8%) responses fell between neutral and strongly disagree, which meant that quality was a source of disputes. From the results, it is concluded that schedule, payment, quality, and variations are common causes of disputes in road construction projects. It is further established that based on modal class from neutral to strongly agree, the most common cause of disputes in road construction project is variation at 80.8%, followed by schedule at 60.8%, payment at 58.0% and lastly quality at 56.4%.

The findings confirm Faridi and Sayeges (2006) that project schedule and variations are frequent sources of disputes in construction projects. Ramachandra and Rotini (2011) identifies payment additional issue causing contractual disputes in construction of road projects. This study has established that quality of works is a further source of disputes in road construction projects, and this is explained by the utility principle verses profiteering principle of the employer and the contractor respectively (Kernzer, 2004; Khanna, 2011), which conflict and undermine quality of the projects

4.5.3. *Resolution of Contractual Disputes in Road Construction projects*

The indicators of contractual disputes are derived from the industry desired characteristics which are resolution of disputes in time (with speed), at optimal cost, with impartiality and enforceable outcome. The study sought to rate desirability of these indicators on a five point Likert Scale of Strongly Agree (SA) = 1, Agree (A) = 2, Neutral (N) = 3, Disagree (D) = 4, Strongly Disagree (SD) = 5 and the results were as presented in Table 4.7.

Table 4.7: Resolution of Contractual Disputes in Road Construction Projects

No.	Desirability statements	*n*	SA	A	N	D	SD	Mean	SD.
			5	4	3	2	1		(±)
5(a)	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
5(b)	Resolution of contractual dispute should be cost effective/affordable	250	196 (78.4%)	54 (21.6%)	0 (0%)	0 (0%)	0 (0%)	4.78	0.412
5(c)	Resolution of contractual dispute should be impartial	250	223 (89.2%)	11 (4.4%)	16 (6.4%)	0 (0%)	0 (0%)	4.83	0.521
5(d)	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
	Composite(combined) Mean and Std.							**4.62**	**0.780**

Item 5(a) examined whether resolution of dispute should be done speedily/fast/in time. Out of 250 respondents an affirmative 167 (66.8%) strongly agreed, 63(25.2%) agreed while 20 (8.0%) were neutral. No respondent disagreed or strongly disagreed. The mean of 4.59, as a measure of central tendency, indicated the unanimity among the respondents that resolution of contractual

disputes should be speedy. The standard deviation was ±0.636 indicating a minimal spread from the mean (from 3.95 to 5.23) compared to composite standard deviation (0.780), and therefore implied high level of agreement among the respondents on time/speed as a desirable characteristic of resolution of contractual disputes in road construction projects. The mean (4.59) was slightly below the composite mean (4.62) but both tend to 5 on the Likert scale, which is strong agreement. These findings are contrary to those of Murali and Soon (2006) who, in a study of construction disputes in Malaysia, found out that although much of construction time was being lost in disputes, parties to the disputes are desirous of dispute settlement whatever time it takes to reach agreement or decision.

Item 5(b) inquired whether resolution of contractual disputes should be cost effective. Out of 250 respondents 196 (78.4%) strongly agreed and 54 (21.6%) agreed. None was neutral, or disagreed, or strongly disagreed. The question scored one of the highest mean (4.78) response compared to the composite mean (4.62) and the least standard deviation of ±0.412 compared to composite standard deviation (±0.780) indicating strong agreement with very small dispersion. The results therefore supported that cost effectiveness is desirable indicator of resolution of contractual disputes. This concurs with Peck and Dalland (2007) who in a study of benefits of dispute resolution boards agreed that money were important resources in construction projects and affects public perception on deliverability of projects, such that overshoot of budget is perceived to be failure in delivery of project. They concluded that any effort that saves both time and money in construction projects improves projects' availability and utility.

Item 5(c) assessed whether resolution of contractual disputes in road construction projects should be impartial. The results indicated that out of 250 respondents who participated in the study, 223(89.2%) strongly agreed, 11(4.4%) agreed while 16(6.4%) were neutral. No respondent disagreed or strongly disagreed. The mean (4.83) was above the composite mean (4.62) with a standard deviation (±0.521) below the composite standard deviation (±0.780). The results indicated strong agreement among the respondents that impartiality in resolving contractual disputes in road construction projects is highly desirable and dispersion from this desirability is only small. Therefore, dispute resolution processes should seek to be neutral without taking sides so as to inspire confidence among stakeholders for being unbiased. This conclusion is supported

by Abeyaratne (2006) who found ranked impartiality as the top industry-desired outcomes of resolution of contractual disputes. Whereas the parties to the dispute are inherently biased towards their interest, the dispute adjudication/arbitration board, the mediator and the litigation bench/judges should be impartial without interest.

Item 5(d) explored whether resolution of contractual disputes in road construction projects should be enforceable. The results show that 159(63.6%) strongly agreed, 47(18.8%) agreed, 16(6.4%) of the respondents were neutral while 12(4.8%) and 16(6.4%) disagreed and strongly disagreed, respectively. The mean was 4.27 below the composite mean 4.62 and standard deviation was ±1.180 above the composite standard deviation (±0.780), indicating that although there is agreement that enforceability is desirable (mean of 4.62 tends to 5 on the Liket scale), this agreement is more general than unanimous as indicated by the large standard deviation above the composite one. However, majority of the respondents (82.4%) either agreed or strongly agreed that enforceability of resolution of contractual disputes was desirable. Among the four statements that were used to assess indicators of resolution of contractual disputes in road construction project, this is the only statement that recorded disagreed (4.8%) and strongly disagreed (6.4%). Although their aggregate percentage (11.2%) is small, it shows that some respondents are averse to subjecting contractual disputes to the legal force, which confirms that although enforcement of dispute resolution outcome is generally desirable, a sizable number of construction industry players find it better to solve disputes consensually (Stephen, 2005). (Tea, 2008, Agarwal and Owasonoye, 2001 and Ayudhya, 2011) all 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.

In summation, the composite mean of 4.62 and standard deviation of ±0.780 sets the range of desirability between 3.84 to 5.40 equivalent to arrange of 4 to 5 in the Likert scale which implies agreement to strong agreement. The means of all indicators are within the range, which leads to the finding that speed/time (mean = 4.62), cost (mean = 4.78), impartiality (mean = 4.83) and enforceability (mean =4.27) are desirable indicators of dispute resolution in road construction projects.

4.5.3.1. *Ranking Indicators of Resolution of Contractual Disputes in Road Construction Projects*

The study ranked the indicators of resolution of contractual disputes in road construction projects 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 smaller the standard deviation the higher the rank in terms of respondent's concordance (respondents are in agreement) with the mean because standard deviation is a measure of dispersion/difference from the most likely/mean or agreed position. The finding of the mean and standard deviation based rakings of indicators using the desirability statements were presented in Table 4.8.

Table 4.8: Ranking of Indicators of Resolution of Contractual Disputes in Road Construction Projects

No.	Desirability statements of indicator	*n*	Mean	Rank (based on mean)	SD (±)	Rank (based on SD)
5(a)	Resolution of contractual dispute should be fast/speedy	250	4.59	3	0.636	3
5(b)	Resolution of contractual dispute should be cost effective/affordable	250	4.78	2	0.412	1
5(c)	Resolution of contractual dispute should be impartial	250	4.83	1	0.521	2
5(d)	Resolution of contractual dispute should be enforceable	250	4.27	4	1.180	4
	Composite (combined)Mean and Std.		**4.62**		**0.780**	

The findings show that impartiality in resolution of contractual disputes, item 5(c), ranked first using the mean and second using the standard deviation. Conversely cost effectiveness of resolution of contractual disputes, item 5(b) was ranked first by standard deviation and second by the mean. This shows that the two indicators (impartiality and cost) of resolution of contractual disputes in road construction projects are equally desirable. Speedy resolution of contractual disputes, item 5(a), and enforceable resolution of contractual disputes, item 5(d) were ranked third and fourth respectively using both mean and standard deviation showing that the two

variables are similarly desirable to resolution of contractual disputes in road construction projects.

All the means were tending to 5 showing that majority of the respondents strongly agreed that the indicators were hence desirable for consensual resolution of contractual disputes in road construction in Kenya. However, cost effectiveness/affordability (with mean of 4.78) and impartiality (with a mean of 4.83) were above the composite mean (4.62). The study therefore concluded that the two indicators are the most influential and desired characteristics of resolution of contractual disputes in road construction projects. Standard deviations of cost (±0.412), impartiality (±0.521) and speed (±0.636) were below the composite standard deviation (±0.780), which shows greater level of convergence of opinion among respondents on the desirability of the indicators as essential to resolution of contractual disputes in road construction projects.

4.5.3.2. *Ranking Indicators of Resolution of Contractual Disputes in Road Construction Projects across categories of Respondents*

The competing interests of utility of a project and profits out of the business between the employer and the contractor of road construction projects makes the respective parties desire different outcomes from resolution of contractual disputes. The Engineer being the contract administrator may largely remain neutral or take sides according to the facts of the disputes.

The study explored desirability of the indicators of resolution of contractual disputes across the categories of respondents, that is; Employer, Engineer and Contractor to establish variation in response among the categories. Measurement was made on a Likert Scale of range 1-5, where Strongly Disagree (SD) = 1, Disagree (D) = 2, Neutral (N) = 3, Disagree(D) = 4, Strongly Agree (SA) = 5. The results were as given in Table 4.9.

Table 4.9: Ranking of Indicators of Resolution of Contractual Disputes across categories of Respondents.

Item	Indicators of resolution disputes	Category of respondents	*n*	**SA 5**	**A 4**	**N 3**	**D 2**	**SD 1**	Mean	Rank
5(a)	Speed									
		Employer	86	56	22	8	0	0	4.558	3
		Engineer	84	57	19	8	0	0	4.583	2
		Contractor	80	54	22	4	0	0	4.625	1
		Total	**250**	**167**	**63**	**20**	**0**	**0**		
5(b)	Cost									
		Employer	86	61	25	0	0	0	4.709	3
		Engineer	84	64	20	0	0	0	4.762	2
		Contractor	80	71	9	0	0	0	4.888	1
		Total	**250**	**196**	**54**	**0**	**0**	**0**		
5(c)	Impartiality									
		Employer	86	78	1	7	0	0	4.826	2
		Engineer	84	74	4	6	0	0	4.810	3
		Contractor	80	71	6	3	0	0	4.850	1
		Total	**250**	**223**	**11**	**16**	**0**	**0**		
5(d)	Enforceability									
		Employer	86	59	15	3	2	7	4.360	1
		Engineer	84	55	13	5	5	6	4.262	2
		Contractor	80	45	19	8	5	3	4.225	3
		Total	**250**	**159**	**47**	**16**	**12**	**16**		

The results show that across categories of respondents, Strongly Agree (SA) was the most frequent response; speed (167), cost (196) impartiality (223) and enforceability (159) across the categories of respondents, followed by Agree (D) with frequency scores of 63, 54, 11, and 47 for speed, cost, impartiality and enforceability respectively. Neutral (3) scores were 20 for speed, nil for cost, 16 each for impartiality and enforceability. Disagree and Strongly disagreed scored nil in all the indicators except enforceability where the scores were 12 and 16, respectively. The mean statistic was above 4 for all the indicators and for all the categories which showed that Employer, Engineer and Contractor to the very minimum agreed that all the indicators are desirable though not at equal rating/level.

From the mean-based ranking, speed as an indicator of resolution of contractual dispute in road construction project scored the highest mean with the contractor (mean = 4.625, Rank 1) followed by engineer (mean =4.583, Rank 2) and lastly employer 9 mean = 4.558, Rank 3). Similarly, cost as an indicator of contractual disputes scored highest mean with contractor 9 mean =4.888, Rank 1), followed by engineer 9 mean = 4.762, Rank 2) and lastly employer (mean

=4.709, Rank 3). Impartiality scored the highest mean with the Contractor (mean = 4.850, Rank 1), followed by employer 9 mean =4.826, Rank 2) and lastly engineer (mean =4.810, Rank 3). Enforceability has the highest mean from the employer (mean = 4.360, Rank 1) followed by engineer (mean = 4.262, Rank 2) and finally contractor (mean =4.225, Rank 3). These results leads to the conclusion that disputes affect contractors more than the other categories of respondents and the contractors in road construction projects are more particularly concerned with speed, cost and impartiality of resolving contractual disputes, ranking these indicators as first, than with enforceability of resolution of contractual disputes. This finding agrees with Kennedy (2006) that contractors pay much attention to any events that affect time and cost of project operations. Jackson (2007) further argued that in cases of disputes, contractors are interested in impartial arbiter who can withstand the 'strong hand' of the Employer - which is the government in nearly all major road construction projects. One of the respondents had this to say:

> *Where the arbiters are impartial, enforceability is not very necessary because the outcome of the dispute is likely to be balanced and satisfactory to the parties. An impartial arbiter often resolves disputes with speed and little cost because of openness and candidness in dispute evaluation.*

Impartiality was singled out as a moral maxim which is deemed to be capable of resolving the human conduct and inclination to misuse of time, cost and enforcement of resolution of contractual disputes.

4.6. Civil Litigation Process and Resolution of Contractual Disputes in Road Construction Projects

Civil Litigation process was the first independent variable of the study and the first component of judicial evaluation model and formed the first objective which the study sought to achieve. The study interrogated the use of civil litigation in resolution of contractual disputes in road construction projects. The respondents were asked to state their agreement/satisfaction with the structure/steps of civil litigation process as used by courts in resolving contractual disputes with respect to efficiency of filing disputes in courts, timeliness of constituting dispute panel/ bench of judges, structured submission by the disputants, fairness of determinations by judges and

enforcement of those determinations. The responses were measured on a Likert Scale of Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly Disagree (SD) corresponding to values of 5, 4, 3, 2 and 1, respectively. Results were as given in Table 4.10.

Table 4.10. Civil Litigation Process and Resolution of Contractual Disputes in Road Construction Projects

Item.	Statements	*n*	SA 5	A 4	N 3	D 2	SD 1	Mean	SD. (±)
6(a)	Filing disputes in court is efficient	250	18 (7.2%)	137 (54.8%)	72 (28.8%)	23 (9.2%)	0 (0%)	3.60	0.755
6(b)	Constituting the dispute panel/ a bench of judges is timely	250	1 (0.4%)	54 (21.6%)	145 (58.0%)	49 (19.6%)	1 (0.4%)	3.02	0.667
6(c)	Making submissions by disputing parties is structured	250	0 (0%)	3 (1.2%)	113 (45.2%)	111 (44.4%)	23 (9.2%)	2.38	0.668
6(d)	Determinations of disputes by the panel/judges is fair	250	0 (0%)	4 (1.6%)	53 (21.2%)	87 (34.8)	106 (42.4%)	1.82	0.819
6(e)	Enforcement of determinations implemented/followed up	250	60 (24.0%)	44 (17.6%)	53 (21.2%)	93 (37.2%)	0 (0%)	3.28	1.197
	Composite Mean and Std.							**2.82**	**1.06**

The results of item 6(a) indicate that out if the 250 respondents, 18(7.2%) strongly agreed that the process of filing disputes in courts was efficient, 137(54.8%) agreed, 72(28.8%) were neutral, 23(9.2%) disagreed and none strongly disagreed. The mean score of 3.6 tends to 4 in the Likert scale and is above the composite mean of 2.82 which confirms that the respondents agreed with efficiency of the filing of disputes in a litigation process. The standard deviation from the mean (±0.775) was below the composite standard deviation (±1.06), considered small and underscored that the level of satisfaction among the respondents was not very divergent. This agreement with filling dispute is attributable to the fact that filing of disputes in courts is under the control of the respective parties to the dispute, particularly the complainant (plaintiff) and so long as the plaintiff properly documents the facts and pleas, the courts will readily accept the documents and open a case file signifying the commencement of litigation process to solve contractual dispute in in road construction projects.

In item 6(b) the results indicate that out of 250 respondents who participated on the study, only 1(0.4%) strongly agreed that constituting of the dispute panel/bench of judges is fair, 54(21.6%) agreed while most respondents145(58.0%) were neural, 49(19.6%) disagreed and another 1(0.4%) strongly disagreed. The mean was 3.2, above the composite mean of 2.82 even though both tend to 3 on the Likert scale, with a standard deviation of ±0.667 below composite standard deviation of ±1.06 and points to a higher degree of convergence. The mean confirms measure of neutrality on the Likert scale, that is, the respondents were undecided on this item and the standard deviation confirms convergence among the respondents on the mean score(neutrality), the item standard deviation (±0.667) being lower than the composite standard deviation (±1.06). Constituting a bench for a civil litigation process is the function of the courts and the parties to disputes have no control. The results therefore demonstrate that parties are not bothered about how the courts constitute the dispute panel, however sometimes courts carry this function in a manner that is satisfactory to the disputants but sometimes the process fail to satisfy the disputants and could lead to lack of trust on the bench. The main reason for dissatisfaction is attributable to slow speed at which courts assign cases to judges thereby slowing resolution of contractual disputes in road construction projects. On the slow speed of assigning judges, one respondent had this to say:

> *"I know of several disputes cases pending in courts because the presiding judges have not been assigned by the court. There is a backlog of cases and courts may need to find alternative ways of facilitating the processes."*

The backlog of unresolved disputes together with the slow processes of resolution cause disputants to have hesitation in the use of civil litigation process as a method of resolution of contractual disputes in road construction projects.

On making submission by the disputing parties, item 6(c), out of 250 respondents in the study, none(0%) strongly agreed that making submission by disputing parties is structured, 3(1.2%) agreed, 113(45.2%) were neutral, 111(44.4%) disagreed while 23(9.2%) strongly disagreed. Nearly as many respondents were neutral 113(45.2%) as disagreed 111(44.4%). The mean of 2.38, tending to 2, was below the composite mean (2.82) indicating disagreement even though

the composite mean (2.82) tends to 3 on the Likert scale suggesting neutral position. This indicates that the respondents were not satisfied with the structure of making submissions under civil litigation process. This would erode confidence in civil litigation process as a method of resolution of contractual disputes in road construction projects. The standard deviation was ±0.668 and was below composite standard deviation (±1.06) which signifies strong concordance among the respondents that making submission in civil litigation process is not structured to the satisfaction of the disputants. The process of making submission is controlled by both the courts and the parties to the disputes. The courts allocate time and duration of submissions including cross examination of witness while the disputants make submission (Ayudhya, 2011). The duration for making submission and cross-examining of witnesses is often insufficient, such that only summaries are presented while the details are left for the judges to read on their own. according to Cheung and Suen (2002), the disputants remain uncertain whether the judges do get time to read the detailed volumes of information submitted and whether they get to understand the context exactly the same way as when the submission of the entire document would have been done by the petitioner or the respondent. This scenario was deemed to be the main cause of the dissatisfaction.

Item 6(d) asked the respondents opinion on whether determinations by judges in a civil litigation was fair. Out of 250 respondents in the study, none (0%) strongly agreed, 4(1.6%) agreed, 53(21.2%) were neutral, 87(34.8%) disagreed while the majority106 (42.4%) strongly disagreed. The mean 1.82 tends to 2 on the Likert scale and was far below the composite mean (2.82) which confirms the dissatisfaction of the respondents on whether determinations by judges are fair. The standard deviation of ±0.819 is below the composite standard deviation (±1.06) and shows that that the concordance/convergence among respondents (in agreement) that at the determinations by judges in a civil litigation process were not fair. The high disapproval rating indicate that the disputants do not trust a process which they have no control over. The decisions reached by the judges are not deemed objective and satisfactory by parties especially the loser of the dispute. This was triangulated by qualitative data that the entire process from filing of disputes to determinations takes very long. One of the respondents had this to say:

"The courts are taking too long to resolve payments of pending bills contractors are asking from the Employers after delivery of projects. Some projects were completed over two years ago, but payment disputes are still pending in courts."

Determination of a dispute is an essential part, perhaps the climax of dispute resolution process. This disapproval by the respondent of the fairness of determination by judges renders civil litigation process unpopular for resolving contractual disputes in road construction projects.

Item 6(e) sought the opinion of respondents on enforcement of determination in terms of follow-up and implementation. Out of 250 respondents who participated in the study, 60(24.0%) strongly agreed, 44(17.6%) agreed, 53(21.2%) were neutral, 93(37.2%) disagreed while none (0%) strongly disagreed. The mean 3.28 was slightly above, but comparable to the composite mean (2.82) and showed that the respondents were generally neutral or undecided on the matter, but the high standard deviation ±1.197 was above the composite standard deviation (± 1.06) which indicated high variability among responses hence lack of agreement/concurrence/unanimity. The lack of convergence indicated how enforcement of determination is viewed differently/variedly among the respondents. In as session of civil litigation, the disputants are indifferent about enforcement of determination leading to apprehension on whether the process can resolve contractual disputes to the satisfaction of both parties. However, as the case progresses and the losing side becomes more apparent; up to the final determination, the impending loser begins to prefer that the determination of the dispute is not strongly enforceable to give him time to appeal or to enable him explore deferment of the case or propose out-of-court settlement. On the other hand, the winner begins to support enforceable determination that would compel the loser to pay the damages or suffer the consequences spelt out in the determination. This leads the two parties to have extreme positions over enforceability of the dispute outcomes, which explains the high variability in the data and lack of convergence, which makes civil litigation process adversarial, antagonistic and not able to preserve business relationships when used in resolution of contractual disputes in road construction projects. One of the respondents who expressed dissatisfaction said:

"The enforcement system is week; the enforcement officers are often compromised, and the judges don't follow up on whether the court decisions and awards were enforced."

This item had the largest standard deviation ± 1.197 among the indicators of civil litigation process which showed that the responses were highly differentiated signifying lack of consensus on this indicator of civil litigation process as a method is resolving contractual dispute. The finding is in line with Fenn and O'shea (2014) who, in a study of Adjudication – tiered and temporary binding disputes, concluded that it is never obvious if litigation process is effective in terms of time and cost of managing contractual dispute resolution in construction projects.

4.6.1. Correlation Analysis of Civil Litigation Process and Resolution of Contractual Disputes in Road Construction Projects

Pearson product-moment correlation was used to measure the strength and the direction of linear association between civil litigation process and resolution of contratual disputes. The results of correlation were as presented in Table 4.11.

Table 4.11. Correlation between civil litigation process and Resolution of Contractual Disputes in Road Construction Projects

	Resolution of Contractual Disputes	Civil Litigation
Resolution of Contractual Disputes	1	
Civil Litigation process	-0.041	1

**. Correlation is significant at the 0.01 level (2-tailed)
*. Correlation is significant at the 0.05 level (2-tailed).

Correlation matrix indicates that civil litigation process has a week negative correlation with resolution of contractual disputes in road construction projects (r = -0.041, p = 0.01). This suggests that an increase in use of civil litigation process has a week and negative influence on resolution of contractual disputes in road construction projects. This finding points to the

unsuitability of civil litigation process in resolution of contractual disputes in road construction project because determination of disputes under this process are not deemed fair, enforcement of determination is not guaranteed, submission are not outrightly structured and filing of disputes is not apparently efficient. These inadequacies of civil litigation process could make resolution of contractual disputes in road construction projects time consuming, and costly among other negative influences. Peck and Dalland (2007) emphasize that litigation process should be used as a last resort of resolving disputes due to some of the negative influence inherent in the process.

4.6.2. Regression Analysis of Civil Litigation Process and Resolution of Contractual Disputes in Road Construction Projects

A simple bivariate linear regression analysis was performed of civil litigation process and resolution of contractual disputes in road construction projects to determine their relationship between the two variables and the model summary of the regression was as given in Table 4.12.

Table 4.12: Regression Model Summary for Civil Litigation Process and Resolution of Contractual Disputes in Road Construction Projects

Model	R	R Square	Adjusted R Square	Std. Error the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F change
1	0.041[a]	0.002	-0.002	2.470	0.002	14.500	1	248	0.520

a. Predictors: (Constant), Litigation

The model gives R value = 0.041 which suggests a low degree of correlation (simple correlation, whether negative or positive) and R-square value = 0.002 which indicates that only 0.2% change in resolution of contractual disputes in road construction projects is explained by civil litigation process. This low rate of change of resolution of contractual disputes which is explained by civil litigation process makes the process unsuitable for resolution of disputes.

4.6.3. Hypothesis 1

H_0: There is no significant relationship between Civil litigation process resolution of Contractual disputes in road construction projects in Kenya.

The null hypothesis was tested using ANOVA F -Statistic at 95% confidence level; to either reject or fail to reject at *p* value = 0.5, level of significance. Table 4.13 shows the results.

Table 4.13: ANOVA Statistics for Civil Litigation Process and Resolution of Contractual Disputes in Road Construction Projects

Model		Sum of Squares	df	Mean Square	F	Sig.
1						
	Regression	2.533	1	2.533	14.500	0.520[b]
	Residual	1512.811	248	6.100		
	Total	**1515.344**	**249**			

a. Dependent Variable: Resolution of Contractual Dispute

b. Predictors: (Constant), Litigation

The ANOVA F statistic, F (1, 248) = 14.5 at $p = 0.520$, shows that the regression of civil litigation process is not a significant predictor (since $p > 0.05$) of resolution of contractual disputes.

Therefore, the study fails to reject the null hypothesis and concludes that there is no significant relationship between civil litigation process and resolution of Contractual disputes in road construction projects in Kenya.

This hypothesis tests confirms the inability of civil litigation process to support consensus in a resolution of contractual disputes. This finding supports those of (Ayudhya, 2011) which stated that civil litigation process is characteristically elaborate, inquisitorial, and adversarial. Civil ligation process should therefore be used as a last resort when consensus is deemed secondary and impartiality is the only attribute desired in the outcome (Cheung and Suen, 2002). It

triangulates with qualitative information; in which one of the respondents had the following to say:

> *"Once disputes go to courts, it is often showing that the relationship between the contracting parties has dipped and can only further deteriorate during the litigation process. The decision of the courts then becomes rather punitive than consensual on the loser."*

Likewise, Fen and O'shea (2014) 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 other, there is a natural tendency for them to view each other as enemies which makes it difficult to achieve consensual resolution over the dispute. Furthermore, the objectivity of litigation process and the value-orientation of consensus are converse and therefore exhibits negative relationship. This has been viewed as its major impediment to resolution of contractual disputes in road construction projects as compared to other methods. One of the respondents said the following in this respect:

> *"Litigation is essential but perhaps not very desirable for resolving disputes in road construction projects. Most contracts nowadays give priority to DAB (Dispute Adjudication Board) and amicable settlement to be attempted before parties pursue litigation as a last resort.*"

Contracting parties in road construction projects are not keen to use civil litigation process to solve disputes in the first instance. They prefer other methods that foster consensus to deliver acceptable resolution with speed, affordable cost, and impartiality, and may use civil litigation process only when other methods fail to solve contractual disputes.

4.6.4. Coefficient of Regression of Civil Litigation Process and Resolution of Contractual Dispute.

The results of hypothesis test were further confirmed by use of coefficients of regression to assess the influence of civil litigation process on resolution of contractual disputes in road

construction projects via a linear univariate relationship. The coefficients of the regression were as given in Table 4.14.

Table 4.14: Coefficients of Regression of Civil Litigation Process and Resolution of Contractual Disputes in Road Construction Projects

Model		Unstandardized Coefficient		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	18.517	1.481		12.500	0.000
1	Civil litigation Process	-0.023	0.035	-0.041	-0.644	0.520

Dependent Variable: Resolution of Contractual Dispute

The results show that the linear regression of the form, $y = \beta_o + \beta_1 X_1 + \varepsilon$ between the resolution of contractual dispute (dependent variable) and civil litigation process (independent variable), assuming no error(ε) in the model, is defined by:

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

The results suggest that a unit increase in use civil ligation process results into -0.023 units increases (which is a decrease/deterioration) in resolution of contractual disputes. This means that resolution of contractual disputes reduces by 0.23 units for every unit increase civil litigation process confirming that civil ligation process has no significant influence on resolution of contractual disputes in road construction projects. The small influence it has is negative and therefore does not build consensus. It is not appropriate method of resolution of contractual disputes because it adversarial and would lead to long time and high cost of resolution of disputes.

4.7. Alternative Dispute Resolution mechanism and Resolution of Contractual Disputes in Road Construction Projects

Alternative Dispute Resolution (ADR) mechanism was the second independent variable in the study and was used to formulate second objective that the study sought to achieve. The study

investigated the use of ADR (Arbitration, Adjudication and Mediation) in resolution of contractual disputes in road construction projects. The respondents were presented with statements on use of adjudication, arbitration and mediation as components of ADR mechanism and requested to state the level of agreement or disagreement on a Likert Scale of Strongly Agree (SA), Agree (A), Neutral(N), Disagree (D) and Strongly Disagree (SD) corresponding to values of 5, 4, 3, 2 and 1 respectively. The results were as given in Table 4.15.

Table 4.15: ADR Mechanism and Resolution of Contractual Disputes in Road Construction Projects

No.	Statements	*n*	SA 5	A 4	N 3	D 2	SD 1	Mean	Std. (±)
7(a)	The project uses Arbitration to solve contractual disputes	250	29 (11.6%)	42 (16.8%)	179 (71.6%)	0 (0%)	0 (0%)	3.40	0.69
7(b)	The project uses Adjudication to solve contractual disputes	250	0 (0%)	104 (41.6%)	69 (27.6%)	61 (24.4%)	16 (6.4%)	3.04	0.96
7(c)	The project uses 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
	Composite Mean and Std.							**3.17**	**0.94**

Item 7(a) sought to establish the use of Arbitration to solve contractual disputes, out of 250 respondents who participated in the study, 29(11.6%) strongly agreed, 42(16.8%) agreed, 179 (71.6%) were neutral while none (0) disagreed or strongly disagreed. This had a mean score of 3.40, which was above the composite mean of 3.17 all of which tended to 3 on the Likert scale suggesting neutral position, and standard deviation of ±0.69 which was below the composite standard deviation of ±0.94 indicating convergence among the respondents on the position. The findings show that many respondents were undecided on the use of arbitration to resolve contractual disputes. However, the responses were skewed to one side of the mode; that is the respondents were generally either neutral, agreed or strongly agreed with the use of arbitration to solve contractual disputes in road construction projects. This demonstrated that the construction

industry is gradually accepting and adopting arbitration as a method of contractual dispute resolution.

Item 7(b) set to assess the use of Adjudication in resolution of contractual disputes in road construction projects. Out of 250 respondents, none (0%) strongly agreed, 104(41.6%) agreed, 69(27.6%) were neutral, 61(24.4%) disagreed and 16(6.4%) strongly disagreed. The mean score was 3.04 below the composite mean of 3.17 confirming that the respondents were neutral on the use of adjudication to solve contractual disputes in road construction projects, and standard deviation was ±0.96 just above the composite standard deviation of ±0.94 a small divergence in opinion among the respondents. These findings show that many respondents/modal class 104(41.6%) agreed with of adjudication, even though the mean statistic was 3.04 and tends to 3 which is a neutral position. Since the mean showed undecided position in the direction of the mode - agree104(41.1%), the study concluded that used adjudication is becoming acceptable as a means of resolving contractual disputes in road construction projects.

Item 7(c) enquired about the use of Mediation to solve contractual disputes in road construction projects. Out of 250 respondents in the study 15(6.0%) strongly agreed 89(35.6%) agreed 57(22.8%) were neutral, 73(29.2%) disagreed 16(6.4%) strongly disagreed. This had a mean of 3.06 below the composite mean of 3.17 indicating neutral position on the Likert scale and standard deviation of ±1.07 above the composite standard deviation of ±0.94 indicating the presence of divergence among the respondents. The modal response was agreed 89(35.6%) in support of use of mediation, the mean =3.06 which is below the composite mean = 3.17 shows a general neutrality among the respondents on the use of mediation to solve contractual disputes. The standard deviation of ±1.07 was above the composite std = ± 0.94 and showed a wide spread in response, indicating lack of unanimity among the respondents. However, since the mean of 3.06 implies that the sample respondents were undecided and the modal response 89(35.6%) is in support of frequent use of mediation, the study concluded that mediation is also increasingly becoming acceptable as a means of resolution of contractual disputes in road construction projects.

The composite mean of 3.17 is a pooled/combined mean of all the ADR mechanism components (adjudication, arbitration and mediation) and showed an apparent neutrality among the respondents on the use of ADR mechanism in resolution of contractual disputes in road construction projects. This implied that the sample respondents were undecided on the use of ADR mechanism is resolving contractual disputes in road construction projects. However, the modal responses across the indicators of ADR mechanism showed that more respondents agreed and strongly agreed as compared to disagree and strongly disagree which indicates the general direction that tends to acceptability of ADR mechanism as method of resolving contractual disputes in road construction projects. This trend was also confirmed by the skewness of the distribution of responses from their respective means, and it was observed that the distributions were skewed towards the affirmative (agree and strongly agree) side. The study therefore concluded that ADR mechanism (composite mean = 3.17) is gaining acceptability in road construction projects as a means of resolving contractual disputes, which was in contrast with litigation process (composite mean = 2.82) which recorded dissatisfaction among the same sample respondents. These findings were consistent with those of Fleke and Perin (2003) who found out that the increase in adoption of ADR mechanism in resolving disputes stems from its ability to offer reduced time and cost of dispute resolution. However, some people remained undecided on the use of ADR mechanism due to partiality of the mechanism (Chau,2007) and weak enforceability of the outcome (Kumaraswami,1997).

In comparison, the study concluded that the alternative dispute resolution mechanism is increasingly becoming acceptable as a method of contractual dispute resolution in road construction projects, displacing civil litigation process, as the latter inherently does not favour consensual resolution of disputes between the parties. More and more contractual disputes in road construction projects are being solved by adjudication, arbitration or mediation.

4.7.1. Correlation Analysis of Alternative Dispute Resolution Mechanism and Resolution of Contractual Disputes in Road Construction Projects

Pearson product-moment correlation was used to measure the strength and the direction of linear association between alterenative dispute resolution mechanism and resolution of contratual disputes in road construction projects. The results of correlation were as presented in Table 4.16.

Table 4.16. Correlation between ADR mechanism and resolution of Contractual Disputes in Road Construction Projects

	Resolution of Contractual Disputes	ADR Mechanism
Resolution of Contractual Disputes	1	
ADR Mechanism	0.695**	1

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

The correlation matrix shows that resolution of contractual disputes in road construction projects has a strong positive correlation with ADR mechanism ($r = 0.695$, $p = 0.01$) thus suggesting that resolution of contractual disputes is more likely to be achieved through ADR mechanism. Increase in use of ADR mechanism has strong positive influence on resolution of contractual disputes in road construction projects. This finding supports the suitability of ADR mechanism in resolution of contractual disputes in road construction project because resolution process and the outcome are deemed cost effective, fast, and fair. These strengths of ADR mechanism have made the mechanism gain acceptability in resolution of contractual disputes in road construction projects. The correlation suggests that the more ADR mechanism is deployed in resolution of disputes in road construction projects, the more a consensual resolution is likely to be reached.

4.7.2. Regression Analysis of Alternative Dispute Resolution Mechanism and Resolution of Contractual Disputes in Road Construction Projects

To determine the influence of ADR mechanism on consensual Resolution of contractual disputes, a linear regression analysis was undertaken, and the model summary of the regression is as given in Table 4.17.

Table 4.17: Regression Model Summary for ADR Mechanism and Resolution of Contractual Disputes in Road Construction Projects

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[a]	.583	.490	2.471	.001	15.400	1	248	.019

a. Predictors: (Constant), ADR Mechanism

The R value of 0.695 suggest a high degree of correlation (negative or positive) and R Square value of 0.583 percent indicate that use ADR mechanism explains a significant 58.3% change in resolution of contractual disputes in road construction projects. The remaining 42.7% is explained by other factors. This implies that relationship between ADR mechanism and consensual resolution of contractual disputes is positive and strong.

4.7.3. Hypothesis 2

H_0: There is no significant relationship between ADR mechanism and resolution of Contractual disputes in road construction projects in Kenya.

The null hypothesis was tested using ANOVA F-Statistic at 95% confidence level; to either reject or fail to reject at *p* value = 0.5, level of significance. The results as given in Table 4.18.

Table 4.18: ANOVA Statistic for ADR mechanism and Resolution of Contractual Disputes in Road Construction Project

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.942	1	0.942	15.400	.019[b]
	Residual	1514.402	248	6.106		
	Total	**1515.344**	**249**			

a. Dependent Variable: Resolution of Contractual Dispute
b. Predictors: (Constant), Alternative Dispute Resolution

The ANOVA F statistic, F (1, 248) = 15.400 at p = 0.019, shows that the regression of ADR mechanism is a significant predictor (since $p < 0.05$) of resolution of contractual disputes.

Therefore, the study rejects the null hypothesis and concludes that there is significant relationship between ADR mechanism and resolution of Contractual disputes in road construction projects in Kenya.

This finding demonstrates the preference for use of ADR mechanism for resolution contractual disputes in road construction projects which contradicts Roebuck *et al* (2009) who stated that the assumption that ADR mechanism is more effective than civil litigation process is only theoretical.

4.7.4. Coefficients of Regression of ADR Mechanism and Resolution of Contractual Disputes in Road Construction Projects

The results of hypothesis test were further confirmed by use of coefficients of regression to assess the influence of alternative dispute resolution mechanism on resolution of contractual disputes in road construction projects via a linear univariate relationship. The results were as given in Table 4.19.

Table 4.19: Coefficients Regression of Regression of ADR Mechanism and Resolution of Contractual Disputes in Road Construction Projects

Model		Unstandardized Coefficient		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	17.154	1.065		16.106	0.000
1	ADR Mechanism	0.520	0.031	0.695	0.393	0.019

Dependent Variable: Resolution of Contractual Dispute

The results show a standardized beta of 0.520 and a constant of 17.154 which when presented in linear relationship of the form, $y = \beta_o + \beta_2 X_2 + \varepsilon$, assuming no error($\varepsilon$) in the model, becomes:

Resolution of contractual dispute = 17.154 + 0.520 ADR Mechanism.

The results imply that a unit increase in use of ADR Mechanism results into 0.520 units of increase/improvement in resolution of contractual disputes. Therefore, increase in the use of ADR mechanism results into a positive improvement in resolution of contractual disputes. the positive relationship between ADR mechanism and resolution of contractual disputes suggests the ability of ADR mechanism to build consensus between parties to a dispute. Although ADR is viewed to be lacking impartiality and enforceability, Kumaraswami (1997) explains that this does not mean negative influence but is a demonstration of a value bound evaluation of disputes and consensus building between parties who accept that a win-win model is not synonymous with a 50:50 outcome. Since ADR mechanism fosters consensus, it is more likely to be fast and cost effective in resolving contractual disputes.

4.8. Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

Judicial evaluation model combines both civil litigation process and ADR mechanism. The third objective of the study sought to examined how judicial evaluation model influences resolution of contractual disputes in road construction projects. The descriptive findings were as presented in Table 4.20.

Table 4.20: Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

Judicial Evaluation Model	n	Mean	Standard Deviation (±)
Civil Litigation Process	250	2.82	1.06
ADR mechanism	250	3.17	0.94
Composite mean and SD	**250**	**2.995**	**1.017**

Out of 250 respondents who participated in the study, civil ligation process had a mean of 2.82 with a standard deviation of ± 1.06 while ADR mechanism had a mean of 3.17 with a standard deviation of ± 0.94. Although the two means tended to 3(neutral) on the Likert scale, they

approached the neutral point from different directions suggesting that use of ADR mechanism had a higher approval rating among the respondents than the use of civil litigation process in resolution of contractual disputes in road construction projects. There was also greater convergence among the respondents, as measured by the standard deviation; ADR mechanism (± 0.94) and civil litigation process (± 1.06). The statistics demonstrated that within the judicial evaluation model, respondents preferred ADR mechanism to civil ligation process for resolution of contractual disputes in road construction projects. Similarly, the composite means of judicial evaluation model = 2.995 tends to 3 on the Likert scale from a higher value than mean of civil litigation process = 2.89 indicating a diminished contribution of civil litigation process, as compared to ADR mechanism, in resolution of contractual disputes. The composite standard deviation of judicial evaluation model (± 1.017) is practically equal to the means of the components of the model; civil litigation process (±1.06) and ADR mechanism (±0.94), showing consistent convergence on the characteristics of the model.

4.8.1. Correlation Analysis of Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

Pearson product-moment correlation was used to measure the strength and the direction of linear association between judicial evaluation model and resolution of contratual disputes. The results of correlation were as presented in Table 4.21.

Table 4.21: Correlation between Alternative Dispute Resolution mechanism and resolution of Contractual Disputes in Road Construction Projects

	Resolution of Contractual Disputes	Civil Litigation	ADR Mechanism
Resolution of Contractual Disputes	1		
Civil Litigation process	-0.041	1	
ADR Mechanism	0.695**	0.008	1

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

The correlations between the two components of judicial evaluation model and resolution of contractual disputes in road construction projects shows that civil litigation process has a week negative correlation (r = -0.041, p = 0.01) with resolution of contractual disputes in road construction projects while ADR mechanism has a strong positive correlation (r = 0.695, p = 0.01) with resolution of contractual disputes in road construction projects. The two correlation are converse to each other suggesting that the effectiveness of the judicial evaluation model in resolving contractual disputes is the net effect of the interplay between the two components. The contribution of civil litigation is small and negative while that of ADR mechanism is comparatively large and positive. This interplay underscores that ADR mechanism is a stronger contributor to resolution of contractual disputes in road projects than civil litigation process.

4.8.2. Regression Analysis of Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

To determine the influence of entire judicial evaluation model (civil litigation plus ADR mechanism) on consensual resolution of contractual disputes, a multiple linear (bivariate) regression analysis was carried out. The model summary of the regression of resolution of contractual disputes on judicial evaluation model was as presented in Table 4.22.

Table 4.22: 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	0.520[a]	0. 400	0.500	2.474	0.003	13.660	2	247	0.004

a. Predictors: (Constant), Alternative Dispute Resolution, Civil litigation

The R value of 0.520 indicates moderate degree of correlation (negative or positive) and R Square value of 0.400 indicates that use judicial evaluation model explains 40.0% change in resolution of contractual disputes. The remaining 60.0% is explained by other factors.

The results infer that civil litigation process, with a negative relationship with judicial evaluation model, has a diluting effect on ADR mechanism (which have +ve relationship with the model) and therefore reduces the influence of judicial evaluation model on resolution of contractual disputes in road construction projects.

4.8.3. Hypothesis 3

H_0: There is no significant relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya.

The null hypothesis was tested using ANOVA F-Statistic at 95% confidence level; to either reject or fail to reject at *p* value, p = 0.5, level of significance. The results of the test were as given in Table 4.23.

Table 4.23: ANOVA Statistics for Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

Model		Sum of Squares	df	Mean Square	F	Sig.
1						
	Regression	4.109	2	2.055	13.600	0.004
	Residual	1511.235	247	6.118		
	Total	**1515.344**	**249**			

a. Dependent Variable: Resolution of Contractual Dispute
b. Predictors: (Constant), Alternative Dispute Resolution, Litigation

The ANOVA F-statistic; F (2,247) = 13.600 at $p = 0.004$ shows that the regression of judicial evaluation model is a significant predictor ($p < 0.05$) of resolution of disputes.

Therefore, the study rejects the null hypothesis and concludes that there is significant relationship between judicial evaluation model and resolution of Contractual disputes in road construction projects in Kenya.

The finding supports the work of Madden (2001) who concluded that both civil litigation process and ADR mechanism can be used in combination to optimize dispute resolution. But Ayudhya (2011) underscores that because of the negative influence of civil ligation process, it should be used as a last resort upon failure of all other options of dispute resolution.

4.8.4. Coefficients of Regression of Judicial Evaluation Model and Resolution of Contractual Disputes

The results of hypothesis test were further confirmed by use of coefficients of the regression to assess the influence of judicial evaluation model on resolution of contractual disputes in road construction projects via a bi-variate relationship. The results were as given in Table 4.24.

Table 4.24: Coefficients of Regression of Judicial Evaluation Model and Resolution of Contractual Disputes

Model		Unstandardized Coefficient		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	18.102	1.695		10.683	0.000
	Civil Litigation	-0.026	0.35	-0.046	-0.720	0.473
	ADR Mechanism	0.510	0. 320	0.033	0.508	0.612

Dependent Variable: Resolution of Contractual Dispute

The results show a standardized beta values of -0.026 for civil litigation process and 0.510 for ADR mechanism and a constant of 18.102 which when presented in a bi-variate relationship of the form, $y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$, assuming zero model error, becomes:

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

The regression of judicial evaluation model and resolution of contractual disputes in road construction projects indicate 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/deterioration (because of the negative) in resolution of contractual disputes in road construction projects. Comparatively, the contribution of ADR mechanism is more positive and higher that the contribution of civil litigation process in resolving contractual disputes in road construction projects. This suggests that ADR mechanism is more suitable than civil litigation process in resolution of contractual dispute due to its ability to build consensus as opposed to adversarial process of litigation.

4.9. Business Strategy, Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects.

Business strategy is the mediating variable and the fourth objective of the study. There are certain strategies in the construction commerce that parties use for purposes of business development. The strategies may mediate/intervene resolution of contractual disputes, either in the choice of evaluation model or the resolution process itself. Some of these strategies target customer retention while others are geared toward profit maximization/cost minimization. The responded were presented with statements of the two indicators of business strategy to state their agreement with the statements on a Likert scale; strongly agree (SA), agree (A), neutral (N), disagree (D), strongly disagree (SD). The results are in Table 4.25(a).

Table 4.25(a): Business Strategy, Judicial Evaluation Model and Resolution of Contractual Disputes

No.	Statements	*n*	SA	A	N	D	SD	Mean	SD
			5	4	3	2	1		(±)
8(a)	Contracting parties avoid disputes to retain customers for long	250	51 (20.4%)	69 (27.6%)	10 (4.0%)	94 (37.6%)	26 (10.4%)	3.10	1.372
8(b)	Contracting parties avoid disputes to maximize profits of business	250	0 (0%)	116 (46.4%)	73 (29.2%)	34 (13.6%)	27 (10.8%)	3.11	1.012
	Composite Mean and SD							**3.105**	**1.205**

On customer retention as a business strategy, out of the 250 respondents who participated in the study; 51(20.4%) strongly agreed, 69(27.6%) agreed while 10(4.0%) were neutral, 94(37.6%) disagreed while 26(10.4%) strongly disagreed. On the either side of the neutral position, there were 120(48%) on the affirmative (agree and strongly agree) as compared to 120(48%) who were not affirmative (disagree and strongly disagree). The distribution either side of the neutral position was therefore balanced. The mean was 3.10 which was very comparable to the composite mean of 3.105, while the standard deviation was ±1.372 above the composite std = ±1.205. This showed that the sample respondents were undecided on whether customer retention as indicator of business strategy causes parties to a road construction contract to avoid disputes. However, the common theme established by qualitative data was rather decisive. The quantitative data was triangulated with qualitative data, and one respondent had this to say:

> *"Resolution of disputes should consider protecting the relationship between the parties/customers. Adversarial resolutions of disputes are a threat to customer retention whereas consensual resolutions foster relationships that retain customers for future business."*

The study therefore concluded that although the sampled respondents were undecided in the quantitative measurements, the qualitative analysis pointed to agreement that customer retention is pertinent to business strategy and intervenes in resolution of contractual disputes in road construction projects. The level of intervention is by parties avoiding disputes to retain customers for the sake of future business. Dancaster (2008) explained this that beyond the contract, there is a non-formal, non-contractual but perhaps the more important relationship that define strategic behavior that influences parties' approaches to dispute resolution. Angus and Robet (2007), states that business dynamics call for strategic behavior in disputed resolution such that relationships are not destroyed.

The respondents were also presented with statement of profit maximization, the second indicator of business strategy. Out of 250 who participated in the study, there was none (0%) strongly agree, 116(46.4%) agree 73(29.2%) were neutral, 34(13.6%) disagreed and 27(10.8%) strongly disagreed. The mean statistic was 3.11which was also comparable with composite mean = 3.105

and the standard deviation was ±1.012 below the composite std = ±1.205. The modal response was 116(46.4%) which is agree and showed that many respondents agreed that profit maximization is business strategy that inform parties to avoid disputes. Both the mean and composite mean were practically the same at 3.11 and 3.105 respectively which tended to neural position and implied that the sampled respondents were generally undecided on whether profit maximization causes parties to avoid disputes.

These results imply that the sampled respondents were undecided on whether business strategy intervenes in resolution of contractual disputes in road construction projects in Kenya. However, the high modal response of profit maximization, agree = 116(46.4%), indicated that the business strategy could be intervening in the resolution of contractual disputes. These findings were triangulated with qualitative data and one the respondents stated as follows:

> *"Parties with high profit maximization attitudes foster adversarial approach to resolution of disputes and undermine consensus."*

From the findings, the study concluded that, although the sampled respondents were largely undecided (composite mean = 3.105) and divergent (composite std = ±1.205), the qualitative information suggests that business strategy has an intervening influence and cannot be ignored in resolution of contractual disputes in road construction projects. The variable has potential of bringing consensus or dispute avoidance when parties consider future opportunities against short term entitlements. Hill and Wall (2008) agree that cost minimization and customer retention often influence parties' willingness to conclude disputes amicably using less adversarial means thus helps in keeping business relationship.

The study also analyzed the composite means and composite standard deviations of the variables to describe the intervening influence of business strategy on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects. The results are given in Table 4.25(b).

Table 4.25(b): Composite mean and standard deviation of Business Strategy, Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

Variable	n	Mean	Standard Deviation (±)
Judicial Evaluation Model	250	3.00	1.02
Resolution of Contractual Disputes	250	4.62	0.78
Business Strategy	250	3.10	1.22
Composite mean and SD	**250**	**3.24**	**1.00**

The composite mean of the three variables (3.24) is higher than standard deviation of business strategy (3.10) and falls in between standard deviations of judicial evaluation model (3.00) and resolution of contractual disputes (4.62), and therefore underscores business strategy as an intervening variable in the relationship between judicial evaluation model and resolution of contractual disputes. However, the intervening influence is just above moderate (above 3). The composite standard deviation of the three variables (±1.00) is below the standard deviation of business strategy (± 1.22) and falls between standard deviations of judicial evaluation model (±1.02) and resolution of contractual disputes (±0.78). It however tends towards the standard deviation of judicial evaluation model with difference of ±0.02 (2.02-1.00) and away from resolution of contractual dispute by ± 0.22(1.00-0.78). The results suggest a higher agreement among respondents that business strategy intervenes the relationship between judicial evaluation model and resolution of contractual disputes.

4.9.1. Correlation Analysis of Business Strategy, Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

Pearson product-moment correlation was used to measure the strength and the direction of linear association of business strategy, judicial evaluation model and resolution of contratual disputes. The results of correlation were as presented in Table 4.26.

Table 4.26: Correlation of Business Strategy, Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

	Resolution of Contractual Disputes	Civil Litigation	ADR Mechanism	Business Strategy
Resolution of Contractual Disputes	1			
Civil Litigation process	-0.041	1		
ADR Mechanism	0.695**	0.008	1	
Business Strategy	0.165	0.092	0.580**	1

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

The correlation matrix indicates that business strategy has weak positive correlation (r = 0.165, p = 0.01) with resolution of contractual disputes in road construction projects, also weak and positive correlation (r = 0.092, p = 0.01) with civil litigation process but moderately strong positive correlation (r = 0.580, p = 0.01) with ADR mechanism. The rather strong correlation between business strategy and ADR mechanism (r = 0.580, p = 0.01) compared to the week correlation with civil litigation process (r = 0.092, p =0.01) suggesting that business strategy works better when ADR mechanism is used for resolving contractual disputes than when civil litigation process is deployed for resolving disputes. This is attributable to the finding that business strategy explores consensus or avoidance to intervene in resolution of contractual disputes, which are also the characteristics of ADR mechanism in resolving contractual disputes in road construction projects.

4.9.2. Regression Analysis of Business Strategy, Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

To determine the mediating influence of business strategy on the relationship between judicial evaluation model and resolution of contractual disputes, a multiple linear regression analysis of the three variables was carried out and the model summary of the multiple regression of business strategy, judicial evaluation model and resolution of contractual disputes in road construction projects is presented in Table 4.27.

Table 4.27: Regression Model Summary for Business Strategy, 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	0.641[a]	0.412	.0399	2.470	0.010	7.890	3	246	0.043

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

The R value of 0.641 indicates moderately high degree of correlation (negative or positive) between business strategy and the relationship between JEM and resolution of contractual disputes in road construction projects. R Square value of 0.412 indicates that the mediating influence of business strategy on the relationship of judicial evaluation model and resolution of contractual disputes explains 41.2% change in resolution of contractual disputes in road construction projects. This change influence is more compared to 40.0% when business strategy does not intervene in the relationship, suggesting that business strategy improves the how parties use judicial evaluation model to resolve contractual disputes in road construction projects.

4.9.3. Hypothesis 4

H_0: There is no significant mediating effect of Business Strategy on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya.

The null hypothesis was tested using ANOVA F-Statistic at 95% confidence level; to either reject or fail to reject at *p* value, $p = 0.5$, level of significance. The results of the test are given in Table 4.28.

Table 4.28: ANOVA Statistics for Business Strategy, Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

Model		Sum of Squares	df	Mean Square	F	Sig.
1						
	Regression	14.446	3	4.815	7.880	.043[b]
	Residual	1500.898	246	6.101		
	Total	**1515.344**	**249**			

a. Dependent Variable: Resolution of Contractual Dispute

b. Predictors: (Constant), Business Strategy, Alternative Dispute Resolution, Litigation

The ANOVA F-statistic; F (3, 246) = 7.88 at p = 0.043 shows that the regression of business strategy, is a significant mediator ($p < 0.05$) in the relationship between judicial evaluation model and resolution of contractual disputes.

Therefore, the study rejects the null hypothesis and concludes that there is significant mediating effect of Business Strategy on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya.

4.9.4. Coefficient of Regression of Business strategy, Judicial Evaluation Model and Resolution of Contractual Disputes

The results of hypothesis test were further confirmed by use of coefficients of the multivariate regression to assess the mediating influence of business strategy on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects and the results were as given in Table 4.29.

Table 4.29: Coefficients of Regression of Business Strategy, Judicial Evaluation Model and Resolution of Contractual Disputes

Model		Unstandardized Coefficient		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	18.803	1.776		10.588	.000
	Civil Litigation	-0.020	0.036	-.037	-.567	.571
	ADR Mechanism	.611	.032	028	437	.662
	Business Strategy	.420	.032	.083	1.302	.194

Dependent Variable: Resolution of Contractual Dispute

The results show a standardized beta values of -020 for civil litigation process and 0.611 for ADR mechanism, 0.420 for business strategy and a constant of 18.803 which when presented in bi-variate linear relationship of the form, $y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$, assuming no error in the model becomes:

Resolution of contractual dispute = 18.803 + 0.611 ADR mechanism – 0.020 civil litigation process + 0.420 Business Strategy.

The model is interpreted that a unit increase in business strategy results into 0.420 units increase/improvement in resolution of contractual disputes in road construction projects. The results also show that with the intervening influence of business strategy, a unit increase in ADR mechanism results into 0.611 units improvement in resolution of contractual disputes, which is higher compared to 0.510 units improvements without intervening influence of business strategy. The results further show that the intervening influence of business strategy causes a unit increase/improvement in civil litigation process to produce -0.20 instead of -0.26 units in resolution of contractual disputes, which is an improvement. These findings further underscore that the intervening influence of business strategy is both positive on civil litigation process and ADR mechanisms, but more on the latter to build consensus in and avoidance of disputes in road

construction projects. The positive intervening influence on civil litigation process indicates that business strategy may cause parties to either to withdraw from litigation processes or seek out-of-court settlements instead of long court processes during which the parties cannot do business because of hostilities and adversarial relationship. The constant standardized beta coefficient has also increased from 18.102 to 18.803. The results suggest that model parameters increase when Business strategy is incorporated in the resolution of disputes.

The study therefore concluded that use of business strategy improves JEM's capacity to achieve resolution of contractual disputes. This resonates with the findings of Gmmell and Entwistle (2010) that employers expect realistic and flexible solutions to a dispute which calls for contractor to use appropriate business strategy. Hill and Wall (2008) further emphasize that business strategy often influences parties' willingness to conclude disputes amicably and consensually. The study has also established that a combination of business strategy and ADR mechanism achieve better results in resolving contractual disputes than its combination with civil litigation process.

4.10. Contract Operational Environment, Judicial Evaluation Model, and resolution of Contractual disputes in Road Construction Project.

Contract operational environment was the moderating variable and the fifth objective of the study. Some of the environmental factors in which construction contracts operate are the legal jurisdiction, that is; the applicable law of the host country of a road construction project and the type of contract itself, that is; whether the contract type is procurement only, or procurement and construction or engineering, procurement and construction (EPC) contract. Statements on these indicators of contract operational environment were presented to the respondents to rate on Likert scale as strongly agree (SA), agree (A), neutral (N), disagree (D), strongly disagree (SD). The results were as given in Table 4.30.

Table 4.30(a): Contract Operational Environment, Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

No.	Statements	*n*	SD	D	N	A	SA	Mean	SD.
			1	2	3	4	5		(±)
9(a)	Applicable law determines selection of dispute resolution method	250	0 (0%)	47 (18.8%)	11 (4.4%)	99 (39.6%)	93 (37.2%)	3.95	0.121
9(b)	Form of Contract determines selection of dispute resolution method	250	0 (0%)	0 (0%)	10 (4.4%)	171 (68.4%)	69 (27.6%)	4.24	0.129
	Composite Mean and SD.							**4.10**	**0.191**

On legal jurisdiction as an indicator of contract operational environment, out of the 250 respondents who participated on the study, none (0%) strongly disagreed, 47(18.8%) disagreed, 11(4.4%) were neutral , 99(39.6%) agreed while 93(37.2%) strongly agreed. Most respondents were affirmative, 99 agreed and 93 strongly agreed, accounting for 192(76.8%). The mean was 3.95 which was below the composite mean of 4.10 and standard deviation was ±0.121 above composite std = ±0.191. The mean (3.95) tended to 4 which is an affirmation, although the large standard deviation above the composite showed a wide spread of responses suggesting lack of convergence among respondents. The findings showed legal jurisdiction (applicable law) determines selection of disputes resolution method that is deployed to resolve contractual disputes in road construction projects.

On form/type of contract, out of the 250 respondents none (0%) strongly disagree or disagree, 10(4.4%) were neutral, 171(68.4%) agreed and 69(27.6%) strongly agreed. The modal response was 4(agree) at 171(68.4%) which is a strong affirmation. The mean was 4.24 which was above the composite mean = 4.10, both tending to 4 on the Likert scale and therefore signifying strong agreement that type of contract determines selection of dispute resolution method. The standard deviation was ±0.129 which was smaller than the composite standard deviation (±0.191) showing high convergence among respondents. The study therefore affirmed agreement among sample respondents that type of contract environment determines selection of dispute resolution method used in resolving contractual disputes in road construction projects.

Contract operational is therefore deemed to have moderating effect on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects by determining the method of dispute resolution. Noushad (2006) agrees that external environment of the contract is a key factor in the choice of dispute resolution approach because it defines the first approach the parties adopt towards resolving disputes. Whereas all dispute resolution methods are subservient to the applicable law, a contract can prescribe which method of resolution should be used in contractual disputes in a road construction project.

The study also analyzed the composite means and composite standard deviations of the variables to describe the moderating influence of contract operational environment on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects. The results are given in Table 4.25(b).

Table 4.30(b): Composite mean and standard deviation of Contract Operational Environment, Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

Variable	n	Mean	Standard Deviation (±)
Judicial Evaluation Model	250	3.00	1.02
Resolution of Contractual Disputes	250	4.62	0.78
Contract Operational Environment	250	4.10	0.19
Composite mean and SD	**250**	**3.90**	**0.66**

The composite mean of the three variables (3.90) is slightly lower than standard deviation of contract operational environment (4.10) and falls in between standard deviations of judicial evaluation model (3.00) and resolution of contractual disputes (4.62), and therefore underscores business strategy as a moderator variable in the relationship between judicial evaluation model and resolution of contractual disputes. The moderating influence is high ($3.9 \approx 4$ on the Likert scale). The composite standard deviation of the three variables (±0.66) is below the standard

deviation of contract operational environment (± 0.19) and falls between standard deviations of judicial evaluation model (±1.02) and resolution of contractual disputes (±0.78). It however tends towards the standard deviation of resolution of contractual dispute by ± 0.12(0.78 -0.66) and away from judicial evaluation model with difference of ±0.36 (1.02-0.66). The results suggest agreement among respondents that contract operational environment moderates the relationship between judicial evaluation model and resolution of contractual disputes.

4.10.1. Correlation Analysis of Contract Operational Environment, Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

Pearson product-moment correlation was used to measure the strength and the direction of linear association of contract operational environement, judicial evalaution model and resolution of contratual disputes. The results of correlation were as presented in Table 4.31.

Table 4.31: Correlation of Contract Operational Environment, Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects.

	Resolution of Contractual Disputes	Civil Litigation	ADR Mechanism	Contract Operational Environment
Resolution of Contractual Disputes	1			
Civil Litigation process	-0.041	1		
ADR Mechanism	0.695**	0.008	1	
Contract Operational Environment	0.305	0.011*	0.065	1

**. Correlation is significant at the 0.01 level (2-tailed)
*. Correlation is significant at the 0.05 level (2-tailed).

The correlation matrix shows that contract operational environment has weak positive correlation (r = 0.305, p = 0.01) with resolution of contractual disputes in road construction projects, even a weaker and positive correlation (r = 0.011, p = 0.01) with civil litigation process and another week positive correlation (r = 0.065, p = 0.01) with ADR mechanism.

Comparatively correlation of contract operation environment with ADR mechanism (r = 0.065, p = 0.01) is higher than with civil litigation process (r = 0.011, p = 0.01) which implies that litigation process is less moderated by contract operational environment than ADR mechanism. This points to the rigidity of litigation process in resolving contractual disputes hence inability to strike a consensus between the disputants. ADR mechanism exhibits flexibility to external factors allowing parties to design own solutions that are consensual and capable of resolving contractual disputes in road construction projects.

4.10.2. Regression Analysis of Contract Operational Environment, Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

To determine the moderating influence of contract operational environment on relationship between judicial evaluation model and resolution of contractual disputes, a multiple regression analysis of the variables was carried out. The model summary of the multiple regression was as presented in Table 4.32.

Table 4.32: Regression Model Summary for Contract Operational Environment Judicial Evaluation, and Resolution of Contractual Disputes in Road Construction Projects

Model	R	R Square	Adjusted R Square	Std. Error the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F change
1	0.631[a]	0.401	-0.005	2.474	0.007	5.48	3	246	0.050

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

The R value of 0.631 indicates moderate degree of correlation (negative or positive) of contract operation environment and the relationship between JEM and resolution of contractual disputes in road construction projects. R Square value of 0.401 indicates that the moderating influence of contract operational environment on the relationship of JEM and resolution of contractual disputes explains 40.1% change in resolution of contractual disputes in road construction projects.

4.10.3. Hypothesis 5

H_0: There is no significant moderating effect of Contract Operational Environment on relationship between judicial evaluation model and consensual resolution of contractual disputes in road construction projects in Kenya.

The null hypothesis was tested using ANOVA F-Statistic at 95% confidence level; to either reject or fail to reject at p value, p = 0.5, level of significance. The results of the test were presented in Table 4.33.

Table 4.33: ANOVA Statistics for Contract Operational Environment, Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

Model		Sum of Squares	df	Mean Square	F	Sig.
1						
	Regression	10.053	3	3.351	5.481	.050[b]
	Residual	1505.291	246	6.119		
	Total	**1515.344**	**249**			

a. Dependent Variable: Resolution of Contractual Dispute

b. Predictors: (Constant), Contract Operational Environment, Alternative Dispute Resolution, Litigation

The ANOVA F-statistic; F (3, 246) = 5.481 at $p = 0.050$ shows that the regression of contract operational environment is a significant moderator ($p \leq 0.05$) of the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects.

Therefore, the study rejects the null hypothesis and concludes that there is significant moderating effect of contract operational environment on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya.

4.10.4. Coefficients of Regression of Contract Operational Environment, Judicial Evaluation Model, and Resolution of Contractual Disputes

The results of hypothesis test were further confirmed by use of coefficients of a multivariate regression to assess the moderating influence of contract operational environment on the relationship between judicial evaluation model on resolution of contractual disputes in road construction projects and the results were as given in Table 4.34.

Table 4.34: Coefficients of Regression of Contract Operational Environment, Judicial Evaluation Model, and Resolution of Contractual Disputes in Road Construction Projects

Model		Unstandardized Coefficient		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.106	1.973		8.669	.000
	Civil Litigation	-.020	.036	-.037	-.571	.569
	ADR Mechanism	.601	.032	.039	.597	.551
	Contract Operational Environment	.036	.036	.064	.986	.325

Dependent Variable: Resolution of Contractual Dispute

The results gave a standardized beta values of -020 for civil litigation process and 0.601 for ADR mechanism, 0.036 for contract operation environment and a constant of 17.106. If plotted in a multiple linear relationship of the form, $y = \beta_o + \beta_1 X_1 + \beta_2 X_2 + \beta_4 X_4 + \varepsilon$, assuming the error term (ε) is zero, becomes:

Resolution of contractual dispute = 17.106 + 0.601 ADR mechanism – 0.020 civil litigation process + 0.036 Contract Operational Environment.

The regression model demonstrates that, with the moderating influence of contract operation environment, a unit increase in ADR mechanism results into 0.601 units increase/improvement

in resolution of contractual disputes. The findings also show that, with the moderating influence of contract operational environment, a unit increases in civil litigation process produces 0.20 decrease in consensual resolution of contractual disputes, while a unit increase in contract operational environment itself causes 0.036 units increase resolution of contractual disputes. The constant standardized beta coefficient is 17.106.

From the above findings, it is observed that standard beta coefficient of ADR mechanism has changed from 0.510 (without influence of contract operating environment) to 0.601 (with influence of contract operating environment) but the beta constant has reduced from 18.102 to 17.106. it is also observed that there is a small increase in the beta coefficient of civil litigation process from -0.026 to -0.020. All these suggest that contract operational environment has a positive change and moderating influence on judicial evaluation model, that is civil litigation process and ADR mechanism. However, it moderates ADR mechanism more than it does civil litigation process confirming the flexibility of ADR mechanism in resolving contractual disputes as compared to civil litigation process (Kumaraswami,1997). These findings further agree with those of Noushad (2006) that external environment is a key factor in the choice of disputes resolution method. Kodagoda (2008) and Madden (2001) respectively state that legal environment and form/type of contract either determine or prescribe approaches to dispute resolution in road construction projects.

CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

This chapter summarizes the main research findings, conclusions arising from the findings and recommendations for policy and practice on use of judicial evaluation model in resolution of contractual disputes in road construction projects. The conclusions were guided by the research objectives and findings. The chapter outlines the contribution of this study to the body of knowledge and proposes areas for further research about judicial evaluation model and resolution of contractual disputes.

5.2. Summary of Findings

The research was guided by five objectives and the corresponding five research questions. There were five research hypotheses, one for every objective. Descriptive analysis was done for all the indicators of resolution of contractual disputes and for all the objectives based on frequencies, mean and standard deviation of the data collected at Likert scale.

5.2.1. Civil Litigation Process on Resolution of Contractual Disputes in Road Construction Project

In research objective one, the study established the influence of civil litigation process on resolution of contractual disputes. Descriptive analysis found a composite mean of 2.82 and a composite standard deviation of ±1.06. This meant that the use of civil litigation process in resolution of contractual dispute in road construction project was low and not agreeable among the respondents. Triangulation with qualitative data also confirmed that civil litigation process is not popular for resolution of contractual disputes. Correlation between civil ligation process was found to be weak and negative ($r = -0.041$, $p = 0.01$) and meant that the relationship between the two variables was adversarial to consensual resolution of contractual disputes.

The coefficients of regression model showed that a unit change in civil litigation process resulted into -0.023 units change in resolution of contractual disputes which indicated that resolution of

contractual disputes in road construction projects tends to be more adversarial when civil litigation process is used. The R-square value in the regression model was 0.002 and meant that only 0.2% change in resolution of contractual disputes is explained by civil litigation process. The hypothesis test using F-test gave F (1, 248) = 14.500 at p = 0.520 and showed that the regression of civil litigation process was not a significant predictor (since $p > 0.05$) of resolution of contractual disputes. The study therefore failed to reject the null hypothesis and concluded that civil litigation process has no significant influence in resolution of contractual disputes in road construction projects.

5.2.2. Alternative Dispute Resolution Mechanism on Resolution of Contractual Disputes in Road Construction Projects

The second objective assessed the influence of Alternative Dispute Resolution (ADR) Mechanism on resolution of contractual disputes in road construction projects. Descriptive analysis showed a composite mean of 3.04 and a composite standard deviation of ±0.94. This meant that the respondents were neural on the use of ADR mechanism in resolution of contractual disputes in road construction projects. However, the modal class was found to be Agree, showing that a significant number of respondents agreed with the use of ADR mechanism in resolution contractual disputes. The correlation between ADR mechanism and resolution of contractual disputes was strong and positive (r = 0.695, p = 0.01) and indicated ADR mechanism build consensus and has high likelihood of resolving contractual disputes.

The coefficients of regression model suggested that a unit change in ADR mechanism results into 0.520 units of increase/improvement in resolution of contractual disputes in road construction projects. The R-square statistic of regression was 0.583 which indicated that 58.3% change in of resolution of contractual dispute is explained by ADR mechanism. The F-test gave F (1,248) = 15.400 at p = 0.019 and showed that regression of ADR mechanism is a significant predictor (since $p < 0.05$) of resolution of contractual disputes. The study therefore rejected the null hypothesis and concluded that ADR mechanism has significant influence on resolution of contractual disputes in road construction projects.

5.2.3. Judicial Evaluation Model on Resolution of Contractual Disputes in Road Construction Projects

The third objective of the study examined the influence of judicial evaluation model on resolution of contractual disputes in road construction project. The composite mean of civil litigation process was 2.82 while that of ADR mechanism was 3.17. A comparative analysis of composite means showed that the respondents did not favour the use of civil litigation process, but they were increasingly accepting the use of ADR mechanism in resolution of contractual disputes in road construction projects. Further, correlation of civil litigation process with resolution of contractual disputes was more weak and negative(r = -0.041, p =0.01) compared to that of ADR mechanism with resolution of contractual disputes which was strong and positive(r =0.695, p =0.01). This suggested that within judicial evaluation model, ADR mechanism has a stronger relationship with resolution of contractual disputes than civil litigation process. This was understood to emanate from the power of ADR mechanism to build consensus in resolution of contractual disputes rather than adversarial relationship found with civil litigation process.

Regression coefficients indicated that influence of judicial evaluation model is such that unit increase in use of ADR mechanism resulted into 0.510 units increase in resolution of contractual disputes while unit change in increase in civil litigation process resulted into -0.026 unit increase (actually decrease) in resolution of contractual disputes in road construction projects. The R-square statistics of the regression was 0.400 and showed that use of judicial evaluation model explain 40.0% change in resolution of contractual disputes. Hypothesis test used the F-statistic at 95% confidence level and gave F (2,247) =13.600 at p = 0.004. The study therefore rejected the null hypothesis ($p < 0.05$) and concluded that judicial evaluation model has significant influence in resolution of contractual disputes in road construction projects in Kenya.

5.2.4. Business Strategy on the relationship between Judicial Evaluation Model and Resolution of Contractual Disputes in Road Construction Projects

The fourth objective established mediating influence of business strategy on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects. The composite mean was 3.105 and composite standard deviation was ± 1.205. this meant that the respondents were undecided on this matter but there was a large divergence of

opinion. This data was triangulated with qualitative data which confirmed that the respondents generally agreed that business strategy cause parties to avoid disputes. Correlations confirmed that business strategy has weak and positive relationship (r =0.092, p =0.01) with civil litigation progress and strong positive relationship (r = 0.580, p = 0.01) ADR mechanism suggesting that difluence of business strategy is stronger and it works better with ADR mechanism that with civil litigation process. This was understood to be due to the flexibility of ADR mechanism in resolution of contractual disputes unlike the rigid civil litigation process.

Coefficient of regression showed that unit increase in business strategy resulted into 0.420 units increase of resolution of contractual disputes by modifying/improving coefficients of civil litigation process from – 0.26 to -0.20 and that of ADR mechanism from 0.510 to 0.611, signifying the mediating influence of business strategy on resolution of contractual disputes in road construction projects. The model summary of the regression gave R-square of 0.412 which meant that with the mediating/intervening influence of business strategy, judicial evaluation model explains 42.2% of resolution of contractual disputes in road construction projects. Hypothesis was tested using F-test and showed that F (3,246) = 7.88 at p = 0.043 which meant that business strategy has a significant mediating influence in the relationship between judicial evaluation model and contractual disputes in road construction projects. The study therefore rejected the null hypothesis and concluded that business strategy has significant mediating influence in the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects.

5.2.5. Contract Operational Environment on the relationship between Judicial Evaluation model and Resolution of Contractual Disputes in Road Construction Projects

The fifth objective examined moderating influence of contract operational environment on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects. The composite mean and composite standard deviation were 4.10 and ±0.191 respectively and showed that respondents agreed and concurred that contract operational environment determined the selection of method of resolving contractual disputes in road construction projects. The correlation between contract operational environment and civil litigation process was weak and positive correlation (r =0.011, p =0.01), the same was the case

with ADR mechanism, but comparatively stronger (r =0.065, p =0.01). This implied that civil litigation process in less moderated by contract operational environment than ADR mechanism, which pointed to the rigidity of civil litigation process in resolving contractual disputes compared to ADR which exhibits flexibility and creativity.

Coefficients of regression showed that unit increase in contract operational environment results to 0.036 units of resolution of contractual disputes by modifying/improving coefficients of civil litigation process - 0.026 to -0.020 and coefficient of ADR mechanism from 0.510 to 0.601, which indicated that contract operational environment has a positive moderating influence on both civil litigation process and ADR mechanism, the two being the judicial evaluation model, and its relationship with resolution of contractual disputes. The R-square statistic of the regression was 0.401 and indicated that with moderating influence of contract environment, judicial evaluation model explains 40.1% of resolution of contractual disputes in road construction projects. Hypothesis test using F-statistic gave F (3, 246) = 5.481 at p = 0.050, which confirmed that contract operational environment is significant moderator of the relationship between judicial evaluation model and resolution of contractual disputes. The study therefore rejected the null hypothesis and concluded that contract operational environment has significant mediation influence on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya.

Summary of results of hypothesis tests is given in Table 5.1.

Table 5.1: Summary of Hypothesis Tests and Results

Objective	Null Hypothesis	Hypothesis Test	Results	Criteria	Remarks	Conclusion
1. To establish the extent to which civil litigation process resolution of contractual disputes in road construction projects in Kenya	There is no significant relationship between civil litigation process and resolution of contractual disputes in road construction projects in Kenya	F-test at 95% confidence level	F (1,248) = 14.500, $p = 0.520$	Reject if $p < 0.05$, otherwise fail to reject if $p > 0.05$	Fail to reject	There is no significant relationship between civil litigation process and resolution of contractual disputes in road construction projects in Kenya.
2. To assess how Alternative Dispute Resolution mechanism influences resolution of contractual disputes in road construction projects in Kenya	There is no significant relationship between Alternative Dispute Resolution mechanism and resolution of contractual disputes in road construction projects in Kenya	F-test at 95% confidence level	F (1,248) = 15.400 $p = 0.019$	Reject if $p < 0.05$, otherwise fail to reject if $p > 0.05$	Reject	There is significant relationship between Alternative Dispute Resolution mechanism and resolution of contractual disputes in road construction projects in Kenya.
3. To examine how judicial evaluation model influences resolution of contractual disputes in road construction projects in Kenya.	There is no significant relationship between judicial evaluation model and resolution of disputes in road construction projects in Kenya	F-test at 95% confidence level	F (2, 247) = 13.600 $p = 0.004$	Reject if $p < 0.05$, otherwise fail to reject if $p > 0.05$	Reject	There is significant relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya.

4. To establish the mediating influence of business strategy on the relationship between JEM and resolution of contractual disputes in road construction projects in Kenya	There is no significant intervening effect of business strategy on the relationship between JEM and resolution of contractual disputes in road construction projects in Kenya	F-test at 95% confidence level	F (3, 246) = 7.88 p = 0.043	Reject if $p < 0.05$, otherwise fail to reject if $p > 0.05$	Reject	There is significant intervening effect of business strategy on the relationship between JEM and resolution of contractual disputes in road construction projects in Kenya.
5. To examine the moderating influence of contract operational environment on the relationship between JEM and resolution of contractual disputes in road construction projects in Kenya	There is no significant moderating effect of contract operational environment on the relationship between JEM and resolution of contractual disputes in road construction projects in Kenya	F-test at 95% confidence level	F (3, 246) = 5.481 p = 0.050	Reject if $p < 0.05$, otherwise fail to reject if $p > 0.05$	Reject	The is significant moderating effect of contract operational environment on the relationship between JEM and resolution of contractual disputes in road construction projects in Kenya

5.3. Conclusions

The first objective was to establish the influence of civil litigation process in resolution of construction disputes in road construction projects in Kenya. Indicators of civil litigation process were efficiency of filing disputes, timeliness of constituting panel/bench of judges to hear the dispute, structured submission by disputing parties, fairness of determination and enforcement of determinations. The process of filing disputes in court was found to be efficient, but assignment of the dispute to a panel of judges was found to take time. Making submissions is not structured because the duration of cross-examination of witnesses is not sufficient. Determination by judges were found not to be fair because the disputants do not trust the process. The respondents were indifferent about enforcement of determination but after triangulation the quantitative data with qualitative data, enforcement was found to be unsatisfactory. It was therefore concluded that civil litigation process is not appropriate method of resolution of contractual disputes in road construction projects since it is adversarial, rigid, time consuming - hence costly, and lacks consensus.

Objective two was to assess how Alternative Dispute Resolution (ADR) mechanism influences resolution of contractual disputes in road construction projects in Kenya. The indicators of ADR mechanism were arbitration, adjudication, and mediation. The study established that road construction projects are increasingly adopting mediation to resolve contractual disputes. the study also found that adjudication and arbitration were also becoming acceptable for resolution of contractual disputes in road construction projects. Although the respondents were, in the quantitative analysis, largely neutral on these indicators, triangulation with qualitative data suggested preference and increase in adoption of arbitration, adjudication, and mediation for resolving contractual disputes, which was attributed to their flexibility that allows parties to creatively solve disputes while at the same time maintaining business relationship. They build consensus and embrace options that lead to a win-win outcome. It was therefore concluded that the use of ADR mechanism influences resolution of contractual disputes in road construction projects and needs to be encouraged so that disputes are solved quickly, more consensually and within reasonable cost.

The third objective was to examine how judicial evaluation model influences resolution of contractual disputes in road construction projects in Kenya. The model presents two methods of resolving contractual disputes, civil litigation process and Alternative Dispute Resolution mechanism. The study established that civil litigation process reduces chances of attaining consensus in resolution of contractual disputes because it is highly legal and rigid, however being a court process has the legal force. ADR mechanism has creative and flexible means to attaining consensus which has made its use in resolution of contractual dispute increasingly acceptable. It was therefore concluded that users of judicial evaluation model should optimize its use in such a way that resolution of disputes is first approached through ADR mechanism so that parties can attempt own creative solution. Civil litigation process should only be used as a last resort to invoke the force of law where/if the same is extremely necessary in deciding (not resolving) a contractual dispute.

Objective Four was to establish the mediating influence of business strategy on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya. Indicators of business strategy were customer retention and profit maximization. The quantitative data presented a neutral position among the respondents over the two indicators, but from triangulation with qualitative data, it was established that customer retention drives parties into avoiding disputes or resolution of dispute through methods that build consensus for the sake of long term business relationship as opposed to adversarial methods. However, profit maximization mentality drives parties towards adversarial approaches of resolving contractual disputes as parties strongly assert their entitlements. It was therefore concluded that business strategy influences the choice of method of resolving contractual disputes depending on whether the parties view their relationship in long term or short term.

The fifth objective was examining moderating influence of contract operational environment on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya. The indicators of contract operational environment were legal jurisdiction (applicable law) and form/type of contract. It was established that disputes resolution methods are subservient to the law and contracts prescribe the dispute resolution method to be applied in a project. It was therefore concluded that contract operational environment determines

selection of dispute resolution method that would be deployed in resolution of contractual disputes in road construction projects.

5.4. Recommendations

This section presents recommendations of the study based on the analysis of the findings and discussions. Recommendations are presented in two broad areas, recommendation for policy and recommendation for practice.

5.4.1. Recommendations for Policy

1. The study has established that judicial evaluation model influences resolution of contractual disputes in road construction projects in Kenya. Road construction authorities should formulate policies in response to this finding and the policy should address the structuring of resolution of disputes in road construction project based on the model. Contractual dispute resolution policy should prioritize a stepwise resolution of disputes, where in the first instance disputes are referred to Alternative Dispute Resolution mechanism to benefit from speedy, cost affordability and consensus which this option of judicial evaluation model offers. The policy will help in reducing delays experienced in projects due to prolonged disputes and will restore commercial relationship between the road authorities and road contractors. It is recommended that civil litigation process be deployed as a last resort and those who run to court as the first point of recourse should be referred by the courts to Alternative Dispute Resolution.

2. The study has also established that ADR mechanism is gaining acceptance for dispute resolution in road construction project. ADR mechanism being a new emerging frontier for dispute resolution, authorities should develop policies on capacity building and regulating ADR mechanism. Institutions like the Nairobi Center for International Arbitration and Kenya Chartered Institute of Arbitrators should develop robust curriculum not only on arbitration but also on adjudication and mediation to address creatively and exhaustively the existing the challenges that contractual disputes resolution encounter with civil litigation process. Trained arbitrators, adjudicators and mediators

should be able to take up the sizable number of disputes in construction sector and reduce the backlog in the courts that partly cause litigation process to be long. The policy should ensure that training is accessible across disciplines because contractual disputes is not just a matter of law and lawyers. Disputes are inherent in any business dealings that define responsibilities and obligations and therefore input of all professionals is important.

3. It is recommended that policy makers should also ensure that the legal environment does not confine dispute resolution to only certain specific methods. The law should recognize alternative methods of dispute resolution and encourage disputes be first attempted by the alternative resolution methods. Such restrain by the law would give latitude to construction stakeholders to explore and design solutions that are tailor-made for the circumstance of the disputes.

5.4.2. Recommendations for Practice

1. The study recommends a structured use of judicial evaluation model. Disputants and evaluators of dispute should be guided by the four desired outcomes of dispute resolution which are: speedy resolution of disputes, cost effective dispute resolution, impartiality of the dispute resolution process and enforceability of dispute outcomes. It is recommended that stakeholders should appreciate that it is not possible that any one dispute resolution method would have all the desired outcomes. However, a structured use of judicial evaluation model in resolving contractual disputes is an optimized approach that would gradually or incrementally achieve most, if not all, of the desired outcomes. This recommendation is informed by the need to avoid adversarial relationship in the execution of the road construction projects. Starting with ADR mechanism allows the resolution process to explore many options such as arbitration, adjudication, and mediation which exhibit flexibility that is necessary to build consensus and resolve disputes quickly and with minimal cost. It allows the disputants to develop own solutions in a private environment that supports business confidentiality and continuity. Before parties submit to civil litigation process, they should assess the risks of exposing their business details to public and the adversarial legal processes which lead to deterioration

of relationships. Courts should also protect businesses by encouraging the disputants to first seek to resolve disputes through ADR mechanism.

2. It is recommended that for continued business, parties should pursue business strategies that avoids or minimize disputes. A strategy like customer retention is common to both parties - employer and the contractor; and is more likely to encourage consensus and amicable settlement of disputes. Such a strategy helps in speedy and cost-effective resolution of disputes. A strategy such profit maximization is partisan and skewed towards one party. The other party sees such a strategy as exploitative and therefore the dispute resolution process becomes protracted.

3. The study recommends that construction industry stakeholders should pay attention to contract operational environment (type of contract and the legal jurisdiction of a project). These external factors influence the choice of dispute and the way dispute resolution is conducted. Drafters of construction contracts should avoid being over-prescriptive on the method of resolution of contractual disputes to allow parties to explore more options provided by judicial evaluation model.

5.5. Suggestions for further Research

1. Judicial evaluation model should be used in a structured and an ordered manner to optimize dispute resolution based on the desired outcome of speed, cost, impartiality, and enforceability. However, since the contracting parties' desires may differ based on interest, further research could be carried out using concordance analysis model to establish the degree of agreement among parties, and relative importance index for possible hierarchical ordering of the components of judicial evaluation model based on the desired outcomes. Such a study will refine the optimization of the model and make the choice of method of resolving disputes easier and reliable.

2. Investigation of ADR mechanism was delimited to arbitration, adjudication, and mediation. Since ADR components are more than these three, including but not limited to dispute review boards, conciliation, and amicable settlement, it is suggested that further

research could be carried out to establish the influence of these additional components of ADR mechanism on resolution of contractual disputes. This will further enrich judicial evaluation model and expand the spectrum of choice within the ADR mechanism by availing to the industry more options thus greater flexibility to choose suitable methods of resolving spectrum of disputes.

3. Considering that the study was also delimited to the road construction projects, the researcher suggests that the study should be replicated in the entire construction sector like sea ports projects, gas and oil projects, power generation projects, dams, water and sanitation projects and building projects etc. so that the findings can benefit the entire construction industry. The study should also be done for non-construction contracts like banking, insurance, taxation, transport, conveyancing etcetera, because contractual disputes is common to all forms of commerce and judicial evaluation model could be applicable across.

5.6. Contribution to the Body of Knowledge

The study generated knowledge on how judicial evaluation model influences resolution of contractual disputes in road construction projects in Kenya. judicial evaluation model was investigated in two disaggregates, that is civil litigation process and ADR mechanism. Contribution of the study to resolution of contractual disputes in road construction projects in Kenya is summarized in Table 5.2.

Table 5.2: Contribution of the study to the Body of Knowledge

Objectives	Contribution to the body of knowledge
1. To establish the extent to which civil litigation process influences resolution of contractual disputes in road construction projects on Kenya	Civil ligation process has a negative and weak influence in resolution of contractual disputes in road construction projects in Kenya. Its weaknesses are found in the inefficient filing of disputes, delay in constituting dispute panels, unstructured submissions processes, unfair determination, and poor enforcement of outcomes It increases time and cost of dispute resolution.

2. To Assess how alternative dispute resolution mechanism influences resolution of contractual disputes in road construction projects in Kenya	ADR mechanism has a strong positive influence on resolution of construction disputes in road construction projects in Kenya. Its components, arbitration, adjudication, and mediation are flexible and helps parties build consensus and therefore reduce time and cost of dispute resolution.
3. To examine how judicial evolution model influences resolution of contraction disputes in road construction projects in Kenya	The influence of the two components of judicial evaluation model are opposite. Influence of civil litigation process is negative and weak while that of ADR mechanism is positive and strong. To reduce cost and time, disputes should be subjected to ADR mechanism in the first instance before they are subjected to civil litigation process as a last resort.
4. To establish mediating influence of business strategy on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya.	Business strategy influences relationship between JEM and resolution of disputes through customer retention and profit maximization. Customer retention strategy avoids disputes and favours long term business relationship, while profit maximization strategy asserts entitlements of parties. Customer retention strategy aligns to ADR mechanism for either avoidance of dispute or consensual resolution of disputes while profit maximization aligns to civil litigation process which supports assertion of entitlements
5. To examine the moderating influence of contract operational environment on the relationship between judicial evaluation model and resolution of contractual disputes in road construction projects in Kenya.	Contract operational environment influences the relationship between judicial evaluation model and resolution of contractual disputes either by preferring a method of resolution of dispute through the applicable law or prescribing the method of dispute resolution through the form of contract.

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APPENDICES

APPENDIX 1

Theoretical and functional distinction of components of Judicial Evaluation Model

	Mediation	Adjudication	Arbitration	Litigation
Definition	Negotiation with assistance of a third party (the mediator).	Submission of disputes by consensual agreement to a third party (the adjudicator) for an interim decision which will be binding unless the Court refuses leave to enforce decision or it is substituted by a final arbitral award or Court judgment.	Submission of disputes by consensual agreement to a third party (the arbitrator) for a binding decision.	Process of making a civil claim in a Court of Law.
Time	Shortest period, may be as short as 1-2 days but depends on the skills of the mediator.	Very much shorter than arbitration and litigation. Adjudicator has 30 days to decide dispute.	May extend over a long period if hearing protracted; it may take months or even years to conclude. Procedure and time frame to be agreed by parties.	Longest period because of backlog of cases in Court.
Cost	Lower than arbitration costs.	Lower than arbitration costs because of faster hearing.	Higher than mediation and generally higher than litigation because of thoroughness and expediency.	Expensive because it takes a long period.
Confidentiality	Private.	Private for consensual adjudication but may become public for compulsory adjudication as the adjudication decision has to be enforced through the Courts.	Private but may become public if there is Court intervention.	Public, judgment reported.
Formalities	Very informal.	Less formal than arbitration, strict rules of evidence do not apply. Procedural rules may be imposed by nominating. body.	Less formal than litigation, strict rules of evidence do not apply but procedural rules may be based on institutional rules. Otherwise, parties to agree or arbitrator to decide.	Formal, rigid, strict evidential and procedural rules are prescribed
Involvement of third	A third party, the mediator, facilitates	A third party, the adjudicator, controls	A third party, the arbitrator, controls	A third party, the judge

party & control by parties	the process but parties are in control of content and outcome.	content and outcome of proceedings but parties have some degree of control choice of adjudicator, language, time, venue, applicable law and procedural rules.	content and outcome of proceedings but parties control choice of arbitrator, language, time, venue applicable law and procedural rules.	controls outcome of proceedings, parties have no control over choice of judge, language, time, venue of processing and procedural rules.
Remedies	Wide ranging, with assistance of mediator, parties need not confine themselves to strict legal remedies, creative remedies possible.	Monetary remedies only usually. Adjudicator's decision on non-monetary issues may not be binding.	More restricted, must be a legal remedy capable of being performed, subject to arbitrability, legislation and rules, creative remedies not possible	Strict, only legal remedies, creative remedies not possible but judges can grant remedies which arbitrators cannot e.g. injunctions, security, subpoena, etc.
Degree of parties satisfaction with outcome	High because parties work together to reach settlement unless allegation of lack of independence on mediator, a win / win outcome	Low because decision imposed by adjudicator, win/lose outcome.	Medium despite win/lose outcome because decided by chosen trade or specialist arbitrator because award imposed by arbitrator, win / lose outcome	Low because judgment imposed by Court, win /lose outcome.
Effect on relationship of parties	Preserves relationship.	May destroy relationship.	May destroy relationship	High chance of Destroying relationship because can be very acrimonious.
Communications	Mediator usually communicates with one party without the presence of the other during the process known as 'caucus'.	Generally, both parties are expected to participate in proceedings. May even involve owner in proceedings although he is not the respondent. May proceed ex-parte if respondent doesn't participate. Legal representation is allowed.	General prohibition against ex–parte communications. Test of justifiable doubt on impartiality and independence of arbitrator.	Strict, ex-parte communications with judge only allowed during ex-parte hearings, parties to communicate with each other through their respective lawyers
Certainty of achieving settlement	With assistance of mediator, there is more certainty of achieving settlement than in arbitration; depends heavily on skills of mediator.	Certainty in getting a decision at the end of the adjudication. Decision is interim in the sense that it may be replaced by a final arbitral award or Court judgment	Certainty in getting an award at the end of the arbitration.	Certainty on getting a judgment at the end of trial.

APPENDIX 2

Letters of Transmittal

P.O Box 19005 -40123

KISUMU, KENYA

Date…….

Dear Respondent.

RE: REQUEST FOR PARTICIPATION IN A RESEARCH STUDY

I am a student at the University of Nairobi currently pursuing Ph.D in Project Planning and Management. As part of my study, I am carrying out a research entitled **Influence of Judicial Evaluation Model on Resolution of Contractual Disputes in Road Construction Projects in Kenya.** You are kindly requested to participate in the study by giving information regarding the topic of the study and return to the above address as soon as possible within two weeks of your receipt of the questionnaire attached.

The information required is purely for academic purposes and will not be used for any other purposes. I further assure that your name will not be mentioned or quoted anywhere during the course of the study or in the final report.

Thank you

Yours Sincerely,

Maurice Paul Okeyo

PhD Student

University of Nairobi

P.O Box 19005-40123

KISUMU

Date: ……

The Managing Director

Kenya National Highways Authority

P.O. Box 47936, Nairobi.

Dear Sir,

RE: REQUEST TO UNDERTAKE A RESEARCH STUDY ON SAMPLED HIGHWAYS COSTRUCTION PROJECTS IN THE KENYA

I am a student at the University of Nairobi pursuing a degree a Ph.D in Project Planning and Management. As part of my study, I have proposed to submit a research thesis on **Influence of Judicial Evaluation Model on Resolution of Contractual Disputes in Road Construction Projects in Kenya**.

I therefore kindly request your permission to undertake this research in your road projects listed herewith. I undertake to comply with your requirements while within your premises either personally or through my research assistants. I will be interviewing project staff at management level handling contracts administration and project monitoring and evaluations from the Employer, Engineer and Contractor both on site and head offices. The information required is purely for academic purposes and will not be used for any other purposes. Please find enclosed a copy of questionnaire which will be administered for the study.

Yours Sincerely,

Maurice Paul Okeyo

PhD Candidate, University of Nairobi.

APPENDIX 3

QUESTIONNAIRE FOR CONTRACTUAL DISPUTE RESOLUTION

PROJECT MANAGERS, CONTRACTS MANGERS AND PROJECTS EVALUATORS

INTRODUCTION

This questionnaire is intended to collect data on the influence of Judicial Evaluation Model on resolution of contractual disputes in road construction projects in Kenya. The information is strictly for academic purpose and will be treated with due confidentiality and professionalism. The researcher hopes that the study will make significant contribution on the use of Judicial Evaluation Model in resolution of disputes in construction projects. You are kindly requested to participate in the study by giving information asked below.

PART 1: GENERAL INFORMATION

1. Name of the respondents/person filling in the questionnaire (optional)

2. Kindly indicate the highest education(academic) level you have attained

Pre-university level [ ] Graduate level [ ] Post-graduate level [ ]

3. How long have you worked in construction management and evaluations?

1 – 3 years [ ] 4 – 7 years [ ] 8 – 10 years [ ] Over 10 years [ ]

PART II:

OCCURRENCE OF CONTRACTUAL DISPUTES IN ROAD CONSTRUCTION PROJECTS

No	Statements	Scale of Measurement				
Occurrence of Contractual Disputes Indicate the level of agreement with the following statements about as Strongly Agree **(SA**), Agree **(A),** Normal **(N),** and Disagree **(D),** Strongly Disagree **(SD).**		**SA** **5**	**A** **4**	**N** **3**	**D** **2**	**SD** **1**
4(a)	Disputes occur in the project					
4(b)	Program/Schedule cause disputes in the project					
4(c)	Payment cause dispute in the project					
4(d)	Quality of works cause disputes in the project					
4(e)	Variations cause disputes in the project					
4(f)	Apart from Schedule/program, payment, quality and variation; state other areas of disputes in this project. _____ _____ _____ _____					

PART III:

RESOLUTION OF CONTRACTUAL DISPUTES IN ROAD CONSTRUCTION PROJECTS

Indicators of Resolution of Contractual Disputes Indicate your agreement with the following desirable outcomes of dispute resolution in this project on a scale of Strongly Agree **(SA**), Agree **(A),** Normal **(N),** and Disagree **(D),** Strongly Disagree **(SD).**		**SA** **5**	**A** **4**	**N** **3**	**D** **2**	**SD** **1**
5(a)	Resolution of dispute should be **fast/speedy**					
5(b)	Resolution of dispute should be **cheap/cost effective**					

5(c)	Resolution of dispute should be **impartial**					
5(d)	Resolution of dispute should be **enforceable**					
5(e)	Speed, cost, impartiality, and enforceability of dispute resolution are the most common construction industry desired outcome of dispute resolution. Are there other desired outcomes of resolution of disputes in this project? If yes, which are they? _____ _____ _____ _____					
Civil Litigation Process Civil litigation process is a process where disputes are resolved by a court of law. Indicate your satisfaction with the following statements about stages of civil litigation process on a scale of Strongly Agree **(SA**), Agree **(A),** Normal **(N),** and Disagree **(D),** Strongly Disagree **(SD).**		**SA** **5**	**A** **4**	**N** **3**	**D** **2**	**SD** **1**
6(a)	Filing disputes in courts is efficient					
6(b)	Constitution of dispute panel/bench of judges is timely					
6(c)	Making submissions by the disputing parties is structured					
6(d)	Determination of disputes by panel/judges is fair					
6(e)	Enforcement of determinations is implemented/followed up					
6(f)	What is your view about civil litigation as a method of dispute resolution in road construction projects? a) To what extent does it give timely resolution of disputes? explain. _____ _____ _____ _____ b) To what extent does it give cost effective resolution of					

	disputes? explain. _____ _____ _____ _____ c) To what extent does it give impartial resolution of disputes? explain. _____ _____ _____ _____ d) To what extent does it give enforceable resolution of disputes? explain. _____ _____ _____ _____

Alternative Dispute Resolution (ADR) Mechanism ADR is a process of resolving disputes outside the court system. Indicate your agreement with the use of the following methods of ADR mechanism on a scale of Strongly Agree **(SA**), Agree **(A),** Normal **(N),** and Disagree **(D),** Strongly Disagree **(SD).**		**SA** **5**	**A** **4**	**N** **3**	**D** **2**	**SD** **1**
7(a)	The project uses Arbitration to solve contractual disputes					
7(b)	The project uses Adjudication to solve contractual disputes					
7(c)	The project uses mediation to solve contractual disputes					
7(d)	What is your view about ADR mechanism (adjudication, arbitration, and mediation) as a method of dispute resolution in road construction projects? a) To what extent does it give timely resolution of disputes? explain. _____ _____ _____					

	_____ b) To what extent does it give cost effective resolution of disputes? explain. _____ _____ _____ _____ c) To what extent does it give impartial resolution of disputes? explain. _____ _____ _____ _____ d) To what extent does it give enforceable resolution of disputes? explain. _____ _____ _____ _____

PART IV:

BUSINESS STRATEGY

Business Strategy Indicate your agreement with the following statements on business strategy on the scale of Strongly Agree **(SA),** Agree**(A),** Neutral **(N),** Disagree (**D),** Strongly Disagree **(SD)**		**SA** **5**	**A** **4**	**N** **3**	**D** **2**	**SD** **1**
8(a)	Contracting parties avoid disputes to retain customers for long					
8(b)	Contracting parties avoid disputes to maximize profits of business					
8(c)	Business always strives to retain its customers while aiming at profit maximization. In your opinion how do these factors influence resolution of contractual disputes? _____ _____ _____					

	_____

PART V:

CONTRACT OPERATIONAL ENVIRONMENT

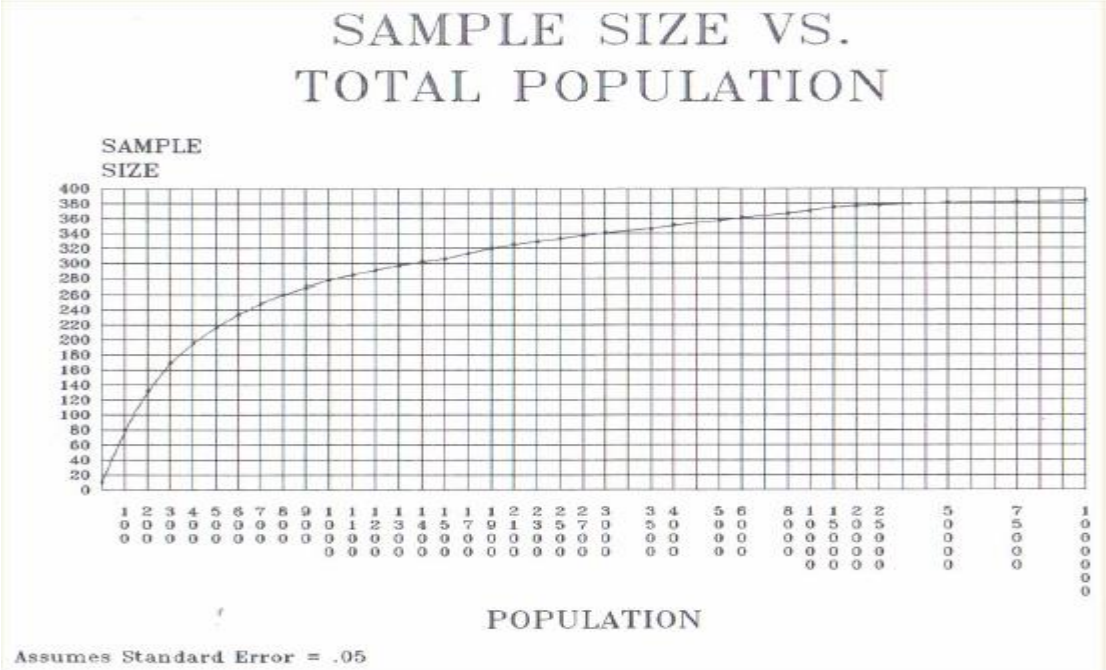
Contract Operational Environment Indicate your agreement with the following statements on contract operational environment on the scale of Strongly Agree **(SA),** Agree**(A),** Neutral **(N),** Disagree (**D),** Strongly Disagree **(SD)**		**SA** **5**	**A** **4**	**N** **3**	**D** **2**	**SD** **1**
9(a)	Applicable laws determine selection of the dispute resolution method					
9(b)	Form of contract determines selection of dispute resolution method					
9(c)	10. Construction contracts recognize Legal environment and Form of Contract of the project. In your opinion, how do these factors influence resolution of contractual disputes? _____ _____ _____ _____					

Appendix 4

Table for Determining Sample Size from a Given Population

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size.
S is sample size.



Appendix 5

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REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **328508**

Date of Issue: **25/September/2020**

RESEARCH LICENSE

This is to Certify that Dr.. Okeyo Maurice Paul of University of Nairobi, has been licensed to conduct research in Nairobi on the topic: Judicial Evaluation Model, Business Strategy, Contract Operational Environment and Resolution of Contractual Disputes in Road Construction Projects in Kenya for the period ending : 25/September/2021.

License No: **NACOSTI/P/20/6595**

328508

Applicant Identification Number

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Appendix 6

Data Codding and Analysis Table (D-CAT)

APPENDIX 6

DATA CODING & ANALYSIS TABLE

JUDICIAL EVALUTION MODEL, BUSINESS STRATEGY, CONTRACT OPERATIONAL ENVIRONMENT AND RESOLUTION OF CONTRACTUAL DISPUTES IN CONSTRUCTION PROJECTS IN KENYA

R&C	1	2										3	4	5	6	7	8				9	10
Question												q1	q2	q3	q4	q5	q6				q7	q8
Measurement Scale												QL	QL	QL	O	O	N/C				N/C	I
Maximum Vaue of Modified Likert Score															3	4						5
R-No.	Region of Kenya	Class of Road	No. of Em, C & E in Classes A , B & C Roads Tallies									General Infomtion			Ed Level	Ex L		No. of E_m , C, E Tallies				
	(Stratum 1)	(Stratum 2)	E_mA	E_mB	E_mC	CA	CB	CC	EA	EB	EC	(Introduction)					(Stratum 3)	Emp	Con	Eng		
1	Western	A	1									intro	intro	intro	3	2	Employer	1			J	4
2	Western	A	1									intro	intro	intro	2	4	Employer	1			J	3
3	Western	A	1									intro	intro	intro	3	2	Employer	1			F	4
4	Western	A				1						intro	intro	intro	3	2	Contractor		1		F&W	4
5	Western	A	1									intro	intro	intro	3	4	Employer	1			J	3
6	Western	A				1						intro	intro	intro	3	4	Contractor		1		F	4
7	Western	A							1			intro	intro	intro	2	2	Engineer			1	J&F	3
8	Western	B					1					intro	intro	intro	3	2	Contractor		1		J&F	3
9	Western	B								1		intro	intro	intro	3	2	Engneer			1	JFW	3
10	Western	B		1								intro	intro	intro	2	4	Employer	1			J	4
11	Western	B		1								intro	intro	intro	3	4	Employer	1			J	3
12	Western	B								1		intro	intro	intro	2	4	Engneer			1	J	2
13	Western	B								1		intro	intro	intro	2	5	Engneer			1	F	3
14	Western	B					1					intro	intro	intro	3	1	Contractor		1		J&F	2
15	Western	B					1					intro	intro	intro	3	1	Contractor		1		F	3
16	Western	C									1	intro	intro	intro	2	1	Engineer			1	F	4
17	Western	C			1							intro	intro	intro	2	1	Employer	1			F	4
18	Western	C			1							intro	intro	intro	3	3	Employer	1			F&W	4
19	Western	C			1							intro	intro	intro	3	4	Employer	1			F&J	3
20	Western	C									1	intro	intro	intro	3	4	Engineer			1	J	3
21	Western	C						1				intro	intro	intro	2	3	Contractor		1		J	4
22	Western	C						1				intro	intro	intro	2	1	Contractor		1		F&J	4
23	Western	C						1				intro	intro	intro	3	4	Contractor		1		F	3
24	Western	C									1	intro	intro	intro	3	4	Engineer			1	J	3
25	Nyanza	A	1									intro	intro	intro	3	2	Employer	1			F	4
26	Nyanza	A	1									intro	intro	intro	2	3	Employer	1			F	3
27	Nyanza	A	1									intro	intro	intro	2	1	Employer	1			J	3
28	Nyanza	A	1									intro	intro	intro	3	3	Employer	1			J	3
29	Nyanza	A				1						intro	intro	intro	3	4	Contractor		1		J	3
30	Nyanza	A				1						intro	intro	intro	2	4	Contractor		1		F	3
31	Nyanza	A				1						intro	intro	intro	3	4	Contractor		1		F	3
32	Nyanza	A				1						intro	intro	intro	3	4	Contractor		1		F	2
33	Nyanza	A							1			intro	intro	intro	2	3	Engineer			1	W	3
34	Nyanza	A							1			intro	intro	intro	2	1	Engineer			1	W	2
35	Nyanza	A							1			intro	intro	intro	3	3	Engineer			1	F	4
36	Nyanza	B					1					intro	intro	intro	3	4	Contractor		1		F	3
37	Nyanza	B					1					intro	intro	intro	2	1	Contractor		1		F&W	4
38	Nyanza	B								1		intro	intro	intro	3	2	Engneer			1	F&J	4
39	Nyanza	B		1								intro	intro	intro	3	2	Employer	1			J	3
40	Nyanza	B		1								intro	intro	intro	2	4	Employer	1			J	4
41	Nyanza	B		1								intro	intro	intro	3	4	Employer	1			F&J	3
42	Nyanza	B								1		intro	intro	intro	2	4	Engneer			1	F	3
43	Nyanza	B					1					intro	intro	intro	2	5	Contractor		1		J	3
44	Nyanza	B					1					intro	intro	intro	3	1	Contractor		1		F	4
45	Nyanza	B								1		intro	intro	intro	3	1	Engneer			1	F	3
46	Nyanza	B								1		intro	intro	intro	2	1	Engneer			1	J	3
47	Nyanza	C									1	intro	intro	intro	2	1	Engineer			1	J	3
48	Nyanza	C			1							intro	intro	intro	3	3	Employer	1			J	4
49	Nyanza	C			1							intro	intro	intro	3	4	Employer	1			F	3
50	Nyanza	C			1							intro	intro	intro	3	4	Employer	1			F	2
51	Nyanza	C									1	intro	intro	intro	3	4	Engineer			1	F	3
52	Nyanza	C									1	intro	intro	intro	3	4	Engineer			1	W	2
53	Nyanza	C						1				intro	intro	intro	2	3	Contractor		1		F	3
54	Nyanza	C						1				intro	intro	intro	2	1	Contractor		1		J&F	4
55	Nyanza	C						1				intro	intro	intro	3	3	Contractor		1		F	3
56	Nyanza	C						1				intro	intro	intro	3	4	Contractor		1		F	2
57	Nyanza	C									1	intro	intro	intro	2	1	Engineer			1	F	3
58	Nyanza	C									1	intro	intro	intro	3	2	Engineer			1	F&W	2
59	Rift Valley	A	1									intro	intro	intro	3	2	Employer	1			F&J	3
60	Rift Valley	A	1									intro	intro	intro	2	4	Employer	1			J	4
61	Rift Valley	A	1									intro	intro	intro	3	4	Employer	1			J	4
62	Rift Valley	A	1									intro	intro	intro	2	4	Employer	1			F&J	4
63	Rift Valley	A							1			intro	intro	intro	2	5	Engineer			1	F	3
64	Rift Valley	A				1						intro	intro	intro	3	1	Contractor		1		J	3
65	Rift Valley	A				1						intro	intro	intro	2	4	Contractor		1		F	4
66	Rift Valley	A				1						intro	intro	intro	3	2	Contractor		1		F	3
67	Rift Valley	A				1						intro	intro	intro	3	2	Contractor		1		J	4
68	Rift Valley	A				1						intro	intro	intro	3	4	Contractor		1		J	4
69	Rift Valley	A							1			intro	intro	intro	3	4	Engineer			1	J	3
70	Rift Valley	A							1			intro	intro	intro	2	2	Engineer			1	F	4
71	Rift Valley	A							1			intro	intro	intro	3	2	Engineer			1	F	3
72	Rift Valley	A							1			intro	intro	intro	3	2	Engineer			1	F	3
73	Rift Valley	B								1		intro	intro	intro	2	4	Engneer			1	W	3
74	Rift Valley	B								1		intro	intro	intro	3	4	Engneer			1	W	4
75	Rift Valley	B		1								intro	intro	intro	3	2	Employer	1			F	3
76	Rift Valley	B		1								intro	intro	intro	3	3	Employer	1			F	2
77	Rift Valley	B		1								intro	intro	intro	3	4	Employer	1			F&W	3
78	Rift Valley	B		1								intro	intro	intro	2	1	Employer	1			F&J	2
79	Rift Valley	B		1								intro	intro	intro	3	2	Employer	1			J	3
80	Rift Valley	B					1					intro	intro	intro	3	2	Contractor		1		J	4
81	Rift Valley	B					1					intro	intro	intro	2	4	Contractor		1		F&W	4
82	Rift Valley	B					1					intro	intro	intro	3	4	Contractor		1		J	4
83	Rift Valley	B					1					intro	intro	intro	2	4	Contractor		1		F	3
84	Rift Valley	B								1		intro	intro	intro	2	5	Engneer			1	J&F	2
85	Rift Valley	B								1		intro	intro	intro	3	4	Engneer			1	F	3
86	Rift Valley	B		1								intro	intro	intro	3	4	Employer	1			F	3
87	Rift Valley	B		1								intro	intro	intro	2	3	Employer	1			F	3
88	Rift Valley	C			1							intro	intro	intro	2	1	Employer	1			J	4
89	Rift Valley	C									1	intro	intro	intro	3	4	Engineer			1	J	3
90	Rift Valley	C									1	intro	intro	intro	3	4	Engineer			1	J	2
91	Rift Valley	C									1	intro	intro	intro	3	2	Engineer			1	J	3
92	Rift Valley	C						1				intro	intro	intro	2	3	Contractor		1		j	2
93	Rift Valley	C						1				intro	intro	intro	2	1	Contractor		1		W	3
94	Rift Valley	C									1	intro	intro	intro	3	3	Engineer			1	W	4
95	Rift Valley	C						1				intro	intro	intro	3	4	Contractor		1		W	4
96	Rift Valley	C						1				intro	intro	intro	2	1	Contractor		1		W	4
97	Rift Valley	C									1	intro	intro	intro	3	4	Engineer			1	W	3
98	Rift Valley	C									1	intro	intro	intro	3	4	Engineer			1	J	3
99	Rift Valley	C									1	intro	intro	intro	2	3	Engineer			1	J	4
100	Rift Valley	C									1	intro	intro	intro	2	1	Engineer			1	J	4
101	Rift Valley	C									1	intro	intro	intro	3	3	Engineer			1	F	3
102	Rift Valley	C									1	intro	intro	intro	3	4	Engineer			1	F	3
103	Nairobi	A							1			intro	intro	intro	2	1	Engineer			1	F	4
104	Nairobi	A							1			intro	intro	intro	3	2	Engineer			1	F	3
105	Nairobi	A							1			intro	intro	intro	3	2	Engineer			1	F	3
106	Nairobi	A							1			intro	intro	intro	2	4	Engineer			1	F	3
107	Nairobi	A	1									intro	intro	intro	3	4	Employer	1			J	3
108	Nairobi	A	1									intro	intro	intro	2	4	Employer	1			J	4
109	Nairobi	A	1									intro	intro	intro	3	3	Employer	1			J	3
110	Nairobi	A							1			intro	intro	intro	3	4	Engineer			1	J	2
111	Nairobi	A				1						intro	intro	intro	2	1	Contractor		1		J	3
112	Nairobi	A				1						intro	intro	intro	3	2	Contractor		1		F	2
113	Nairobi	A				1						intro	intro	intro	3	2	Contractor		1		F	4
114	Nairobi	B					1					intro	intro	intro	2	4	Contractor		1		F	3
115	Nairobi	B					1					intro	intro	intro	3	4	Contractor		1		F	4
116	Nairobi	B					1					intro	intro	intro	2	4	Contractor		1		W	4
117	Nairobi	B		1								intro	intro	intro	2	5	Employer	1			W	3
118	Nairobi	B		1								intro	intro	intro	3	1	Employer	1			W	4
119	Nairobi	B		1								intro	intro	intro	2	4	Employer	1			J	4
120	Nairobi	B		1								intro	intro	intro	3	2	Employer	1			F&W	4
121	Nairobi	B					1					intro	intro	intro	3	2	Contractor		1		J	3
122	Nairobi	B								1		intro	intro	intro	3	4	Engneer			1	F	2
123	Nairobi	B		1								intro	intro	intro	3	4	Employer	1			J&F	3
124	Nairobi	C			1							intro	intro	intro	2	2	Employer	1			F	3
125	Nairobi	C			1							intro	intro	intro	3	2	Employer	1			F	3
126	Nairobi	C			1							intro	intro	intro	3	2	Employer	1			F	4
127	Nairobi	C			1							intro	intro	intro	2	4	Employer	1			J	0
128	Nairobi	C			1							intro	intro	intro	3	4	Employer	1			J	2
129	Nairobi	C			1							intro	intro	intro	2	4	Employer	1			J	3
130	Nairobi	C									1	intro	intro	intro	3	3	Engineer			1	J	2
131	Nairobi	C						1				intro	intro	intro	3	4	Contractor		1		j	3
132	Nairobi	C						1				intro	intro	intro	2	1	Contractor		1		W	4
133	Nairobi	C						1				intro	intro	intro	3	2	Contractor		1		W	4
134	Nairobi	C									1	intro	intro	intro	3	2	Engineer			1	W	4
135	Central	A							1			intro	intro	intro	2	4	Engineer			1	J	3

R&C	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Question	q9					q10					q11	q12a					q12b				
Section	a	b	c	d	QL	a	b	c	d	QL		a1	a2	a3	a4	a5	b1	b2	b3	b4	b5
Measurement Scale	I	I	I	I		I	I	I	I		I	I	I	I	I	I	I	I	I	I	I
Maximum	5	5	5	5		5	5	5	5		5	5	5	5	5	5	5	5	5	5	5
1	4	2	3	4		1	1	1	1		2	2	2	5	5	5	2	1	1	1	2
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R&C	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
Question	q12c					q12d					q13					q14a			q14b		
Section	c1	c2	c3	c4	c5	d1	d2	d3	d4	d5	a	b	c	d	e	a1	a2	a3	b1	b2	b3
Measurement Scale	I	I	I	I	I	I	I	I	I	I	n/a	I	I	n/a	I	I	I	I	I	I	I
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R&C	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
Question	q14c			q14d			q15		q16				q17			
Section	c1	c2	c3	d1	d2	d3	1	2	1	2	3	4	1	2	3	4
Measurement Scale	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
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122	2	2	3	2	2	3	2	1	1	2	2	2	1	1	1	1
123	2	3	4	4	4	4	2	2	5	2	2	2	5	4	2	1
124	1	1	1	3	4	5	2	2	1	1	3	3	1	1	1	1
125	3	4	5	3	5	4	2	1	5	4	4	4	1	1	1	1
126	3	2	3	4	4	4	1	1	1	1	2	2	4	1	2	1
127	1	2	3	2	3	2	2	2	2	2	2	2	4	4	4	1
128	2	2	3	3	3	2	2	2	4	2	1	1	2	1	1	1
129	2	3	4	3	2	2	2	1	1	1	2	4	1	1	2	4
130	1	1	1	2	2	3	1	1	4	2	3	1	4	4	4	1
131	3	4	5	2	2	0	2	2	2	1	1	1	1	1	1	1
132	2	3	2	2	3	3	2	1	5	4	1	1	5	4	2	1
133	2	2	2	2	3	3	1	2	2	2	3	3	1	1	1	1
134	5	4	5	3	5	4	1	2	1	1	1	1	2	1	1	1
135	3	3	3	4	4	4	2	2	2	2	2	2	1	1	2	4

R&C	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
Question	q18						19	20	q21a				q21b			
Section	a	b	c	d	e	f			a1	a2	a3	a4	b1	b2	b3	b4
Measurement Scale	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Maximum	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
1	2	3	4	4	4	4	4	4	2	2	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2	4	2	3	4	2	2	2	2
3	2	2	4	4	2	2	4	4	4	2	2	2	4	2	2	2
4	1	1	4	5	2		4	4		1	2	2		1	1	1
5	2	2	1	4	3	2	3	4	1	1	2	4	1	1	1	1
6	1	1	4	5	2	2	4	4	2	1	2	2	4	2	2	2
7	1	2	2	4	2	3	2	3	2	4	4	4	2	2	3	4
8	2	3	4	4	4	4	1	1		1	2	4	4	2	2	2
9	1	1	5	5	2	2	4	4	2	2	3	4	2	2	2	2
10	2	2	2	2	2	2	2	2	2	2	4	4	2	2	4	4
11	2	2	1	4	3	2	3	4	1	1	2	4	1	1	1	1
12	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1
13	1	1	2	1	1	1	3	3	2	4	4	4	4	2	2	2
14	2	2	3	2	4	4	3	3	2	2	4	4	2	2	2	2
15	2	3	4	4	4	4	2	2	2	2	4	4	4	2	2	2
16	1	1	4	5	2	2	4	4	2	1	2	2	4	2	2	2
17		4	2	2	3	4	3	3	2	2	2	2	3	3	3	3
18	1	1	4	5	2		4	4		1	2	2		1	1	1
19	2	2	4	4	2	2	2	4	1	4	4	4	2	2	2	2
20	1	1	5	2	4	4	4	4	2	2	2	2	1	1	1	1
21	3	3	3	3	4	4	4	4	4	3	3	2	2	2	3	4
22	2	2	4	4	4	4	4	4	3	2	3	4	4	1	2	4
23	2	2	2	4	4	4	4	2	2	2	2	2	2	2	2	2
24	1	1	2	4	4	4	5	4	2	3	3	3	2	1	1	1
25	2	3	3	3	2	2	3	3	2	3	3	3	3	3	3	3
26	1	1	2	1	1	1	4	4	2	1	2	2	1	1	1	1
27	1	2	2	4	2	3	2	3	2	4	4	4	2	2	3	4
28	2	3	4	4	4	4	1	1		1	2	4	4	2	2	2
29	1	1	5	5	2	2	4	4	2	2	3	4	2	2	2	2
30	2	3	3	4	4	2	2	3	2	2	2	2	4	2	2	2
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32	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1
33	1	1	2	1	1	1	3	3	2	4	4	4	4	2	2	2
34	2	2	3	2	4	4	3	3	2	2	4	4	2	2	2	2
35	2	3	4	4	4	4	4	4	2	2	2	2	2	2	2	2
36	2	2	2	2	2	2	2	2	4	2	3	4	2	2	2	2
37	2	2	4	4	2	2	4	4	4	2	2	2	4	2	2	2
38	1	1	4	5	2		4	4		1	2	2		1	1	1
39	2	2	1	4	3	2	3	4	1	1	2	4	1	1	1	1
40	1	1	4	5	2	2	4	4	2	1	2	2	4	2	2	2
41	1	2	2	4	2	3	2	3	2	4	4	4	2	2	3	4
42	2	3	4	4	4	4	1	1		1	2	4	4	2	2	2
43	1	1	5	5	2	2	4	4	2	2	3	4	2	2	2	2
44	1	1	4	5	2	2	4	4	2	1	2	2	4	2	2	2
45	1	2	2	4	2	3	2	3	2	4	4	4	2	2	3	4
46	2	3	4	4	4	4	1	1		1	2	4	4	2	2	2
47	1	1	5	5	2	2	4	4	2	2	3	4	2	2	2	2
48	2	2	2	2	2	2	2	2	2	2	4	4	2	2	4	4
49	2	2	1	4	3	2	3	4	1	1	2	4	1	1	1	1
50	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1
51	1	1	2	1	1	1	3	3	2	4	4	4	4	2	2	2
52	2	2	3	2	4	4	3	3	2	2	4	4	2	2	2	2
53	1	1	5	5	2	2	4	4	2	2	3	4	2	2	2	2
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56	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1
57	1	1	2	1	1	1	3	3	2	4	4	4	4	2	2	2
58	2	2	3	2	4	4	3	3	2	2	4	4	2	2	2	2
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60	1	1	4	5	2	2	4	4	2	1	2	2	4	2	2	2
61		4	2	2	3	4	3	3	2	2	2	2	3	3	3	3
62	1	1	4	5	2		4	4		1	2	2		1	1	1
63	2	2	4	4	2	2	2	4	1	4	4	4	2	2	2	2
64	1	1	5	2	4	4	4	4	2	2	2	2	1	1	1	1
65	3	3	3	3	4	4	4	4	4	3	3	2	2	2	3	4
66	2	3	4	4	4	4	1	1	2	4	4	4	2	2	2	2
67	1	1	5	5	2	2	3	3	2	2	4	4	4	2	2	2
68	2	2	2	2	2	2	3	3	2	2	2	2	2	2	3	4
69	2	2	1	4	3	2	4	4	4	2	3	4	4	2	2	2
70	1	1	1	2	1	1	2	2	4	2	2	2	2	2	2	2
71	1	1	2	1	1	1	3	4		1	2	2	2	2	4	4
72	2	2	3	2	4	4	1	1	1	1	2	4	1	1	1	1
73	1	1	5	5	2	2	3	3	2	1	2	2	1	1	1	1
74	2	2	2	2	2	2	3	3	2	4	4	4	2	2	2	2
75	2	2	2	2	2	1	2	2	2	2	2	4	2	2	2	4
76	1	1	1	2	1	1	4	4	2	2	3	4	2	2	2	2
77	1	1	2	1	1	1	3	3	2	1	2	2	2	2	4	4
78	2	2	3	2	4	4	4	4	2	4	4	4	1	1	1	1
79	2	3	4	4	4	4	2	4		1	2	4	1	1	1	1
80	1	1	4	5	2	2	4	4	2	2	3	4	4	2	2	2
81	2	2	2	2	2	2	4	4	2	2	4	4	4	2	2	2
82	2	2	1	4	3	2	3	3	1	1	2	4	4	2	2	2
83	1	1	1	2	1	1	2	2	1	1	1	1	4	2	2	2
84	1	1	2	1	1	1	4	4	2	4	4	4	4	2	2	2
85	1	1	4	5	2	2	2	2	2	2	4	4	3	3	3	3
86	1	2	2	4	2	3	3	4	1	1	2	4		1	1	1
87	2	3	4	4	4	4	1	1	1	1	1	1	2	2	2	2
88	1	1	5	5	2	2	3	3	2	4	4	4	1	1	1	1
89	2	2	2	2	2	2	3	3	2	2	4	4	2	2	3	4
90	2	2	1	4	3	2	2	2	2	2	4	4	4	1	2	4
91	1	1	1	2	1	1	4	4	2	1	2	2	2	2	2	2
92	1	1	2	1	1	1	3	3	2	2	2	2	2	1	1	1
93	2	2	3	2	4	4	4	4		1	2	2	3	3	3	3
94	1	1	5	5	2	2	2	4	1	4	4	4	1	1	1	1
95	2	2	2	2	2	2	4	4	2	2	2	2	2	2	3	4
96	2	2	1	4	3	2	4	4	4	3	3	2	4	2	2	2
97	1	1	1	2	1	1	1	1	2	4	4	4	2	2	2	2
98	1	1	2	1	1	1	3	3	2	2	4	4	2	2	4	4
99	2	2	3	2	4	4	3	3	2	2	2	2	1	1	1	1
100	2	3	4	4	4	4	4	4	4	2	3	4	1	1	1	1
101	1	1	4	5	2	2	2	2	4	2	2	2	4	2	2	2
102		4	2	2	3	4	3	4		1	2	2	2	2	2	2
103	1	1	4	5	2		1	1	1	1	2	4	2	2	2	2
104	2	2	4	4	2	2	3	3	2	1	2	2	2	2	2	2
105	1	1	5	2	4	4	3	3	2	4	4	4	4	2	2	2
106	3	3	3	3	4	4	2	2		1	2	4		1	1	1
107	2	3	4	4	4	4	4	4	2	2	3	4	1	1	1	1
108	1	1	5	5	2	2	3	3	2	1	2	2	4	2	2	2
109	2	2	2	2	2	2	4	4	2	4	4	4	2	2	3	4
110	2	2	1	4	3	2	2	4		1	2	4	4	2	2	2
111	1	1	1	2	1	1	4	4	2	2	3	4	2	2	2	2
112	1	1	2	1	1	1	4	4	2	2	4	4	4	2	2	2
113	2	2	3	2	4	4	3	3	1	1	2	4	2	2	3	4
114	1	1	5	5	2	2	2	2	1	1	1	1	4	2	2	2
115	2	2	2	2	2	2	4	4	2	4	4	4	2	2	2	2
116	2	2	1	4	3	2	3	3	2	2	2	2	2	2	4	4
117	1	1	1	2	1	1	4	4		1	2	2	1	1	1	1
118	1	1	2	1	1	1	2	4	1	4	4	4	1	1	1	1
119	2	2	3	2	4	4	4	4	2	2	2	2	4	2	2	2
120	2	3	4	4	4	4	4	4	4	3	3	2	2	2	2	2
121	1	1	4	5	2	2	1	1	2	4	4	4	2	2	2	2
122	2	2	2	2	2	2	3	3	2	2	4	4	2	2	4	4
123	1	1	4	5	2	2	3	3	2	2	2	2	1	1	1	1
124		4	2	2	3	4	4	4	4	2	3	4	1	1	1	1
125	1	1	4	5	2		2	2	4	2	2	2	4	2	2	2
126	2	2	4	4	2	2	3	4		1	2	2	2	2	2	2
127	1	1	5	2	4	4	1	1	1	1	2	4	4	2	2	2
128	3	3	3	3	4	4	3	3	2	1	2	2	4	2	2	2
129	2	3	4	4	4	4	3	3	2	4	4	4	3	3	3	3
130	1	1	5	5	2	2	2	2		1	2	4		1	1	1
131	2	2	2	2	2	2	4	4	2	2	3	4	2	2	2	2
132	2	2	1	4	3	2	3	3	2	1	2	2	1	1	1	1
133	1	1	1	2	1	1	4	4	2	4	4	4	2	2	3	4
134	1	1	2	1	1	1	2	4		1	2	4	2	2	2	2
135	2	2	3	2	4	4	4	4	2	2	3	4	4	2	2	2

R&C	85	86	87	88	89	90	91	92	93	94	95	96	
Question	q21c				q21d				21				Further reference
Section	c1	c2	c3	c4	d1	d2	d3	d4	e	f	g	h	
Measurement Scale	I	I	I	I	I	I	I	I	I	I	I	I	
Maximum	5	5	5	5	5	5	5	5	5	5	5	5	
1	4	4	4	4	2	2	2	2	4	4	4	4	R1
2	3	1	2	2	2	2	3	2	2	2	4	3	R2
3	5	2	2	2	2	2	2	2	4	4	4	4	R3
4		2	1	1	1	1	2	2	4	1	1	1	
5	1	1	1	3	1	2	3	2	4	4	2	2	R8
6	1	1	1	3	2	1	1	1	3	3	2	3	
7	2	2	3	4	1	1	1	1	2	1	3	1	R4
8	2	2	3	4	1	2	3	2	3	3	2	3	
9	3	3	3	3	2	2	3	3	4	4	4	4	R5
10	2	2	4	4	3	2	2	2	4	4	2	4	R6
11	1	1	1	3	1	2	3	2	4	4	2	2	R8
12	1	1	1	1	2	1	1	1	3	3	2	2	R7
13	4	2	2	2	2	4	4	2	4	4	4	4	R11
14	1	1	1	1	2	2	3	2	2	2	3	4	R12
15	3	1	2	2	3	2	2	2	2	2	4	3	
16	1	1	1	3	2	1	1	1	3	3	2	3	
17	2	2	2	2	2	2	2	2	3	3	2	3	R9
18		2	1	1	1	1	2	2	4	1	1	1	R10
19	2	2	2	2	4	4	4	4	4	4	4	4	R13
20	2	2	2	2	2	2	2	2	2	2	3	2	R14
21	4	4	4	4	2	2	4	4	2	2	3	3	R15
22	3	2	3	2	2	2	2	2	4	3	4	4	R16
23	2	2	2	2	1	1	1	1	2	2	3	2	R17
24	3	2	2	2	1	1	1	1	2	3	4	4	R18
25	3	3	3	3	2	2	3	4	4	4	4	4	R19
26	3	1	2	2	2	4	4	2	2	2	4	3	
27	2	2	3	4	1	1	1	1	2	1	3	1	
28	2	2	3	4	1	2	3	2	3	3	2	3	
29	3	3	3	3	2	2	3	3	4	4	4	4	
30	4	2	2	2	2	2	3	3	3	3	3	4	R20
31	1	1	1	3	1	2	3	2	4	4	2	2	
32	1	1	1	1	2	1	1	1	3	3	2	2	
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36	3	1	2	2	2	2	3	2	2	2	4	3	
37	5	2	2	2	2	2	2	2	4	4	4	4	
38		2	1	1	1	1	2	2	4	1	1	1	
39	1	1	1	3	1	2	3	2	4	4	2	2	
40	1	1	1	3	2	1	1	1	3	3	2	3	
41	2	2	3	4	1	1	1	1	2	1	3	1	
42	2	2	3	4	1	2	3	2	3	3	2	3	
43	3	3	3	3	2	2	3	3	4	4	4	4	
44	1	1	1	3	2	1	1	1	3	3	2	3	
45	2	2	3	4	1	1	1	1	2	1	3	1	
46	2	2	3	4	1	2	3	2	3	3	2	3	
47	3	3	3	3	2	2	3	3	4	4	4	4	
48	2	2	4	4	3	2	2	2	4	4	2	4	
49	1	1	1	3	1	2	3	2	4	4	2	2	
50	1	1	1	1	2	1	1	1	3	3	2	2	
51	4	2	2	2	2	4	4	2	4	4	4	4	
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56	1	1	1	1	2	1	1	1	3	3	2	2	
57	4	2	2	2	2	4	4	2	4	4	4	4	
58	1	1	1	1	2	2	3	2	2	2	3	4	
59	3	1	2	2	3	2	2	2	2	2	4	3	
60	1	1	1	3	2	1	1	1	3	3	2	3	
61	2	2	2	2	2	2	2	2	3	3	2	3	
62		2	1	1	1	1	2	2	4	1	1	1	
63	2	2	2	2	4	4	4	4	4	4	4	4	
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66	2	2	3	4	1	1	2	2	2	1	3	1	
67	3	3	3	3	1	2	3	2	3	3	2	3	
68	2	2	4	4	2	1	1	1	4	4	4	4	
69	1	1	1	3	1	1	1	1	3	3	2	3	
70	1	1	1	1	1	2	3	2	2	1	3	1	
71	4	2	2	2	2	2	3	3	3	3	2	3	
72	1	1	1	1	2	1	1	1	4	4	4	4	
73	3	3	3	3	1	1	1	1	4	4	2	4	
74	2	2	4	4	1	2	3	2	4	4	2	2	
75	2	2	2	4	2	2	2	2	4	3	3	3	R21
76	1	1	1	1	3	2	2	2	4	4	4	4	
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83	2	2	4	4	2	2	3	3	3	3	2	2	
84	1	1	1	3	3	2	2	2	4	4	4	4	
85	1	1	1	3	1	2	3	2	4	4	4	4	
86	1	1	1	1	2	1	1	1	2	2	3	2	
87	4	2	2	2	1	1	1	1	2	2	3	3	
88	1	1	1	1	1	2	3	2	4	3	4	4	
89	3	1	2	2	2	2	3	3	2	2	3	2	
90	1	1	1	3	3	2	2	2	2	3	4	4	
91	2	2	2	2	1	2	3	2	4	4	4	4	
92		2	1	1	2	1	1	1	2	2	4	3	
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94	2	2	2	2	2	2	3	2	3	3	2	3	
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136	Central	A	1									intro	intro	intro	3	4	Employer	1			J
137	Central	A	1									intro	intro	intro	2	4	Employer	1			J
138	Central	A							1			intro	intro	intro	2	5	Engineer			1	J
139	Central	A	1									intro	intro	intro	3	4	Employer	1			J
140	Central	A	1									intro	intro	intro	3	4	Employer	1			F
141	Central	A	1									intro	intro	intro	2	3	Employer	1			F
142	Central	A							1			intro	intro	intro	2	1	Engineer			1	F
143	Central	A				1						intro	intro	intro	3	4	Contractor		1		F
144	Central	A				1						intro	intro	intro	3	4	Contractor		1		F
145	Central	A				1						intro	intro	intro	3	2	Contractor		1		F
146	Central	A							1			intro	intro	intro	2	3	Engineer			1	F
147	Central	B								1		intro	intro	intro	2	1	Engneer			1	J
148	Central	B								1		intro	intro	intro	3	3	Engneer			1	J
149	Central	B		1								intro	intro	intro	3	4	Employer	1			J
150	Central	B		1								intro	intro	intro	2	1	Employer	1			J
151	Central	B		1								intro	intro	intro	3	4	Employer	1			J
152	Central	B		1								intro	intro	intro	3	4	Employer	1			W
153	Central	B								1		intro	intro	intro	2	3	Engneer			1	J
154	Central	B								1		intro	intro	intro	2	1	Engneer			1	F
155	Central	B					1					intro	intro	intro	3	2	Contractor		1		W
156	Central	B					1					intro	intro	intro	2	3	Contractor		1		F
157	Central	B					1					intro	intro	intro	2	1	Contractor		1		J
158	Central	B					1					intro	intro	intro	3	3	Contractor		1		J
159	Central	C									1	intro	intro	intro	3	4	Engineer			1	J
160	Central	C						1				intro	intro	intro	2	1	Contractor		1		F
161	Central	C									1	intro	intro	intro	3	4	Engineer			1	F
162	Central	C			1							intro	intro	intro	3	4	Employer	1			W
163	Central	C			1							intro	intro	intro	2	3	Employer	1			F
164	Central	C			1							intro	intro	intro	2	1	Employer	1			W
165	Central	C			1							intro	intro	intro	3	3	Employer	1			W
166	Central	C			1							intro	intro	intro	3	4	Employer	1			W
167	Central	C									1	intro	intro	intro	2	1	Engineer			1	J
168	Central	C						1				intro	intro	intro	3	2	Contractor		1		W
169	Central	C						1				intro	intro	intro	3	2	Contractor		1		F
170	Central	C						1				intro	intro	intro	2	4	Contractor		1		J
171	Central	C						1				intro	intro	intro	3	4	Contractor		1		F
172	Eastern	A							1			intro	intro	intro	2	4	Engineer			1	F&W
173	Eastern	A							1			intro	intro	intro	3	3	Engineer			1	J
174	Eastern	A	1									intro	intro	intro	3	4	Employer	1			F
175	Eastern	A	1									intro	intro	intro	2	1	Employer	1			J&F
176	Eastern	A	1									intro	intro	intro	3	2	Employer	1			J&F
177	Eastern	A	1									intro	intro	intro	3	2	Employer	1			JFW
178	Eastern	A							1			intro	intro	intro	2	4	Engineer			1	J
179	Eastern	A				1						intro	intro	intro	3	4	Contractor		1		J
180	Eastern	A				1						intro	intro	intro	2	4	Contractor		1		J
181	Eastern	A				1						intro	intro	intro	2	5	Contractor		1		F
182	Eastern	B								1		intro	intro	intro	3	1	Engneer			1	J&F
183	Eastern	B								1		intro	intro	intro	2	4	Engneer			1	F
184	Eastern	B		1								intro	intro	intro	3	2	Employer	1			F
185	Eastern	B		1								intro	intro	intro	3	2	Employer	1			F
186	Eastern	B		1								intro	intro	intro	3	4	Employer	1			F&W
187	Eastern	B					1					intro	intro	intro	3	4	Contractor		1		F&J
188	Eastern	B					1					intro	intro	intro	2	2	Contractor		1		J
189	Eastern	B					1					intro	intro	intro	3	2	Contractor		1		J
190	Eastern	B					1					intro	intro	intro	3	2	Contractor		1		F&J
191	Eastern	B								1		intro	intro	intro	2	4	Engneer			1	F
192	Eastern	B								1		intro	intro	intro	3	4	Engneer			1	J
193	Eastern	B								1		intro	intro	intro	2	4	Engneer			1	F
194	Eastern	C						1				intro	intro	intro	3	3	Contractor		1		J
195	Eastern	C			1							intro	intro	intro	2	1	Employer	1			J
196	Eastern	C			1							intro	intro	intro	3	2	Employer	1			J
197	Eastern	C			1							intro	intro	intro	3	2	Employer	1			F
198	Eastern	C									1	intro	intro	intro	2	4	Engineer			1	J&F
199	Eastern	C									1	intro	intro	intro	3	4	Engineer			1	F
200	Eastern	C									1	intro	intro	intro	2	4	Engineer			1	F
201	Eastern	C						1				intro	intro	intro	2	5	Contractor		1		F
202	Eastern	C						1				intro	intro	intro	3	4	Contractor		1		F&W
203	Eastern	C									1	intro	intro	intro	3	4	Engineer			1	F&J
204	Eastern	C									1	intro	intro	intro	2	3	Engineer			1	J
205	Coast	A				1						intro	intro	intro	2	1	Contractor		1		J
206	Coast	A							1			intro	intro	intro	3	4	Engineer			1	F&J
207	Coast	A	1									intro	intro	intro	3	4	Employer	1			F
208	Coast	A	1									intro	intro	intro	3	2	Employer	1			J&F
209	Coast	A	1									intro	intro	intro	2	3	Employer	1			F
210	Coast	A	1									intro	intro	intro	2	1	Employer	1			F
211	Coast	A				1						intro	intro	intro	3	3	Contractor		1		F
212	Coast	A							1			intro	intro	intro	3	4	Engineer			1	F
213	Coast	B								1		intro	intro	intro	2	1	Engneer			1	F&J
214	Coast	B					1					intro	intro	intro	3	4	Contractor		1		J
215	Coast	B					1					intro	intro	intro	3	4	Contractor		1		J
216	Coast	B		1								intro	intro	intro	2	3	Employer	1			F&J
217	Coast	B		1								intro	intro	intro	2	1	Employer	1			F
218	Coast	B		1								intro	intro	intro	3	2	Employer	1			J
219	Coast	B		1								intro	intro	intro	2	3	Employer	1			F
220	Coast	B					1					intro	intro	intro	2	1	Contractor		1		J
221	Coast	C									1	intro	intro	intro	3	3	Engineer			1	J
222	Coast	C						1				intro	intro	intro	3	4	Contractor		1		J
223	Coast	C									1	intro	intro	intro	2	1	Engineer			1	F
224	Coast	C			1							intro	intro	intro	3	4	Employer	1			J&F
225	Coast	C			1							intro	intro	intro	3	4	Employer	1			F
226	Coast	C			1							intro	intro	intro	2	3	Employer	1			F
227	Coast	C			1							intro	intro	intro	2	1	Employer	1			F
228	Coast	C									1	intro	intro	intro	3	3	Engineer			1	F&W
229	Coast	C						1				intro	intro	intro	3	4	Contractor		1		F&J
230	Coast	C						1				intro	intro	intro	2	1	Contractor		1		J
231	Coast	C						1				intro	intro	intro	3	2	Contractor		1		F
232	Coast	C									1	intro	intro	intro	3	2	Engineer			1	F
233	North Eastern	A							1			intro	intro	intro	2	4	Engineer			1	W
234	North Eastern	A	1									intro	intro	intro	3	4	Employer	1			J
235	North Eastern	A							1			intro	intro	intro	2	4	Engineer			1	F
236	North Eastern	A	1									intro	intro	intro	3	3	Employer	1			F
237	North Eastern	A							1			intro	intro	intro	3	4	Engineer			1	W
238	North Eastern	A				1						intro	intro	intro	2	1	Contractor		1		W
239	North Eastern	A							1			intro	intro	intro	3	2	Engineer			1	W
240	North Eastern	B					1					intro	intro	intro	2	3	Contractor		1		J
241	North Eastern	B		1								intro	intro	intro	2	1	Employer	1			J
242	North Eastern	B		1								intro	intro	intro	2	3	Employer	1			F
243	North Eastern	B					1					intro	intro	intro	2	1	Contractor		1		F
244	North Eastern	B					1					intro	intro	intro	3	3	Contractor		1		F
245	North Eastern	B								1		intro	intro	intro	3	4	Engneer			1	F&W
246	North Eastern	C									1	intro	intro	intro	2	1	Engineer			1	F&J
247	North Eastern	C			1							intro	intro	intro	3	4	Employer	1			J
248	North Eastern	C						1				intro	intro	intro	3	4	Contractor		1		J
249	North Eastern	C						1				intro	intro	intro	2	3	Contractor		1		F&J
250	North Eastern	C									1	intro	intro	intro	1	2	Engineer			1	F
			30	30	26	23	29	28	27	23	34						Resp	Em	C	E	total
			E_mA	E_mB	E_mC	CA	CB	CC	EA	EB	EC						Analysed	86	80	84	250
																	from design	86	80	84	250

136	3	3	4	3	4	3	2	1	1	2	2	4	3	5	2	3	3	2	2	3	5	2	5	2	5	2	2	4	4	4	3	4	2	1	2	2	3	2	3	5	4	5	2	3	3
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243	2	1	4	2	3	1	5	4	2	1	2	2	1	4	3	2	3	3	2	4	4	4	3	3	3	3		2	1	1	1	1	2	2	1	1	1	1
244	1	2	2	1	1	1	1	1	1	1	1	1	1	2	1	1	2	2		1	2	4	1	1	1	1	2	2	2	2	4	4	4	4	1	2	3	2
245	1	1	5	4	1	1	2	1	1	1	1	1	2	1	1	1	4	4	2	2	3	4	2	2	3	4	2	2	2	2	2	2	2	2	2	2	3	3
246	2	2	2	2	3	3	1	1	2	4	2	2	3	2	4	4	3	3	2	1	2	2	4	2	2	2	4	4	4	4	2	2	4	4	3	2	2	2
247	2	1	1	1	1	1	4	4	4	1	2	3	4	4	4	4	4	4	2	4	4	4	2	2	2	2	2	2	3	4	2	2	2	2	1	2	3	2
248	1	2	2	2	2	2	1	1	1	1	1	1	4	5	2	2	2	4		1	2	4	2	2	4	4	3	3	3	3	1	1	1	1	2	1	1	1
249	1	1	4	2	3	1	5	4	2	1		4	2	2	3	4	4	4	2	2	3	4	1	1	1	1	2	2	4	4	1	1	1	1	2	4	4	2
250	2	2	5	4	4	4	1	1	1	1	1	1	4	5	2		4	4	2	2	4	4	1	1	1	1	1	1	1	3	2	2	3	4	2	2	3	2

86 | 80 | 84 respondents per class of road

250 total respondents in the study

Reference	
1. M-Scale = Measurement Scale	
2. N/C = Nominal/Categorical Scale	
3. O = Ordinal Scale	
4. I = Interval Scale	
5. QL = Qualitative	
6. n/a = Note Applicable	
7. R-No. = Respondent Number	
8. R&C = Rows and Columns	
9. n/c = No Comments	
10. J = Jica Forms of Contract	
11. F = Fidic Forms of Contract	
12. EA = Engineers in Class A Roads	
13. EB = Engineers in Class B Roads	
14. EC - Engineers in Class C Roads	
15. E_mA = Employer of Class A Roads	
16. E_mB = Employers on Class B Roads	
17. E_mC = Employers on Class C Roads	
18. CA Contractors on Class A Roads	
19. CB = Contractors on Class B Roads	
20. CC = Contractors on Class C Roads	

Matrix Elemnets

24,000