

Assessing the Seeds of Disputes in Projects

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ABSTRACT

Purpose: *Unlike other projects, disputes are not avoidable on road projects. The study was focused to assess the causes of disputes management practices on road construction project performance under the department of roads.*

Design/Methodology/Approach: *Based on convenient sampling eight (8) construction sites were chosen for the contextual analysis. After the serious audits of accessible writing on the reasons for debates in the development businesses, one set questionnaire study was completed among the principal partners engaged with the road sites to evaluate the reasons for questions. Semi-organized interviews were led with the stakeholders.*

Findings/Result: *The main seeds of disputes were attributed due to Delays in works progress, Design error, Financial failures of contractors, Quality of works, Technical inadequacy of contractors, Payment delays, Semi-structured, Change in scope, Extension of Time (EoT) and Financial difficulties. Claims arising from delay in work progress can be reduced by realistic work schedule with resource deployment plan. The employer should closely monitor the activities with approved work schedule and provide appropriate solution for the issues arises from disputes / claims. Claims arising from delay in payment can be reduced by systematic disbursement of payment or directly payment to the people working groups under contractor. The cash flow management of contractors can be control by control mechanism for the use of mobilization fund on the same project works. Consultants ought to guarantee BOQ and contract periods, determined in the bid archives, are practical and according to existing site conditions.*

Originality/Value: *The study is significant for professionals to overcome identified causes effectively to create zero dispute projects based on real time causes.*

Paper Type: *Research paper*

Keywords: Causes, Road, Construction, Projects, Disputes, Laws, Contract

1. INTRODUCTION :

It is heard that no seeds are required for disputes in one hand and in contrary to the same, it is also heard every effects are outcome of specific causes. In this regards, let's discuss causes of disputes in changing conditions as society is changing at every moment and the causes of disputes also known as seeds of disputes might be changing.

The construction of road has a huge amount of investment and has higher priority in Nepal [1]. The construction disputes affects the projects in term of cost and time and the control and management of its effects is more challenging [2 &3]. Depending upon the type of contract, skill of employee, delivery method, the disputes have different forms. The size and nature of disputes depends on response of the conflicts during construction. Each debate might rise the expense and season of the undertaking which can harm the monetary and HR, nature of works and opportunity cost (Mishra A. K, et al. 2018) [4]. Subsequently this study centers on the monetary costs of debates to forestall the venture to be expensive.

Additionally for the debates the board its causes, effects and adequacy of the elective questions goal strategies ought to be found. However the review directed in street contracts under division of streets will assists with recognizing the significant reasons for debates in various sizes of street projects and their powerful method of settlement rehearses in setting of Nepal. In setting of goal rehearses in worldwide serious offering (ICB), discussion is most applied ADR to determine the questions followed by Settlement and intervention (Mishra, A.K., 2018) [2]. Therefore, the research has conducted on different types of road project (ICB and NCB) already settled or pending on the settlement process. The study was through secondary data (case study) and primary data (questionnaire) methods for the further more practices and effectiveness of disputes management. There are various types of causes according to the nature of work and contract. So, the research is about to find the major causes in road projects.

2. STATEMENT OF THE PROBLEMS :

Development of the Nation depends upon project management practice. During the process of project management, the most focused aspects are performance of projects. Among several projects, construction projects are more complex which needs additional care. Nepal is a land locked country. Most effective means used here are roads for transportation. That is why roads are found to be focused by all 3 level governments in Nepal though the nation is facing budget gap. In these aspects, it is essential to be known the causes of disputes in the road construction sites / projects which are functioning as seed for disputes for attempting to create zero disputes construction industry by overcoming real time causes of the sector [5, 6, 7, 8 & 9]. Contract is complex particularly in construction which needs attention of researchers and professionals to assure performance without conflicts to reduce its economic impacts [10, 11, & 12].

3. OBJECTIVES :

To assess the major causes of disputes in different road construction projects under department of roads, Nepal.

4. LITERATURE REVIEW :

4.1 Claims in Construction Contract in Nepal:

There has been impressive examination attempted to decide the reasons for debates in the development business. A writing survey has been led to outline the reasons for development questions. A few explores from various nations have been broke down and the outcome shows that the case is the primary driver of debate in the development business. During the execution of an undertaking, a few issues emerge that can't be settled among project members. Such issues commonly include project workers mentioning for either time augmentation or repayment of an extra expense, or here and there both. Such demands by the project worker are alluded to as 'guarantee'. Assuming the proprietor consents to the case of worker for hire and awards him augmentation of time or repayment of extra expense, or both, the issue is figured out. Nonetheless, in the event that the proprietor doesn't consent to the case put out by worker for hire and there are contrasts in the understandings, the issue appears as debate [2, 3 & 4]. Development is a perplexing interaction including of numerous exercises, bunches of individual, different organization or firms, different size, part of the country with various abilities and capacities and consistently dependent upon the evolving climate. Assuming that debate in the development business advances, it becomes extended, mind boggling and costly to determine. The results of the development debates won't help the partners in the development project. The effect of development questions might remember extra cost for administrative and organization, plausibility of suit cases, loss of organization notoriety, loss of productivity and maybe business reasonability, time postponements and cost overwhelms, lessening of regard between parties weakening of relationship and breakdown in participation, higher delicate costs, expanded and/or more perplexing honor process, modify and movement costs for men, gear and materials, loss of expert standing [2, 3 & 4].

Cost is one of the parameters of the project which determine a project's success. There is always a construction disputes, i.e. client wants to get their project operated with minimum cost whereas contractor at lowest possible cost to gain maximum profit. When the construction disputes were not solved on time then the additional cost in term of personnel, time and opportunity cost were encountered. So that the certain % of the project cost is estimated for the construction litigation expenditure.

The terms conflict, claim and dispute are utilized reciprocally. Numerous development questions are emerging out of conflict and postponement of difficulty and cost during the development project.

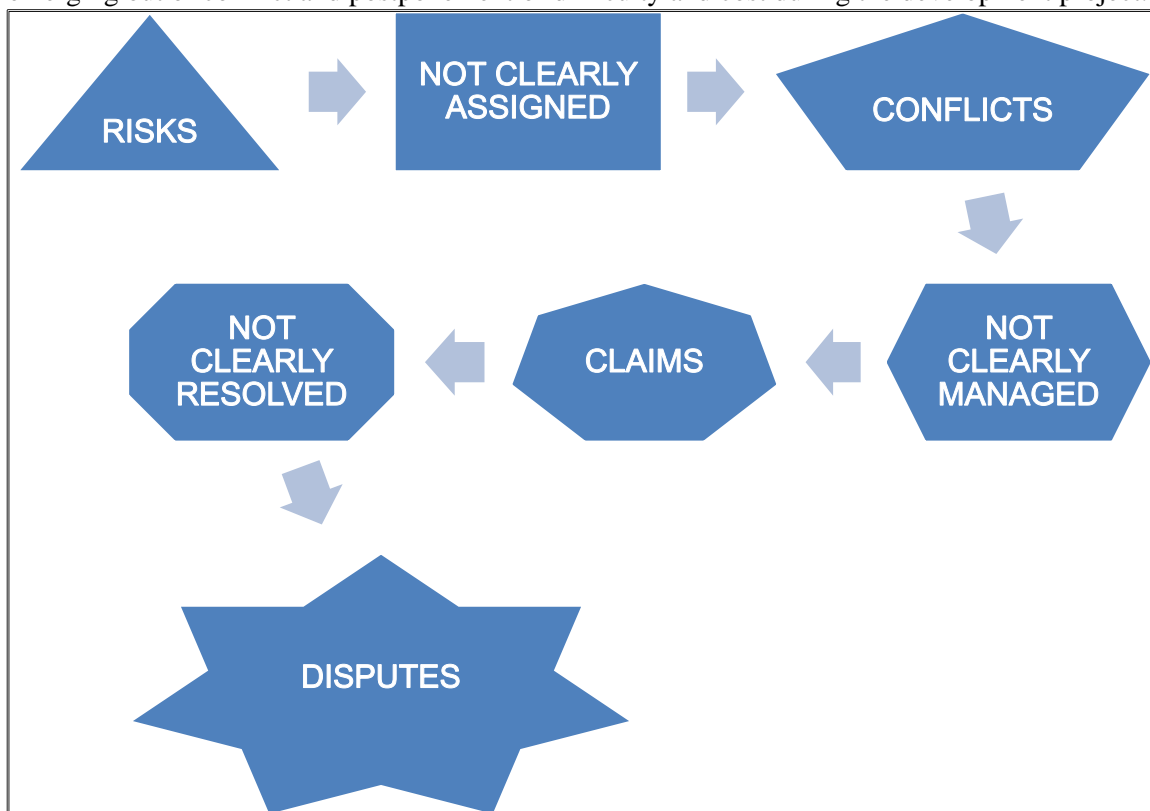


Fig. 1: Origin of Disputes [13, 14, 15, 16, 17, & 18].

Questions and claims are normal in numerous development projects. Normally, good judgment and sound preparation and the executives conquer such debates. Clear recognizable proof of prerequisites, group development, great correspondence channels, great offering rehearses, and complete development reports all work to limit mistaken assumptions and keep away from conflicts.

There are different reasons for questions from the past explores. As indicated by the analyst Aryal S, 2018 [3] the reasons for questions are 1) need of objective/unbiased, 2) difference in site condition, 3) character clashes, 4) labor assets, 5) individuals' interferences, 6) information or guidance from pioneer, 7) outside individuals interferences, 8) modeler and architects disappoint the work progress of the principal worker for hire, 9) correspondence boundaries, 10) absence of ceaseless improvement, 11) quotes, 12) opening for review, late conveyance of materials by business, 13) correspondence breakdown and doubting one another.

Similarly, according to the researcher Salem, (2015) the causes of disputes are as 1) Delays, 2) The domination of government projects in the market, 3) Contracting contracts, 4) Tendering process, 5) Variation, 6) Under-pricing, 7) Misinterpretation of contracts, 8) Lack of resources, 9) Poor communication and documentation, 10) Lack of construction legislation, 11) Late involvement of lawyers in the construction projects.

Table 1: Factor contributing to disputes

Location	Factor contributing to disputes
Middle East (2012)	<ul style="list-style-type: none"> • Inability to manage the agreement appropriately • Inability to make break grants on expansions of time and remuneration • Boss forced change • Contract determination was not a best for when contrasted with projects qualities. • Outsider or power majeure occasions

Asian 2012	<ul style="list-style-type: none"> • Inadequate as well as unverified cases • Inability to make break grants on expansion of time and pay • Contrasting site conditions • Inability to comprehend and additionally follow its legally binding commitment by the business/worker for hire/subcontractor • Inability to oversee the agreement appropriately
United State (2012)	<ul style="list-style-type: none"> • Fragmented and/or unconfirmed cases • Mistakes and/or oversights in the agreement report • Inability to comprehend and/or conform to its legally binding commitments by the business/project worker/sub project worker • Varying the site condition • Inability to make interval grants on augmentation of time and pay
United Kingdom (2012)	<ul style="list-style-type: none"> • Inability to direct the agreement appropriately • Inability to comprehend or potentially conform to its legally commitment by the business/project worker/subcontractor • Boss forced change • Clashing party interests • Inadequate and/or unconfirmed cases
Main land Europe (2012)	<ul style="list-style-type: none"> • Inability to comprehend as well as follow its legally commitment by the business/worker for hire/subcontractor • Ridiculous gamble move from businesses to project workers • Inability to make interval grants on expansions of time and pay • Clashing party interests • Outsider or Power majeure occasions

[2, 4, 19, 20, 21, 22, 23, 24, 25, 26]

5. METHODOLOGY :

5.1 Philosophy of the Research:

The world as we probably are aware and comprehend it is developed according to our points of view and encounters, through what is 'noticeable'. In this manner, as per basic pragmatists, imperceptible designs cause discernible occasions and the social world can be seen provided that individuals comprehend the designs that create occasions. Ontology (one or multiple reality) + Epistemology (interpretative) = Critical Realism Research Philosophy.

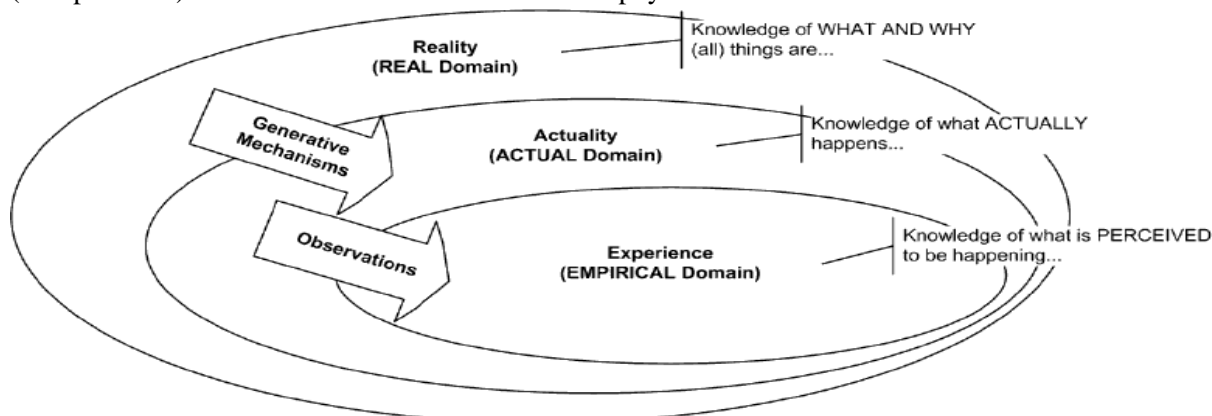


Fig. 1: Critical Realism Concept Diagram [27].

5.2 Research Strategy:

5.2.1 Case Study:

The case study approach is an in-depth, detailed examination of a particular case (or cases) on the disputes management aspect. Here, different road projects under Department of road will be study to determine the causes.

5.2.2 Archival Research:

The secondary data is collected from the archival records of the department of roads.

5.2.3 Survey Research:

The primary data is collected from the set of questionnaires related to the studied cases or projects. The set of questionnaires will be on the types and causes of the disputes. The data collected from the questionnaire is analyzed for the major causes of disputes.

5.3 Research Approach:

The qualitative study was done by the collection of data from the case study and semi-structure interview or key informant interview and quantitative study was done by the questionnaire study.

5.4 Study Population:

The concentrated on populace was the principal partners (for example Clients, Experts/Architects, and Project workers) work at both administration and functional degrees of street contracts under division of streets. The meetings planned to arrange reactions emerging from the survey. The meetings of boss will be two (2) respondent from street project who is something like inferior official and senior post for example project supervisors, Delegate Undertaking chief's and so forth. Likewise, in the event of Advisor or Architect Two (2) nos. of respondent from street projects who are engaged with both administration and functional levels during the development cycle of different disciplines for example Project facilitators, arranging, and agreement manager, site In-control and on account of worker for hire Two (2) no. of respondent from street projects who face the questions the board and agreement record.

5.5 Sample Selection:

The sample selection for the second objective of case study of the dispute settlement cases was planned for 8 number of cases but only 8 number of cases was provided from the department of road we will collect the data also from the case study and through questionnaire survey (sample size ≥ 30) from the stakeholders related to the case study and practices on different road projects and also from the respondent from the road construction project who are involved in both management and operational levels.

The Cochran formula is:

$$\begin{aligned} \text{For Large Population; } n_0 &= \frac{Z^2 pq}{e^2} \\ &= 1.96^2 \times 0.5 \times \frac{0.5}{0.05^2} = 385 \end{aligned}$$

Where:

- e is the desired level of precision (i.e. the [margin of error](#) = 0.05)
- p is the (estimated) proportion of the population which has the attribute in question
- q is 1 - p.
- Z is found form Z-table (for 95% level of confidence Z=1.96)

$$\begin{aligned} \text{For Small Population; } n &= \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} \\ &= \frac{385}{1 + \frac{385 - 1}{48}} = 43 \end{aligned}$$

Where:

- is Cochran's sample size recommendation,
- N is the population size, and
- n is the new, adjusted sample size

The sampling method is **convenient sampling (non-probability sampling) method**. This research has studied the cases related to road construction projects under the department of road.

5.6 Data Collection:

5.6.1 Questionnaire Preparation:

For the fulfillment of research objective, the various types of disputes are selected from previous research works, case study, and discussion with experts and with the support of supervisor and the research questions are developed.

A five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was adopted to capture the causes of disputes. After brainstorming and discussion with the experts of departments of road, forty-five (45) cause of disputes were identified and offered for survey along with additional options.

5.6.2 Cases and Response Rate:

The Eight (8) numbers of cases were studied followed by one set of questionnaire survey. It was planned to collect the responses from all the parties involved in the road projects under department of roads. The survey has included Consultant (both design and supervision level engineer), Contractor and Client/Owner. This research is done with the use of Relative Importance Index method (RII) for to rank the major causes of disputes. According to planned sample size of the questionnaire survey the rate of responses is different in each stakeholder.

Rate of responses:

Table 2: Rate and Responsibility of different stakeholder

S. No.	Respondent	Questionnaire Distribution	Response Received	Percentage of Response
1	Client/Employer	16	15	93.75%
2	Consultant/Engineer	16	15	93.75%
3	Contractor	16	13	81.25%
	Total	48	43	89.58%

During the data collection process, the total 48 questionnaires is distributed to the stakeholders but 15 number from the client and the consultant/engineer and 13 number from the contractor data were collected, i.e. 89.58% of response which means 100% of sample size is covered.

5.7 Validity & Reliability of Data:

5.7.1 Triangulation Method:

Here, **Methodological Triangulation** is used for the verification of the validation of data. It involves use of more than one option to gather data i.e. KII, Questionnaire and Documents [27].

5.7.2 Data Consistency Test (Internal Consistency) :

The kind of reliability we use is **Internal Consistency** and the statistic is Cronbach’s Alpha.

Table 3: Cronbach’s alpha test for different questions

S.N.	Objectives	Items/Components	Sum of item variance	Variance of total score	Cronbach’s alpha	Remarks
1	Major Causes of disputes	45	34.29	355.33	0.924	Excellent

Correlation Test of analyzed data:

Correlation test was performed for the Spearman Rank Correlation

$$R = 1 - \frac{6 \sum D^2}{N^3 - N} \text{Where,}$$

R = Spearman rank correlation

D = Difference of ranks.

N = Number of observations

The worth of R lies between - 1 to +1. An ideal positive relationship is +1 and an ideal negative connection is - 1. In the event that we get the worth of R closer or equivalent to 1, the outcome is great and on the off chance that the worth of R is closer or equivalent to - 1, the outcome is flawed there may be some mistake in the information.

5.8 Analysis of Data:

After information assortment investigation of information was finished, which is the course of deliberately looking and orchestrating the meeting records, interview record and different materials that analyst amass to increment understanding and to empower the specialist to introduce what the scientist has found to other people. Microsoft Succeed was utilized to examination of gathered information to produce suitable understanding. Relative Significance file (RII) was determined for the respondent's information to dissect the information and afterward applying 80/20 rule to recognize the main sources.

5.8.1 Primary Data Analysis:

In this examination work to meet the goals one (1), two (2) and three (3) Microsoft Succeed programming is utilized to compute and dissect the measurable information which was gathered by the poll study. 48 surveys (find in Supplement) were disseminated to the example populace of the review. A complete 43 surveys addressing 89.58 % of the all-out polls disseminated were returned.

5.8.2 Factors causing disputes:

The causes of disputes in construction projects are shown in Table 3-3 was analyzed from the respondent response (1 to 5 in Likert scale i.e. strongly disagree to strongly agree) and presentation has been made. RII, Percentage and Rank of the causes of disputes was calculated.

5.8.3 Relative Importance index (RII)

Data of all these tables were analyzed by the RII index was calculated for each type of Questions as follows:

$$RII \text{ Index} = \Sigma W / (A * N)$$

Where, W = weight given to each factor by the respondents, ranges from 1 to 5,

A = highest weight (i.e. 5 in this case) and

N = total number of respondents.

6. RESULTS AND DISCUSSION :

There is a different nature of disputes/ claims, which have arisen during the construction phase of the individual road projects. Causes of disputes were found from case studies, semi structure interview and questionnaire surveys are discussed one by one in underlying sections.

6.1 Causes of Disputes in Particular Road Contract based on Case Studies:

Following are the causes identify during cases of selected road projects.

Table 4: Causes of Disputes in Particular Case Road Project

S. N.	Project	Contract no.	Issues
1	Construction of Ghurmi-Chatara Koshi Corridor Sector, Km 146+100 to Km 149+600	KCHP/GC/19/068/69	a) Issue of site accessibility, site availability & mobilization,,
			b) Stoppage of work & issue on EoT
			c) Status of contract in terms of termination & issues of breach of contract,
			d) Issue of contra-claims (i.e. 10% LD and cost of uncompleted works)
			e) Not completion of EIA.
2	Construction of Ghurmi-Chatara Koshi	KCHP/GC/12/068/69	a) Issue of site accessibility, site availability & mobilization,,
			b) Stoppage of work & issue on EoT

	Corridor Sector, Km 16+920 to Km 18+880		c) Status of contract in terms of termination & issues of breach of contract, d) Issue of contra-claims (i.e. 10% LD and cost of uncompleted works). e) Not completion of EIA.
3	Construction of Ghurmi-Chatara Koshi Corridor Sector, Km 0+000 to Km 2+160	KCHP/GC/01/068/69	a) Issue of site accessibility, site availability & mobilization,, b) Stoppage of work & issue on EoT c) Status of contract in terms of termination & issues of breach of contract, d) Issue of contra-claims (i.e. 10% LD and cost of uncompleted works). e) Not completion of EIA.
4	Upgrading and Construction of Rani-Biratnagar-Itahari-Dharan Road Sector.	TRIP/337312/RBID/2071/72/01	a) Price adjustment factor to be used for the calculation of the contractor's price adjustment. b) On Extension of Time (EoT)
5	Construction(Improve ment) of Maitighar-Tinkune Road Section (1+300 to 2+660)	AH/MT/1-03/068/69	a) Price adjustment factor to be used for the calculation of the contractor's price adjustment. b) On Extension of Time (EoT)
6	Upgrading of Dhading-Gorkha Road, Ghyampesal-Gorkha Section (Km 54+300 to Km 64+500)	EEAP/NCB/D G/03	a) On price adjustment b) On insurance c) On providing laboratory space d) On providing furniture and equipment etc for material testing lab at site all complete. e) On VAT rules and regulation, 2053 for refund for diesel f) On refund of 50% VAT reduction on IPC 13 g) On prolongation costs h) On liquidated damages.
7	Construction of Motorable Steel Truss Bridge over Marsyangdi River at Damaula, Purkot VDC, Tanahu.	51-2067/68	a) Price Escalation Amount of NRs 98,08,354.82
8	Upgrading of Tulsipur - Salyan Road (Km 0+000 to Km 61+744)	RIP/EXIM/TS-04	a) Interest on LD of Rs 1,983,811.20 b) Additional cost of idling of resources of Rs 26,312,375.00 c) Additional payment due to changes in quantities.

From the case study of road contracts under DoR shown in Table 4, there are many issues/causes which generate dispute and have the significant impact of project performance in terms of time and cost. The major common issues/causes occurred in all road contract of case study are

“Extension of Time (EoT)”, “Price Adjustment”, “Late possession in site”, “Additional payment due to changes in quantities”, “Liquidity Damage” “Not completion of EIA” & “Contract Termination and Breach of Contract”.

The “Extension of Time (EoT)” issue is encountered in five (5) numbers of project which generate to disputes is *issue of EOT is overlooked and no emphasis is given on EOT*. The “Price Adjustment” issue is encountered in four (4) numbers of project where the disputes is *the employer made the unilateral decision to fix the price adjustment factor for the extended completion period and this assumption is wrong and conversion factor was applied in re-index on price adjustment calculation*. And the “Contract Termination and Breach of Contract” issue is encountered in three (3) numbers of project where the disputes is *the contractor claim’s on the contract termination by employer which should be contract termination by contractor, the employer’s claim for Liquidity Damage is not justified due to lack of EOT and as the contract is not terminated effectively, the claim for the losses towards incomplete work is not justified*.

6.1.1 Causes of Disputes in Road Contract Based on Semi-Structure Interview:

In view of semi structure interview, it is tracked down that the significant reasons for questions in of street development contract are technical inadequacy of contractor, incorrect bidding due to lack of understanding, delay in work, payment delay, Design error, evidence for extension of time (EoT), poor cash flow management by contractor, quality of works are detail of the interview

6.1.2 Causes of Disputes in the Road Contract from Questionnaire Survey:

The reactions of fundamental partners (for example Boss, Architects, and Workers for hire) were gathered through the poll overview in street contract. Thusly, the reactions over the entire poll connected with the reasons for questions/asserts, its goal techniques and elective debates goal strategy in the street contract has been depicted in table and figures.

Table 5: Overall ranks to causes of Construction disputes

S. N.	Types of disputes	Client		Contractor		Engineer		Overall	
		$RII = \frac{\sum W}{(A*N)}$	Rank	$RII = \frac{\sum W}{(A*N)}$	Rank	$RII = \frac{\sum W}{(A*N)}$	Rank	$RII = \frac{\sum W}{(A*N)}$	Rank
	Employer/Client Related :								
1	Change in scope.	0.8133	6	0.7692	10	0.8000	5	0.7953	9
2	Late possession in site.	0.7600	9	0.8154	7	0.7333	10	0.7674	12
3	Payments delay.	0.8400	4	0.8000	8	0.7733	7	0.8047	7
4	Variation initiation by owner.	0.6667	16	0.6923	15	0.6933	13	0.6837	23
5	Slow in decision making.	0.7467	10	0.8462	5	0.7867	6	0.7907	10
6	Unrealistic contract duration and requirements imposed.	0.7600	9	0.7846	9	0.6667	15	0.7349	18
	Contractor related :								
1	Delays in work progress.	0.9067	1	0.8615	4	0.8667	1	0.8791	1
2	Extension of Time (EoT)	0.8533	3	0.7231	13	0.7867	6	0.7907	10
3	Financial failure of contractors.	0.8400	4	0.8615	4	0.8133	4	0.8372	4
4	Technical inadequacy of contractors.	0.9067	1	0.7231	13	0.7733	7	0.8047	7
5	Tendering/Bidding.	0.6933	14	0.5692	19	0.6533	16	0.6419	30
6	Quality of works.	0.8800	2	0.7077	14	0.8533	2	0.8186	6
7	Site management	0.8267	5	0.6923	15	0.7333	10	0.7535	14
8	Failure to plan & execute the changes of works	0.8267	5	0.7231	13	0.7867	6	0.7814	11

9	Construction methods	0.7600	9	0.6769	16	0.7600	8	0.7349	18
10	Mistakes during construction stage	0.8133	6	0.7385	12	0.8267	3	0.7953	9
11	Inexperienced contractor	0.7200	12	0.7846	9	0.7333	10	0.7442	16
12	Lack of understanding & agreement in contract document	0.7600	9	0.6923	15	0.7733	7	0.7442	16
13	Financial Difficulties	0.8000	7	0.8308	6	0.7467	9	0.7907	10
14	Exceptionally Low Bid	0.8400	4	0.9692	1	0.8000	5	0.8651	2
	Design related :								
1	Quality of design.	0.7867	8	0.8000	8	0.7600	8	0.7814	11
2	Design errors.	0.8133	6	0.8923	2	0.8267	3	0.8419	3
3	Inadequate/incomplete specifications.	0.6267	19	0.7231	13	0.7200	11	0.6884	22
4	Availability of information.	0.6800	15	0.6462	17	0.6400	17	0.6558	28
5	Loss of productivity due to change in design.	0.6667	16	0.7231	13	0.6000	20	0.6605	27
	Contract related :								
1	Ambiguities in contract document.	0.6933	14	0.7538	11	0.7067	12	0.7163	21
2	Different interpretation of contract provisions.	0.6533	17	0.6769	16	0.7067	12	0.6791	24
3	Risk allocation	0.6400	18	0.7385	12	0.6400	17	0.6698	25
4	Other contractual problems.	0.6133	20	0.6923	15	0.6933	13	0.6651	26
	Material, Labor & Equipment related								
1	Quality of material	0.8400	4	0.8000	8	0.7733	7	0.8047	7
2	Price fluctuation of Construction Materials	0.8533	3	0.8462	5	0.7733	7	0.8233	5
3	Government Regulations	0.7200	12	0.7077	14	0.7333	10	0.7209	20
4	Shortage in material	0.7467	10	0.7692	10	0.7600	8	0.7581	13
5	Shortage of Labor supply	0.6800	15	0.6769	16	0.6933	13	0.6837	23
6	Labor productivity	0.6933	14	0.6308	18	0.6267	18	0.6512	29
7	Equipment availability and failure	0.7467	10	0.7077	14	0.5867	21	0.6791	24
	Human behavior related								
1	Lack of Communication	0.7067	13	0.7692	10	0.7467	9	0.7395	17
2	Lack of team spirit.	0.7467	10	0.8154	7	0.7467	9	0.7674	12
3	Adversarial/controversial cultures.	0.6267	19	0.6769	16	0.6667	15	0.6558	28
	External Factor								
1	Site Conditions	0.6800	15	0.8462	5	0.8267	3	0.7814	11
2	Unforeseen changes	0.7467	10	0.7846	9	0.7200	11	0.7488	15
3	Weathers	0.6267	19	0.7231	13	0.6133	19	0.6512	29
4	Legal and economic factors	0.7200	12	0.8000	8	0.6800	14	0.7302	19

5	Political influences.	0.7600	9	0.8769	3	0.7733	7	0.8000	8
6	Idle resources due to banda(Strikes)	0.7333	11	0.7231	13	0.7067	12	0.7209	20
	Any other factor								

From the questionnaire study, it is separately ranked the causes of disputes as per client’s response, contractor’s response and consultant/engineer’s response. From the Client’s response, it is found that “Delays in works progress” & “Technical inadequacy of contractors” is having first rank among all the causes for generation of disputes. Second rank was given to “Quality of Works”. “Extension of Time (EoT)” & “Price Fluctuation of Construction Materials” is having third rank and “Financial failure of Contractor” & “Quality of Materials” is having fourth rank in causes of disputes. “Inadequate/incomplete specifications” & “Weather” is having lowest rank. From the Contractor’s response, it is found that “Exceptionally Low Bid” is having first rank among all the causes for the generation of disputes. Second rank was given to “Design Error”. “Political Influences” is having third rank and “Delays in works progress” is having fourth rank in causes of disputes. Whereas “Tendering/Bidding” is having lowest rank. And from the Consultant/Engineer’s response, it is found that “Delays in works progress” is having first rank among all the causes for generation of disputes. “Quality of works” is having second rank, “Mistake during construction stages” & “Design Errors” & “Site Conditions” is having third rank and “Financial failure of contractors” is having fourth rank in causes of disputes. Whereas, “Equipment availability and failure” is having lowest rank. Also from the overall responses, it is found that “Delays in works progress” is having first rank among all the causes for generation of disputes. “Exceptionally low bid” is having second rank, “Design Error” is having third rank and “Financial failure of contractors” is having fourth rank in causes of disputes. Whereas, “Labor productivity” & “Weather” is having lowest rank.

Table 6: Spearman’s rank correlation for causes of disputes.

S. N.	Correlation Between	N		R	Remarks	
1	Client & Contractor	45	91125	1201	0.921	Reliable
2	Client & Consultant	45	91125	703	0.954	Reliable
3	Contractor & Consultant	45	91125	918	0.939	Reliable

From the above table 6, Spearman’s rank coefficient for all the questions is nearer to 1 so the results is reliable. Which shows that there is the positive correlation between the data collected from the respondent.

Discussion on the major causes of disputes on the basis of ranking by Questionnaire study with the Previous Researches:

From the previous literatures, case studies, discussion with the experts and the support of the supervisor, the forty-five (45) numbers of causes of disputes were selected and from the questionnaire study the causes of disputes are ranked as per the respondent.

From the previous research (as stated in literature review section) of Aryal S (2018) [3] and Cakmak & cakmak [10] one of the causes of disputes “Delays in work progress” is having first rank among all the causes from the Client’s and Engineer’s response & from the previous research [2,4,10, & 26] on of the causes of disputes” Technical inadequacy of contractor” is also having first rank among all the causes from the Client’s response. Also from the previous researches as discussed in literature review, different causes of disputes like “Quality of Works”, “Extension of Time (EoT)”, “Financial Failures of Contractor”, “Financial Difficulties”, “Change in scope”, “Payment Delay” and “Design error” are found as the common major causes of disputes with the result of questionnaire study.

Discussion on the major causes of disputes on the basis of ranking by Questionnaire study with case study of selected projects:

From the forty-five (45) numbers of causes of disputes were selected and from the questionnaire study the causes of disputes are ranked as per the respondent. From the case study of selected road contract i.e. table 4.1, the major causes of disputes is due to “Delays in Works progress”, “Extension of Time

(EoT)”, “Additional payment due to changes in quantities”, “Liquidity Damage” “Not completion of EIA” & “Contract Termination and Breach of Contract”. From the questionnaire study of the major causes of disputes, it is found that “Delays in Works progress”, “Extension of Time (EoT)” and “Change in scope” are the major causes of disputes. So, the causes which are found from the questionnaire study relate the actual causes of disputes on the road contracts.

7. CONCLUSION :

From the primary data, obtained from the questionnaire survey it is concluded that out of 45 numbers of causes of disputes arises in road construction projects, the following are the major causes of disputes which are verified with the issues/causes from the different researchers and studied number of cases.

- Delays in works progress.
- Design error.
- Financial failures of contractors.
- Quality of Works.
- Technical inadequacy of contractors and Payment delay.
- Change in scope.
- Extension of Time (EoT) and Financial Difficulties.

From the primary data, obtained from the questionnaire study, out of forty five (45) number of causes of the disputes, the change in scope have not significant impact on the project performance in terms of time and cost.

8. RECOMMENDATIONS :

Following are the recommendations.

- Claims arising from delay in work progress can be reduced by realistic work schedule with resource deployment plan. The employer should closely monitor the activities with approved work schedule and provide appropriate solution for the issues arises from disputes / claims.
- Claims arising from delay in payment can be reduced by systematic disbursement of payment or directly payment to the people working groups under contractor.
- The cash flow management of contractors can be control by control mechanism for the use of mobilization fund on the same project works.
- Consultants should timely submit the corrected drawing with any information on location to work with smooth execution of work and settle on brief choices in regards to the specialized and authoritative issues by taking manager endorsement where vital in determined time as required.
- Specialists ought to sort out a post agreement grant meeting mutually with project workers (counting specialized group) to affirm material accessibility, constructability and different limitations hailed up by workers for hire before their site preparation.
- Claims arises due to design error and quality of works can be reduced by strictly enforcement of standard specification and Quality Assurance Plan (QAP).
- The project monitoring / evaluation and control system should be enforcing strongly.

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