

# Developing Conceptual Framework to Improve the Efficiency of Disputes Avoidance in Public Sector Road Projects in Pakistan Construction Industry

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**Abstract:** Pakistan construction industry is one of the fastest growing economic industry in the construction and development of infrastructures. It has become the second largest industry in the country's gross domestic products (GDP) and labor force. This sector includes a verity of projects in road developments sector like, smart motorways, highways and other major districts road in last decades, unwillingly many disputes in road construction projects has been seen. Hence disputes have bad consequences over time, quality and cost of the project, which may fail the successful completion of the project. The main aim of this research is to improve the efficiency (outcomes) of disputes avoidance in public sector road construction projects, through the development of a disputes avoidance framework. To achieve this aim data was collected through qualitative and quantitative methods. Semi-structured and structured interviews were conducted. Totally 88 questionnaire were sent to the relevant stakeholders from which 56 were successfully received in which most critical issues were recognized which are prompting debates in open area street development tasks of Sindh territory. Also, recommended a few questions shirking systems to defeat from debates during street development ventures. Finally a conceptual framework was developed for better understanding in disputes avoidances

**Keywords:** *Construction Industry, Road Projects, Disputes, Problems which are leading to disputes, Disputes avoidance strategies and conceptual Framework.*

## I. INTRODUCTION

Construction industry "a term that includes activities associated with the construction of physical infrastructure and associated activities" plays a vital role in the economy of the country. It has been expected that production of this sector has a tremendous share in gross constant capital formation. Furthermore research studies have recommended that different associated industries are linked with the construction industry and its development. Being a critical industry of the cutting edge days the development business greatly affects the economy, and workforce of any nation [1].

The construction industry of Pakistan is playing a key role in its economic growth, labor force. Currently (provisional) estimates published in Pakistan's economic survey, shows the construction industry grew up last year (2017), contributed 9.1% in economy and 20% of gross domestic products (GDP) [2]. The construction sector is taken into consideration to be essential for the economic growth of any country and invest in construction sector has a widespread effect on all different sectors which are contributing in the economy. The participants of construction industry have different views, talent, and high level of knowledge in construction sector, while this industry is engage in the preparation of lands and construction of real state of the country. This examination study is focusing on identification of critical issues which are prompting questions identifying with road tasks of Pakistan development industry further all the more building up a specialist framework for debates shirking in open area street development ventures [3].

Described a disputes as a particular disagreement regarding depend of reality, law or policy where in declare or statement is rejected and that rejection is not accepted [9]. Corby (2003) define disputes as any contract query or controversy that out to be settled past the jobsite control group of workers [10]. Cheung and yiu (2007). Described disputes as a difference between the parties after the internal system has been exhausted [11]. Being a complex industry the stakeholder face specific trouble at some point of a construction tasks. The stakeholders like Sponsor, constructor and engineer have unlike observation approximately the development problems. Therefore which ends up in conflicts and disputes then the confrontation approximately something is inevitable [12]. Elziny, a et al, (2016) indicated that the development of the construction industry has turn out to be one of the most adverse and hassle-susceptible, with claims and disputes on projects construction tasks regularly the guideline in preference to the exception. The huge hazard that may be resulted from disputes existing, requires honest decision strategies [13]. Cobry et al. (2003), characterize contest as "the variety between the gatherings after their inner results has been exhausted" [14]. Broke down the typical components which caused debates and their general significance from disposition of contractual workers, clients and advisor. In the event that the development questions aren't overseen in an all-around planned way, at that point the task face issue of time and cost overwhelm, top notch and horrendous execution with the guide of the temporary worker [15].

## II. LITERATURE REVIEW

Mrs. Arcadies' (2016), Examined that the estimation of Construction debates in Asia is as yet on the top stage. Clients Sponsor are the standard assets in development advancement area, all issues, causes and their results are bury associated with one another with customers [16]. There are explicit sorts of contentions in development undertaking which can be prompting cases and debates, for example making arrangements, plan, drawings, direct, development method, significances and trade in requests. Questions resigning up from outside issues, put off in convey of drawings, charges, plan mix-ups, obtainment and giving over the site page to customer are the primary driver of debates among supporters of creation venture [17]. Thusly the questions are the standard central points of interest which make commitments to undertakings delays, unsettling influence of development time table, to blast the test charge in high stage and gives affected impacts inside the seeking of the mission members. It's far being recognized that the contest is one of the dominating variable which demand and forestall the effective delegated magnificence of all type of creation activities [18]. KBES is an expert relative scholarly PC programming program application to a couple of explicit region for coding current realities. Expect to go through this exact strategy to free the issues at the level from human skills [19]. An examination was led in Turkish structure development industry by Ruveyda Komurlu (2017), to deal with the cases and debates in building development ventures. The investigation distinguished the reasons for questions by proprietors as: change in necessities, delays/quickenning, additional work, contracts ambiguities and contrast in site condition. Likewise at some point lawful debates caused in light of the cycle of exchange falls flat among temporary worker and customers. [20]. Irlayıcı Çakmak, P. (2016), likewise examined the debates in Turkish development industry. In this examination the issues and reasons for debates were distinguished in development ventures. This examination closed the primary driver of debates for example the danger of members, given time limit, wanted expense and suitable quality are the primary factor. On the off chance that they are not oversee appropriately will impacts the effective finishing of tasks [21]. An examination was directed at United Kingdom on building development ventures. The investigation featured the reasons for debates because of terrible climate conditions on development extends, these incorporates temperature, downpours, hazes, winds and day off. In such manner, another stochastic model on spatio-fleeting changeability of both climate and inconstancy was proposed. The model aides in the term fluctuation, improving development venture beginning and finishing date as for their target and climate assessment report to limit questions in building site [22]. Demirkesen, S., Ozoehon, B. (2017), overview on schedule, cost and quality and controlling measure to lessen the debates in development area with the assistance of utilization of mix the board. The fundamental part of mix the board are character improvement of ventures, coordinated information and incorporation of staff, cycle and store network the executives. While the element of task the executives are customers and contractual workers which are mindful to limit questions in development industry [23]. For construction industry of Pakistan, Muhammad Akram (2016), identified the significant aspect causing time overrun and cost overrun in construction projects and evolved an expert guide for controlling measures for the giant component time overrun and cost overrun [24]. Similarly, Abbas Muhammad Buhran (2016), additionally built up an 'specialist framework for examination of disappointment in development area by utilizing (ES) Builder Programed Software application. These disappointment of building development may prompt debates between the task members. The presence of disappointments in building development area has become a momentous angles. These various sorts of disappointments beginning from straightforward breaks or complete breakdown of the structure are identified with numerous outcomes, for example, botches in execution stage or in plan stage [25]. Ogburn and El-Adaway (2013). Conducted a research to investigate the pathway of disputes occurrences. The study concluded that the critical causes are risks, conflicts and claims. These cause finally turn into disputes, further, if do not properly manage they affect negatively to the project's completion [26].

### I. Research Methodology Flow Chart

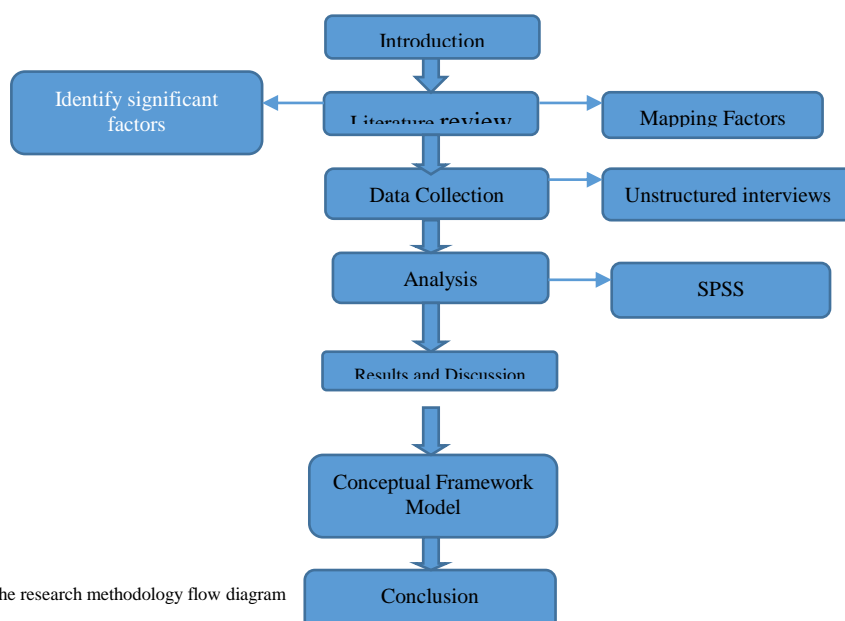


Fig: shows the research methodology flow diagram

## II. Results and analysis

The data was collected from the concerned stakeholders according to the nature of the projects were divided in to four categories client, contractor, consultant and others (sub-contractor and suppliers). Totally 150 questionnaire distributed form them 105 received successfully. 43 from client, 27 from contractors, 22 from consultants and 13 form others.

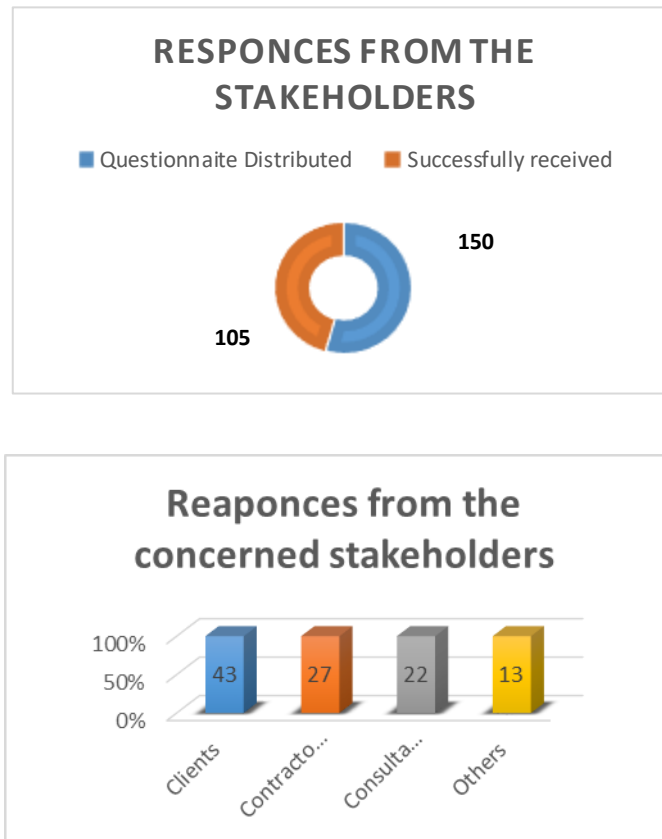


Fig: shows Responses from the Concerned Stakeholders

### DISPUTES IMPACT ON CONSTRUCTION PROJECTS

The results of this phase of interview express of the knowledge and experience of the concerned stakeholders reflects the impact of disputes on construction progress. Time, quality and cost are considered impact affected as broad categories by disputes directly or indirectly in road construction projects.

#### Disputes impact on Time

During questionnaire surveys and interviews it was noted that disputes impact on time was considered more significant than cost and quality. Most of the experts indeed explained that time impact directly affect the completion of successful projects. Such that to avoid issues at the earlier stage.

#### Disputes impact on Cost

The results of the interviews shows that disputes impact on cost is almost similar to that on time, a direct relationship identified between cost and time. In the relation it's stated that the time impact is higher than cost which is directly impacted on project. Disputes impact on cost also affected client and contractor because the budget for the project will increased which directly affect contractor profitability and project benefits.

#### Disputes impact on Quality

The impact of disputes on quality will damage trust between parties and mostly construction project is affected. Quality is, disputes generating agent during construction. Time and cost also affected by quality. In the figure shows the disputes impact on time, cost and quality.

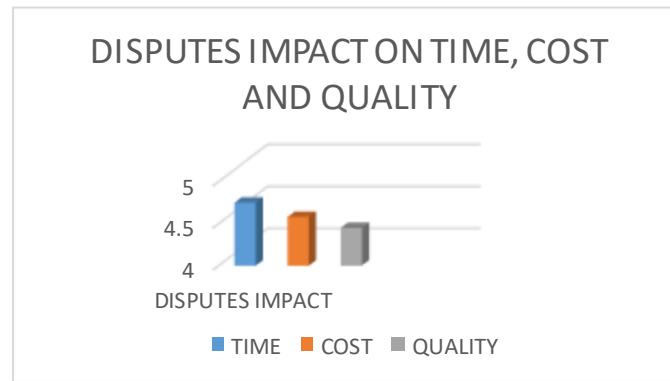


Fig. Shows the impact of disputes on time, quality and cost

The concerned stakeholders of the industry were agreed disputes impact on time is highest in ranking have a positive relationship between both time and cost, time considered more significant than their individual impacts. During structured interviews on quality issues, is less considering it of relative reduction if trust is lost the quality automatically drop down. The Fig below indicates that the relationship between three constraint.

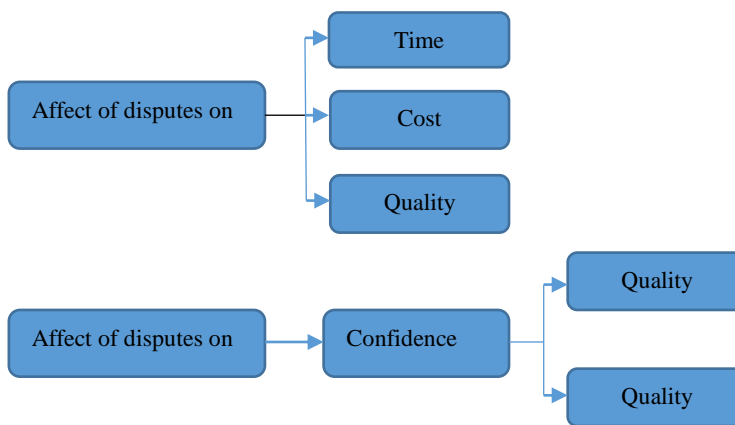


Fig. Shows the relationship between Time, cost and quality

**TYPES OF DISPUTES**

During this study the following significant types of disputes were identified in Pakistan construction industry. On the basis of questionnaire survey (structured interviews) eight categories of disputes were identified from concerned stakeholders.

Table: 1.1 shows the most significant types of disputes

S/No	Type of disputes	Mean Rank	S Deviation
1	Financial Disputes	4.65	0.65
2	Contractual disputes	4.15	0.79
3	Owner related disputes	3.45	0.82
4	Design related disputes	4.02	0.88
5	People behavior disputes	3.56	0.96
6	Contractor disputes	3.59	1.03
7	Project related disputes	4.21	1.15
8	External factor related	3.89	1.27

**Financial Disputes**

Financial disputes is top with average mean value in ranking experts stated during unstructured interviews that the disputes is of the major problems which causing delay in payment by the owner to contractor or to sub-contractor. Financial disputes increase material price as well as increase the cost of project. However some experts refer that wrong calculation will lead financial disputes between owner and main contractor.

**Contractual Disputes**

In the construction industry there are various way to rises disputes due to their nature and complexity. The most common causes of disputes in contracts is ambiguous contract documents, inappropriate specification and incorrectly bidding are the most

significant causes of the contractual disputes. However the participants take wrong advantage of contracts the disputes will arise among stakeholders.

#### Owner disputes

Disputes take place between concerned parties due to the changes and verbal orders of the owner, the sponsor of the project directly talks to stakeholders without documentation instruction which directly increases misunderstanding about contract agreement terms and condition of the projects will lead to disputes. Unrealistic planning, sudden changes and increase in the scope of the project of owner instruction make difficulties and rises owner related disputes.

#### Design related disputes

Error occurs during designing of the project which will increase disputes among client and consultant. The designing aspect of the project most significant causes of disputes are inadequate design and design error as primary source of disputes due to insufficient of time, lake of attention and improper field survey.

#### People behavior

Behavior of the stakeholder rises disputes within the construction zone, planning and operation were identified most significant source of disputes during construction. Failure in decision making of the project manager, lake of experience, poor communication and lack of team spirit are the important causes of the disputes which effect the progress and success of the projects.

#### Contractor related disputes

The main stakeholder in the construction industry to carry out works (projects). Mostly disputes arises from contractors side in the way of project manage and run. Mismanagement on site, monitoring and controlling were identified and considered major source of disputes many contractors involved in construction are not mature about their reputation, therefore they are not suitable to run the project because they take insufficient pride in their work.

#### Project related disputes

Inadequate documentation and failure to delivery of materials are the issues leading to disputes, delay and stop of the construction work not only causing simple disputes but also affect the time, cost and quality of construction. Lake of Planning, site mismanagement, unskilled labor and poor communication are the disputes generating during construction of a project.

#### External factor

The particular issues were identified from external source which are out of control of the stakeholders. Unexpected weather condition, political interferences, religious places, third party interfaces, higher authorities and governmental regulation are the broad classification of disputes risen in construction projects.

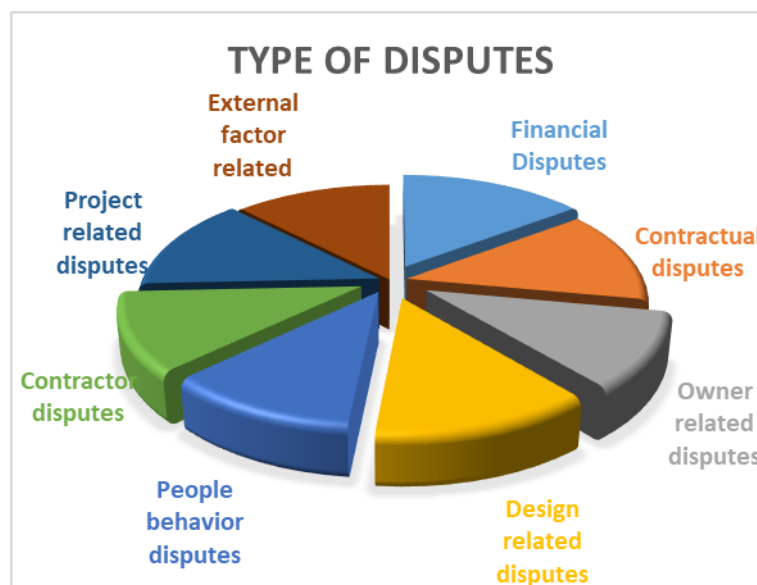


Fig. shows the most significant types of disputes

Barriers to using Disputes Avoidance Strategies

This study concluded that, what barriers prevented to use disputes avoidance strategies (DAS) in Pakistan construction industry on projects are classified as follows

Contractual disputes barriers ii. Governmental barriers iii. Cultural barriers and iv, development and rehabilitation barriers.

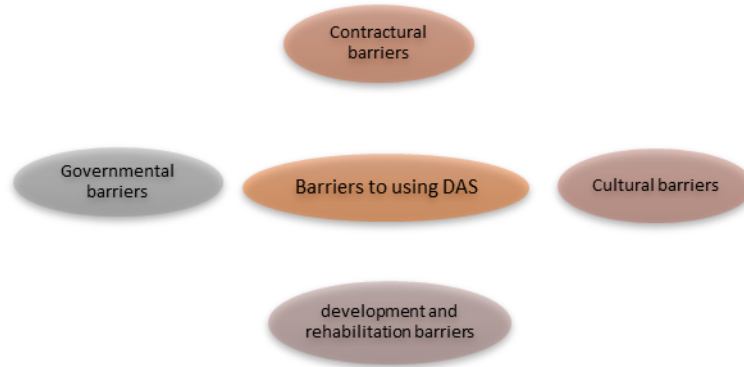


Fig: shows the barriers to use DAS  
 CRITICAL SUCCESS FACTOR FOR DISPUTES AVOIDANCE STRATEGIES (CSF)

This section of the study represent the critical success factors for disputes avoidance strategies (DAS) in the perspective of Pakistan construction industry. Eleven CSF for DAS were identified from which speed and economical are the most important. Based on literature review and data collection of this study, framework for the most critical success factor identified nine factor with two additional factor which are: Speed, Economy, flexibility, confidence, neutrality, fairness, maintaining relationship privacy is being psychological and reputation is being a non-adversarial.



Fig: shows the critical factor for Disputes avoidance Strategies

Method of disputes avoidance

In this study we focus on the methods of disputes avoidance used in Pakistan construction industry. The avoidance strategies were identified through literature and interviews to the concerned stakeholders. Seven methods of disputes avoidance strategies were identified which are currently being used in Pakistan construction industry.

Conciliation, Effective Management, Proactively Planning, Ensuring Clear Contract Documents, Early Contractor Involvement (ECI), Design Team Management, and Third Party Dependencies which are legally controlled disputes among the stakeholder [27].

Types of disputes and relationship with methods of disputes avoidance

This section discuss the relationship between the type of disputes and the method of disputes avoidance used on the basis data collection form the concerned departments of the industry.

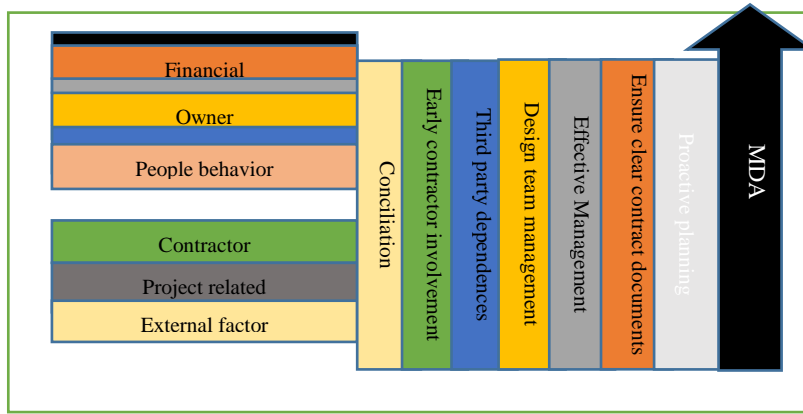


Fig: shows relationship between types of disputes and disputes avoidance strategies

Results of the analyzed data of this study shows that the financial disputes are settle by proactive planning, contractual disputes are settle by ensure clear contract documents, at last the contractor disputes are managed through early contractor involvement and external factor disputes are settle by third party dependences.

### Disputes avoidance conceptual Framework

Disputes avoidance framework is to improve the efficiency of disputes avoidance in Pakistan construction industry. It consists of the following three columns, in the first column represented the types of disputes which are: financial, contractual, owner, design, people behavior, contractor, project related and external factor related disputes.

In the second columns stated the methods of disputes avoidance strategies which are: Conciliation, Effective Management, Proactively Planning, Ensuring Clear Contract Documents, Early Contractor Involvement (ECI), Design Team Management, and Third Party Dependencies which are legally controlled disputes among the stakeholder. In the second is related to the first column the types of disputes heaving a relationship to the third column. The third column of the conceptual framework represents the critical success factor CSF of disputes avoidance strategies. It consists of CSF ranked according to their importance in term of DAS which are: Speed, economy, flexibility, confidence, neutrality, fairness, maintaining relationship, privacy and reputation.

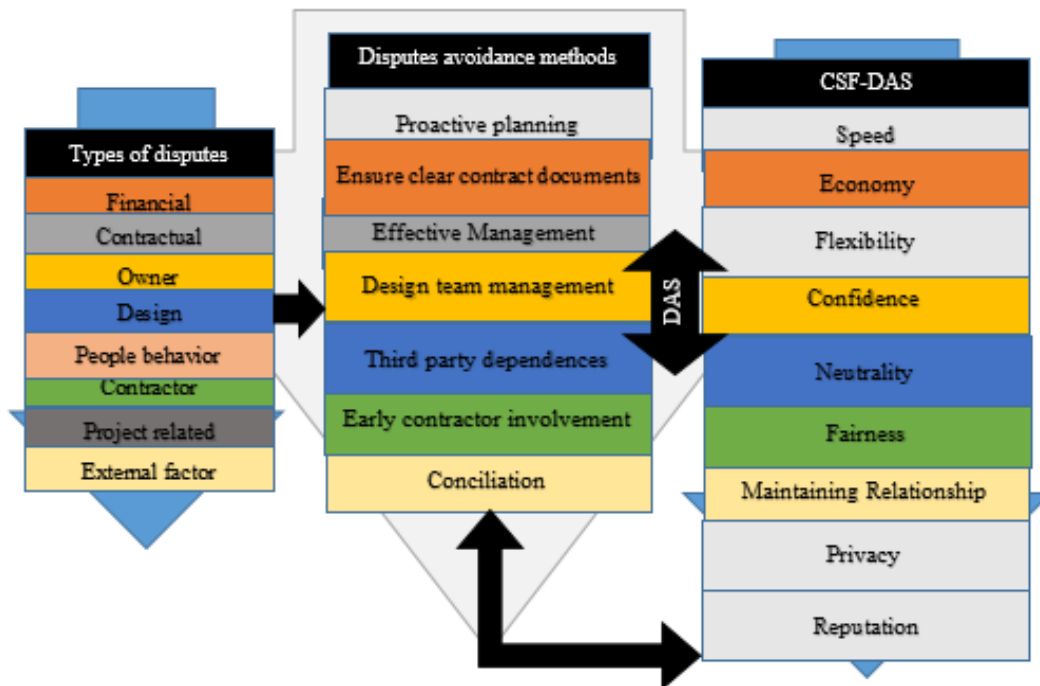


Fig: shows the conceptual framework

### III. CONCLUSIONS

In the results of this study, it was concluded that the impact of disputes on the projects of Pakistan construction industry in terms of the three constraints Time, Cost and Quality. The most significant disputes types and critical success factor CSF were identified, developed a co-relation between critical success factor and to the avoidance strategies. The data was collected through unstructured interviews and questionnaire survey from the concerned departments. Totally 150 questionnaire were sent from which 105 were received successfully. 43 from client, 27 from contactor, 22 from consultant and 13 from others (Sub-contractor and Suppliers). Finally a conceptual framework was developed for better understanding to improve the efficiency of disputes avoidance in public sector road construction projects.

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