

Sources of Conflicts between Key Stakeholders in a Public Construction Project: A Case Study of Construction of Research & Academic Facilities (CRAF) Project ¹

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Abstract

Sources of Conflicts between Key Stakeholders in a Public Construction Project: A Case Study of Construction of Research & Academic Facilities (CRAF) Project. Several studies have been carried on conflicts involving key stakeholders of construction projects in the literature. However, a detailed discussion on conflicts between key stakeholders of public construction projects in the higher education sector of Pakistan is absent from the literature. Therefore, current research has aimed to address this gap by conducting a case study on the Construction of Research & Academic Facilities (CRAF) project. The CRAF project is being implemented by the Government of Pakistan in a Higher Education Institution located in the federal capital Islamabad. Semi-structured interviews were conducted with the key stakeholders who were directly involved during the execution phase of the CRAF project. Results of this research are based on the collected data from the key stakeholders. The main findings suggest that the task-focused issues such as defective design, excessive quantity variations, and excessive change orders, etc. are causing conflicts between the key stakeholders of the project. Such conflicts in turn cause schedule delay and cost overruns in the execution of CRAF Project. The study also gathered recommendations from the key stakeholders of the project i.e., project directors, client, consultants, contractors, subcontractors, vendors, etc. for avoiding such conflicts in the future.

Keywords: construction management, conflict management, construction stakeholders, public construction projects, key stakeholders

Introduction

The construction industry is an important sector of the Pakistani economy. According to the Economic Survey of 2021, the construction industry of Pakistan accounts for 2.53% of Gross Domestic Product (GDP) and employs 7.61% of the employed Pakistani labour force (Finance, 2021). Therefore, it plays an essential role in the socio-economic development of the country. The

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Construction of Research & Academic Facilities (CRAF) project is conceived through the country's Public Sector Development Program (PSDP) for the improvement of education facilities in a Higher Education Institution (HEI), which requested anonymity for this study.

Construction projects are complex and involve various key players, such as the end-user, client, project team, project manager, consultant, contractor, subcontractors, vendors, etc., throughout their lifecycle to bring the plan into reality. These individuals and groups may or may not have worked together before, and usually possess varying competencies, technical skills, goals, perceptions, objectives, priorities, expectations, and values, which can often lead to conflict among them. These key players or stakeholders are interconnected with each other in a network of professional relationships. Therefore, the actions of one part directly or indirectly affect the interests of other parties in that professional network. Extreme contentions and controversies may result if these various concerns are not examined and appropriately managed, exposing the project to the risk of cost and time overruns (Olander, 2007; Olander & Landin, 2005). In the case of Pakistan, public projects often face cost and schedule overruns and even failures due to conflicts between key stakeholders. The planning and execution of a development project require extensive resources and close cooperation of various stakeholders such as end-users, clients, and contractors. These different connections often lead key stakeholders of the construction projects into conflicts over plans, priorities, technical issues, and even personality. (Hansen-Addy, 2013).

This case study has focused in detail on the types and sources of conflicts, the impact of these conflicts, and the conflict management processes that are being practiced in the context of a public construction project in Pakistan. Additionally, the research also proposes recommendations for improvement of conflict management and propose preventive measures for conflicts. This study may assist project managers in the public sector sphere to manage project conflicts effectively and develop effective conflict management strategies.

Stakeholders in Construction Projects

Construction projects are often carried out by a consortium composed of a group of participants and organizations who have different and sometimes even competing interests, goals, and social and cultural foundations. And without the support and full cooperation of these individuals or groups, projects cannot be successfully completed. The role of stakeholders in the lifecycle of a construction project has been exceptionally addressed in research (Yang & Shen, 2015). Construction-related stakeholders can be categorized into two major categories, internal and external stakeholders. Internal stakeholders include project teams, organization employees, end-user, clients, customers, architects, consultants, contractors, service providers, equipment suppliers, material suppliers etc. (Newcombe, 2003; Smith & Love, 2004). Among these groups, client, end-user, consultant, contractors and subcontractors can be considered as key stakeholders during the execution phase of construction projects. Key stakeholders are referred to as the individuals or groups that are actively or directly involved in the implementation of the project or

the entities that have some sort of a contractual or legal obligation to the project (Olander, 2007). Key stakeholders such as end-users, consultants, contractors, clients, and project managers are crucial participants in construction projects (Olander, 2007).

These key stakeholders have different expectations from each other. The end-user has an interest in acquiring a quality construction in the most economical way. Consultants design for the end-user by producing detailed blueprints and specifications for the project. The architect is more focused on creativity and aesthetics which often results in additional time and cost. While the contractors and subcontractors execute the construction project, their focus is to deliver the construction project as soon as possible without giving much attention to the end user's expectations. The skilled workers transform detailed plans and requirements into reality, by individual or group effort, which are managed by supervisors. All these participants have varied preferences and interests towards the construction projects and it increases the likelihood of conflict. Such confrontational relationship makes it difficult to achieve project goals and objectives, resulting in time and cost overruns (Hwang, Zhao, & Ng, 2013; Jelodar, Yiu, & Wilkinson, 2015).

Sources of Conflicts in Construction Projects

A common definition of a conflict is “a process that starts whenever an individual or a group perceives being adversely affected by the actions of another individual or group”. Research work has been conducted in the study of conflicts between key stakeholders (Awwad, Barakat, & Menassa, 2016; Ewurum, Egolum, & Ogbuefi, 2019; Leung, Yu, & Liang, 2014; Li, Hao, & Ren, 2015). Some authors have attempted to classify the sources of conflicts in construction projects into three distinguishable categories, which are local impacts, contextual factors, and characteristics of a project (Boudet, Jayasundera, & Davis, 2011). The current research has focused on all-inclusive conflicts that are delaying the CRAF project. The prior studies conducted in the context of Pakistan suggests that financial failures of contractors, delayed payments and approvals, land allocation disputes, differing site conditions, underbidding by contractors, adverse weather conditions, incompetent contractors, and incomplete information and inadequate preliminary surveys before design are among the major sources for conflicts and project delays (Hussain, Zhu, Ali, Aslam, & Hussain, 2018). Another study investigating conflicts in projects suggests that differing site conditions, public disorder, unrealistic risk allocation, lack of communication, contractual claims, and delayed payments are the direct causes leading to the conflicts in construction projects (Khahro & Ali, 2014). Conflict among key stakeholders may occur in multiple scenarios and may involve two or more parties.

Some researchers also attempted to categorize sources of construction conflicts according to the parties involved i.e., Owner evoked conflicts, consultant evoked conflicts, contractor evoked conflicts, and third-party evoked conflicts (Acharya, Dai Lee, & Im, 2006). However, other types of conflict such as the project vision, group differences, communication gap, lack of leadership,

and disagreement on disputes are also prevalent in the construction projects. The conflict between any of these participants has a direct impact on the project's added value (Wu, Zhao, & Zuo, 2017).

Conflict Management, Approaches and Strategies

Conflict management is the practice of being able to identify and handle conflicts sensibly, fairly, and efficiently. Although conflicts among stakeholders in the industry are not new, particular emphasis has been placed on conflict management such as by the Latham report which portrayed conflict as a damaging phenomenon that needs to be reduced and possibly eliminated from the construction process (Gardiner, 2005; Latham, 1994). Construction projects face challenges not only in the identification and management of stakeholders but also in the realization of their high expectations. The common strategies of dealing with conflicts are: avoiding, compromising, accommodating, confronting, and dominating (Rahim & Bonoma, 1979). Avoidance is a conflict management approach that is based on the idea that conflicts will eventually become irrelevant once the project progress further while conflict is ignored. Preferably, when it is not possible to go against the opposition (Gardiner, 2005). Compromise or smoothing refers to the shifting of a stance of one side or both in the conflict by compromising. (White & Thornbory, 2007). Integration is, when the parties involved in the conflict encourage consensus forming to address the conflict. This approach creates an environment that results in a win-win situation for both parties. Sometimes, an arbitrator is employed by competing parties to resolve the conflicts (White & Thornbory, 2007).

People-focused conflicts stems from incompatible values and needs, and differences in personalities, interpretation, and expectations (Whetten, 2011). This type of conflict has also been referred to as interpersonal conflict (Meredith, Shafer, & Mantel Jr, 2017). The conflict grows due to a lack of understanding or inability to manage the various personalities encountered. It is extreme level conflict and triggers an emotional response that is difficult to resolve and can harm team members' relationships working in the project. It can increase absenteeism and turnover, and lower team performance and work satisfaction (Halyskyi, 2020; Löhr, Weinhardt, Graef, & Sieber, 2017). The available literature suggests that this type of conflict should be diagnosed early on and managed constructively using a collaborative approach, increase the level of trust and understanding, and maintain communication. The parties involved should develop active listening skills to give people the opportunity to disagree and express their opinions. In addition to this, encourage team building to develop beneficial coping strategies and learn to develop highly flexible behaviours (Wu, Wu, Li, & Dan, 2018). Another type of conflict is task conflict that involves task irregularities, the result of the task, or the performance of the task. This type of conflict usually generates new ideas and may positively affect the completion of the task. The effects of task conflict depend on the complexity of the task and are only beneficial to a certain level. The available literature suggests that project managers should create a safe environment that

encourages open communication and high levels of trust. The parties involved in the task-related conflicts should resolve disagreements through negotiations. (Liu & Zhai, 2011).

Research Methodology

The primary data for this qualitative research study was collected through interviews with the key stakeholders of the project. The questionnaire for the study was composed after detailed literature review, pilot interviews, and consultation with subject expert. Pilot interviews were conducted with individuals working on construction projects in similar educational institutions. Each cause or issue under discussion was covered through following five research questions: What causes conflict between key stakeholders? What impact do these conflicts have on the project? What are the major conflict management strategies for the identified conflicts? what preventive measures should project managers take to avoid conflicts in the future?

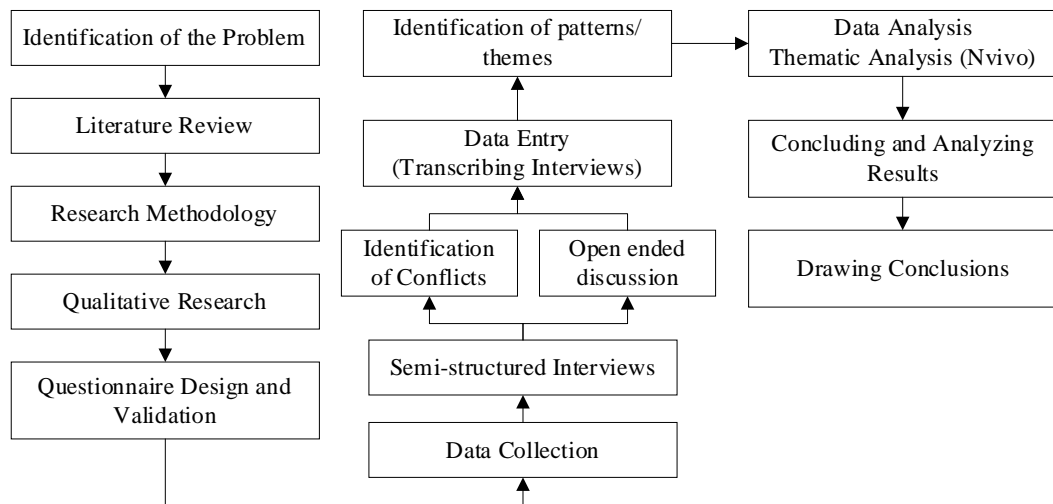


Figure 02: Research Workflow Diagram

The population for the study were the key stakeholders involved during execution phase of the CRAF project. For sampling, participants were selected in purposive manner, based on their roles and responsibilities. The data was only collected from those individuals who were part of top management and had extensive experience with this project. Additionally, for identification of other potential stakeholders, snowball sampling was also adopted. A total of sixteen semi-structured interviews were conducted. The data collection for the study was cross-sectional and each source of conflict was discussed in detail. As this study is qualitative, the scales of measurement were categorical, because there is no numerical data or calculation involved. The unit of analysis was an individual, contributing in an important technical and managerial capacity to the CRAF project. The details of individuals interviewed is given in Table 01.

Table 01: Respondents Demographics

Respondents	Designation	Experience (Years)	Area of Specializations
End User			
01	Project Director	8-10	Building Construction
02	Site Engineer	5	Building Construction
03	Facility Manager	5	Facility Management
04	Project Director	10-12	Building and Infrastructure
Consultants			
05	Project Director	15	Management & Consultancy
06	Project Manager	10	Civil Engineering &
07	Senior Engineer	05	Mechanical Engineer
08	Senior Engineer	10	Civil Engineering
Contractors			
09	Project Director	10-12	Engineering Management
10	Project Manager	5	Civil Engineering &
11	Site Engineer	15	Civil Engineering
12	Site Engineer	10	Civil Engineering
Subcontractors			
13	Manager	3-5	Building Construction
14	Manager	5	Building Construction
Vendors			
15	Manager	3-5	Mechanical Engineering
16	Manager	5	Electrical Engineering

Data Analysis

NVivo software was used to carry out thematic analysis of the data. After coding, certain queries for example text search query, matrix coding query, cluster analysis, and word frequency query were run in the software. The results of the queries are provided in the following sections.

Text Search Queries

The main approach to find patterns was to investigate “cause and effect” of different issues faced by key stakeholders. For this purpose, text search queries were run into NVivo for the words “Issue, project, delay.

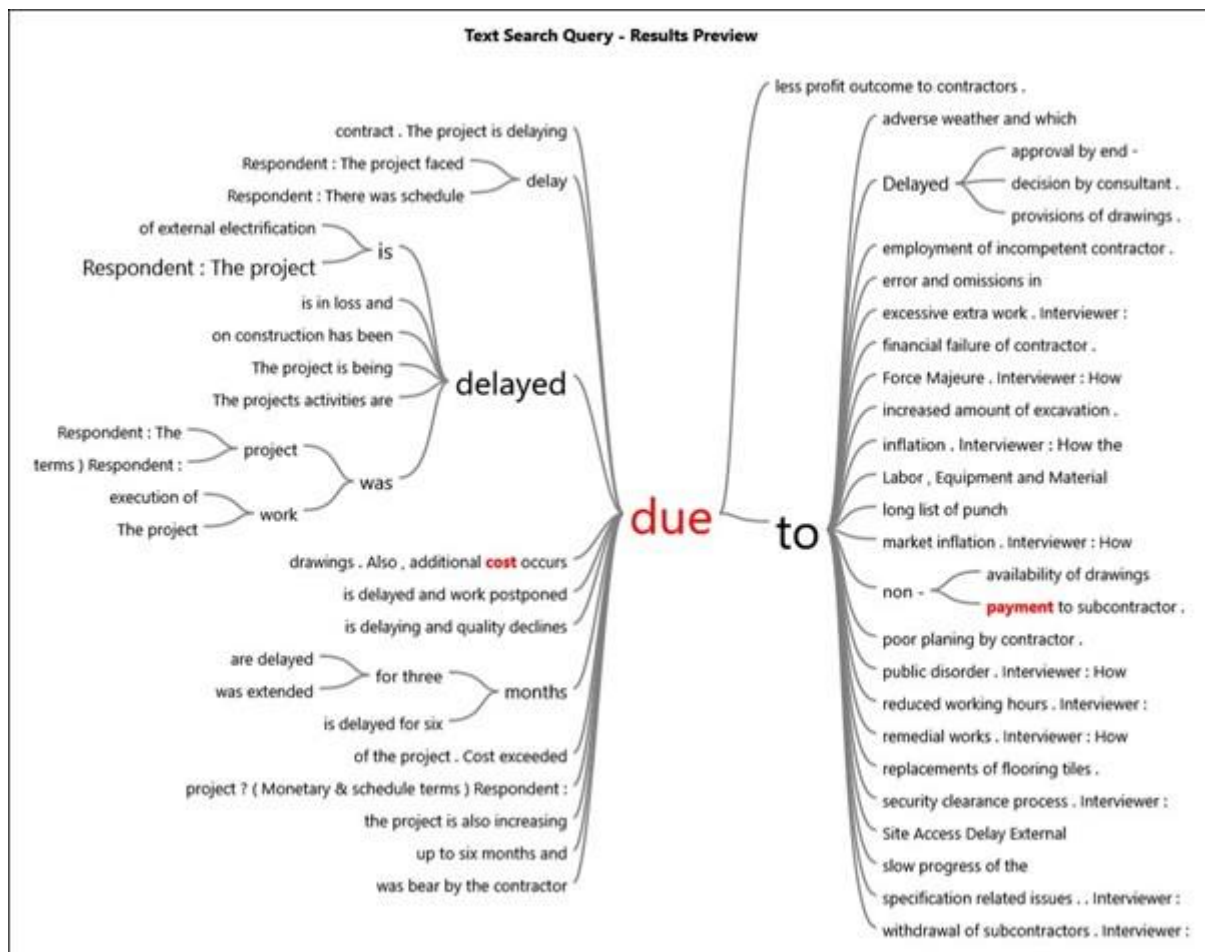


Figure 01: Text Search Query - Cause

Word Frequency Theories

The word frequency analysis was utilized to find the most frequent words in the themes created. All the statements that were relevant to the research questions of the study were themed separately under five nodes.

Word Cloud

The Word Cloud result for first node suggests that delayed provisions of drawings, excessive change order, excessive variations, defective design, and site access delays are causing conflicts. Similarly, result for the second node suggests that “Consultant” invoked causes are leading the project into a conflicting environment. The causes include lack of communication and coordination by the consultant, excessive variations in estimation, and delayed provisions of requirements.

The word cloud for the third node, which was created for the “impact” suggest that there is a consensus among the participants about the project delay. Finally, results for “Recommendations”

The Word Tree for identifying the overall impact of conflicts in the statements was obtained and the results are shown in Figure 03. The result also validated the Word Cloud for the same question, which suggests that delays are caused to consultant-related factors. Finally, the Word Tree analysis for statements related to recommendations for the preventive measures suggested that consultants should focus on collecting complete requirements, realistic estimation, and communication between managers.

Summary Tables

The results for issues are shown in Table 02, which consists of the most used words in the statements that were pointing out a source of conflict in the CRAF project. The word excessive has been used twelve times during discussions. The word ‘excessive’ has been associated with excessive change orders, excessive quantity variation and excessive extra work in the data. Similarly, the result suggests poor estimation, excessive change orders, requirements-related issues, lack of communication, defective design, and site access delays are also causes of conflicts in the CRAF project.

Table 02: Word Summary Table – Causes

Word	Length	Count	Weighted Percentage (%)	Similar Words
Cause	5	51	6.72	cause, caused, causes,
Consultant	10	35	4.67	consultant, consulting
Delayed	7	17	2.27	delay, delayed
Process	7	14	1.78	procedures, process, progress
Estimation	10	13	1.74	estimate, estimated,
Excessive	9	12	1.40	excessive, extra
Requirements	12	11	1.38	involved, requirement,
Changing	8	10	1.34	change, changing
Communication	13	10	1.34	communication
Defective	9	9	1.20	defective, defects, flaws

The result in Table 03 for “impact of conflicts” suggests that the major impact of conflicts on the project was a schedule delay. The result also suggests that consultant-related sources of conflicts are causing schedule delays. The next three entries in the table, cost, poor, and delay, suggest that poor cost estimation, site access delays, lack of communication, and extra work are also among the major reasons for schedule delay.

Table 03: Word Summary Table – Impact

Word	Lengt	Cou	Weighted Percentage
Delayed	7	82	5.69
Cause	5	45	3.12
Work	4	40	2.78
Consultant	10	39	2.71
Cost	4	32	2.22
Poor	4	27	1.87
Delay	5	25	1.73
Lack	4	22	1.53
Schedule	8	20	1.39

The word frequencies in the statements that were related to recommendations for preventive measures and the results result in Table 04 suggests that most respondents were focused on process, requirements, estimation, communication between line managers i.e., electrical, construction, HVAC. Most respondents have also emphasized the need for improvement in the design review and bid evaluation process.

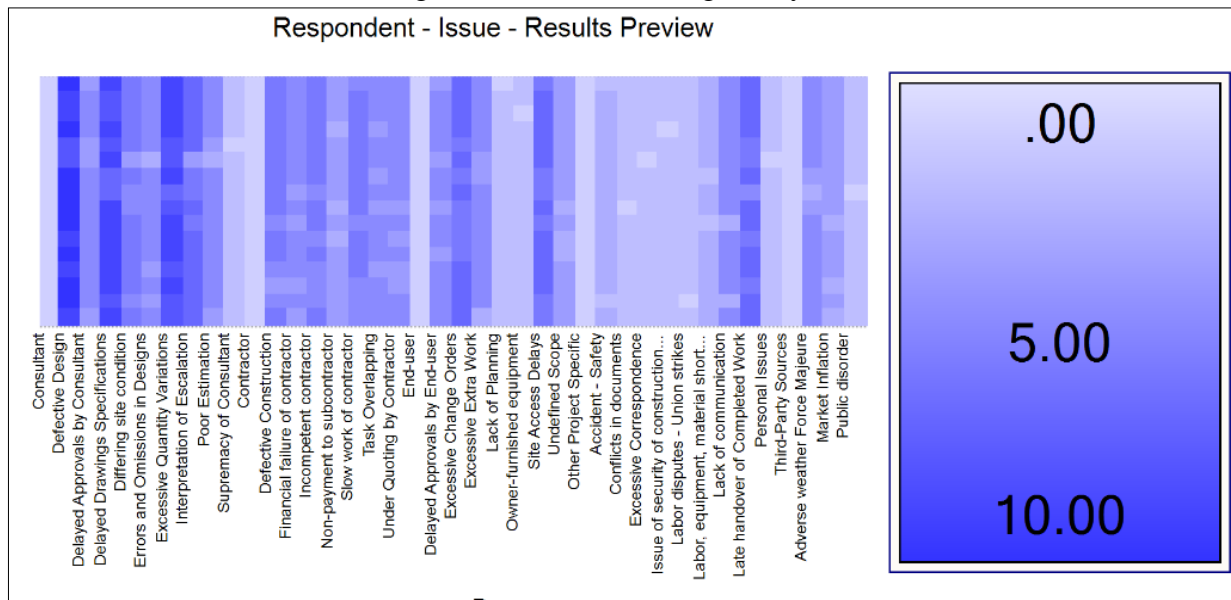
Table 04: Word Summary Table – Recommendations

Word	Length	Count	Weighted Percentage (%)
Construction	12	57	2.57
Consultant	10	44	2.50
Process	7	41	1.83
Requirements	12	35	1.79
Complete	8	35	1.61
Estimate	8	32	1.53
Execution	9	32	1.20
Managers	8	27	1.09
Conditions	10	25	1.05
Reviewed	8	25	1.05

Matrix Coding

The matrix coding query gives a measure of a specific node about its relevance and how many times an issue has been discussed by the respondents.

Figure 01: Matrix Coding Query – Heat Chart



Results in Figure 01 shows a ‘Heat Chart’ across all entries in interview transcripts. The darker areas represent major areas of sources of conflict. For instance, in the case of the first node “defective design” was mostly mentioned by the participants on different occasions. The matrix coding chart shows all the major issues discussed by interview participants in a graphical representation. The results suggests that defective design, delayed provisions of drawings, excessive change orders, site access delays were most prominent issues according to respondents.

Conclusions

Types and Sources of Conflicts in CRAF Project

After interviewing the participants of the CRAF project the study found that most of the conflicts that are taking place between key stakeholders of the project are task-related conflicts. There was only one instance in which a project task was delayed due to interpersonal conflict.

Defective Design

The results indicate that the first major source for the conflict is defective design by the consultant. Most of the participants have asserted that the defective design of the buildings is the main reason for the schedule and cost overruns of the CRAF project. The provided structural design was

incompatible with the given site conditions. This is because the site conditions were different than anticipated by the consultant in structural designs and project estimates. The impact of differing site conditions on project cost is found to be average, whereas the impact on project duration is found to be high. The structure of the building was redesigned after the commencement of work. It took six months to completely review the structural design of the academic and hostel building. Time delays due to the stoppage of work at the site until design review was the most significant schedule delay-related factor. Cost overrun related to defective design and differing site conditions were compensated through the inclusion of “extra items of work” in the project.

Excessive Quantity Variations

The reason given by the respondents was that the consultant hasn't conducted complete site surveys of construction sites before going into the estimation phase of the project. Another major reason mentioned by the respondent is the last-minute site location change by the end-user and client. Poor Realistic estimation were also major issues raised by the participants for cost overruns. In the CRAF project, unrealistic and poor estimation has caused cost overruns. Due to poor estimation, the project cost for some items of work is significantly higher than anticipated. All of these factors are not only causing variations in quantities of work but also contributed to schedule delays. As more work is also being added to the project, the cost of the project also increased.

Excessive Change Orders

It was found that there has been a lack of communication between end-user and consultants. The reason given by the respondents is that complete requirements from end-user and client were not taken before the design stage which resulted in end user's lack of planning and changing requirements. All these factors led end-user to make change orders which effected contractors' performance as work and cost plans had to change repeatedly.

Site Access Delays

The study found that site access delays have caused the contractors to work in reduced hours which also added to schedule and cost overrun in overall project. The contractors have to pay construction workers in full while the output had reduced due to work hours limitation.

Impact of Conflicts on CRAF Project

The impact of these issues was also inquired during the interviews and the study finds that these issues are affecting all three factors of the project triangle i.e., time, cost, scope. Due to the undefined scope by the end-user, the contractors have been burdened with large amounts of extra work and excessive change orders. Undefined scope-related issues are leading the project to scope creep because scope of the project is increasing, as additional work is being added.

The study finds that differing site conditions and site access delays have significantly contributed to the schedule delays. Site access delays by the end-user organization are causing low performance of the contractors and subcontractors. Project tasks are delayed on daily basis due to reduced working hours. Another major factor for schedule delay is the addition of extra work in the project. This is because the end-user is uncertain about future requirements. Additional works are implemented as directed but the project schedule hasn't been revised accordingly.

During the interviews, respondents were also asked about the financial impact of these conflicts and they concluded that cost overruns are occurring due to poor estimation, extra work, defective design, and market inflation. Where inclusion of extra work due to defective designs, poor estimation, and change orders are prolonging the project schedule, and also financially affecting the project due to increasing market inflation in the meantime. The cost of the project is increasing as the project is being prolonged.

Management of Conflicts

For the management of conflict, issues were addressed through on-site negotiations. Issues such as quantity variations were addressed through change orders or change requests. Specifications-related issues were resolved according to the contract clause related to alternative/substitute items in the project. In the case of defective construction due to design mistakes, the contractors were compensated for extra work. However, dismantling costs were paid by them. To address the issue site access delay on daily basis, workers have to abide by the complicated administrative process which were nonpersistent and everchanging. Therefore, the issue of delayed accessed of the construction site was unresolved.

Recommendations by Participants

The respondents were also asked to draw recommendations based on their experience to avoid conflicts. Based on the findings, this research has several useful recommendations for the organizations which are involved in the CRAF.

Recommendations for Consultant

The interview participants have stressed the resolution of communication issues between end-user and consultant organizations. The communications between line managers within consultant organizations should improve. The specification for building services and fixtures should available in the market. Another, recommendation that has been emphasized by interviewees participants was that a thorough geotechnical study should have been carried out before the structural design. End-user respondents have focused on the flaws in the prequalification and tender evaluation process. One of the major reasons for schedule delay and cost overruns given

by the participant was defective design, both architectural and structural. The designs should be reviewed and the process of reviewal should be defined. Additionally, the consultant should ensure the estimates are prepared after complete through site surveys and geotechnical investigations.

Recommendations for Contractors

The interview participants highlighted the underbidding trend by the contractors. The contractors have significantly underquoted certain items of work to win the bid for the project. In consequence, they were unable to balance the profits and expenses in the project. That ultimately lead to the financial failure of the contractors. In the case of the CRAF project, contractors had three months to mobilize their labour and machine resources to timely access the site. Several participants have stressed that contractors should employ dedicated supporting staff to address the issue of site access delays. The project contractor should focus on the schedule to avoid the adverse effects of market inflation and cost overrun. Additionally, the contractor should also cultivate a culture of health and safety in construction sites to avoid accidents.

Recommendations for End-user

The majority of the participants have indicated that the end-user lacks planning and future extensions of the projects. The end-user should communicate complete requirements to the consultant at the time of project estimation so change orders for extra works are avoided. Several participants suggested that the end-user should be involved during the estimation process. Additionally, the end-user should thoroughly review the project estimate and verify that all the requirements are included in the project estimate. The end-user should also define the process for site access to contractors and facilitate their access on regular basis. The communication between the end-user and the consultant organizations must improve to timely implement changes within a construction project.

Limitations and Challenges

The research study met its purposes and objectives, but there were some limitations and challenges during the research. Organizations involved in the project agreed to provide information only on the condition of anonymity therefore their personal information wasn't disclosed. Lack of interest was initially shown by the public organizations' officials about the interviews. It was difficult to make people agree for the interviews as individuals hesitated due to departmental restrictions against disclosure of official information. Therefore, individuals did not share any documented information about the issues in the project. Overconcern and misconception of project stakeholders about the research was also a challenge.

Future Directions

The present study offers multiple potential opportunities for future researchers. First, to increase the generalizability and applicability of the research, future studies may be conducted by inclusion of multiple projects to strengthen the validity and analyse patterns across different public projects that are being implemented under the umbrella of the PSDP.

Secondly, the current research has been conducted in the cross-section time frame and is inductive, and qualitative. However, future researches may be designed under longitudinal design to test the sources of conflicts to develop a better understanding of the conflicts among key stakeholders that are causing schedule and cost overruns. Moreover, future work may include the application of quantitative methods to determine the major sources of conflicts among key stakeholders of the construction projects.

Thirdly, the current project involved public sector end-user and consultants, while contractors belonged to private sectors. However, there is still room for future research to be carried out in different scenarios. For instance, construction projects that are involving public sector end-user and private sector consultants and contractors, etc.

References

- Acharya, N. K., Dai Lee, Y., & Im, H. M. 2006. Conflicting factors in construction projects: Korean perspective. *Engineering, construction and architectural management*.
- Awwad, R., Barakat, B., & Menassa, C. 2016. Understanding dispute resolution in the Middle East region from perspectives of different stakeholders. *Journal of Management in Engineering*, 32(6): 05016019.
- Boudet, H. S., Jayasundera, D. C., & Davis, J. 2011. Drivers of conflict in developing country infrastructure projects: experience from the water and pipeline sectors. *Journal of Construction Engineering and Management*, 137(7): 498-511.
- Ewurum, N. I., Egolum, C. C., & Ogbuefi, J. U. 2019. Stakeholder management strategy for sustainable public housing delivery in South East, Nigeria. *Global Journal of Advanced Research*, 6(3): 78-94.
- Finance, M. o. 2021. Pakistan Economic Survey, 2020-21 ed., Vol. 2021. Pakistan: Board of Investments.
- Gardiner, P. D. 2005. *Project management: A strategic planning approach*: Macmillan International Higher Education.

- Halytskyi, O. 2020. Conflict Dynamic Model Of Innovative Development In The System Of Ensuring The Competitiveness Of An Enterprises.
- Hansen-Addy, A. 2013. An Analysis of Soft Conflict Resolution Approaches in the UK Construction Industry. *International Journal of Construction Engineering and Management*, 2: 106-112.
- Hussain, S., Zhu, F., Ali, Z., Aslam, H. D., & Hussain, A. 2018. Critical delaying factors: public sector building projects in Gilgit-Baltistan, Pakistan. *Buildings*, 8(1): 6.
- Hwang, B.-G., Zhao, X., & Ng, S. Y. 2013. Identifying the critical factors affecting schedule performance of public housing projects. *Habitat International*, 38: 214-221.
- Jelodar, M. B., Yiu, T. W., & Wilkinson, S. 2015. Systematic representation of relationship quality in conflict and dispute: For construction projects. *Construction Economics and Building*, 15(1): 89-103.
- Khahro, S. H., & Ali, T. H. 2014. *Causes leading to conflicts in construction projects: a viewpoint of Pakistani construction industry*. Paper presented at the International Conference on challenges in IT, Engineering and Technology (ICCIET'2014) July.
- Latham, S. M. 1994. Constructing the team.
- Leung, M.-y., Yu, J., & Liang, Q. 2014. Analysis of the relationships between value management techniques, conflict management, and workshop satisfaction of construction participants. *Journal of Management in Engineering*, 30(3): 04014004.
- Li, Y., Hao, S., & Ren, X. 2015. Research on the conflict management of stakeholders in a construction project, *ICCREM 2015*: 733-740.
- Liu, A. M., & Zhai, X. 2011. Influences of personality on the adoption of conflict-handling styles and conflict outcomes for facility managers. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 3(3): 101-108.
- Löhr, K., Weinhardt, M., Graef, F., & Sieber, S. 2017. Enhancing communication and collaboration in collaborative projects through conflict prevention and management systems. *Organizational Dynamics*, 47(4): 259-264.
- Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. 2017. *Project management: a strategic managerial approach*: John Wiley & Sons.
- Newcombe, R. 2003. From client to project stakeholders: a stakeholder mapping approach. *Construction management and economics*, 21(8): 841-848.

- Olander, S. 2007. Stakeholder impact analysis in construction project management. *Construction management and economics*, 25(3): 277-287.
- Rahim, A., & Bonoma, T. V. 1979. Managing organizational conflict: A model for diagnosis and intervention. *Psychological reports*, 44(3_suppl): 1323-1344.
- Smith, J., & Love, P. E. 2004. Stakeholder management during project inception: Strategic needs analysis. *Journal of architectural engineering*, 10(1): 22-33.
- Whetten, D. A. 2011. *Developing management skills*: Pearson Education India.
- White, C., & Thornbory, G. 2007. HOW TO... manage conflict and confrontation. *Occupational Health & Wellbeing*, 59(11): 26.
- Wu, G., Wu, Y., Li, H., & Dan, C. 2018. Job burnout, work-family conflict and project performance for construction professionals: The moderating role of organizational support. *International journal of environmental research and public health*, 15(12): 2869.
- Wu, G., Zhao, X., & Zuo, J. 2017. Relationship between project's added value and the trust-conflict interaction among project teams. *Journal of management in Engineering*, 33(4): 04017011.
- Yang, R. J., & Shen, G. Q. 2015. Framework for stakeholder management in construction projects. *Journal of Management in Engineering*, 31(4): 04014064.

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