
PROJECT PERFORMANCE PROBLEMS ASSOCIATED WITH COST-BASED CONTRACTOR SELECTION IN CONSTRUCTION INDUSTRY OF SINDH PAKISTAN

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ABSTRACT

Construction sector in Sindh faces various problems especially due to COST-BASED CONTRACTOR SELECTION. Construction projects frequently encounter a range of intricate issues, including disagreements among project stakeholders like clients and contractors. The success of a project relies heavily on both the chosen contractor and the adopted project delivery method. The aim of this research is to explore the best method of procurement based on selection of contractor in the construction industry based on finding and analyzing the Project performance problems. SPSS software was used to interpret the collected data. From the problems associated with cost-based contractor selection; highest mean is of technical competence i.e. 4.30 and lowest mean is of use of up to date technology utilization i.e. 3.30. In addition to this, highest standard deviation is of safety problems i.e. 1.166 and lowest standard deviation is of technical competence i.e. 0.695 and Cronbach's alpha value is .908.

Keywords: SPSS, Cronbach's, Contractor, Procurement.

I. INTRODUCTION

Infrastructures are the backbone to the path towards sustained economic growth in a country. In Pakistan, the infrastructure projects were traditionally procured through public funds, which mainly came through foreign aid (Ahmed et al., 2013).

Governments across the globe are spending a significant portion of their budgets on procurement. Procurement is predominantly visible in developing countries with active infrastructure and social programs. Any attempt, therefore, to bring fiscal discipline by efficient allocation of resources and then pragmatically spending must consider procurement to be a fundamental part. Empirical evidence supports that procurement reforms improve spending efficiency by 1 percent of GDP. This means that this saving could be diverted to other pressing sectors like education, health, and municipal services. Basically, the country Procurement Assessment Report (CPAR) of World Bank in 2000 concluded that procurement was characterized by; a plethora of different systems and procedures operating simultaneously, lack of institutional capacity, and lack of human resources adequately trained to implement the systems and procedures. In this context, after the year 2000, Government of Pakistan (GOP) established Public Procurement Regulatory Authority (PPRA) through promulgation of Ordinance No. XXII of 2002 on 15 May 2002; Public Procurement Rules (PPR) in 2004; Public Procurement Regulations in 2008; and Public Procurement Regulations for Procurement of Consultancy Services in 2010. The Rules and Regulations, largely based on international best practices, are applicable to the procurement of goods, works and services by the federal government, state-owned enterprises and semi-autonomous organizations. Procurement involves other issues such as culture, leadership, management, economics, environmental, ethical and political issues. Value triggers throughout the project management supply chain, the generation of value can be designed into the procurement process (Walker and Rowlinson, 2008a). Although the current industry climate is highly diverse and rapidly evolving, there are still relatively few procurement systems to choose from. Each procurement system that is available delivers project success to a variable degree (Bowen et al., 1997; Tookey et al., 2001).

Evolution of procurement in project management in the construction industry has arisen from a number of factors which has resulted in forcing the construction industry into a position where it has to change to survive (Walker and Rowlinson, 2008a). Tookey et al. (2001) state that there are a number of different types of procurement routes available to choose from. Each different type of procurement (traditional approach, design and build (D&B), build-operate-transfer (BOT), management contracting, public-private-partnership (PPP),

etc.) has its own proponents and inherent strengths and weaknesses but the underlying question that arises is which one is the best choice?

Budget overruns, schedule delays, poor quality, low customer satisfaction, and weak productivity development. These are the words that have been, and still are, often used to describe the construction industry, whatever the referenced country may be. Despite the efforts of the construction practitioners in the field and scholars in multiple disciplines, these challenges are far from being settled. As Alves et al. (2012) note, the calls for change during the past three decades have been numerous and severe. Instead of stressing new tools, technologies or skills, the criticism is often targeted towards the fundamental operating logic of the industry. Therefore, incremental changes in how we do things may not be enough and a more profound soul-searching is needed to question what things we do and why we do them in the first place. There are five key principles of procurement as described by Raymond (2008) they include: Value for Money (VFM); Ethics; Competition; Transparency; and Accountability.

II. PROBLEM STATEMENT

The dynamics of the construction industry have experienced significant changes in recent times, largely due to the increasing complexity of construction projects and the heightened emphasis on management and technical proficiency. Concurrently, clients of these projects are demanding shorter delivery times and require contractors to promptly provide a comprehensive project cost estimate during the project's initial stages. The traditional procurement method for procurement of works adopts to the selection of contractor based on least cost. Many project criteria are sacrificed and the likelihood of project failure is raised by using the least expensive approach. One of the most significant issues is the selection of contractors based on pricing or bid amount alone. PPRA has provided for single stage two envelope methodology and prequalification process to help in selection of technically sound contractors however, non-adoption of technical qualification score of the contractor in final evaluation does not help in selection of best contractor. In order to adopt quality cum cost contractor it is necessary that we must have a clear understanding of procurement of works based on traditional method, its shortcomings and benefits to adopting the quality cum cost based selection of contractors. Therefore, this research is proposed to bridge the gap of quality cum cost among various organizations to bring unique policies of awarding projects to contractors.

III. LITERATURE REVIEW

According to Ofori (2006) the construction industry is an important sector of the economy which makes a significant contribution to gross domestic product (GDP), capital formation, and employment (Hillebrandt, 2000); and has backward and forward linkage effects with several other sectors (The World Bank, 1984). As it produces the nation's physical infrastructure and other productive assets, the industry is of critical importance in the national development of developing countries (Ofori, 2006). According to Turin (1978) in the majority of developing countries construction activity is dominated by infrastructure he further adds that in the developing countries value added in construction accounts for only 3-7 percent of GDP, the total value of new construction work represents anything between 45 and 65 percent of gross domestic capital formation. According to Turin (1973) that the proportion of civil engineering works in the total construction output of developing countries was higher than that in their industrialized counterparts. Ofori and Han, 2003 observed that the mix of construction demand (and output) changes as an economy develops. Developing countries need to embark on extensive infrastructure provision in order to achieve and sustain economic growth and aspire towards the standards of the developed economies. Further Quartey (1996) states that the methods used in developing countries to procure projects and implement them are not in tune to achieve successful operation of projects. From the above discussion it is clear that construction is of great importance in economic development and there is a need for understanding of procurement practices in developing countries for better implementation of projects (Noor et al., 2011c).

In Pakistan, construction sector is an important sector although not working to its fullest potential but it is still of prime significance to the country (Azhar et al., 2008). The construction industry of Pakistan constitutes around 2.4 percent of GDP (Federal Bureau of Statistics (FBS, 2011)). Growth in this sector is critical for growth in national income as it is among the largest sectors that generates employment within the country as well as a key driver for economic development of Pakistan (Azhar et al., 2008). The construction industry in Pakistan

employs almost 3.3 million people out of a population of a little over 176 million people (FBS, 2011). Like many other developing countries, Pakistan is also facing critical project management related issues (Azhar et al., 2008). They suggest that procurement choice is a major factor for cost overruns in projects in Pakistan and further research should be conducted to find out the impact of procurement on project success (Noor et al., 2011c). According to Lodi et al. (2009) the root cause of construction non-performance in Pakistani construction industry can be attributed to the low-bid project procurement system. In Pakistan most contracts (75-99 percent private projects and 100 percent public projects) are awarded to the lowest bidder based on open competitive bidding (with no negotiations). The minimum cost overrun range observed by them was as high as 51-60 percent of initial estimated cost while some projects even showed a cost overrun greater than 100 percent of their contracted amount. Furthermore, they found that the ranges of cost overruns for public projects were found to be higher than those for privately funded projects. According to them the range of cost overrun was even greater than 100 percent for a substantial proportion of public projects in Pakistan. They found that about more than 80 percent of both the time delay and cost overrun of projects in Pakistan can be attributed to inappropriate contractor selection. Their research has helped identify the root causes of underperformance of Pakistani construction industry, one of the major root cause is procurement related (Lodi et al., 2009). Saqib et al. (2008) found out that procurement related factors such as project delivery system, project bidding method and project contract mechanism were rated as most significant factors and procurement related factors were rated among the top five critical success factors categories in Pakistan (Saqib et al., 2008). They suggest that there is a need for further study regarding research on procurement and project success in Pakistan which will be useful in implementing projects successfully (Saqib et al., 2008). Khan et al. (2008) states that much of the research remains to be done on the link between procurement of projects and its effective implementation in Pakistan. They expect that further research within Pakistan could reveal more prospective information on the existing mechanisms of procurement of projects in Pakistan and the means for improving the implementation of projects to achieve successful outcomes for the benefits of all the stakeholders and general public (Khan et al., 2008). There is a need to gather data and conduct studies to gain a better understanding of what actually happens in the construction industry in general and project procurement in particular in developing countries including Pakistan. It has also been observed that literature pertaining to developing countries is limited and some of it is 30-40 years old things and so might have changed over such a long period of time which needed to be explored. The literature investigated also did not address as to the suitability of different procurement methods to cater the needs to country specific issues of developing countries. The author has been unable to find substantial academic literature that investigates country specific issues of construction procurement practice in the context of developing countries and especially Pakistan. The above discussion warranted the author's rationale for conducting the particular research and the questions that needed further investigation (Noor et al., 2011c).

PROCUREMENT:

Procurement is the process of preparing for the implementation of a project. This involves selecting the best contractual arrangement for a particular project, inviting tenders and agreeing the various contracts required to get the project off the ground. Procurement can often involve agreeing funding facilities.

Benefits of Adoption of Procurement:

Following are benefits of adoption of Procurement:

- **Lowered Costs:** The correlation between procurement and procurement costs comes down to a single concept - planning. When properly planned, purchase orders can go out at certain times of year for bulk amounts, which can positively affect cost. Moreover, when time is not of the essence, procurement teams have a more powerful negotiating position. Conversely, when time is running short, vendors/suppliers possess the advantage and, therefore, costs may end up notably higher.
- **Increased Resource Availability:** Continuity of goods and services, without interruption, is core to a sustainable business. Harkening back to the planning involved with lowered costs, so too is the case for resource availability. Procurement teams can ensure ceaseless resource availability by planning with significant advance notice and by focusing on long-term requirements. On the other hand, without these measures, supplies may run out early, thus requiring costly, last-minute procurement arrangements.

- **Improved Procedural Transparency & Efficiency:** There's no denying the importance of transparency in business, and procurement is no exception. Given the stakeholders, relationships, steps, and processes involved with enabling large-scale procurement for complex organizations, such transparency is essential for problem-solving, making improvements, and acquiring a general understanding. By having a clear sense of how a business's procurement systems work, these elements can improve overall efficiency, particularly when the goal is to iterate or scale.
- **Reduced Supplier Risk:** When dealing with outside third parties, no matter the relationship, there is always an element of risk, whether it be financial, operational, legal, or strategic. Robust procurement systems should plan for these potential contingencies and have frameworks in place to identify and assess said risks. As a result, effective procurement management can mitigate the possibility and severity of supplier risk.
- **Bolstered Supply Resiliency:** Beyond simple resource planning and availability, successful businesses have plans in place by which they can expect the unexpected. In the realm of procurement, this means accounting for scenarios where supplies might be limited despite service expected to continue unabated. In technical terms, this means businesses that desire robust procurement processes must shift from a "just-in-time" (JIT) to a "just-in-case" (JIC) mentality. That way, supplies, and overall service can remain resilient in the face of the unforeseen.
- **Freedom to Innovate:** When businesses possess effective procurement management strategies, their priorities change. More specifically, when companies inefficiently manage procurement, their attention focuses on the short-term, while efficient procurement management enables long-term, high-level focus. In turn, this birds-eye perspective gives companies the freedom to innovate in ways they previously could not.

IV. METHODOLOGY

Research Methodology is a systematic method of solving a problem related with research. It depicts the complete plan of how the entire process of research has been carried out. The main elements of this chapter include the explanation of questionnaire formation, collection and analysis of data.

This research aims to see the effect of quality cum cost-based contractor selection on construction project performance in construction industry of Sindh. To achieve the purpose, the whole task was split into number of goals which is further explained in detail below along with framework.

Stage 01 Development of Research Aim and Objective

The topic was given by the supervisor and later on detailed research was done to reach towards aim and objectives.

Stage 02 Literature Review

After aim and objectives were set, detailed research was carried out for objectives.

Stage 03 Questionnaire Development Process

After literature review of aim and objectives, questionnaire was made.

Stage 04 Data Collection

Data was collected through different sources.

Stage 05 Data Analysis

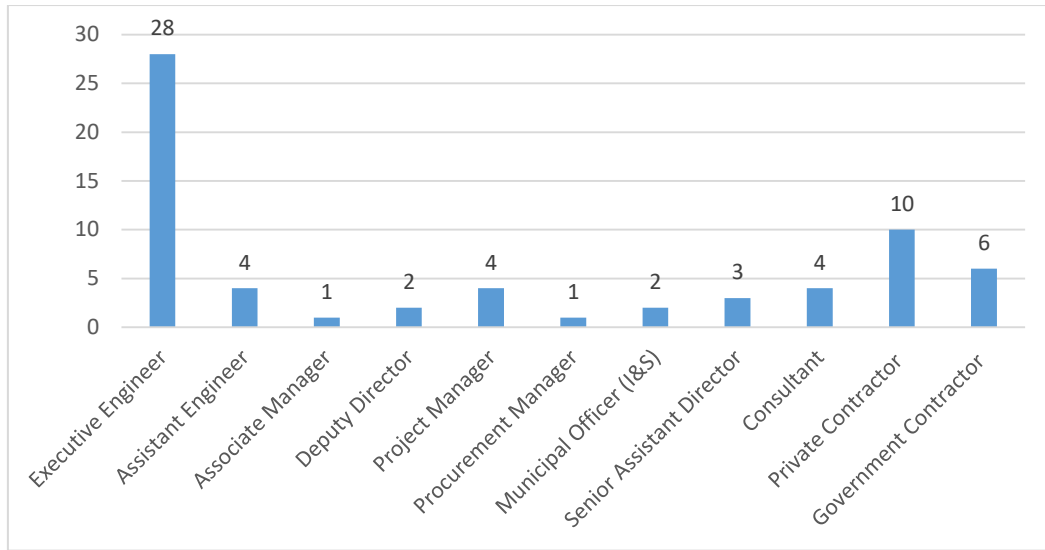
Data collected was analyzed on excel sheet and through SPSS 25 version.

Stage 06 Conclusion and Recommendation

Based on the analysis and the obtained results, conclusion was drawn. Along with this, recommendations were given too.

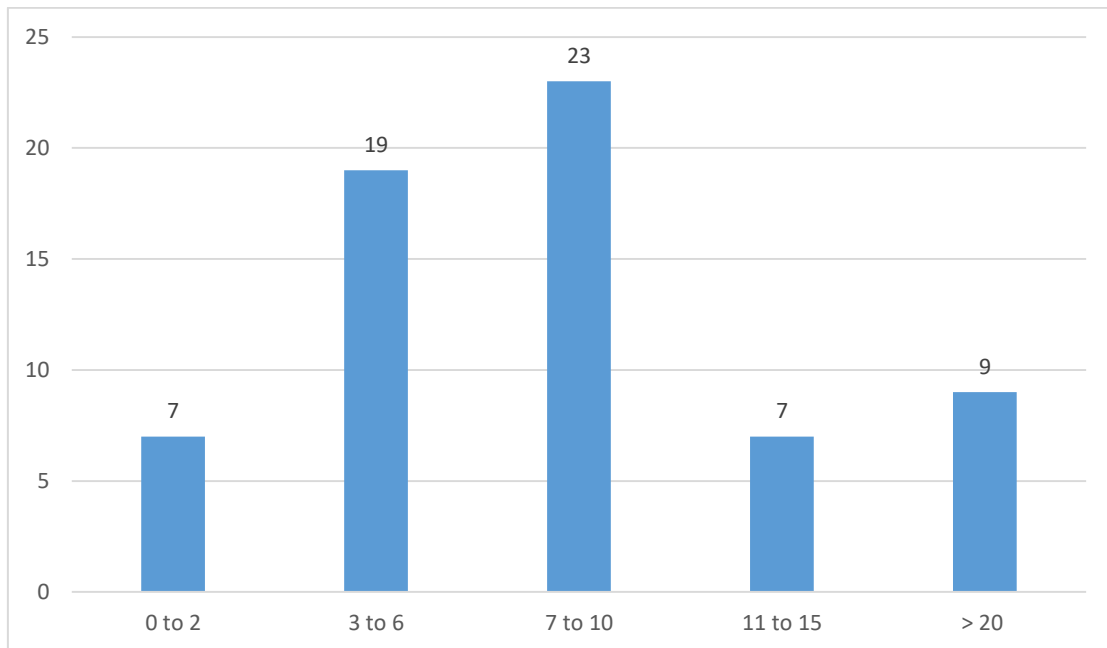
V. RESULTS AND DISCUSSION

The working position of the respondents working in different organization on quality cum cost-based contractor selection on construction project performance as well as respondent who filled the questionnaire are shown below in bar chart. They include Executive Engineers, Assistant Engineers, Associate Managers, Deputy Director, Project Manager etc.



Working Positions of Respondents

The working position of the respondents working in different organization on quality cum cost-based contractor selection on construction project performance as well as respondent who filled the questionnaire have different year of experience. In this responses majority of experience who filled were having experience of 7 to 10 years i.e. 23 and secondary were 19 responses who were having experience of 3 to 6 years.



Experience of Respondents

Table 1. Ranking of Project Performance Barriers

S#	Project Performance Barriers	Mean	SD	Rank
1	Technical Competence	4.30	0.695	1
2	Cost within budget	4.15	0.788	2
3	Incomplete drawings	4.09	0.890	3
4	Poor Quality Workmanship	4.04	0.988	4
5	Conflicts with contractors	4.04	0.842	4
6	Design Changes	4.02	0.931	5

7	Cost overruns	4.00	0.760	6
8	Material Management Problems	3.98	0.931	7
9	Time Needed to implement variation orders	3.87	0.980	8
10	Time needed to rectify defects	3.85	0.894	9
11	Schedule delays	3.83	0.851	10
12	Communication Problems	3.67	0.871	11
13	No Motivation of dedicated employes	3.67	0.790	11
14	satisfaction with the quantity	3.65	0.849	12
15	Cost of rework	3.63	0.951	13
16	Slow Decision Making	3.61	1.022	14
17	To meet salary requirements of staff based on their skills	3.61	0.802	14
18	Safety Problems	3.59	1.166	15
19	Construction Methods	3.57	1.025	16
20	Late Delivery	3.57	0.860	16
21	Change in Site Conditions	3.54	1.026	17
22	Frequent Progress meetings	3.52	1.130	18
23	Project design cost	3.50	1.070	19
24	Financial Competence	3.48	0.960	20
25	Poor planning & Scheduling	3.33	1.012	21
26	Use of up to date technology utilization	3.30	1.008	22

Reliability Test

The dependability of the findings gleaned from the respondents was examined using the Cronbach’s alpha values. The data collected from respondent’s responses have a Cronbach’s alpha value of .908.

Reliability test of Project Performance Barriers

Cronbach’s Alpha	No of Items
.908	26

VI. CONCLUSION

According to the findings of problems associated with cost-based contractor selection; highest mean is of technical competence i.e. 4.30 and lowest mean is of use of up to date technology utilization i.e. 3.30. In addition to this, highest standard deviation is of safety problems i.e. 1.166 and lowest standard deviation is of technical competence i.e. 0.695. The dependability of the findings gleaned from the respondents was examined using the Cronbach’s alpha values. The data collected from respondent’s responses have a Cronbach’s alpha value of .908.

There are several limitations to the research as outlined below:

- 1- A large number of questionnaire responses would have increased the credibility of the research from the survey analysis.
- 2- The information was not easily accessible due to the sensitivity of the research topic. However, the results would have been more representative if some case studies could have been conducted. But, due to time limitation this was not possible.
- 3- Because of time constraints, the researcher chose to minimum interviews to investigate project performance problems associated with cost-based contractor selection in construction industry of Pakistan.

This research has contributed a survey based region/country specific study on project performance problems associated with cost-based contractor selection, however, there remains the opportunity for further research of this kind. The following further research is recommended:

- 1- An experiment based research may investigate the more project performance problems deeply associated with cost-based contractor selection.
- 2- A deeper case-study approach may cut across different projects to provide more evidence of project performance problems associated with cost-based contractor selection.
- 3- This research has been done only for Pakistan, it must be done of few more countries to compare the project performance problems associated with cost-based contractor selection.

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