

Evaluating Construction Quality Management Practices in the Construction Projects of Afghanistan: Research Article

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Abstract - Many construction projects in Afghanistan have not adopted the requirements and guidelines of construction quality management (CQM) includes quality assurance and quality control, leading to construction quality problems and failing to satisfy final customer demands. This study aims to assess the construction quality management (CQM) practices within the construction projects of Afghanistan, and to propose effective measures for improvement.

Quality management in construction projects encompasses both quality assurance and quality control, which, if implemented properly, improve the quality of construction. However, many hinder effective quality management.

Through a combination of surveys, interviews, and desk research, data were gathered from construction professionals, revealing significant gaps in training and commitment to CQM principles.

After analyzing the data, it came to light that there are currently potential barriers and challenges in attaining the construction quality management requirements in the country, such as insufficient dedication to implementing CQM, coupled with reliance on low-level subcontractors, poor communication, and inadequate training, which contribute to substandard construction quality.

The study concludes with recommendations for better implementation of CQM requirements and guidelines.

Keywords: Construction Quality Management, quality assurance, quality control, subcontracting, construction project.

I. INTRODUCTION

Housing and infrastructure have always been one of the primary needs of humans and can be considered one of the most crucial aspects of societal development. With the rapid growth of the population, urbanization, and the return of immigrants have made access to adequate housing has become a major challenge for the majority of urban residents of

Afghanistan [1] [2]. Even those who have shelter and housing they concerns about its quality. Quality in construction encompasses meeting customer needs and delight, adhering to specifications, and the fitness of purpose. However, A. Mittal [3] states that failure to realize the quality of the project will cause the project to fail [3].

Several elements contribute to construction quality, including the availability of precise design drawings and unambiguous specifications, the presence of a well-defined quality control methodology, the use of the right materials, the presence of qualified personnel, and the proper use of equipment. Together, these components ensure that projects either meet or surpass established quality standards [4].

It is hard to overstate the importance of construction to the nation's economy. However, most Afghan construction projects continue to experience poor quality due to inadequate practices and fail to meet the requirements of Construction Quality Management (CQM). Quality of construction projects is affected by many factors such as corruption, security issues [5-9], poor communication, low capacity of governmental entities, lack of control and close monitoring, and a lack of dedication to quality standards [10] [11].

CQM is the performance of tasks, which ensure that construction is performed according to plans and specifications, on time, within a defined budget, and in a safe work environment. Or CQM is the combined effort of the contractor and the Government [12].

The objectives of the study are:

- i) To review the current construction quality management practices in construction firms/projects of Afghanistan.
- ii) To assess the engineer's knowledge of CQM.
- iii) To identify challenges in CQM implementation.

II. LITERATURE REVIEW

Construction Quality Management (CQM) helps the government by ensuring that construction is carried out in accordance with established plans and specifications, finished

on schedule and within budget, and producing structures that are simple to maintain [13] [14]. Furthermore, CQM promotes a safe workplace, which ultimately enhances efficiency and reliability. However, Contractors can benefit from Construction Quality Management (CQM) in several ways, including increased productivity and profitability, improved communication, and enhanced planning. Additionally, their outstanding performance positions them favorably for securing future contracts [12] [15].

However, the implementation of the quality management system in developing countries is hindered by a lack of experience, a strong reliance on traditional construction management methods, a negative attitude towards new approaches, and the ineffective trickle-down process in which subcontractors and suppliers fail to adopt these systems despite large organizations implementing them [16] [17]. Similarly, awarding projects to second and third-hand subcontractors at low prices is the highest parameter or factor that has negatively affected the quality of projects [18]. Furthermore, unfortunately, construction project delays have become normal, particularly in developing nations. These delays cause projects to miss their financial, timeline, and quality goals [19].

M. Lawrence et al. [20], have studied construction projects quality affecting factors in Ghaza line, The utmost important affecting factors were recognized as (1) Site layout characteristics, (2) Site staff experience, (3) Design documents, consistency, (4) Contractor’s financial power, (5) Construction materials availability, (6) and subcontractors’ abilities, (7).

Construction workers can improve project quality, reduce mistakes and rework, and ultimately produce projects that meet or surpass customer expectations by understanding the concepts and procedures of QA/QC [4]. Moreover, N. A. I. Janipha et al. [21] recommend using careful quality management (QM) techniques through quality planning (QP), quality assurance (QA), and quality control (QC) in order to maintain and ensure the achievement of superior quality.

The proper application and implementation of construction quality management requirements in construction projects has improved quality all over the world [22]. However, their failure has led to poor quality and premature failure of structures. Premature failure of structures has been a main cause of public criticism in developing countries [6] [23]. For example, in Africa, the failure or collapse of structures is attributed to weak foundations, poor quality of construction materials, poor mixing of construction materials by workers, excessive loading of structures, and poor material testing in laboratories [24] [25].

Additionally, Chitkara. [26] found that low-quality materials were a significant factor in low-quality construction projects, especially when it came to building flaws and project failures.

III. RESEARCH METHODOLOGY

In order to assess the current state of construction quality management practices in Afghanistan, this study uses a survey/site visit, Distribution of questionnaires, desk study, and interview approach.

3.1 Data Collection Instruments

Data collection for this study utilized several instruments, including:

1. Surveys: A systematic and self-administered questionnaire targeting construction companies/firms was developed. In this method, 100 sets of questionnaires were distributed to people/engineers who had sufficient experience in the field of construction and management.

The three (3) sections of the questionnaire were intended to be as follows:

Section A: Respondent background and demographics

Section B: Knowledge of CQM, QA, and QC

Section C: Causes of Poor Quality in Construction and not implementing the CQM system.

2. Interviews: In-depth interviews were conducted with construction industry experts, government officials in engineering and procurement departments, and employees of construction firms/companies.

3. Desk Research: A desk survey and document review guide was employed to gather secondary data related to CQM in Afghanistan.

3.2 Respondent and the firms/companies’ profiles

This section provides an overview of the respondents' profiles in the survey, highlighting their designations within the construction firms. The distribution of respondents is summarized in Table 1.

Table 1: Respondent’s designations

Designation	Frequency (n=100)	Percent (%)
Designer	20	20
Project manager	10	10
Site engineer	40	40
Architect	10	10

Contractor	20	20
Total	100	100

The data in Table 1 reveal that the majority of respondents (40%) are site engineers, indicating a strong presence of on-site experience among the surveyed individuals.

The questionnaire asked educational qualifications of the surveyed respondents, providing insights into their academic backgrounds. The distribution of qualifications is summarized in Table 2.

Table 2: Highest level of qualification

Level of education	Frequency (n=100)	Percent (%)
BSc.	75	75
MSc.	25	25
PhD.	0	0
Total	100	100

Table 2 shows that 75% of respondents hold a Bachelor’s degree (BSc.), while 25% have a Master’s degree (MSc.). Notably, no respondents possess a PhD. This distribution suggests a predominantly undergraduate-level qualification among industry professionals, which may influence their understanding and implementation of advanced construction quality management practices.

The questionnaire asked about the engineers' work experience, the results of which are shown in Table 3.

Table 3: Experience in the construction industry

Years	Frequency (n=100)	Percent (%)
1-3 years	50	50
4-6 years	15	15
7-9 years	20	20
More than 9 years	15	15
Total	100	100

Table 3 indicates that half of the respondents (50%) have 1-3 years of experience in the construction industry.

IV. RESULTS AND DISCUSSION

In a questionnaire and site visit process, engineers working in construction companies and on-site were asked about the courses they had attended. The results are shown in Table 4.

Table 4: Participation Rates in CQM Courses

Course	Frequency (n=100)	Percent (%)
Construction Quality Management (CQM)	4	4
Procurement Management	11	11
Safety and risk management	10	10
Have not taken a Management Training Course	75	75
Total	100	100

The results presented in Table 4 indicate a significant lack of training among engineers in the construction field regarding quality management. Only 4% of respondents reported having attended a course in Construction Quality Management (CQM), while the majority, 75%, indicated that they have not participated in any management training courses at all.

This highlights a critical gap in the professional development of construction personnel, which may adversely affect their ability to implement effective quality control measures. Additionally, only 11% and 10% of engineers reported attending courses in Procurement Management and Safety and Risk Management, respectively.

The findings suggest that the absence of adequate training in CQM and related management courses is a substantial barrier to improving construction quality, underscoring the need for targeted educational programs to enhance skills and competencies in the sector.

Respondents were also asked to identify the three main obstacles they face in implementing construction quality management (CQM) principles. The results are summarized in Table 5.

Table 5: Main Obstacles Hinder Implementation of CQM Principles

Parameter	Frequency (n=100)	Percent (%)	Rank
Lack of commitment to implementing CQM principles	45	45	1
Awarding projects to second and third-hand subcontractors	30	30	2
Weak Communication, coordination, and cooperation among key players of the project	25	25	3
Total	100	100	

As demonstrated in Table 5, the majority of respondents (45%) indicated that the primary obstacle to effective CQM implementation is a lack of commitment to the system. This is followed by the practice of awarding projects to second and third-hand subcontractors (30%), which undermines quality control. Finally, 25% of respondents highlighted weak communication, coordination, and cooperation among key project players as a significant barrier. These findings underscore critical areas that need addressing to enhance the overall effectiveness of construction quality management in projects.

After a comprehensive synthesis of the literature review, analysis of questionnaires, and conducting field surveys (site visits) and face-to-face interviews, the following obstacles have been identified as contributing to poor construction quality and non-compliance with construction quality management (CQM) regulations, leading to dissatisfaction among residents. The ratings of these causes/obstacles for poor construction quality management are summarized in Table 6.

Table 6: Order of Reasons for Low-Quality Construction and Non-Adherence to the CQM System

Potential Barriers/Causes	Cause Rank
Lack of commitment to implementing CQM principles	1
Awarding projects to second and third-hand subcontractors	2
Lack of cooperation and coordination between the owner, contractor, and subcontractors	3
Not taking training courses related to CQM	4
Poor supervision and Low-level skills of project leadership	5
Shortage of qualified personnel and highly experienced staff	6
Inadequate design and specification, and design changes	7
Design by unqualified engineers	8
Construction without being designed in advance	9
Poor quality of construction materials	10
Lack of a CQM/ QA & QC team to lead the processes	11
Setting unrealistic deadlines	12
Construction without drawings or not adhering to the specification	13
corruption and excessive paperwork (bureaucracy)	14
Resource unavailability	15
The delivery of materials for use without final acceptance, and the delay due to shortages	16
Poor estimation	17
Lack of knowledge and experience among engineers in public projects	18
Failure to execute work steps according to the schedule	19
Ignoring the deterioration of the quality of construction by engineers	20
Inappropriate equipment	21

The data presented in Table 6 reveal the key obstacles impacting construction quality management as perceived by respondents and through the survey. The most significant barrier identified is the lack of commitment to implementing CQM principles. This is closely followed by the failure to take training courses related to CQM, poor cooperation and coordination among key players, inadequate supervision, and low-level skills of project leadership.

This analysis emphasizes the urgent need for enhanced collaboration, better training, and more effective implementation of quality management practices to improve construction outcomes in the country.

The study's conclusions shed light on the crucial issues influencing construction quality management (CQM) procedures in construction projects in Afghanistan. Notably, the vast majority of respondents said that the biggest obstacle to attaining building quality was a lack of dedication to CQM

principles. This result is consistent with previous research that emphasizes the importance of organizational commitment in the effective deployment of quality management systems. The quality of construction projects is unavoidably jeopardized in the absence of strong commitment from both government agencies and contractors.

Furthermore, the practice of awarding contracts to second and third-hand subcontractors poses another significant threat to quality. As revealed in the literature, such subcontracting often leads to a decrease in quality standards due to the lack of accountability and expertise among lower-level contractors. Given that a substantial portion of the construction industry in Afghanistan operates under these substandard practices.

Weak communication and a lack of coordination among key players of a construction project, as identified in the study, also align with the challenges noted in prior research. Effective communication lines are crucial for ensuring that all project participants, including owners, contractors, and subcontractors, are aligned in their understanding of quality expectations and deliverables. The observed barrier in communication further complicates quality assurance efforts, rendering projects susceptible to delays and subpar outcomes.

The lack of training in CQM practices among engineers and construction personnel was another alarming finding. With only 4% of respondents having attended relevant training courses, it becomes evident that the knowledge gap significantly hampers the ability to effectively implement quality control processes. This echoes findings in the literature that assert the importance of continuous professional development and adequate training to enhance the capabilities of construction personnel, thereby bridging the quality gap.

Moreover, the multiple obstacles outlined—ranging from inadequate supervision to insufficiently qualified personnel—reflect a systemic issue that transcends individual projects and calls for comprehensive reforms across the construction sector in Afghanistan.

V. CONCLUSION

Afghanistan is one of the countries with rapid reconstruction and construction, both small and large projects, which has had a positive impact on other sectors of life, such as job creation, welfare, etc. However, the construction industry in Afghanistan is struggling with many problems and obstacles, one of which is the low quality of construction projects.

This study emphasizes the urgent need for a fundamental change in how construction quality is managed in Afghanistan. The predominant challenges—lack of

commitment to CQM, inadequate communication/cooperation, and insufficient training—collectively contribute to a landscape of declining construction standards. Improving construction quality is not merely the responsibility of contractors or engineers; it necessitates a collaborative effort involving multiple players, including governmental bodies, industry leaders, and educational institutions.

The adverse impacts of poor construction quality are observed not only in project delays and financial losses but also in the broader socio-economic implications for urban residents. As Afghanistan continues to urbanize, the demand for quality housing and infrastructure will only intensify, making it imperative to confront the current shortcomings in CQM head-on.

VI. RECOMMENDATIONS

1. Enhance Commitment to CQM:

- Construction Quality Management (CQM) requires immediate attention, as it impacts not only the immediate project results but also the future sustainability of the infrastructure and the standard of living for the Afghan people.
- Key players, including government agencies(owner), designer, and contractors, must cultivate a culture of quality. This can be achieved through strategic initiatives, such as leadership workshops and quality-focused training programs that instill the importance of quality management at all levels of the organization.

2. Strengthen Training Programs:

- Development of comprehensive training modules on CQM for construction personnel is critical. Partnerships with educational institutions can foster a curriculum that not only covers theoretical knowledge but also practical applications in the Afghan context.

3. Reform Procurement Practices:

- Establishing stringent criteria for contractor selection that emphasize expertise and experience will help mitigate the risks associated with low-quality subcontracting. Encouraging transparency in the procurement process is essential to ensure accountability.

4. Improve Communication Mechanisms:

- Development of standardized communication protocols among all project players can facilitate better coordination and collaboration. Regular meetings and progress reports should be mandated to address

challenges as they arise and reinforce a shared commitment to quality.

5. Implement Continuous Quality Monitoring:

- Establish mechanisms for ongoing quality evaluation throughout construction projects. This can include the formation of dedicated QA/QC teams responsible for oversight, site inspections, and adherence to quality benchmarks outlined in the CQM guidelines.

6. Raise Public Awareness:

- Engaging local communities about their rights to quality housing and infrastructure can empower them to demand better construction practices from developers and contractors.

By taking these proactive steps, Afghanistan can promote a construction environment that not only meets the basic needs of its urban population but also ensures sustainability and resilience in its infrastructure and housing sectors.

CONFLICTS OF INTEREST

Regarding the publishing of this paper, the author declares that there are no conflicts of interest.

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