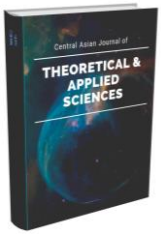

CENTRAL ASIAN JOURNAL OF THEORETICAL AND APPLIED SCIENCE

https://cajotas.centralasianstudies.org/index.php/CAJOTAS
*Volume: 05 Issue: 07 | November 2024 ISSN: 2660-5317*

*Article*

# Study of Projects Quality in Construction industry in Thi-Qar City, Iraq

**Noor Ali Adulridha**[1*]

1. Dhi Qar Center for Historical and Archaeological Studies, University of Thi-Qar, Iraq
* Correspondence: noor.alkaaby@utq.edu.iq

**Abstract:** This study examines the quality of construction projects in Thi-Qar city, located in southern Iraq, in the context of ongoing challenges such as political instability, inadequate funding, and managerial inefficiencies. Despite the critical role of construction in regional development, limited research has addressed the specific factors affecting project quality in this region. To address this gap, the study aims to identify key quality challenges by categorizing them into financial and economic, managerial and operational, and external factors. Using qualitative and quantitative methods, the research highlights issues such as insufficient contractor experience, poor operational decisions, and limited adoption of modern construction technologies. The findings emphasize the need for targeted interventions by local authorities to comprehensively address these challenges, offering actionable insights to enhance project outcomes and support sustainable development in the region.

**Keywords:** Project management, Project quality, Construction quality management

## 1. Introduction

Thi-Qar is a southern city in Iraq, in recent years; Thi-Qar experienced a significant growing in construction projects. As a result, quality for projects has become an important concern for population in the city and for authorities. The concern leads to supervise and regulate the construction industry in Thi-Qar. This study aims to determine the current state of construction quality in Thi-Qar city, and identify the key factors that contribute to the overall quality of construction projects in the region.

### Construction Project Quality in Iraq

Currently, construction projects in Iraq have had to take on new challenges stemming from the political instability and security concerns that have plagued the country for years and from overall lack of resources and infrastructure. One of the more troublesome aspects of the construction industry in Iraq today is the high rate of abandoned or incomplete projects. Abidali and Ali have conducted an investigation into what has caused these comparable and concerning dereliction rates. They have found a number of contributing factors, from using inadequate project management practices and having unqualified project managers to several economic and political problems [1].

The Iraqi construction industry is grappling with important issues in projects securing financial funding. In addition, a substantial number of construction initiatives have been stopped operations because of financial hurdles, like unrealistic estimates for

**Citation:** Noor Ali Adulridha. Study of Projects Quality in Construction industry in Thi-Qar City, Iraq. Central Asian Journal of Theoretical and Applied Science 2024, 5(7), 654-661.

Received: 9th Sept 2024
Revised: 16th Oct 2024
Accepted: 20th Nov 2024
Published: 29th Nov 2024

projects budget, subpar execution for projects, and multiple other impediments [2]. Researchers innovate diagnostic techniques due to the need for a deeper understanding for the findings obstacles, like root cause analysis, the innovative diagnostic techniques allow to investigate the underlying issues of the problems.

The construction sector in Iraq confronted several quality-related problems. According to a 2021 study by Khudhaire and Naji, these quality issues involved overall project management, materials, and workmanship. Although the study did not identify the reasons for the quality problems, one could reasonably conclude that inadequate regulatory oversight, unskilled labor, and insufficient high-quality construction materials might be responsible.

**Quality Standards in Construction Projects**

The construction industry, like so many others, is pushing hard to meet project budgets and schedules. And just as in other sectors, generally those push come at the expense of the quality of something else [3]. Although, quality is an important part of any construction projects because quality ensures that the final services or projects meet the specification required and satisfies customer needs. Establishing a comprehensive quality management system is part of quality planning in construction projects that mainly helps organizations to maintain a competitive advantage within the industry and improve customer satisfaction.

Quality focuses on enhancing organizational performance by achieving customer expectations at a reasonable cost. Quality in construction sector is one of the most important management targets, beside cost and duration for successful projects [4]. A well-organized quality management system is crucial for companies, as it helps them for improving customer satisfaction and gaining a competitive to improve the performance [5].

**Factors Influencing Construction Quality**

The quality of construction projects influence by several factors. Such as, construction processes and the design should be planned and executed carefully to ensure the final products meet the required standards. In addition, on-site quality management is important because it involves implementing quality procedures and requirements, also continuous improvement and communication with stakeholders [6].

Another important factor is quality benchmarking. Quality benchmarking helps construction companies for comparing performance against standards and identifying areas for future improvement. In addition, the construction industry characteristics like the complexity of projects, the involvement of multiple stakeholders, and the dynamic nature of the work environment, can also effect on the quality of construction projects. The application of the Plan-Do-Check-Act cycle, a well-known quality management principle approach that has been proposed to address these quality management challenges. Integrating quality throughout the project lifecycle is a must overstated. Quality should consider during the early stages of project analysis, planning, and design, additionally, during the construction stage and the final product [7].

**Factors Affecting Construction Quality**

Several factors highlighted in the existing literature can influence construction quality in Thi-Qar city. A study by Nyakala et al. (2021) on construction quality implementation in Southern Africa focused on small and medium-sized enterprises and emphasized the importance of the construction process and design, quality management, and the implementation of quality procedures and requirements. Their study strongly points to these areas as essential for Southern Africa and for ensuring construction quality more generally. Another recent study, by Khudhaire and Naji (2021), directly addressed construction quality issues in Iraq. Their study identified several key culprits, including

poor management and financial corruption that are causing the problems. The next sections will provide an overview of these identified factors in more detail.

The investigation into the financial obstructions that thwart construction projects in Iraq uncovered some underlying causes. Among these, the researchers identified inadequate project funding, which in turn produced effects that were tantamount to poor executions of project quality; ineffective oversight; and several lapses in control, which altogether served as "red flags." The study's authors recommended that the financial flow problems be addressed first. Otherwise, all of the above project execution lapses (and by inference, several construction quality-related problems) look set to continue unabated in the near future [8,9].

The existing literature highlights number of factors that can mainly impact on the construction projects quality in Thi-Qar city. The factors are human resource management, customer satisfaction, and construction-specific factors for example the contractors experience and expertise, the project planning and scheduling effectiveness, and the modern technologies and equipment availability. Like many other parts of Iraq, the construction sector in Thi-Qar has encountered a number of recent difficulties, mainly due to the country's on-going economic crisis and financial instability. These problems have been felt throughout the construction industry. However, from the study's findings in the existing literature, you can develop a good understanding of the basic key issues and difficulties that affect the quality of construction projects in Thi-Qar.

**Challenges and Barriers**

The construction industry in Iraq, including in Thi-Qar city, has faced a set of challenges that have prevented the high-quality project delivery [10]. These challenges are financial challenges like inadequate funding and budget overruns, in addition to managerial and operational challenges like poor project planning, lack of experience of contractors, and the impact of external challenges such as political instability and security concerns [11]. Additionally, the use of out-dated techniques and the lack of use for modern technologies have also been found as an important contributor to the suboptimal quality of construction projects. To address these pressing challenges, applying multifaceted approach is necessary, one that encompasses financial, managerid operational challenges including lack of experience among contractors, poor project planning, and political instability and security concerns [12].

**Key Challenges in Construction Project Quality**

Multifaceted construction projects need efficient planning, coordination, and execution for achieving high-quality end product successful delivery. Nonetheless, they face significant and difficult quality challenges. The construction industry has not hitherto been characterized by particularly effective management planning, quality assurance, or quality control systems. Even the tragedy of a bridge collapse in 1967 along the Niagara Parkway failed to motivate the Canadian construction industry to adopt a more integrated and systematic approach to quality management [13,14]

The construction industry itself presents undeniable inherent challenges extremely variable and often unpredictable conditions—affecting quality, it is affecting the quality. It is a fragmented supply chain, where lot by lot, project by project, it must satisfy an incredible number of manual requirements to reach anything resembling coherence. Even when the construction industry is not literally at war with a project's manual requirements, it is often at war with itself, thanks to its intense and largely negative internal competition. However, the industry itself is known for its resistance to change, with many construction companies trying to adopt new technologies or innovative quality management practices [15].

Construction projects in developing countries are often remote and face the most serious of challenges. These projects contend with a profound lack of the basic, necessary

socio-economic infrastructure and resources that would enable them to execute tasks in a timely fashion. They are also frequently subject to missed deadlines, cost overruns, and poor quality outcomes because of the nagging understaffing and lack of adequate working capital. Changing societal demands and a weak construction economy can create even more obstacles and deliver times to high-quality construction in developing countries [16].

**Evaluating Construction Standards in South of Iraq**

The quality of construction in south of Iraq is more complex by the Iraqi's varying building standards and regulations. The study by Abidali and Ali determined the importance of effective design, planning, and the application of modern technologies for ensuring construction quality. However, the authors mentioned that weak practices implementation and changes in government regulations, have contributed to substandard construction outcomes.

To improve construction quality, Establishing and enforcing consistent building standards across southern Iraq's regions is important. This might be part of involving regulations, implementing rigorous quality control measures, and providing training and resources to construction professionals,. For achieving sustainable development in the construction industry, a holistic approach addressing financial, regulatory, and capacity-building challenges will be the main focus. Policymakers, industry stakeholders, and construction professionals have to collaborate to address the multifaceted challenges of quality in construction sector in south of Iraq, leveraging a coordinated effort to drive significative and lasting improvements [17,18]

**Implementing Quality Standards in Construction Sector**

To implement quality standards effectively in construction projects, construction companies have to develop and apply a comprehensive quality management system. This system may include the following components: [19]

1. Defining quality policies clearly and objectives those align with overall strategic goals of the organization.
2. Establishing procedures and requirements of quality that are communicated to all stakeholders.
3. Monitoring and evaluation continuously of the construction process and procedures to identify areas for future improvement.
4. Effective strategies for risk management to determine potential issues of quality.

Through implementing quality standards, companies in construction sector will be able for improving customer satisfaction, enhancing their competitiveness, and ensuring the successful delivery of projects [20,21]

**Fostering a Culture of Quality in Construction Sector**

Implementing quality standards successfully in construction projects heavily depends on the creation of a culture that prioritizes quality throughout the organization. construction companies should apply the following for fostering a culture of quality:

1. Provide education programs and comprehensive training on quality management principles and best practices for all employees in the organisation.
2. Encourage collaboration and communication between project teams to enhance a shared quality objectives understanding.
3. Recognize the commitment employees and reward them for their commitment to quality and continuous improvement.
4. Evaluate and update quality management practices continuously for ensuring that the practices remain relevant and effective.

Creating a culture in construction companies that values quality, can make the companies ensure that quality standards are applied consistently throughout the project stages, leading to meet or exceed customer expectations by the successful delivery of construction projects.

**Aligning Quality Management with Sustainability Objectives**

The construction industry is paying increased attention to sustainable practices, making it all the more vital to harmonize the organization's quality management with sustainability goals. Projects deemed "sustainable" often distinguished themselves due to their quality and adherence to standards. On the other hand, many construction projects that meet basic quality and quantity requirements do so while violating, in spirit if not in letter, those same sustainability principles. All of this suggests that a path to genuine sustainable construction must also lead through the territory of quality management.

Construction companies should apply the following to align quality with sustainability:

1. The principles of sustainable design should be integrated into the planning and design stages of a project.
2. Project teams should enhance overall project quality by collaborating with supply chain partners.
3. Teams should construct the project sustainably by working with supply chain partners who use environmentally friendly materials and building methods that minimize waste and negative impacts on the environment.
4. The project team's supply chain partners should unfailingly apply the quality standards and the sustainability standards in consistently throughout the project stages [22].

Throughout aligning quality with sustainability objectives, companies in construction sector can deliver projects that meet customer expectations and contribute to the broader goal of sustainable development.

**Integrating Quality with Building Information Modelling (BIM)**

Enhancing quality in construction projects can be though the integration of quality management with (BIM) technology. BIM can help not only with planning and design but also with conferring upon the physical structure a digital representation of its functional characteristics. There are several ways in which construction companies can systematically reach for the quality-enhancing, cost-reducing elixir promised by a merger of quality management with BIM/quality construction digital tools.First, they can use BIM to facilitate the building project's design phase itself by identifying potential issues early on.Second, even if the design phase were not under BIM's governance, the construction company might still reap quality-enhancing returns during construction from the controlled digital supervision of the building as a "work site."Third, BIM could substitute for the construction site's equivalent of a "quality assurance laboratory," where systems sold to the construction company can be evaluated at work.

## 2. Materials and Methods

**Study Area**

This research focuses on the construction industry in Thi-Qar city, located in southern Iraq. The region has seen significant growth in construction projects in recent years, but persistent quality-related challenges necessitate an in-depth examination of contributing factors.

**Research Design**

The study employs a mixed-methods approach, combining quantitative and qualitative techniques to ensure a comprehensive analysis of construction project quality in Thi-Qar. The quantitative component analyzes numerical data on project completion rates, budget adherence, and quality benchmarks. The qualitative component involves interviews and surveys with key stakeholders in the construction industry, such as project managers, contractors, and local authorities.

**Data Collection**

**Primary Data:**

Surveys : Structured questionnaires were distributed to 100 construction professionals, including project managers, engineers, and contractors, to gather data on factors influencing construction quality.

Interviews : Semi-structured interviews were conducted with 20 stakeholders to explore in-depth perspectives on quality challenges, including financial, managerial, and external factors.

**Secondary Data:**

Analysis of existing literature, reports, and case studies related to construction projects in Iraq, with a focus on Thi-Qar. Review of government policies, financial reports, and project performance data from local authorities and agencies.

**Data Analysis**

**Quantitative Analysis:**

Statistical analysis using tools like SPSS to identify trends and correlations between financial, managerial, and external factors affecting project quality. Application of root cause **analysis to identify underlying issues causing quality lapses.**

**Qualitative Analysis:**

Thematic analysis of interview transcripts to identify recurring themes related to quality challenges. Comparative analysis to relate findings in Thi-Qar to broader issues faced by the construction industry in Iraq.

**Methodological Framework**

The research employs the Plan-Do-Check-Act (PDCA) cycle as a guiding framework for assessing and improving quality in construction projects. This approach enables the identification of gaps in project planning, execution, and evaluation processes, while providing actionable recommendations for addressing these gaps.

**Validation**

To ensure the reliability and validity of the findings, triangulation was employed by cross-verifying data from multiple sources, including interviews, surveys, and secondary reports. The use of multiple data collection methods strengthens the robustness of the study's conclusions.

**Ethical Considerations**

Ethical approval was obtained from the relevant institutional review board. Participants were informed about the purpose of the study and their rights, including confidentiality and voluntary participation.

## 3. Results and Discussion

This study's literature reveals a complex, multifaceted nature of construction quality problems in Thi-Qar city, Iraq. Financial and economic factors directly affect construction projects' overall quality, and our data suggest that inadequate funding, financial instability, and poor budgeting very much influence construction quality in Thi-Qar [23].

The three main problems whose adverse effects are magnified by those financial factors:

1. The inexperience of the contractors,
2. The ineffective planning of the projects, and
3. The lack of modern construction technology.

Furthermore, the research determined the effect of outside forces, such security, a lack of political stability, and the on-going economic downturn, on the construction industry in Thi-Qar City, Iraq. In contrast to previous studies, this research ventured out

to yield new findings and attempted to deliver useful insights to the field regarding the current state of how "quality" is understood in the construction sector of Thi-Qar City and the various factors that affect construction project outcomes. Following is a summary of the valuable insights gained from the research.The results might aid in creating specific treatments and policies to deal with the causes of the quality problems and better the construction industry's performance in the region.

## 4. Conclusion

The complex and multifaceted challenges facing the construction sector in Thi-Qar city, Iraq has been shed lighted in this study. The findings mentioned the important role of managerial, financial, and external factors in implementation of the quality for construction projects. In order to handle these challenges and issues, a comprehensive and integrated approach is highly needed by involving and encouraging collaborating among various stakeholders, construction industry professionals, policymakers, and the local community.

The following are potential strategies to improve quality in construction sector in Thi-Qar city:

1. Enhancing financial and budgetary management practices for ensuring adequate and stable funding for construction projects.
2. Strengthening project planning stage, scheduling stage, and contractor selection processes for improving project execution and implementation.
3. Promoting new technology and adopting for innovative construction technologies, like Building Information Modelling (BIM), prefabrication, and automation for enhancing efficiency, productivity, and quality control throughout the process in construction projects.

Further, address the broader political, economic, and security challenges is crucial to create a more stable and to enable environment of construction industry to thrive. By facing these issued and challenges of quality, the construction sector in Thi-Qar city may work towards delivering high-quality, sustainable, and reliable infrastructure that meets the local community needs and supports the development of the region's long-term.

In conclusion, developing projects construction quality in Thi-Qar city, Iraq needs an approach that addresses managerial, financial, operational, economic, and external challenges. Professionals, construction companies, and Policymakers in the construction industry have to work together for enhancing quality construction projects. These efforts by Professionals, construction companies, and Policymakers should include developing comprehensive quality management systems, improving contractor expertise, increasing the use of modern construction technologies, and fostering collaboration among supply chain partners. By following these actions, the quality of construction projects in Thi-Qar city can be improved, leading to sustainable development in the construction sector.

## REFERENCES

[1] F. C. D. Santos, M. T. M. Carvalho, and M. C. G. D. O. Brandstetter, "Development of a Performance Concept in the Construction Field: A Critical Review," Open Construction & Building Technology Journal, vol. 14, no. 1, pp. 370–381, Dec. 2020, doi: 10.2174/1874836802014010370.

[2] S. H. Aldhamad and S. E. Rezouki, "Identify and Diagnose the Causes of Financial Funding Using the Root Cause Analysis Technique," Engineering Journal, vol. 26, no. 9, pp. 1–10, Sep. 2020, doi: 10.31026/j.eng.2020.09.01.

[3] R. K. Ghaben and A. A. Jaaron, "Identifying and Assessing Innovation Factors in Construction Projects in Palestine: An Empirical Study," International Journal of Project Organisation and Management, vol. 9, no. 4, pp. 350–350, Jan. 2017, doi: 10.1504/IJPOM.2017.088250.

[4] H. Y. Khudhaire and H. I. Naji, "Causes of Abandoned Construction Projects: A Case Study in Iraq," IOP Conference Series: Materials Science and Engineering, vol. 1105, no. 1, pp. 012081–012081, Jun. 2021, doi: 10.1088/1757-899x/1105/1/012081.

[5] T. W. Loushine, P. Hoonakker, P. Carayon, and M. J. Smith, "Quality and Safety Management in Construction," Total Quality Management & Business Excellence, vol. 17, no. 9, pp. 1171–1212, Nov. 2006, doi: 10.1080/14783360600750469.

[6] R. K. Mavi and C. Standing, "Critical Success Factors of Sustainable Project Management in Construction: A Fuzzy DEMATEL-ANP Approach," Journal of Cleaner Production, vol. 194, pp. 751–765, May 2018, doi: 10.1016/j.jclepro.2018.05.120.

[7] S. Nyakala, J. Pretorius, and A. Vermeulen, "Construction Quality Process Implementation as a Source of Competitive Advantage in Small and Medium-Sized Construction Projects," Journal of Construction Business and Management, vol. 4, no. 2, pp. 46–54, Feb. 2021, doi: 10.15641/jcbm.4.2.862.

[8] I. Othman, M. Kamil, R. Y. Sunindijo, M. A. Alnsour, and A. F. Kineber, "Critical Success Factors Influencing Construction Safety Program Implementation in Developing Countries," IOP Conference Series: Materials Science and Engineering, vol. 1529, no. 4, pp. 042079–042079, Apr. 2020, doi: 10.1088/1742-6596/1529/4/042079.

[9] I. Othman, N. Shafiq, and M. F. Nuruddin, "Quality Planning in Construction Project," IOP Conference Series: Materials Science and Engineering, vol. 291, no. 1, pp. 012017–012017, Dec. 2017, doi: 10.1088/1757-899x/291/1/012017.

[10] Y. Park and C. Yi, "Resource-Based Quality Performance Estimation Method for Construction Operations," Applied Sciences, vol. 11, no. 9, p. 4122, Apr. 2021, doi: 10.3390/app11094122.

[11] N. A. Abdulridha and M. A. Gata, "Delays Factors for Construction Projects in South of Iraq," Engineering and Technology Journal, vol. 9, no. 9, pp. 5073–5081, 2024, doi: 10.47191/etj/v9i09.11.

[12] M. S. Fathi and N. A. Abdulridha, "Enhancing Organizational Performance in Oil and Gas Industry: A Comprehensive Review of Quality Management Practices," Journal of Applied Engineering Design and Simulation, vol. 4, no. 1, pp. 1–12, 2024.

[13] A. R. Rumane, Quality Management in Construction Projects. Boca Raton, FL, USA: CRC Press, 2017.

[14] D. Arditi and H. M. Gunaydin, "Total Quality Management in the Construction Process," International Journal of Project Management, vol. 15, no. 4, pp. 235–243, 1997.

[15] L. Jraisat, L. Jreisat, and C. Hattar, "Quality in Construction Management: An Exploratory Study," International Journal of Quality & Reliability Management, vol. 33, no. 7, pp. 920–941, 2016.

[16] N. M. N. Saeed and A. S. Hasan, "The Effect of Total Quality Management on Construction Project Performance," Journal of Science and Technology, vol. 17, no. 2, 2012.

[17] D. Ashokkumar, "Study of Quality Management in Construction Industry," International Journal of Innovative Research in Science, Engineering and Technology, vol. 3, no. 1, pp. 36–43, 2014.

[18] P. E. D. Love and Z. Irani, "A Project Management Quality Cost Information System for the Construction Industry," Information & Management, vol. 40, no. 7, pp. 649–661, 2003.

[19] S. Demirkesen and B. Ozorhon, "Impact of Integration Management on Construction Project Management Performance," International Journal of Project Management, vol. 35, no. 8, pp. 1639–1654, 2017.

[20] P. T. Nguyen et al., "Construction Project Quality Management Using Building Information Modeling 360 Field," International Journal of Advanced Computer Science and Applications, vol. 9, no. 10, pp. 228–233, 2018.

[21] H. Mallawaarachchi and S. Senaratne, "Importance of Quality for Construction Project Success," in Proc. 6th ICSECM, 2015, pp. 84–89.

[22] T. K. Leong et al., "Using Project Performance to Measure Effectiveness of Quality Management System Maintenance and Practices in Construction Industry," The Scientific World Journal, vol. 2014, p. 591361, 2014.

[23] S. S. Salvi and S. S. Kerkar, "Quality Assurance and Quality Control for Project Effectiveness in Construction and Management," International Journal of Engineering Research & Technology (IJERT), vol. 9, no. 2, pp. 26–29, 2020.