



ICCAUA Proceedings Journal

*Proceedings of the international conference of contemporary affairs in architecture and urbanism-ICCAUA
Volume 9 (December 2026), 2610478*

ICCAUA
Proceedings *Journal*
<https://journal.iccaua.com/>

Journal homepage: <https://journal.iccaua.com/>

DOI: <https://doi.org/10.38027/ICCAUA2026EN0478>

Quality Management and Professional Practice in Architectural Firms in Bahrain: Role of ISO 9001 in Improving Architectural Project Delivery

¹ Sara Rashed , ² Islam Elghonaimy

^{1&2} Department of Architecture & Interior Design, University of Bahrain, Bahrain

¹E-mail : 20153543@stu.uob.edu.bh, ²E-mail: eelghonaimy@uob.edu.bh

¹ ORCID: <https://orcid.org/0009-0008-1500-4289> , ² ORCID: <https://orcid.org/0000-0002-1044-249X>

Abstract

Received: 27.04.2026
Revised: 29.06.2026
Accepted: 01.07.2026
Available online: 10.07.2026

Copyright © 2026 by the author(s).
All rights reserved.

This article is published under an open-access model and is made available in accordance with the terms of the Creative Commons Attribution 4.0 International Licence (CC BY).



The publisher maintains a neutral stance concerning jurisdictional claims in published maps and institutional affiliations.

This article has been selected and peer-reviewed for publication in this journal as part of the 9th International Conference of Contemporary Affairs in Architecture and Urbanism, held on 7–8 May 2026 in Istanbul, Türkiye.

Quality management is an essential element of professional performance in many sectors, such as engineering, architecture, and construction. Quality management standards, such as ISO 9001:2015, provide tools for controlling the documents, project monitoring, and risk management to support constant improvement. In Bahrain, the Council for Regulating the Practice of Engineering Professions (CRPEP) manages the regulation of professional licensing of engineers and architectural firms, and it does not incorporate any quality management systems (QMS). However, limited research examines to what extent CRPEP aligns with QMS standards in architectural firms. This raises an important question regarding the potential outcomes of integrating such a system within a professional regulatory framework by conducting interviews with professionals in architectural firms in Bahrain. This study investigates the relationship between the ISO 9001 quality management system and CRPEP regulations and explores whether aligning them could improve project delivery and strengthen professional practice.

Key words : Quality Management; ISO 9001; Architectural Practice; CRPEP; Bahrain.

1. Introduction

The significance of quality management in the construction industry has increased due to the rising scale, complexity, and stakeholder participation in the construction works. Delay of projects is a common occurrence in Bahrain, which is often caused by lack of coordination, absence of guidelines to follow, and lacking project management methodologies (Alali et al., 2022; Johny et al., 2024). These issues affect the project timeframes, the efficiency of delivery, and the overall performance of the industry (Alali et al., 2022). The structured quality management systems for improving organizational processes, such as ISO 9001, a quality management standard that is developed by the International Organization for Standardization (ISO), allow a formal approach to the progress of organizational processes, project documentations, coordination, and workflow management (Boiral, 2012; Tari et al., 2012; Budayan and Okudan, 2022). The past literature has demonstrated that quality management systems can enhance the performance of a project and decrease the delays due to more explicit procedures, enhanced monitoring, and improved communication (Hoonakker et al., 2010; Tari et al., 2012; Akhund et al., 2017). Nevertheless, limited of the available literature has dealt with architectural practices, although their role in the project delivery process is significant because they are involved in the design phase and during the coordination and documentation phases (Santos Salgado, 2010; Santos Salgado, 2011; Zoghlami, 2024).

The architectural firms in Bahrain are regulated by the CRPEP system, which was established under Law No. 51 of 2014 and its implementing rules, but without formal systems to organize the quality of organizations. The difference can be demonstrated based on the opposition between the demands of professional practice and the quality management approaches applied in architectural companies in Bahrain.

The gap is particularly relevant in Category A architecture firms that are classified by the Council of Regulating the Practice of Engineering Professions (CRPEP); these firms deal with large projects with high cost and require multidisciplinary project coordination. Category A firms are mainly involved in major governmental projects and advanced private developments, which makes them adopt a quality management system such as ISO 9001 to ensure

project quality and alignment to the timeline. At the same time, the implementation of ISO 9001 into the architectural industry of Bahrain remains quite limited based on the research. However, in a survey of active firms that the author conducted, only 7 out of 41 Bahraini architectural firms in Bahrain were actively using ISO 9001, representing approximately 17 percent of the architecture industry (Figure 1) (CRPEP Category A list, 2026). Accordingly, this study attempts to explore the potential of systematic quality management approaches to improve the process of project delivery and to reduce the delays in architectural projects in Bahrain. By examining professional interviews with ISO-certified companies, including category company owners, the study offers a practical insight into how quality management can be used to enhance project execution and reduce delays amongst architectural projects in Bahrain.

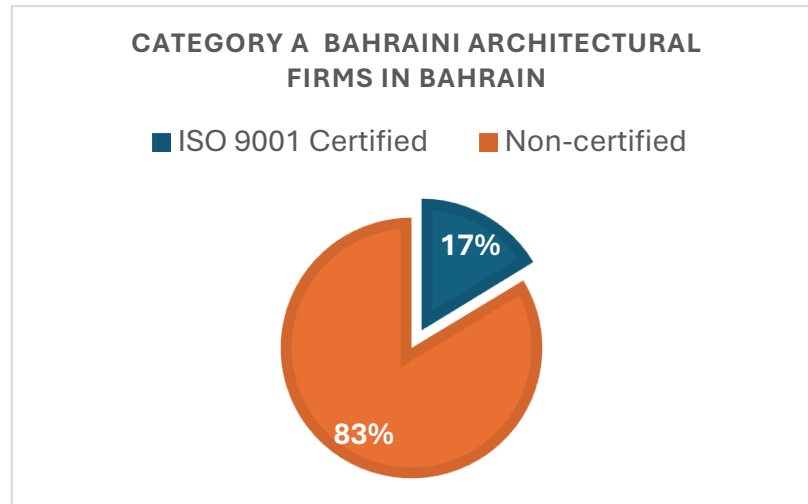


Figure 1. (ISO 9001 Certification Among Category A Bahraini Architectural Firms) (Source: Author, 2026).

1.1 Background and Context

There has been a shift towards quality management in the built environment industry, which has been triggered by the growing magnitude, complexity, and stakeholders of a project. The importance of architectural firms in this context is that they are charged with the responsibility of developing the design, documentation, coordination, and communication at the commencement of a project. Accordingly, errors in the first stage may have a negative impact on the overall development of the projects and cause additional delays (Hoonakker et al., 2010; Budayan and Okudan, 2022). In Bahrain, the construction works are characterized by delays and are usually connected with the issues of their coordination, ambiguous processes, and management and follow-up deficiencies (Alali et al., 2022). Similarly, construction delay issues are highlighted in international studies (Senouci et al., 2016; Ullah et al., 2018). All these problems emphasize the necessity of employing organized systems to enhance the working process, make communication more efficient, and enable more stable completion of the project (Tari et al., 2012).

The approach to the systematic management of quality in the organization, the maintenance of records, and the control of operations, as well as the achievement of constant improvement, has been applied through the implementation of a structured approach to quality management (which is the standard of a wide variety of ISO 9001), which has been proven to increase the effectiveness of an organization and eliminate project-related inefficiencies (Hoonakker et al., 2010; Akhund et al., 2017). Nonetheless, the use of such systems in architectural organizations is not as developed as in construction organizations, especially in Bahrain.

1.2 Problem Statement and Research Gap

The issue of quality management has gained importance in the built environment sector largely due to the fact that construction projects are becoming bigger and more complex than ever before. The architecture firms have the role of developing design and writing documents or even coordination of various issues and communicating with each other in the initial stages of a project's completion. Deficiencies in these aspects can undoubtedly slow the working process of the project. (Senouci et al., 2016).

A common issue with construction projects in Bahrain is that they are not completed on time, which is also a result of ineffective coordination and not having clear operations and procedures, along with bad management and supervision (Alali et al., 2022; Johny et al., 2024).

These problems have become repetitive, and they demonstrate the importance of structured systems. Through these systems, the workflow would be enhanced, communication would increase, and there would be more trustworthy project completion. One of the best-known standards, ISO 9001, offers the process control, documentation, and monitoring framework (Boiral, 2012; Tari et al., 2012).

The former literature demonstrated that the application of structured quality management approaches may enhance the performance of organizations and minimize project issues (Hoonakker et al., 2010; Akhund et al., 2017). However, little has been done on the application of these systems in architectural firms in Bahrain.

1.3 Objectives and Hypothesis

This paper seeks to assess the compatibility of ISO 9001 principles with the CRPEP framework and examine how organized quality management can be used to enhance the delivery of projects within architectural organizations in Bahrain.

The research question is as follows: To what extent does the application of the ISO 9001 quality management principles enhance the working practices and project management of architectural firms in Bahrain controlled by CRPEP? Depending on the research question, the following hypotheses were formulated:

H1: Architectural companies in Bahrain relying on quality management concepts will experience a lower level of project delays than other firms.

H2: ISO 9001 awareness and use have a positive impact on perceived enhancement of project delivery in architectural companies in Bahrain.

1.4 Significance and Structure of the Paper

The study is important as it explores an issue that has received slight attention in Bahrain on the application of organized quality management in architectural companies and its connection with the ISO 9001 and CRPEP frameworks. The study provides empirical information on how quality management can enhance project delivery and minimize delays on the local level. In this paper, there are five sections:

After the introduction, the qualitative approach and process of interviewing are described under the materials and methods section. The results section is followed by the main findings of the interview. Findings will be compared to the current research, taking into account the particular area of profession in Bahrain. The study's conclusions will be summarized at the end and followed by some reflections on the possible implications of this study.

2. Materials and Methods

2.1 Study Design and Setting

This study uses a qualitative research design where it studies the application of ISO 9001 to architectural practice in Bahrain; in particular, it seeks to determine the effects of this standard on project implementation and delays related to it (Zoghلامي, 2024). The study is undertaken in the Bahraini architectural sector, which focuses on those companies under the regulations of the CRPEP.

2.2 Participants

The research employs a directed sampling method to select participants directly to achieve the aim of the study. The sample consists of five professionals employed in five different Category A firms in Bahrain. All of these firms are ISO 9001 certified; and these firms were chosen because of their successful application of ISO 9001 within their organizational system. The selection process was from ISO 9001-certified architectural firms, and it revealed that a mere 7 out of the 41 Bahraini architectural firms in category A in Bahrain have ISO 9001 certification representing approximately 17% of the sector. This sample establishes a segment of the related population which thereby strengthens the credibility of the qualitative observation among them. Two of the participants were Category A firms owners, which are known for their expertise in managing large projects in Bahrain, and they can offer valuable insights into quality management. Other participants provided information about their organizations in term of operational practices, coordination, and documentation methods.

2.3 Materials and Equipment

The main research tool was the semi-structured interview guide, which consisted of eight questions in English and Arabic languages. The interview questions were selected based on the review of literature concerning quality management systems and implementation of ISO 9001 within the built-environment sector (Hoonakker et al., 2010; Tari et al., 2012; Boural, 2012; Budayan & Okudan, 2022). This methodology confirms that the conducted questions were connected to principles related to operation processes to examine the quality management practices in architectural firms. Therefore, the questions were to examine the monitoring procedures and coordination documentation methods that are highly related to the cause of project delays and the influence of quality management systems such as ISO 9001. The interviews were conducted online, and response collection was through writing to facilitate the analysis.

2.4 Procedures and Protocols

The individual online interviews were carried out in order to collect data, which took about 20 minutes. Prior to the commencement of the interviews, the participants were provided with a complete description of the objectives of the study. The interview questions were structured to include open-ended questions with the opportunity for participants to elaborate on their responses and provide in-detail perspectives; as a result, this method helps to understand the responses of the interviewers which will allow the collection of the detailed collective data. No personal and company-identifiable data is revealed in the study to preserve confidentiality.

2.5 Data Analysis

The thematic analysis was applied to the interview data. The responses of the interviewers were classified into major themes after the review. These areas were the application of ISO 9001, reflecting the essential elements such as

documentation procedures, project management approaches, coordination approaches, how to minimize project delays, and the perceived effects of quality management on the results of projects. The methodological approach facilitates a systematic analysis of the research by enabling the flow of patterns within the interview data. This approach has increased the findings reliability and interpretation which helps in achieving the research goal eventually.

3. Results

3.1 ISO 9001 Implementation in Daily Practice

The interviews established that the application of ISO 9001 in the participating firms is in the form of instituted daily processes, internal manuals, and checklists as well as assigned roles. The system is managed by an ISO-specific manager or followed up by team leaders in certain companies and incorporated into the work of project managers and technical staff in others. The respondents noted that ISO 9001 manual application helps their firms to sustain their seamless operations as a result of the well-defined procedures and documentation. This makes it possible to achieve consistent performance even in cases where employees have left or are not present. The general results indicate that ISO 9001 is observed to be beyond a mere formal certification; it functions as a working operational model that is applied in the architectural firms particularly in coordination, document control and process evaluation.

3.2 Monitoring and Quality Control

It was also revealed in the interviews that internal and external audits oversee the applying of ISO 9001.

The quality checklists, internal audits, team leader reviews, and regular follow-up of project procedures were also all internal monitoring. This implies that companies use overlaying monitoring procedures to make sure that the ISO procedures are under implementation. Regarding external audits, participants mentioned differences in how often they were done at different architectural firms. Some firms had external audits twice a year, while others had them once a year. Additionally, one mentioned the certification renewal process every three years via a recertification audit. Despite these differences, all participants emphasized that external auditing is an important procedure to ensure that the ISO 9001 manual is consistently followed and maintained. These findings suggest that architectural firms adopt many quality monitoring ways to support ISO 9001; however, this observation is limited by the number of participants and reflects variations in practices.

3.3 Project Documentation and Process Management

The need to have organized and standardized documentation to assist in project progress was emphasized by all participants. The architectural companies use documented forms, shared servers, and approved templates, as well as project reports and regular reminders. These were used to monitor submittals, RFIs, meeting history, and approvals. One of the owners of a Category A firm said that the responsibility to keep documentation was assigned to project managers themselves so that the follow-up could be enhanced and delay could be prevented. In term of ISO 9001 implementation in architectural firms, participants indicated creating documentation systems with a structured setup period, and that depends on the size of the firm, but it typically involves months of system development and management training before ISO is fully operating. Furthermore, the application of ISO 9001 is found in different architectural phases, in design, and in the ISO documentation found in design development, drawing control and disciplines coordination. In contract, during supervision and site activities, it is found in monitoring procedures, reporting, and compliance checks. This demonstrates that while ISO 9001 provides a structured quality management mechanism, the practical application varies depending on the nature of firm activities. On the whole, the findings indicate that ISO 9001 helps to achieve the contribution to stronger documentation systems, better clarity of records, and greater workflow processes.

3.4 Project Coordination

The results demonstrate that there is a definite correlation between project coordination and the application of meetings, field visits, project schedules, and progress-tracking tools.

Respondents indicated that they were holding weekly or semi-weekly meetings, reporting progress, holding kickoff meetings, and comparing actual work and planned work. One respondent has also reported that the number of meetings increases with the magnitude of the project, and another respondent has reported the use of shared Excel sheets to coordinate activities and send reminders.

These remarks indicate that practices related to ISO allow a more guided way of monitoring and coordinating projects. Consequently, firms with many parties can have greater control over the timing and duties of their projects.

3.5 Project Delay Management

The issue of project delays was also popular in all the interviews, and it was perceived as a practical problem that needs to be directly managed. Our interviewees reported that additional delays were usually caused by the difficulties with the main contractor, problems with subcontractors, budget constraints, or design changes by the clients.

The interviews indicated that the companies solve these issues using follow-up correspondence, root cause analysis, rescheduling, technical assessment, and timely stakeholder coordination. In addition, one respondent noted that quality shortages may lead to demolition and rebuilding, therefore affecting project schedules.

To conclude, the interview information indicates that although ISO 9001 does not remove delays entirely, it does provide a systematic way of problem identification, documentation, and efficient responses.

3.6 Positive Impact on Project Delivery

The participants all reported that ISO 9001 has a positive impact on project delivery. The participants noted that they perceived an increase in the efficiency of the work process, more defined job responsibilities, improved interaction between team members, and the possibility to track project tasks more effectively. Moreover, they stated that the system reduced the interruption that is brought about by the turnover of employees since the documentation is always available since organized processes access it.

Consequently, ISO 9001 was considered a means of facilitating a rather stable and efficient delivery of a project, as opposed to relying on the capacity of individual employees to handle project delivery on their own.

3.7 Client Trust and Firm Reputation

The last theme that developed after the interviews was that of the connection between ISO 9001 and client trust. The participants mentioned that, with the help of ISO certification, the confidence in the procedures in the firm is enhanced, and the competitiveness of the firm, in particular, in the tenders and acquisition of the projects, is enhanced. According to two interviewees, ISO 9001 had helped build better client confidence and, in other instances, to get more clients. It means that the usefulness of ISO 9001 is not limited to inner management and also traces the perception of firms by their clients and the market.

4. Discussion

The results of the research indicate that the interviewed firms do not consider ISO 9001 a formal certificate but rather a working management system that influences the everyday working process. In all the interviews, the participants continued to associate ISO 9001 with more transparent processes, enhanced documentation management, increased frequency of follow-ups, and improved coordination among the parties involved in the project. This is in line with earlier research that has established that a structured quality management system enhances control within organizations, communication, and process consistency (Boiral, 2012; Hoonakker et al., 2010; Tarí et al., 2012).

One of the most important discoveries is that the role of document control was central to the way the firms viewed the importance of ISO 9001. Manuals, forms, logs, reports, shared systems, and documented approvals were always described by the participants as key tools to maintain the workflow and reduce disruptions. The result is consistent with the prior study that indicates that a quality management system is effective in enhancing documentation and internal cooperation, both of which are particularly important in project-based situations (Akhund et al., 2017; Santos Salgado, 2010). This finding is especially relevant in architectural practice, where delivery of projects largely relies on drawings, technical approvals, and communication among various parties.

Another suggestion of the interview data is that the improved coordination by the use of ISO 9001 enables the projects to save time in terms of delivery delays.

Weekly meetings, progress reports, checklists, site visits, and follow-up records, all these were parts of a more structured form of control. These approaches appear to make firms more on time and responsive in case things go wrong. This result is consistent with the available literature on construction management that singles out inadequate coordination, inefficient communication, and lack of monitoring among the major causes of project delays (Senouci et al., 2016; Alali et al., 2022; Johny et al., 2024). A further key finding from conducted interviews revealed that construction project delays were not assigned to a single source. Interviewees identified several elements such as contractor-related issues, financial limitations, subcontractor performance, and client modifications in addition to rework due to the quality issues (demolish and rebuild). However, participants highlighted the role of ISO 9001 in mitigating these issues that cause delivery delays, especially through the structured manual that helps in problem identification and documentation. As one of the interviewees said, "It's easy to identify the problems with applying ISO 9001 in the firm because it helps us to see all the processes clearly and easier for us to identify issues earlier before they affect the whole timeline. To clarify, issues are systematically documented through reporting and logging systems, and team members are responsible for following up on the protocol and ways of formatting all documents. Nonetheless, according to the interviews, ISO 9001 may remain an important factor since it offers a systematic method to report problems, distribute responsibilities, and justify corrective behavior. In this regard, ISO 9001 does not eliminate all the risks of delays, but it enhances the capability of the firm to deal with them in a more organized manner.

According to the results, it is possible that professional regulation, without structured systems of documentation, coordination, and quality control, may not be enough to enhance project delivery. (Table 1) shows the differences between a regular architectural firm and ISO-9001 certified architectural firms in Category (A) in Bahrain and how each one of them is dealing with several dimensions such as process, documentation, coordination, monitoring, quality assurance and project delivery.

Table 1: (Comparison Between Regular Architectural Firms and ISO-9001 Certified Architectural Firms, Category A).

Dimensions	Traditional Practice in Architectural Firms Based on CRPEP Regulations	ISO 9001-Based Architectural Firms (Category A)
Process	General guidelines without clear procedure	Clear documentation procedure for all processes in the firm
Document Management	Varies between firms	Standard formative documentation system through controlled records, logs, and templates to follow
Coordination	Depends on the experience	Structured processes with clear communication flow
Monitoring System	Limited structure and only relying on the project manager to monitor	Continuous monitoring through internal and external audits, checklists, and reviews
Quality Assurance	Varies due to the professional competence	Clear through the formative quality management system
Impact on Project Delivery	Variable outcomes depend on the firm's capability to manage the work	More controlled, traceable and predicted outcomes

An addition to the research is the fact that it dealt with architectural firms and not with contractors only. Most of the literature around has focused on construction companies, yet the current results indicate that the architectural offices are also experiencing the benefits of having an organized quality system, particularly due to their obligations in the initial stages of project design. The interview evidence confirms the claims of Santos Salgado (2010; 2011) and Zoghلامي (2024), who reveal that quality management principles can be easily applied to the architectural field, thereby improving the processes of organizing, documenting, and delivering design projects by architectural companies, as shown in (Figure 2) it illustrates the frequency of key themes extracted from interview data; the results revealed that these elements support the project delivery especially documentation systems and coordination practices in the firm. Monitoring procedures and project timelines as delay management were also frequently stated. Another result of the study was that stronger client trust, and a better professional image were related to the presence of ISO 9001. Respondents associated the ISO certification with the opportunities to get improved opportunities to win project bids, better understand work processes, and have more trust from customers. This is an indication that the worth of ISO 9001 is not only in the efficiency that firms have internally but also reflects on the perception that firms have on the outside. This may be a valuable practical benefit in a competitive professional environment.

Because of the limited number of participants and the focus only on Category A architectural firms with ISO 9001 certification, the results reflect the views of a specific group within the construction industry rather than the wider population of firms in Bahrain. Nevertheless, the interviews are also informative on the professional level, particularly since two of the participants were owners of Category A companies.

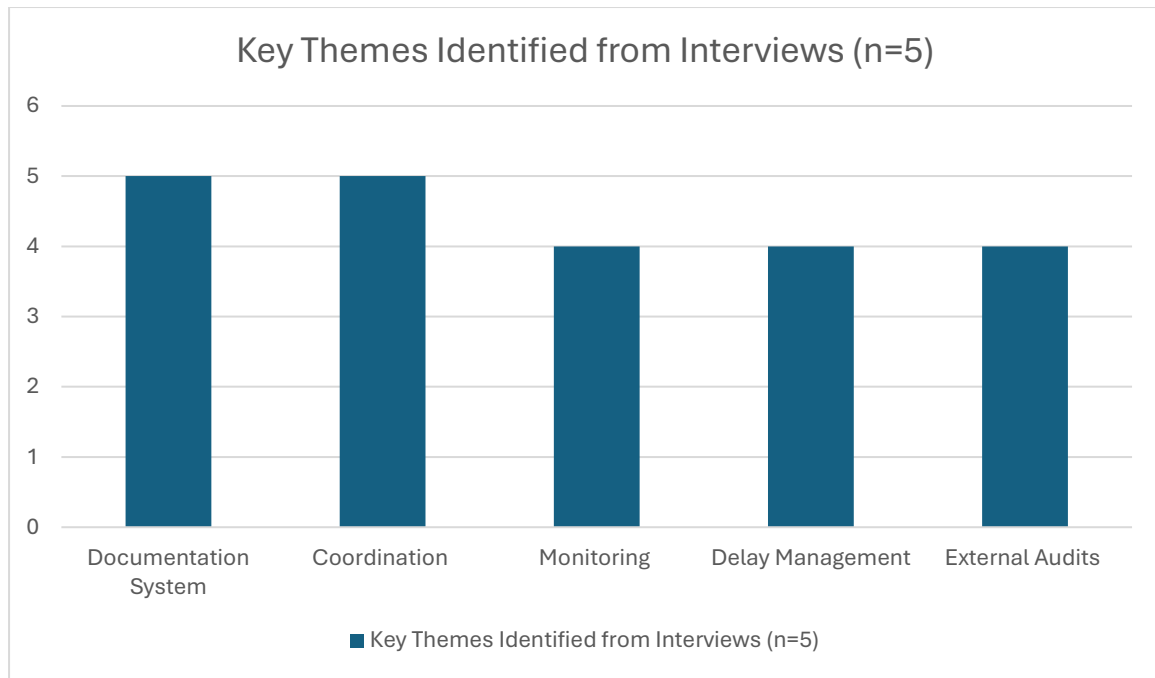


Figure 2. (Chart Showing Key Themes from Interviews) (Source: Author, 2026).

In general, the results indicate that ISO 9001 may help enhance the project delivery within the architectural companies by enhancing the internal structure, facilitating the clearer procedure, and reinforcing the follow-up procedures. The study is thus useful in bridging the gap that exists between professional regulation and quality management practice as well as demonstrating that architectural firms can play a significant role in alleviating project delivery issues as early as when a project is being developed.

5. Conclusion

5.1 Summary of Key Findings

This study investigated the possible application of ISO 9001 in architectural firms in Bahrain, with the focus on its role in reducing delays and improving project delivery. The findings suggest that the ISO 9001 simplifies the day-to-day running of operations, as it offers better documentation, clearer procedures, consistent monitoring, and better coordination.

The interviews also revealed that these practices assist architectural firms in ensuring that project delivery is enhanced and also in terms of dealing with delays more efficiently. Moreover, the respondents considered ISO 9001 to enhance the continuity of workflow, particularly during the occurrence of staff change, since information and processes are not lost since they are recorded and readily available.

5.2 Implications of the Findings

The findings indicate that with proper mechanisms of quality management in place, professional practices in architectural firms in Bahrain can be enhanced successfully.

Whereas CRPEP offers a system of licensing and professional responsibility, ISO 9001 facilitates the internal system upon which day-to-day project management is based. That is, quality management has the ability to supplement professional regulation through better coordination, documentation, and follow-up practices. It is also revealed in the study that ISO 9001 can positively affect client trust and professional reputation, as well as help to deliver projects in a more reliable manner.

5.3 Limitations of the Study

The current study is limited by the use of a limited sample of interviews, and it is only using five ISO-certified architectural companies out of eight that are operating in Bahrain. Although the part of including two participants who owned (Category A) firms was a great insight, the sample size is small. Moreover, the study was only restricted to the certified firms, hence eliminating the possibility of a direct comparative study with their non-certified counterparts. As a result, the findings of the study can be referred to as primary and specific to the context that is under study.

5.4 Recommendations for Future Research

Further studies can increase the sample size of architectural firms in Bahrain by comparing the architectural firms that are ISO-certified and the firms that are not. The role of quality management in deliveries of the project would be better understood through the lens of the opinions of the clients, contractors, and regulatory authorities. In addition, it might be

examined in the future to determine whether enhanced interconnection between formal quality management frameworks and professional regulatory frameworks would enhance project delivery within the construction industry.

Acknowledgements

The author wishes to acknowledge the time, cooperation, and valuable professional observations of the interview participants as valuable contributors to this study. This research was conducted as part of the Professional Practice course within the Master of Architecture program at the University of Bahrain. Special thanks are extended to Prof. Islam Elghonaimy for his support and guidance.

Funding

This study was not granted any particular grant by any funding organization in the public, commercial, or not-for-profit sector.

Conflicts of Interest

The author declares no conflict of interest.

Data Availability Statement

The anonymous interview transcripts can be accessed by the respective author upon reasonable request.

References

- Akhund, M. A., Khahro, S. H., Ali, T. H., & Memon, N. A. (2017). *ISO 9001:2008: A factorial analysis of its advantages and implementation for construction firms. International Journal of Civil Engineering and Technology*, 8(6), 969–976.
- Alali, F., Suliman, S., & Al-Shafie, K. (2022). An investigation into the delay factors affecting the construction projects in the petrochemical industries in Bahrain. *International Journal of Construction Engineering and Management*, 11(1), 21–29. <https://doi.org/10.5923/j.ijcem.20221101.03>
- Boiral, O. (2012). ISO 9000 and organizational effectiveness: A systematic review. *Quality Management Journal*, 19(3), 16–37. <https://doi.org/10.1080/10686967.2012.11918071>
- Budayan, C., & Okudan, O. (2022). Roadmap for the implementation of total quality management (TQM) in ISO 9001-certified construction companies: Evidence from Turkey. *Ain Shams Engineering Journal*, 13(6), 101788. <https://doi.org/10.1016/j.asej.2022.101788>
- El-Dash, K. M., Ramadan, O. M., & Youssef, W. M. (2019). Duration prediction models for construction projects in Middle East. *Engineering, Technology & Applied Science Research*, 9(2), 3924–3932. <https://doi.org/10.48084/etasr.2531>
- Hoonakker, P., Carayon, P., & Loushine, T. (2010). Barriers and benefits of quality management in the construction industry: An empirical study. *Total Quality Management & Business Excellence*, 21(9), 953–969. <https://doi.org/10.1080/14783363.2010.487673>
- Johny, J., Jasson, B., & Job, S. (2024). The effect of design and construction integration on project delays in Bahrain. In A. Hamdan & A. Harraf (Eds.), *Business development via AI and digitalization* (Studies in Systems, Decision and Control, Vol. 538). Springer. https://doi.org/10.1007/978-3-031-62102-4_65
- Martínez-Costa, M., & Martínez-Lorente, A. R. (2007). A triple analysis of ISO 9000 effects on company performance. *International Journal of Productivity and Performance Management*, 56(5/6), 484–499. <https://doi.org/10.1108/17410400710757150>
- Neyestani, B. (2016). Impact of ISO 9001 certification on the projects' success of large-scale (AAA) construction firms in the Philippines. *International Research Journal of Management, IT and Social Sciences*, 3(11), 35–45. <https://doi.org/10.21744/irjmis.v3i11.305>
- Ngwenya, L., & Du Plessis, T. (2025). A knowledge management implementation strategy for architectural firms in Gauteng, South Africa. *South African Journal of Information Management*, 27(1). <https://doi.org/10.4102/sajim.v27i1.2034>
- Salgado, M. S. (2010). *Quality management system applied to architecture offices: Report on a Brazilian experience in the city of Rio de Janeiro*. Paper presented at the CIB W070 International Conference in Facilities Management, São Paulo, Brazil.
- Salgado, M. S. (2011). *Implementation of quality management system on architecture offices as a requirement for sustainable design*. Paper presented at the CIB W096 2011 - Architectural Management in the Digital Arena, Vienna, Austria.
- Senouci, A., Ismail, A., & Eldin, N. (2016). Time delay and cost overrun in Qatari public construction projects. *Procedia Engineering*, 164, 368–375. <https://doi.org/10.1016/j.proeng.2016.11.632>
- Tari, J. J., Molina-Azorín, J. F., & Heras, I. (2012). Benefits of the ISO 9001 and ISO 14001 standards: A literature review. *Journal of Industrial Engineering and Management*, 5(2). <https://doi.org/10.3926/jiem.488>
- Tzelepis, D., Tsekouras, K., Skuras, D., & Dimara, E. (2006). The effects of ISO 9001 on firms' productive efficiency. *International Journal of Operations & Production Management*, 26(10), 1146–1165. <https://doi.org/10.1108/01443570610691111>

- Ullah, K., Khan, M. S., Lakhari, M. T., Vighio, A. A., & Sohu, S. (2018). Ranking of effects of construction delay: Evidence from Malaysian building projects. *Journal of Applied Engineering Sciences*, 8(1), 79–84. <https://doi.org/10.2478/jaes-2018-0011>
- Yap, J. B. H., Lim, B. L., & Skitmore, M. (2022). Capitalising knowledge management (KM) for improving project delivery in construction. *Ain Shams Engineering Journal*, 13(6), 101790. <https://doi.org/10.1016/j.asej.2022.101790>
- Zoghlami, R. (2024). Process for implementing a quality management system (QMS) adapted to architectural practices in Tunisia, in the case of ISO 9001. *Qeios*. <https://doi.org/10.32388/3YM24V>