



ICCAUA Proceedings Journal

Proceedings of the international conference of contemporary affairs in architecture and urbanism-ICCAUA
Volume 9 (December 2026), 2610029

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

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

DOI: <https://doi.org/10.38027/ICCAUA2026EN0029>

Ethics and Professional Practice: Post-Occupancy Accountability in Healthcare Architecture

Mashaël Hisham AlDoy

Department of Architecture and Interior Design, College of Engineering, University of Bahrain, Zallaq, Kingdom of Bahrain

E-mail: 20180439@stu.uob.edu.bh

ORCID: <https://orcid.org/0009-0002-1416-5730>

Abstract

Received: 21.04.2026
Revised: 21.06.2026
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.

This research examines the ethical obligations of architects after project handover, using the Post-Occupancy Evaluation (POE) model in healthcare architecture in Bahrain. Although sustainable and user-centred design is being prioritized globally, Bahraini projects do not have formal POE mechanisms. The study examines 2 healthcare cases (the Salmaniya Medical Complex (SMC), Bahrain, and Maggie's Cancer Care Centres, UK), using a qualitative comparative approach. The results are complemented by interviews with 6 local professionals in the field. The study indicates a notable discrepancy between the local practice and the international standards, such as AIA and RIBA. The research emphasizes the mandatory status of POE and how it should be taken as an architectural policy in Bahrain to promote accountability in the lifecycle of the building, increase the performance of the buildings, and maintain professional ethics in the profession.

Keywords: Post-Occupancy Evaluation; Architectural Ethics; Accountability; Bahrain; Sustainable Practice; Building Performance; Healthcare Architecture.

1. Introduction

There is a growing recognition of the role of the architect beyond the production of design and the handover of the project. Architects today are expected to factor in how buildings will function once they are occupied, focusing on such aspects as user health and comfort, building efficiency, environmental impact, and adaptability. In the healthcare sector, spatial quality, circulation, comfort, accessibility, and maintenance are critical elements that can directly affect patients, staff, and visitors, underscoring the importance of this responsibility in healthcare architecture (Chen et al., 2024; Goulart & Ono, 2022; Jaušovec & Gabrovec, 2023). The integrity of the design professional and the integrity of the building is not limited to the intent, or to the contractual delivery of the design, but also entails assessing the capacity of the design to continue to serve its users well. Post-occupancy evaluation (POE) offers a practical way of connecting the design intentions and actual building performance (Day et al., 2020). It gives architects, clients, and facility managers an opportunity to evaluate the building's performance once it is occupied, to understand its differences between its expected and actual use, and to learn from the experience and incorporate that knowledge into their future projects (Elsayed et al., 2023). This post-handover phase is recognized as a crucial phase in responsible architectural practice in the growing number of international professional frameworks. The post-handover phase is increasingly acknowledged by international professional frameworks as an integral part of responsible architectural practice. For example, the AIA professional guidance focuses on the architect's role in helping to create serviceable and effective buildings, and RIBA Stage 7, "In Use", stresses the need for feedback, monitoring and learning following occupation. Thus, in this study, POE is not just a technical evaluation process, but also an ethical process in which the architect can still be held accountable to the building user and to society in general.

Although the global exposure of POE has been rising, there is still limited use of the technology in many countries around the Gulf Cooperation Council (GCC), including Bahrain. The built environment has expanded in size and complexity, yet post-handover evaluation is not commonly included in architectural contracts, professional codes, or public sector procurement processes. This leaves a gap between expectations for design and life cycle responsibility. The situation is especially critical in the healthcare sector in Bahrain, where sub-optimal spatial performance, lack of feedback on maintenance performance, or insufficient user involvement can have a negative impact on safe, comfortable, and efficient operation of healthcare buildings. This research aims at bridging this gap by exploring the issue of POE as an ethical duty in the Bahraini healthcare structure. The originality is its integration of three aspects of architectural discussion that are normally isolated: architectural ethics, post-occupancy building performance, and healthcare design accountability. The study is based on a comparison of the Salmaniya Medical Complex in Bahrain and Maggie's Cancer Care Centres in the United Kingdom, and a consideration of

the perspectives of Bahraini professionals, to build an argument that makes sense of the possibility of incorporating POE into local architectural policy and professional practice.

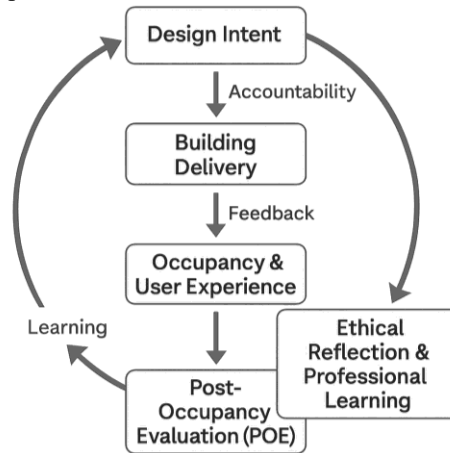


Figure 1. Comparative overview of POE integration in Bahrain and international best-practice frameworks (RIBA, LEED).

1.1 Background and Context

Various professional organizations and scholars have emphasized the value of POE in architecture (Boissonneault & Peters, 2023; Preiser et al., 2019). In Stage 7: In Use the Royal Institute of British Architects (RIBA, 2020) classifies long-term monitoring, client feedback, and operational performance as key elements in the building lifecycle. Likewise, post-occupancy performance is acknowledged in the LEED v4 Building Design and Construction Guide (USGBC, 2021) to substantiate environmental claims and to support lifecycle sustainability. These arrangements put POE in the place of a procedural and ethical aspect of the architecture practice. Educators also emphasized the ethical dimension of POE. Focusing on design without considering users' feedback runs the risk of an architecture being disconnected from its real-life consequences (Brown, 2018), and POE can help bridge the gap between design and user experience (Watson, Hay, and Samuel, 2018). The perspectives break away from the conventional boundaries of the architectural responsibility and underscore the necessity of post-handover assessment. However, this change in ethics has not yet fully taken root in Bahrain. Many projects target green certification, functional efficiency, or otherwise, but few projects include post-handover appraisal. Consequently, the longer-term building performance, user satisfaction, and feedback from building operations are seldom recorded in the professional process.

1.2 Problem Statement and Research Gap

While Bahrain strives to transform to a sustainable and intelligent city, the existing architectural practice still lacks a clear system for post-occupancy accountability as illustrated in Figure 2 (Akram et al., 2024; Elghonaimy, 2019; Omar, 2018, 2020). The Bahrain Society of Engineers (2021) indicates that most construction projects do not include formal POE protocols. Likewise, the Middle East Green Design Council (2023) revealed that only 6.7% of the Bahrain businesses carry out POE and 74% do not involve POE in their contracts. This lack goes beyond a technical deficiency, it is a lack in ethics, institutional policy, and professional accountability.

Additional statistics reveal that 83% of architecture companies in Bahrain see low client interest as one of the challenges to (POE) and 68% have not yet received formal training in conducting POE. Furthermore, 59% have not heard of international (POE) standards such as LEED v4 and RIBA Plan of Work Stage 7. The results showed a structural deficiency of lifecycle accountability, which would impact building performance, safety of the users and adaptability of the buildings in Bahrain's architectural practice. Eldardiry et al. (2025) reports that Bahrain's architectural profession suffers from a lack of accountability measures, leading to ethical issues in the industry. If buildings are not performing their intended functions, they are consuming more energy, not meeting the needs of users, and are not contributing to sustainability goals, without POE. Zallio and Clarkson (2022) further state that the lack of feedback after the event can contribute to design blindness and to users' disadvantage. The issue extends beyond technical and contractual concerns; it also raises ethical questions.

1.3 Objectives of the Study

Therefore, the objectives of this paper are to explore and discuss the ethical lapse of professional responsibility in Bahraini architecture practice as follows:

- To critically assess the ethical underpinnings of post-occupancy evaluation as advanced in international professional systems, including those by the AIA, RIBA, and LEED. This involves the realization of how POE can be used as an instrument of professional responsibility, social trust, as well as lifecycle thinking in architecture.
- To conduct a comparative analysis of a regional and a single international case study of architecture, exploring how POE has been applied, institutionalized, or opposed in practice. The analysis will help reveal the ethical, operational, and policy-based aspects underlying the formation of the post-occupancy accountability in multiple cultural and regulatory settings.
- To assess Bahraini practitioners through interviewing professionals, with the goal of determining barriers, attitudes, and opportunities associated with POE adoption. This goal contributes to the elaboration of the context-specific ethical framework of incorporating POE into the architectural practice in Bahrain following the global standards yet based on the local realities.

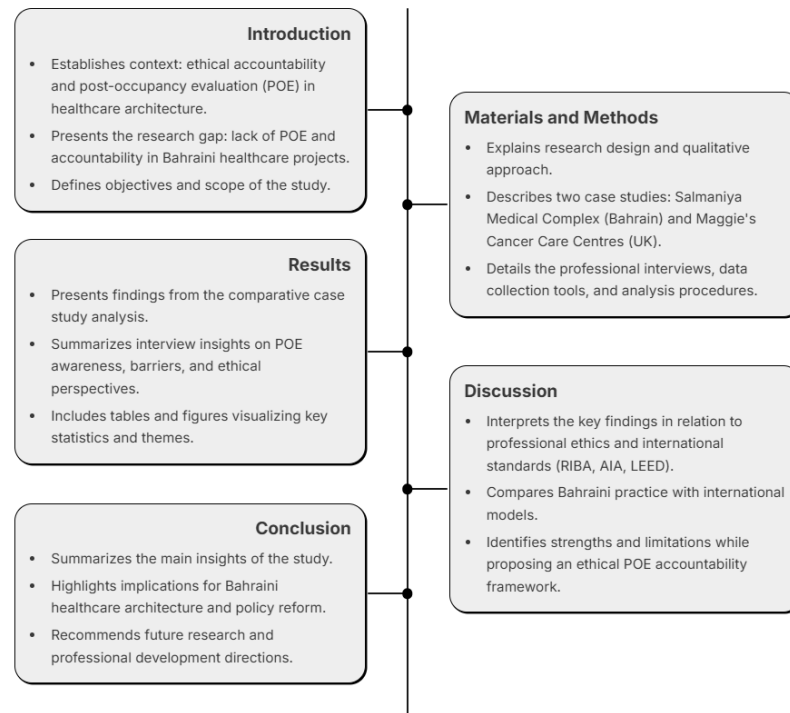


Figure 2. A flowchart illustrates the structure of the paper, showing the progression from the study's introduction and methodology through to results, discussion, and conclusions (Source: Author, 2025).

1.4 Significance and Structure of the Paper

This paper contributes to the emerging field of architectural ethics by highlighting POE as a professional and ethical duty in healthcare architecture. Design has a profound impact on patient care and efficiency in hospitals and other healthcare facilities, making the lack of POE a technical and ethical deficiency. The study examines the Salmaniya Medical Complex (SMC) in Bahrain and Maggie's Cancer Care Centres in the United Kingdom and examines how one might learn from the international models of accountability to inform a context-relevant model in Bahrain. The paper combines professional insights and international guidelines, including RIBA, AIA, and LEED, to suggest realistic approaches for integrating POE into architectural practice and policy. The structure of the paper, as shown in Figure 2, is as follows: Section 2 describes the research methodology; Section 3 presents the main results from the case studies and interviews; Section 4 discusses the ethical implications and proposes a POE accountability framework for Bahrain; and Section 5 concludes the paper with policy and professional recommendations to help align local practice with international standards.

2. Materials and Methods

2.1 Study Design and Setting

This research uses a qualitative comparative case-study approach with a semi-structured interview technique. It investigates the ethical concerns of POE in healthcare architecture in two contrasting case studies: Salmaniya Medical Complex (SMC) in Bahrain and Maggie's Cancer Care Centres in the United Kingdom. The cases were selected based on their diverse approaches to achieving post-occupancy accountability. The SMC case reflects a local healthcare context where POE is not formally institutionalized. On the other hand, Maggie's Cancer Centres displays a building project that internationally integrates user feedback and building performance evaluation into the architectural lifecycle.

SMC is one of Bahrain's primary public health care providers and it is used to show the implications of inadequate post-occupancy feedback in local practice. The hospital has faced various operational and maintenance issues, such as reports of ceiling collapse, inadequate wayfinding, and frequent parking problems (News of Bahrain, 2023), since its construction in 1978. The challenges highlight the necessity of structured feedback mechanisms that connect building usage, user experience, and professional accountability after handover.

On the other hand, Maggie's Cancer Care Centers in the UK is one of the healthcare design models that systematically incorporates POE into the architectural lifecycle. The measurement of environmental comfort, spatial quality, and user satisfaction is performed in each center through assessments developed by the University of Sheffield and based on the results, new projects will be informed (Watson et al., 2018). This institutionalized strategy demonstrates that POE can also serve as a moral code, meaning healthcare design will be responsive, transparent, and user centered. In these two opposing contexts, POE play a vital role in advancing professional ethics, improving healthcare settings, and enhancing accountability within architectural practice (Akram et al., 2024; Eldardiry et al., 2024).

2.2 Participants or Subjects

This research used two healthcare architecture case studies and a sample of professional participants who presented qualitative information about POE practices. The SMC in Bahrain reflected the situation of the POE not being institutionalized in the region. The second example, Maggie's Cancer Care Centers in the United Kingdom, illustrates a well-developed, ethically ingrained (POE) system within the healthcare architecture. In addition to such case studies, the study involved 6 Bahraini professionals who worked directly on a public-sector or healthcare project. The participants were three practicing architects,

two engineers, and one regulatory officer. Purposive sampling was utilized to select the professionals, ensuring proper expertise in design, construction, and performance evaluation. All professionals had at least 8 years of experience in the profession and were registered with an established professional organization, such as the Bahrain Society of Engineers or the Council of Regulation of the Practice of Engineering Professions.

Each participant signed an informed consent form before data collection. These views were obtained using semi-structured interviews that aimed to understand the awareness, attitudes, and obstacles to the implementation of (POE) in Bahrain. The incorporation of these expert voices enabled the research to examine the institutional and personal considerations of the ethical obligations of architects and engineers upon project completion.

2.3 Materials and Equipment

To gather the data required for this study, both secondary and primary sources were used, and there was the possibility of extensive cross-verification of information in documents and with the expertise of professionals. In the case of the (SMC), the sources used to retrieve the information were publicly available material, such as local news reports (News of Bahrain, 2023), maintenance bulletins released by the Ministry of Health, and the records of civic feedback. These records described the recurring facility problems and the community response and served as empirical evidence for assessing the lack of post-occupancy responsibility in the healthcare sector in Bahrain.

In the case of Maggie's Cancer Care Centers, the published (POE) studies were consulted, including the Building Performance Evaluation Program at the University of Sheffield, as well as the literature on user experience and spatial well-being analysis (Watson et al., 2018). These sources offered reliable and measurable data on (POE) implementation and how the same helps to enhance design quality and ethical practice.

Semi-structured interviews with six Bahraini professionals were used as primary data. Face-to-face interviews were conducted via video conferencing, depending on participants' availability. An interview guide, as illustrated in Table 1, was used to ensure consistency, and all sessions were audio-recorded with participants' consent. Transcriptions were done word-for-word to remain accurate and reliable in future analysis.

2.4 Procedures and Protocols

The research was conducted using a systematic but adaptable qualitative methodology aimed at achieving methodological rigor and ethical standards. The 2 case studies were evaluated using documentary and content analysis, which addresses post-occupancy performance, user satisfaction, and professional accountability. In both projects, some data were systematically revised to determine the effects of the existence or absence of (POE) on long-term building outcomes. The (SMC) case was discussed due to the tracking of the outcomes of lacking feedback mechanisms, whereas the case of Maggie's Cancer Care Centers exemplified the operational advantage of institutionalized (POE) in healthcare design. The semi-structured interviews were conducted using a standardized protocol to ensure consistent, comparable responses. The interview guide contained open-ended questions that discussed four main themes:

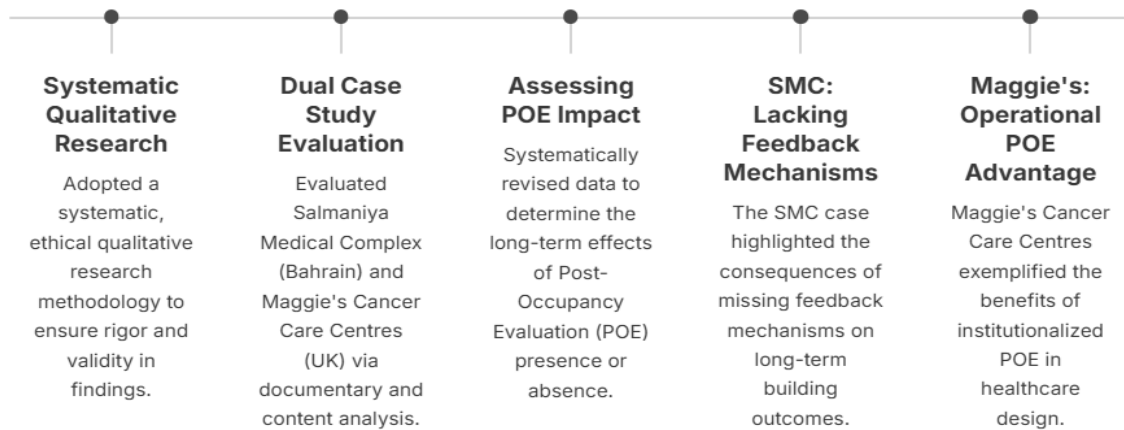


Figure 4. Linear process of the procedures and protocols of (POE) through illustrating the systematic qualitative approach adopted in this study (Source: Author, 2025).

Table 1: Structure and Thematic Focus of the Semi-Structured Interview Protocol.

Theme No.	Interview Focus Area	Purpose / Description
1	Awareness and understanding of POE	To assess participants' familiarity with POE concepts, methods, and their relevance to architectural practice in Bahrain.
2	Perceived Barriers to Implementing POE in Healthcare Projects	To identify cultural, institutional, financial, and regulatory challenges limiting the adoption of POE in Bahrain's healthcare sector.
3	Ethical Perspectives on Post-Handover Professional Responsibility	To explore how professionals perceive their moral and professional obligations after project completion, and how these relate to user well-being.
4	Recommendations for Integrating POE into National Policies and Standards	To gather insights on strategies for embedding POE into Bahrain's architectural codes, regulatory frameworks, and professional development programs.

The interviews lasted 30 to 45 minutes and were held in a confidential environment, either face-to-face or via secure online systems. The ethics of data collection were followed, and informed consent was obtained before the study. To ensure the privacy of participants and reliability of the data, the transcripts were anonymized and coded to analyze.

2.5 Data Analysis

A qualitative thematic method was used to analyze the data, combining information from the case studies and semi-structured interviews. The aim was to establish common themes that would connect POE practices to ethical accountability and performance outcomes in healthcare architecture (Leitner & Santos, 2022). In the case studies, a comparative content analysis of the relationships among design intent, operational outcomes, and ethical responsibility was conducted. The SMC data was coded to determine the patterns of post-occupancy failure, reactive maintenance, and the lack of feedback mechanisms. However, the Maggie Cancer Care Centers' data was evaluated against the evidence of proactive evaluation, design improvement or refinement, and user-centered ethical practice. The two contexts were compared using key themes such as accountability, feedback integration, and ethical performance.

The analysis of interview transcripts was conducted using open and axial codes within a grounded theory framework. The first assignments of codes were given to recurring schemes such as awareness, barriers, and ethical attitudes, which were then grouped into larger categories. Data management and thematic organization were supported by using Microsoft Excel. Then, the triangulation analysis was performed, comparing the interview results with those of the case studies to warrant analytical validity. Such a process has helped identify similar and different views, and the mechanisms by which POE serve as a professional ethics measure across healthcare settings (Table 2).

Table 2: Summary of Methodology and Its Implementation Across the Project Life Cycle.

Project Life Cycle Stage	Equivalent RIBA Stage	Methodological Focus in This Study	Data Source / Method Used	Intended Outcome / Ethical Relevance
Concept and Design Development	Stages 1–3 (Preparation, Concept, Developed Design)	Review of early design intent and ethical considerations in healthcare architecture.	Secondary analysis of architectural documentation, academic literature, and project archives.	Establish ethical baseline; identify design decisions impacting long-term user well-being.
Technical Design and Construction	Stages 4–5 (Technical Design, Construction)	Examination of professional responsibility during delivery and material execution.	Case study documentation (Salmaniya and Maggie's), project reports, and institutional frameworks (AIA, RIBA).	Assess compliance with professional ethics; evaluate transparency and communication in design delivery.
Handover and Occupation	Stage 6 (Handover)	Identification of transition challenges between design completion and operational use.	Ministry of Health reports, facility management data, stakeholder interviews.	Reveal gaps in accountability during project handover; evaluate how feedback mechanisms are not established.
Post-Occupancy and In-Use Evaluation	Stage 7 (In Use)	Comparative evaluation of how POE is (or is not) implemented in healthcare buildings.	Case studies: Salmaniya Medical Complex (no POE) and Maggie's Centres (structured POE); professional interviews.	Highlight the ethical importance of continuous feedback, transparency, and user-centered improvement.
Professional Reflection and Policy Integration	Cross-stage (Ethical Review and Knowledge Transfer)	Integration of insights from professionals to propose accountability frameworks for Bahrain.	Semi-structured interviews with six Bahraini professionals; thematic analysis.	Develop recommendations for embedding POE and ethics into Bahrain's architectural practice and policy.

3. Results

3.1 Presentation of Key Findings

The findings in this research are derived from 2 complementary sources: comparative case study analysis and semi-structured professional interviews. Collectively, these data sets give a comprehensive picture of the conceptualization and practice of ethical accountability and POE as applied in healthcare architecture. Salmaniya Medical Complex in Bahrain and Maggie Cancer Care Centers in the United Kingdom are case studies used to compare the results of absent versus embedded POE practices. These observations have been complemented by the views of Bahraini architects, engineers, and health practitioners, whose opinions indicate the ethical, institutional, and cultural impediments that influence the prevailing professional responsibility state in Bahrain. By combining the 2 types of data, it is possible to triangulate on how architectural ethics are applied beyond the end of the project, focusing on the connections among design intent, building performance, and user well-being.

3.1.1 Case Study Findings

The comparative analysis of the 2 healthcare case studies, Salmaniya Medical Complex (SMC) in Bahrain and Maggie's Cancer Care Centres in the United Kingdom, demonstrates distinct differences in accountability after occupation and in ethical practice. As seen in Figure 5 and Table 3, they all play vital roles in healthcare, but across varying professional and institutional settings. Founded in 1978 and operating through 2022, SMC is the primary state hospital in Bahrain, yet it still experiences chronic POE problems, including ineffective circulation and inadequate ventilation, as well as structural deterioration, including a ceiling collapse in 2019 (News of Bahrain, 2023). Regardless of these concerns, no structured POE has been

applied. According to the Bahrain Society of Engineers (2021) and the Middle East Green Design Council (2023), less than 10% of companies perform POE, and most cite budget constraints and client resistance as reasons. Professionally, this is an indication of systemic failure to uphold ethical responsibility. According to Eldardiry et al. (2025), the lack of POE requirements in the architectural codes of Bahrain reinforces a culture of design-and-disengage where the responsibility of the architect ends with the completion of the project, and where global standards, such as AIA (2014) and RIBA (2020) view performance verification as an ongoing obligation.

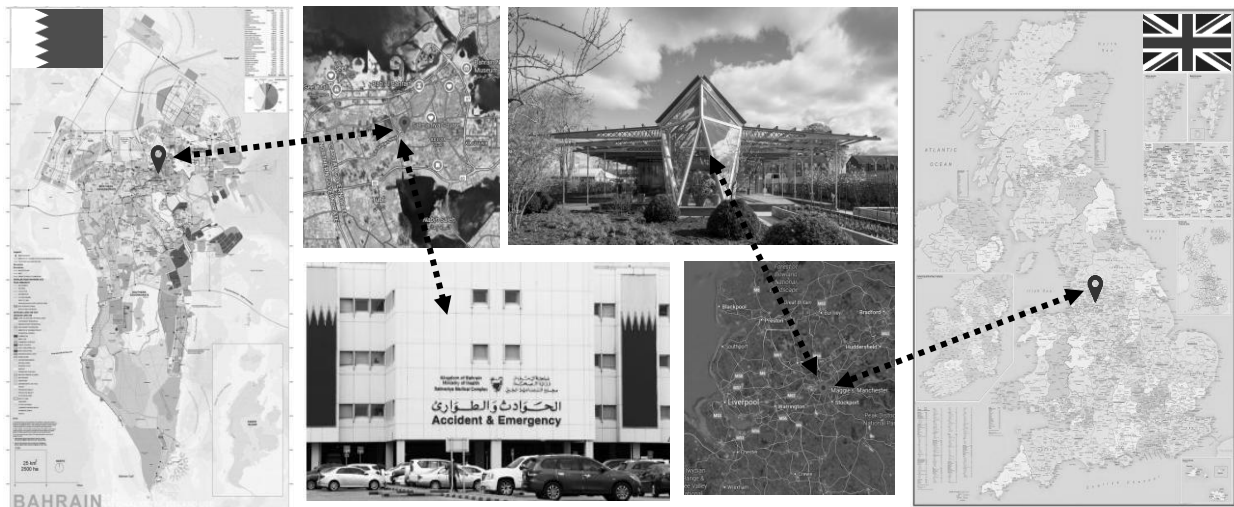


Figure 5. Macro and Micro level of Salmaniya Medical Complex in Bahrain and Maggie's Cancer Care Centres in the United Kingdom (Source: Data compiled from News of Bahrain, 2023; RIBA, 2020; and Watson and Samuel, 2019).

On the other hand, Maggie Centers can be considered a proactive approach to architecture in which POE is a part of the architectural lifecycle. These centers are designed by reputable architects such as Foster and Partners and Wilkinson Eyre and are subject to regular POE by the Building Performance Evaluation Program at the University of Sheffield, which measures spatial comfort, lighting, and user well-being (Watson and Samuel, 2019; Samuel, 2018). This practice will conform to RIBA Stage 7 In Use, LEED v4 performance framework (RIBA, 2020; USGBC, 2021), and make feedback an ethical tool, enhancing transparency and empathy. The introduction of (POE) into institutional policy makes accountability a lifelong professional responsibility of Maggie Centers (Brown, 2018; Zallio & Clarkson, 2022).

The two cases represent contrasting paradigms: SMC represents a reactive approach, in which ethical responsibility ends when handover is completed, whereas Maggie Centers is a reflective approach, in which post-occupancy review exemplifies ethical, functional, and human-centered excellence (Table 4).

Table 3. Comparative Analysis of Regional and International Healthcare Case Studies.

Dimension	Salmaniya Medical Complex (SMC) (Bahrain)	Maggie's Cancer Care Centers (United Kingdom)
Project Type	Public healthcare facility	Network of cancer care and support centers
Year of Completion / Renovation	Originally in 1978, with expansions up to 2022	Established 1996–present, ongoing new centers
Post-Occupancy Evaluation (POE)	No formal POE conducted (News of Bahrain, 2023)	Formal POE conducted for each center by the University of Sheffield's Building Performance Evaluation Program (Watson et al., 2018)
Post-Occupancy Issues	Ceiling collapse, poor ventilation, parking shortages, and accessibility concerns (News of Bahrain, 2023)	High user satisfaction; feedback-driven improvements to lighting, acoustics, and spatial comfort (Watson et al., 2018)
User Feedback Mechanisms	Informal complaints via media and public forums; no official system (Eldardiry et al., 2025; Bahrain Society of Engineers, 2021)	Structured POE using surveys, interviews, and environmental monitoring (Watson et al., 2018)
Ethical Oversight in Lifecycle	No institutional mechanism for post-handover responsibility (Middle East Green Design Council, 2023)	Embedded ethical framework linking architecture to user well-being and continuous learning (Watson et al., 2018; RIBA, 2020)
Institutional Frameworks Used	None	RIBA Plan of Work, Building Performance Evaluation Program, Maggie's internal feedback model (RIBA, 2020; Watson and Samuel, 2019)
Operational Adaptations	Reactive corrections only after public criticism (News of Bahrain, 2023)	Proactive design refinements informed by regular POE cycles (Watson et al., 2018)
Cultural Response to POE	Viewed as optional and unsupported by local regulation (Eldardiry et al., 2025; Bahrain Society of Engineers, 2021)	Institutionalized as an ethical and professional norm (Watson et al., 2018)
Implications for Ethics	Demonstrates a systemic gap in lifecycle accountability and user-centered ethics	Exemplifies POE as an ethical practice ensuring empathy, accountability, and evidence-based design (Watson and Samuel, 2019; Brown, 2018)

Table 4. Breakdown of Each Dimension and Its Source Alignment.

Dimension in Table	Derived From	Framework / Source	Purpose in POE Context
Project Type	Contextual descriptor	RIBA and AIA project typologies	Defines the building's function and sector.
Year of Completion / Renovation	Standard building lifecycle data	RIBA Stage 0–7 framework	Establishes a temporal context for assessing occupancy period and updates.
Post-Occupancy Evaluation (POE)	Core concept	RIBA Stage 7 “In Use”; AIA POE Protocol	Identifies whether a formal evaluation process was conducted.
Post-Occupancy Issues	Performance outcomes	AIA POE Checklist; Brown (2018)	Captures observed building performance and user experience problems.
User Feedback Mechanisms	User engagement practices	AIA (2014) Ch. 76; Watson et al. (2018)	Evaluates the presence and structure of formal or informal feedback systems.
Ethical Oversight in Lifecycle	Professional accountability	RIBA “Code of Professional Conduct” (2020); AIA “Ethical Standards 3.1”	Examine the extent to which ethical responsibility continues post-handover.
Institutional Frameworks Used	Policy / procedural guidance	RIBA Plan of Work; BREEAM; LEED; AIA Practice Handbook	Identifies any institutional standards guiding POE implementation.
Operational Adaptations	Building performance management	RIBA Stage 7 feedback loop; USGBC Continuous Improvement Model	Evaluates whether feedback resulted in proactive or reactive changes.
Cultural Response to (POE)	Sociocultural context of practice	Brown (2018); Eldardiry et al. (2025)	Assesses how the local professional culture perceives or prioritizes POE.
Implications for Ethics	Theoretical synthesis	Derived from all frameworks above	Summarizes the moral and professional significance of findings.

3.1.2 Interview Findings

Six interviews with Bahraini professionals, including two architects, two engineers, and two healthcare practitioners, indicated a uniform understanding of POE as a useful process and a general divide between professional practice and ethical practice. While all respondents recognized the value of POE in principle, most of them stated that it is not followed in practice at all in Bahrain, and that it may be done depending on the willingness of clients, budgets, or pressure from external factors. The most significant challenges posed by architects and engineers were issues of cost, non-regulation, and client resistance. Engineers have stated that POE is not an obligatory national policy; thus, its application varies mostly reactively. Medical practitioners, in turn, highlighted the lack of feedback mechanisms, stating that their suggestions as users are rarely sought, despite their role in patient treatment. Responding to a question about how they share observations that impact patient care and the day at work, one nurse reported that there is no system to distribute them.

Nevertheless, participants in this field reached consensus that architects and engineers have an ethical duty to ensure that buildings remain functional as intended after handover, particularly in healthcare, where design directly influences safety and efficiency. Their perspectives are consistent with international practices, including the AIA (2014) and RIBA (2020) that present the post-handover review as a professional responsibility of the architect. The participants suggested implementing POE in project contracts and as part of the requirement in the public sector and connecting it with sustainability models like LEED or RIBA Stage 7. In response to the question of how to enhance healthcare facilities in the future, healthcare respondents proposed mandatory review processes a few months after opening, during which staff input can be collected to inform facility design.

In sum, the interviews highlight a powerful ethical consciousness but institutional inertia: although professionals acknowledge the moral necessity of POE, it cannot become routine within the Bahraini healthcare system due to a lack of policy, training, and enforcement.

3.2 Use of Tables and Figures

To enrich the qualitative results, a set of tables and figures was created to demonstrate the major trends of the case studies, as well as professional interviews. These illustrations summarize the evidence of post-occupancy accountability gaps in Bahrain and compare them with international best practices in healthcare architecture.

Table 5. Structure and Thematic Focus of the Semi-Structured Interview Protocol.

Theme No.	Interview Focus Area	Purpose / Description
1	Awareness and understanding of POE	To assess participants' familiarity with POE concepts and relevance to Bahraini architectural practice.
2	Barriers to Implementing POE in Healthcare Projects	To identify financial, institutional, and regulatory challenges hindering POE adoption.
3	Ethical Accountability After Handover	To explore how professionals perceive their post-completion moral and professional obligations.
4	Recommendations for Policy Integration	To collect strategies for embedding POE into Bahrain's national codes, regulatory frameworks, and education.

Table 5 presents the thematic organization of professional interviews, highlighting four key areas of inquiry: awareness of POE, barriers to implementation, ethical accountability, and policy recommendations. Direct evidence on practitioners' views

in the architecture, engineering, and healthcare fields was presented through representative quotes from participants. Figure 6 contrasts the stage of POE integration in the United Kingdom (RIBA Stage 7) and the United States (LEED v4) with that of Bahrain. The figure states that Bahrain has adopted POE protocols and training to a lower extent than available international guidelines (Bahrain Society of Engineers, 2021; RIBA, 2020; USGBC, 2021).

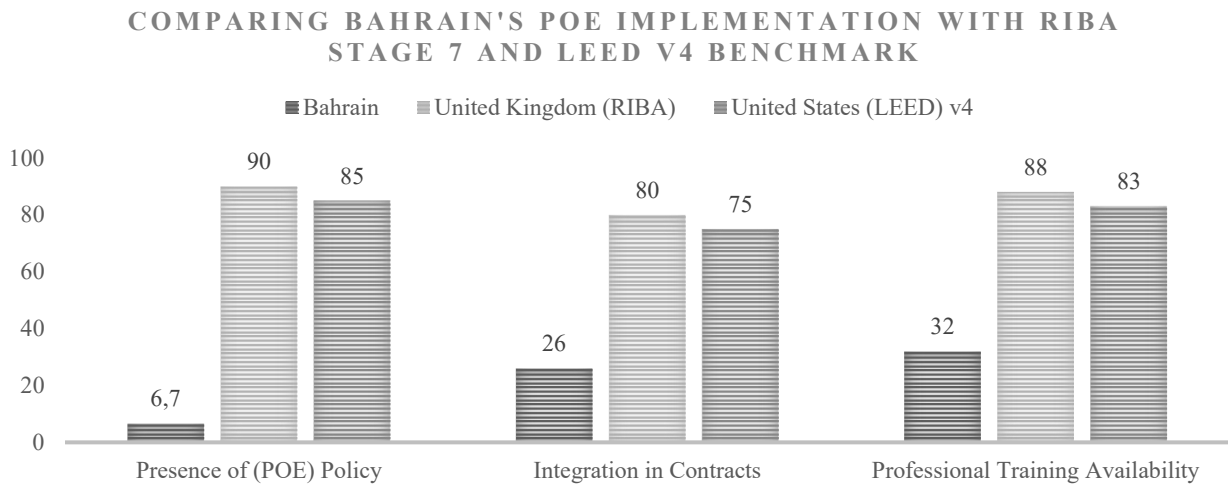


Figure 6. Comparative overview of POE integration in Bahrain and international best-practice frameworks (RIBA Stage 7 and LEED v4). Data compiled from *Bahrain Society of Engineers (2021)*; *Middle East Green Design Council (2023)*; *RIBA (2020)*; *USGBC (2021)*.

Figure 7 illustrates the feedback loop in architectural practice regarding ethics, showing how POE is embedded in the relationships among design intention, user experience, and professional reflection. This figure underscores the need for responsibility to extend beyond the end of the project, supporting the social and ethical aspects of architecture (AIA, 2014; Brown, 2018; Elghonaimy & Al-Haddad, 2018).

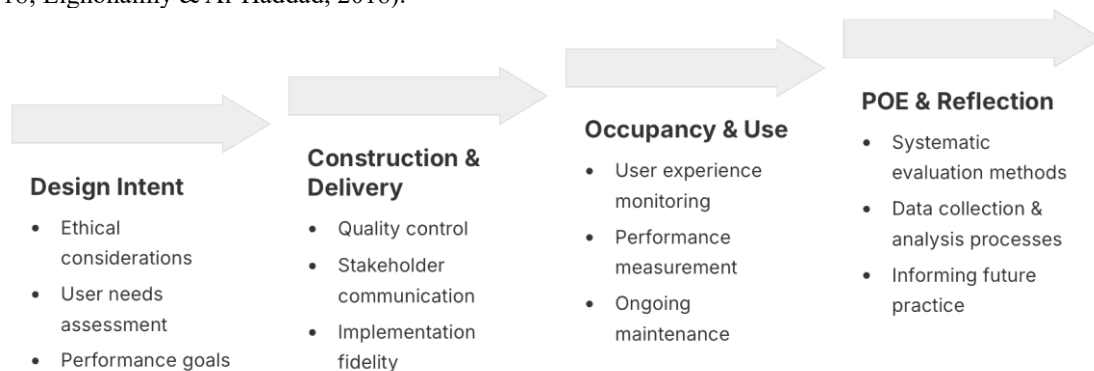


Figure 7. Conceptual model of the ethical feedback loops in architectural practice, illustrating how POE connects design intent, user experience, and professional reflection. (AIA, 2014; RIBA, 2020; Brown, 2018; Zallio & Clarkson, 2022; Castaño-Rosa & Nerweyi, 2025).

These tables and figures combine to explain the main finding of the study: although the ethical awareness of POE is present in the professional community in Bahrain, the institutional level of its implementation is also minimal, which implies the necessity of developing regulatory frameworks that would establish post-occupancy review as a common practice of ethical architectural work.

3.3 Statistical Analysis

This study adopts a qualitative approach however descriptive analysis was employed to describe the patterns that emerged from the six professional interviews and the secondary statistical data pertaining to POE in Bahrain. The analysis revealed a limited use of POE and a significant gap between the ethical awareness and institutional practice.

Most participants (100%) were aware of post-occupancy building performance POE. Additionally, 33% participated in either a formal or informal POE process. The perspectives of all respondents (6 out of 6) were in line with the notion that architects and engineers should have an ethical responsibility for the performance of built works beyond the period of handover, which is supported by international standards and frameworks, including the AIA (2014) and RIBA (2020). However, 83% identified client resistance and financial constraints as the key implementation challenges, with 67% saying it was due to regulatory non-compliance or government policy.

Healthcare professionals also reported that their organizations did not have common mechanisms for collecting feedback from users, with 100% saying that users' opinions are not gathered regularly after the building is occupied. This also correlates with broader industry data, indicating that 6.7% of Bahraini companies have formal POE protocols, while 74% do not include POE protocols in project contracts (Middle East Green Design Council, 2023).

Overall, the descriptive findings show that there is a large implementation gap with respect to awareness about POE among professionals, and that its use is low because of structural, cultural, and policy-related barriers. These trends highlight the need for institutional systems and regulatory POE review programs to further facilitate architectural responsibility in the healthcare sector in Bahrain (Table 6).

Table 6. Summary of Quantitative Insights from Professional Interviews.

Indicator	Value / Percentage	Interpretation
Awareness of POE Concept	100%	High awareness across all professions
Participation in POE Practices	33%	Limited engagement in evaluation activities
Belief in Ethical Accountability Post-Handover	100%	Consensus on professional responsibility
Barriers: Cost & Client Reluctance	83%	Financial and attitudinal constraints most common
Barriers: Lack of Policy or Regulation	67%	Need for institutional enforcement
Presence of Staff Feedback Mechanisms (Healthcare)	0%	Absence of structured user feedback
Firms Conducting POE in Bahrain	6.7%	Extremely low industry implementation
Firms Without POE in Contracts	74%	POE excluded from most project agreements

Data compiled from author interviews (2025) and secondary reports: Bahrain Society of Engineers (2021); Middle East Green Design Council (2023).

3.4 Subsections for Different Types of Data

The comparative case study analysis and professional interviews are two major data sources used in this research. These sources, combined, offer further perspective on the ethical and institutional questions of POE in the realm of healthcare-related architecture. The results indicate that professionals recognize ethical responsibility but has not been widely applied in architectural practice in Bahrain.

3.4.1 Case Study Data

The comparative case studies of Salmaniya Medical Complex in Bahrain and Maggie’s Cancer Care Centres in the United Kingdom illustrate contrasting paradigms of ethics and professional accountability. However, in Bahrain, POE issues have persisted at SMC without a formal feedback and follow-up mechanism such as inefficiency in circulation, discomfort in the environment and risk in maintenance (News of Bahrain, 2023). This is a reactive process, and the design is handed over at the end of the project. Maggie’s Centres, on the other hand, embody an institutional culture of constant review, wherein architects continuously interact with users to evaluate building performance, as integral to the professional responsibility for users (Watson & Samuel, 2019; Samuel, 2018). The contrast between the two cases reinforces the significance of POE as both a technical and ethical link between design intent and lived experience.

3.4.2 Interview Data

The results were corroborated by the six professional interviews which showed good theoretical acceptance but limited practical implementation of the ethical principle of post-handover accountability. All respondents acknowledged POE as a useful tool, but few had seen it applied in their professional practice. Financial issues, resistance by clients and the absence of regulation were the most frequently mentioned obstacles. Healthcare professionals also mentioned the lack of user feedback mechanisms, particularly in the design assessment when staff experiences are seldom taken into consideration. These observations indicate a shared professional awareness of ethical responsibility, but also institutional inertia that prevents POE from being integrated into standard architectural practice in Bahrain.

3.4.3 Cross-Analysis of Findings

When combining the two sources the results show one thing: Architectural practice in Bahrain has a prominent level of ethical awareness and a low level of procedural accountability. The case studies demonstrate the real-world impact of this approach, while the interviews reveal the underlying reasons, such as inadequate regulation, insufficient client training, and poor client engagement. Existing international standards, such as RIBA Stage 7 (“In Use”) and LEED v4, provide structured methods for post-occupancy review, but these are not yet widely reflected in Bahrain’s professional systems (RIBA, 2020; USGBC, 2021). The solution to this is not just a change in institutional practice but also a change in professional ethics: The architect’s role is not only in project delivery, but also in health-care environment lifecycle performance.

4. Discussion

4.1 Interpretation of Key Findings

The key findings point to a clear gap in ethical and institutional practice of architects in Bahrain, particularly in the field of healthcare design. Although experts acknowledge POE as a method for evaluating building performance and user satisfaction, its application remains underutilized. This indicates that in Bahrain responsibilities are still more project-oriented than lifecycle-oriented.

This is done by comparing the two case studies. SMC demonstrates the reactive culture of professionals where responsibility may be limited to the project handover, which then leads to post-occupancy issues and dissatisfaction amongst users (News of Bahrain, 2023; Eldardiry et al., 2025). Conversely, Maggie’s Cancer Care Centres in the United Kingdom demonstrate how institutionalized POE, through structured feedback and user engagement, can transform design into an ongoing ethical practice (Watson & Samuel, 2019; Brown, 2018).

This interpretation is also confirmed by the interview results. The consensus of all participants was that architects and engineers should continue to have ethical responsibilities beyond the completion of the project, while most cited that cost,

client resistance, and lack of regulation were hindering implementation. Lack of systematic feedback channels also reduced the opportunities for post-occupation learning, noted healthcare workers.

The results here are aligned with RIBA (2020) and AIA (2014) standards which place POE within the scope of continuing professional responsibility. Spatial performance is not only a technical area of weakness but also an ethical one as it has a direct impact on well-being in healthcare facilities. The situation in Bahrain is, therefore, one in which there is a mismatch between the awareness of architects and their institutional practice, and thus, the need to integrate the POE within national codes and professional frameworks as a component of architectural responsibility.

4.2 Comparison with Previous Studies

This study's findings align with recent global literature on the significance of POE in architecture, particularly its professional and ethical dimensions (Read & Meath, 2025). Brown (2018) and Watson et al. (2018) state that POE also enables professionals to reflect on design, linking design with intent to lived experience. This is reflected in Maggie's Cancer Care Centres, where feedback and performance evaluation are part of architectural practice. The SMC case in Bahrain, however, reinforces Eldardiry et al.'s (2025) view that architectural ethics in the region is still in need of development, especially when professional responsibilities stop at the handover of the project.

The results also support the conclusions that Zallio and Clarkson (2022) conclude as ethical expectations in modern design: the need for inclusion and feedback. Likewise, Castaño-Rosa and Nerweyi (2025) show the benefits of early integration of POE in the building process for performance and efficiency improvement. POE, however, is not well defined in the Bahrain context, as in the UK and US contexts through RIBA Stage 7 and LEED v4 respectively, where it is seen as a structured approach to POE, with the aim of transferring ethical awareness to procedural responsibility (RIBA, 2020; USGBC, 2021).

This study is thus adding to the existing body of knowledge by considering POE in the context of the Middle East region and healthcare. It proves that barriers to professional awareness extend beyond professional barriers, but also include structural inertia, restricted regulation, disjointed responsibility, and lack of demand from clients. The results are consistent with AIA (2014) and RIBA (2020) and support the notion that ethical professionalism in architecture should permeate the building lifecycle, particularly in healthcare environments where space design directly affects human well-being.

5. Conclusion

5.1 Summary of Key Findings

This paper examined ethical accountability and POE in healthcare architecture in Bahrain through two case studies and six professional interviews. The results indicate that there is a long-standing gap between the professional ethical awareness and institutional practice.

The SMC case reflects the fact that lack of structured POE can lead to recurring issues that could arise after occupation such as inefficient layout, ventilation problems, and maintenance concerns (News of Bahrain, 2023; Eldardiry et al., 2025). Maggie's Cancer Care Centres in the UK, by contrast, illustrate how user feedback and performance data can be used to enhance design quality and patients' wellbeing (Watson & Samuel, 2019; Brown, 2018).

The interviews with Bahraini architects, engineers, and healthcare professionals support these findings. All participants identified POE as an ethical requirement; however, they also showed cost, client unwillingness, and lack of regulation as major obstacles. Healthcare workers also noted the lack of formal feedback mechanisms, making it difficult to incorporate lived experience to create improved healthcare design. The overall findings show that there is some level of ethical intent but not as much as procedural support. This highlights the importance of embedding POE in Bahrain's professional and regulatory frameworks.

5.2 Implications of the Findings

The findings of this research are significant in the aspects of architectural policy, professional ethics, and architectural education in Bahrain and the rest of the Gulf region. This identified gap between ethical awareness and institutional adoption of POE indicates that the reform should not only focus on individual professional responsibility, but also on the development of systems that hold people accountable for their actions over time in the context of healthcare design.

Incorporating POE into national policy and public procurement would set formality of accountability as a component of the professional process. Post-occupancy reviews of public healthcare projects may be mandated, based on spatial performance, safety, and environmental quality. Ensuring alignment of these requirements with those specified in the international standards as set out in RIBA Stage 7 ("In Use") and LEED v4 operational performance requirements would enable a greater consistency and transparency in professional expectations (RIBA, 2020; USGBC, 2021).

Ethically, the Bahraini authorities for registration of architects should include post-occupancy accountability in their code of practice and the engineering councils should do the same. There may also be Continuing Professional Development (CPD) courses to help practitioners learn how to perform POE and evaluate feedback from users. Post-handover evaluation would then be a standard industry requirement for professionals' competence and ethical conduct, instead of being a voluntary effort (AIA, 2014; Brown, 2018).

POE principles should be integrated into design education and studio courses at the institutional and educational level, particularly in the field of user-centered and evidence-based healthcare design. This would set the ground for the future professionals to develop and understand ethical responsibility as a continuous process of reflection and improvement and not as a responsibility to be handed over at the project's completion.

Future studies should be undertaken to expand this study to other GCC countries, with larger sample sizes and the incorporation of quantitative measures of performance based on real post-occupancy evaluations. The research would also validate the linkage between ethical responsibility and building performance and contribute to the creation of a regionally specific approach to sustainable and ethical healthcare design.

5.3 Strengths and Limitations of the Study

This study's primary advantage is its integration of ethical theory, professional practices, and empirical evidence to investigate post-occupancy accountability within healthcare architecture in Bahrain. The study is based on comparative case-study research and professional interviews that give a detailed insight of the gap between awareness of ethics and institutional practice. This qualitative method enabled the cross-checking of the architectural performance evidence and professional viewpoints, increasing the interpretation of the results.

Comparing SMC, where structured POE is not utilized, with Maggie's Cancer Care Centres, which has an institutionalized POE process, reinforced the study's findings of the impacts of weak accountability and the advantages of frequent post-occupancy review. Moreover, the presence of healthcare professions among the interviewees gave the user perspective, emphasizing the connection between architectural ethics and patient care.

There are some limitations to the study, however. The findings are limited in generalizability because the interview sample was small (six professionals). However, it was enough to give qualitative depth to thematic analysis. There was also a restriction on access to proprietary information from institutions and detailed measurements of POE. Furthermore, although the focus on Bahrain gives the study regional specificity, results may not be generalizable to the broader GCC region.

The study shows the ethical aspect of POE in a scenario where this discussion is limited. It can thus serve as a foundation for future policy making and cross-cultural studies of architectural accountability.

5.4 Recommendations for Future Research

The following three directions for further research are suggested. Comparative studies examining the effect of various policies and cultural conditions on architectural accountability could be conducted across the GCC region at first. Second, quantitative POE measures, like energy usage efficiency, user comfort, and maintenance statistics, would increase the empirical validity and tie ethical responsibility to quantitative results (Tripathi et al., 2023; Zhao et al., 2024). Third, an analysis of educational and client perspectives may have the potential of adding insight into the influence of professional values and organizational behaviour on accountability practices. Long-term studies on healthcare projects, from their design until they are occupied, would also give insight into how ethical responsibility evolves over time (Viryasiri et al., 2024). Last, a context specific POE framework in Bahrain that complies with the RIBA and LEED requirements but is tailored to the local practice would contribute to the institutionalization of post-occupancy accountability as a professional responsibility and an ethical obligation (Saifalla & Elghonaimy, 2024).

Acknowledgements

This study was developed as part of the ARCH 631 Professional Practice course in the Department of Architecture and Interior Design at the University of Bahrain. The author thanks the course instructor, Prof. Islam Hamdy Elghonaimy, for the guidance, feedback, and support provided during the research process. The author also thanks the professionals who participated in the interviews and contributed their time and insights to this study.

Conflict of Interests

The authors declare no conflicts of interest. The study was conducted independently, and no external organization influenced the design, data collection, analysis, or publication of this research.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Data Availability Statement

All data generated or analyzed during this study are included within this published article. Anonymized interview transcripts are available from the corresponding author upon reasonable request, subject to ethical approval and participant confidentiality requirements.

Institutional Review Board Statement

The study was approved by the Research Ethics Committee of the University of Bahrain, College of Engineering (Approval No. UOB-ARCH-2025-014, dated 15 January 2025).

All participants were informed of the study's purpose and provided written consent prior to participation. The research adhered to the Declaration of Helsinki and complied with the University of Bahrain's ethical standards for studies involving human participants.

CRedit Author Statement

Conceptualization: M.A.; Methodology: M.A.; Investigation: M.A.; Data curation: M.A.; Formal analysis: M.A.; Visualisation: M.A.; Writing – original draft: M.A.; Writing – review & editing: I.E.; Supervision: I.E.

All authors have read and approved the final manuscript.

References

- Akram, B., Eldardiry, D. H., & Elghonaimy, I. H. (2024). Urban regeneration: A strategy of nature-based sustainable developments: A case of Nabih Saleh neighbourhood public spaces. 6th Sustainability and Resilience Conference: Integration of Nature-Based Solutions in Industrial and Developmental Transitions (SRC'24). <https://doi.org/10.12785/src/1571093221>
- American Institute of Architects. (2014). The architect's handbook of professional practice (15th edition). Wiley.

- Bahrain Society of Engineers. (2021). Post-occupancy survey report: Mixed-use developments in Manama. Bahrain Society of Engineers.
- Boissonneault, A., & Peters, T. (2023). Concepts of performance in post-occupancy evaluation post-probe: A literature review. *Building Research & Information*, 51(4), 369–391. <https://doi.org/10.1080/09613218.2022.2132906>
- Brown, T. L. (2018). A critical assessment of the place of post-occupancy evaluation in the critique and creation of socially responsible architecture. *Intelligent Buildings International*, 10(2), 84–99. <https://doi.org/10.1080/17508975.2018.1437708>
- Castaño-Rosa, R., & Nerweyi, D. (2025). Bringing post-occupancy evaluation up front to enhance energy efficiency in residential buildings. *Building Research & Information*. <https://doi.org/10.1080/09613218.2025.2538167>
- Chen, Y., Zhang, J., Yang, Z., & Qiu, Z. (2024). Improving life quality for the aged: A comprehensive post-occupancy evaluation of long-term care facilities in China. *Frontiers in Public Health*, 12, Article 1488653. <https://doi.org/10.3389/fpubh.2024.1488653>
- Day, J. K., Ruiz, S., O'Brien, W., & Schweiker, M. (2020). Seeing is believing: An innovative approach to post-occupancy evaluation. *Energy Efficiency*, 13, 1137–1157. <https://doi.org/10.1007/s12053-019-09817-8>
- Eldardiry, D., Suvarna, K., & Asvar, M. (2025). Exploring architectural ethics and challenges for sustainable practices: A qualitative study in Bahrain. *A+Arch Design International Journal of Architecture and Design*, 11(2), 109–125. https://doi.org/10.17932/IAU.ARCH.2015.017/arch_v011i2002
- Eldardiry, D. H., Akram, B. A. M., & Elghonaimy, I. H. (2024). Investigating the urban morphology of Sh. Isa Street design: A qualitative study to demonstrate streetscapes and heritage perceptions. *New Design Ideas*, 8(Special issue), 76–105. <https://doi.org/10.62476/ndisi.76>
- Elghonaimy, I. H. (2019). Alliancing between the documentation and the renovation of historical buildings in accelerating economic growth in Bahrain. In *The 2nd Smart Cities Symposium (SCS 2019)*. Institution of Engineering and Technology. <https://doi.org/10.1049/cp.2019.0201>
- Elghonaimy, I., & Al-Haddad, M. H. (2018). Towards reviving the missing noble characteristics of traditional habitual social life: “Al-Farej” in the Kingdom of Bahrain. *International Journal of Contemporary Urban Affairs*, 3(2), 35–46. <https://doi.org/10.25034/ijcua.2018.4699>
- Elsayed, M., Pelsmakers, S., Pistore, L., Castaño-Rosa, R., & Romagnoni, P. (2023). Post-occupancy evaluation in residential buildings: A systematic literature review of current practices in the EU. *Building and Environment*, 236, Article 110307. <https://doi.org/10.1016/j.buildenv.2023.110307>
- Goulart, F. M., & Ono, R. (2022). Post-occupancy evaluation and codesign in mental healthcare buildings: User’s input as a driver for functional and technical adaptations in post COVID-19 reality. *Frontiers in Built Environment*, 8, Article 962940. <https://doi.org/10.3389/fbuil.2022.962940>
- Jaušovec, M., & Gabrovec, B. (2023). Architectural evaluation of healthcare facilities: A comprehensive review and implications for building design. *Buildings*, 13(12), Article 2926. <https://doi.org/10.3390/buildings13122926>
- Leitner, D. S., & Santos, A. P. L. L. (2022). Performance evaluation in healthcare buildings: A systematic literature review. *Ambiente Construído*, 22(2). <https://doi.org/10.1590/s1678-86212022000200598>
- Middle East Green Design Council. (2023). Professional practices survey in the GCC architecture sector.
- News of Bahrain. (2023, October 1). Salmaniya Hospital ceiling collapse video goes viral.
- Omar, O. (2018). Towards eco-neighbourhoods: Solutions for sustainable development, construction and energy-saving technologies. *Journal of Architecture and Urbanism*, 42(2), 95–102. <https://doi.org/10.3846/jau.2018.6141>
- Omar, O. (2020). Intelligent systems for functional improvement of buildings. *International Journal of Environmental Science and Development*, 11(5), 244–250. <https://doi.org/10.18178/ijesd.2020.11.5.1257>
- Preiser, W. F. E., White, E. T., & Rabinowitz, H. Z. (2019). *Post-occupancy evaluation* (Routledge Revivals). Routledge. <https://doi.org/10.4324/9781315713519>
- Read, J., & Meath, C. (2025). A conceptual framework for sustainable evidence-based design for healthcare facilities. *HERD: Health Environments Research & Design Journal*, 18(1), 86–107. <https://doi.org/10.1177/19375867241302793>
- Royal Institute of British Architects. (2020). RIBA Plan of Work 2020 overview.
- Samuel, F. (2018). *Why architects matter: Evidencing and reinforcing the value of architects*. Routledge. <https://doi.org/10.4324/9781315768373>
- Saifalla, M., & Elghonaimy, I. H. (2024). Optimizing sustainable landscape maintenance techniques through digital tools and data analytics. *OMAINTEC Journal*, 5(6). <https://doi.org/10.70094/KKPD6024>
- Tripathi, I., Froese, T. M., & Mallory-Hill, S. (2023). Applicability of BIM-IoT-GIS integrated digital twins for post-occupancy evaluations. *Frontiers in Built Environment*, 9, Article 1103743. <https://doi.org/10.3389/fbuil.2023.1103743>
- U.S. Green Building Council. (2021). *LEED v4 Building Design and Construction Guide*.
- Viryasiri, T., Laovisutthichai, V., Sangnin, K., Dhanakoses, K., Roopkaew, P., & Viryasiri, P. (2024). Hospital design principles implementation: Reflections from practitioners in Thailand. *Journal of Asian Architecture and Building Engineering*, 23(1), 43–56. <https://doi.org/10.1080/13467581.2023.2215842>
- Watson, K. J., Hay, R., & Samuel, F. (2018). Post-occupancy evaluation in architecture: Experiences and perspectives from UK practice. *Building Research & Information*, 46(6), 698–710. <https://doi.org/10.1080/09613218.2017.1314692>
- Zallio, M., & Clarkson, P. J. (2022). The inclusion, diversity, equity and accessibility audit: A post-occupancy evaluation method to help design the buildings of tomorrow. *Building and Environment*, 209, Article 108675. <https://doi.org/10.1016/j.buildenv.2021.108675>
- Zhao, J., Abdul Aziz, F., Deng, Y., Ujang, N., & Xiao, Y. (2024). A review of comprehensive post-occupancy evaluation feedback on occupant-centric thermal comfort and building energy efficiency. *Buildings*, 14(9), Article 2892. <https://doi.org/10.3390/buildings14092892>