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Investigating the factors impacting Defect Reporting in the UAE's Facilities Maintenance Contracts

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ABSTRACT

Purpose - In order to achieve value for money, it is pivotal to assess maintenance projects at the handover and operational stages and to create a good defect report. This study highlights the importance of managing defect report to achieve better management control during the awarding of contracts for the operation and maintenance phase of buildings. The lack of best practices for defect reporting of the management of contractors results in unnecessary costs, leading to a lack of trust in the contractual relationship between parties. Design/methodology/approach - The authors conducted a literature review to uncover the factors that impact defect report management during maintenance outsourcing. Quantitative, qualitative, and mixed approaches were used to compare the current and best practices of defect report management and to suggest improvements and ensure better awareness of both clients and service providers. Findings - Study reports importance of involving facilities management in early stages of construction projects to reduce operation and maintenance defects and there are several factors are responsible for the quality of defect reporting: involving facilities management in the early stages of construction, controlling and pre-evaluating the contract type, payment mechanisms, contract duration, acting in mutual trust, negotiating service level agreements during mobilisation, and the adequacy of the mobilisation period. These add value to facilities management contracts and reduce operational and contractual disputes. Originality/value - This study addresses the current method and practices of defect report management, discusses its impacts on the outsourcing of maintenance activities, and turns the client's focus towards managing the fair mobilisation and demobilisation of service providers.

1. Introduction

The construction field is well known for its complexity on a multitude of levels due to its various operations over the project life cycle. The royal Institute of British Architects RIBA endorses the process of appointing FM contractor during the phases of project's handover and usage of buildings as of RIBA plan of Work 2020. The lack of implementing best practices of defect reporting during FM contractors' transition-in/transition-out leads to multiplying outsourcing budgets and maintenance costs, generating a lack of trust in the contractual relationship between parties.

According to Pilanawithana and Sandanayake (2017), the absence of FM in the early stages of a project creates gaps later, putting more pressure on an O&M organisation to efficiently practice FM roles and achieve the desired outcomes. Their study reports on the importance of involving FM in the early stages of construction to add value to the maintainability, testing, commissioning, and management of the DLP, and to provide opportunities for sustainable maintenance.

There is no study conducted in the UAE geographic location for the defect reporting and this study provides literature review of defect report management during operation and maintenance (O&M) life cycle outsourcing to highlight better management control through the award of contract periods. The results showed factors such as controlling and pre-evaluating the type of contract, payment mechanism, duration of contract, acting in mutual trust, negotiating SLAs during mobilization, adequate mobilization period, and quality defect reporting are essential areas for adding value to FM contracts and reducing operational and contractual disputes.

This study aims to investigate factors influencing defect report management during outsourcing maintenance contracts to approach value money in facilities management contracts and reduce operational and contractual disputes. And additionally, FM departments need to have a broad understanding of the importance of assessing comprehensive defect reports and working collaboratively with service providers to manage and plan their budgets.

2. Literature review

2.1 Defects in facilities maintenance contracts and challenges of assets surveying in FM

There is no standard description of what constitutes a 'defect' as the term is defined but not specified in most standard contract forms. However, a building defect can be defined as the assessment of a building's deficiency as measured according to predetermined norms (Atkin, 2009). A defect can be defined as a failure in a building's asset performance, function, or end user requirement (Watt, 2007).

A comparison of the construction defect definitions of the New Engineering Contract (NEC) and the International Federation of Consulting Engineers (FIDIC), reveals differences. NEC4's definition comprises of two points. The first refers to anything that does not comply with the scope of the work. The second involves contractor-designed work, with the benchmark being the existing law or the contractor's design as approved by the project manager (Rowlinson, 2018). The FIDIC does not specify what constitutes a defect either for the purpose of the contract's defects correction or for post-contractual legal liability. This is left to the discretion of the governing laws, so the definition is determined by the relevant statutes. Unfortunately, the exact features of the contractor's liability for defects vary across international jurisdictions (Jaeger and Hök, 2009a; Jaeger and Hök, 2009b; Godwin, 2020). In sum, the FIDIC considers a defect as drafted under the working local laws, while the NEC considers defect management as a process that supports the defect-free approach after project handover.

According to Sui Pheng and Wee (2001), building defects are caused by vulnerabilities in three organisational sub-systems: technical, human resources, and management.

As defects are assessed by the FM contractor through the process of condition surveys during the mobilization of contracts, the significance of a condition survey highlighted by Straub (2002) as a method for evaluating a building's technical performance to support long-term maintenance goals, and the output data is primarily intended for strategic management. The aim of a condition survey is to collect additional information for planning and conducting remedial work (Straub, 2002). Atkin (2009) further supports the importance of managing building defects and considers defect remediation an indirect cost, since this cost is generated only when a defect is identified.

These building inspections require expertise in both defect recognition and knowledge of reporting processes. Such inspections largely entail competent surveying works and report creation per project (Che-Ani et al., 2011). However, Sommerville (2007) criticised the current defect reporting method that contactors depend upon as repetitive and arbitrary, and has consequently recommended process and method changes. Additionally, Faqih and Zayed (2021) further

assert that the current evaluation methodologies are arbitrary, time-consuming, and repetitive, causing surveyors in FM to face major problems due to the lack of full and reliable data. One of the most difficult aspects when visually inspecting the condition of a building for assessment concerns the ambiguity of the inspection personnel's judgement due to subjective and often imprecise on-the-job decision-making. The Institute of Workplace and Facilities Management (IWFM: 2016) reveals a lack of best practices when conducting condition surveys that limit management surveying practices. Not conducting asset surveys during contract mobilisation results in the use of high-level 'dummy' parent assets rather than true assets for Planned Preventive Maintenance (PPM) structures. Other short falls are a lack of asset surveys during contract mobilisation, poor survey planning and specification, (resulting in the collection of low-quality data), a lack of survey auditing and data quality audits, inadequate contact with stakeholders to fully understand a survey's scope, specification, benefits, and survey deliverables, and a lack of a coherent strategy for using data and increasing user knowledge.

According to the Standard Guidance on Outsourcing (British Standards Institute, 2014), outsourcing has both benefits and disadvantages. Before making an informed outsourcing decision, management should evaluate the presumed organisational benefit and risks. Ikediashi and Okwuashi (2015) list such risks as follows: absence of strategy, poor understanding of environmental dynamics, blind focus on cost reduction, underestimation of business impact, poor cultural compatibility, lack of process understanding, poor relationship management, high management overheads, decline in service performance, critical service failure, risk of dependency on service providers, financial failure of selected service providers, absence of quality benchmarking, issues of contract awarding, lack of application of standard contract forms, and insufficient planning of operating procedures.

Murthy and Jack (2014) assert that the succession of contractors on buildings brought through tendering, impacts the outsourcing budget. It is therefore important for clients to conduct a thorough assessment of the consequences of outsourcing their maintenance.

2.3 Defect management during the operation and maintenance phase

Where the FM profession in construction is still mired in a cost-centred mentality that prevents business leaders from viewing facilities as more than a 'necessary evil'. Most FM organisations report to the finance department, and their performance metrics concentrate mainly on resource utilisation and cost reduction steps (RICS and Ware, 2017).

The cost of lifecycle operations, repair, and rehabilitation are far higher than the cost of the building, yet when it comes to constructing or purchasing new properties, the FM's attention is almost always focused on the initial construction expense (Selman and Schneider, 2005). During DLP is the period following project completion in which the supplier is liable for defects in their work and must compensate the client for them (Tan et al., 2018). Defects during the DLP present continuous budget risks for maintenance departments when they are not managed properly, as client follow-up decreases after construction and there is a lack of competent reporting, leading to the early involvement of the FM in the initial construction stage.

Studies have shown that building aging and degradation are unavoidable, representing difficult challenges for FM managers (Watt, 2007). In the United Kingdom, the Building Research Establishment (BRE) discovered that 50% of the defects discovered on construction projects were due to design issues, 40% occurred during the construction process, and 10% were due to product failures. Over a 50-year period, building and maintenance costs account for roughly half of the total lifecycle costs (Haugbølle and Raffnsøe, 2019).

According to Olanrewaju and Woon (2017), building defects are commonly attributed to improper design methods, but they may also be induced by poor maintenance and use. Furthermore, Zalejska Jonsson and Hungria Gunnelin (2019) argue that lessons learned from defects and observed issues faced by owners and users are critical for developers, designers, and contractors.

Additional issues concern the significant differences in the culture of the FM profession, which pose unique challenges for collaboration, especially when working with a remote design teams, the cooperation between FM and designers is important to ensure maintainability and value management; such cooperation is far higher in the United States than in the Middle East, where it is almost non-existent (Kalantari et al., 2017). Ignoring maintainability during the design and construction phase and the use of defective building materials, poor quality control, and poor workmanship or design mistakes, resulting in higher future lifecycle maintenance and repair (Waziri, 2016).

The design errors account for more than half of all building defects or failures; 45% of the claims for

faulty building services are due to design mistakes (Wiggins, 2014), and Faqih and Zayed (2021) argue that building defects expedite the degradation of a structure's condition, resulting in more frequent repairs and higher O&M costs of up to 4% of the overall construction cost annually.

2.3 Additional contractual factors that limits Defect Reporting quality

Defect reporting impacted by service provider and client decisions, inspections, quality audits, contract type, competency level of defect surveyors, and contract management. Poor maintenance planning and backlogs, insufficient funds, and poor service delivery impact maintenance management during the contract period (Zul-Atfi, 2017). The benefit of allocating resources to conduct asset surveys is a point of contention between management levels (Chew et al., 2017). Hon Yin Lee and Scott (2009) argue that price, efficiency, and process factors affect building maintenance activity and impact maintenance strategy selection in FM.

According to East and Brodt, (2007) current facility maintenance contractors should be paid to survey an existing building to capture its as-built conditions, and the owner should pay twice: once for the construction contractor to complete the documents at the end of construction, and then again for the maintenance contractor survey at the beginning of each contract. However, this approach is intrinsically wasteful as it generates poor integrity, unnecessary duplication of information, and is arguably challenging when implementing building information modelling for existing buildings.

Contract length is also a critical component of any FM agreement; many client organisations devote a significant amount of time to developing contract specifications and scope of work. According to the Building Service Research and Information Association BSRIA (2016), the contract type impacts maintenance management as comprehensive and semi-comprehensive contracts and the traditional practice of forming contracts is less than satisfactory due to a lack of knowledge of contract form processes and principles (BSRIA, 2016).

Reid-Thomas and Phillips (2005) emphasise the importance of a well-drafted contract with a client as it reduces outsourcing scope ambiguity risk. The contract must be sufficiently stable to protect all parties' interests while remaining flexible enough to manage their respective business needs (Reid-Thomas and Phillips, 2005). However, Lai et al. (2004) point out that conflicts may arise due to the scope of contract ambiguity, as a contractor may refuse to take on any duties that go beyond their considered contractual obligations.

One of the contractual challenges in FM is Managing the mobilisation of a new contract, it may seem straightforward, but the need to handle a wide variety of risks necessitates careful preparation, the process references the British Standards Institute (British Standards Institute, 37500, 2014, 8892, 2014), which states that an organisation should execute the transition using a project-based approach in which the service scope is defined subject to the transition.

Table I sums the risks that contribute to the mismanagement of a defect report during the mobilisation stage, according to the current and previous studies, while Table II sums the major factors to consider for further investigation, as mentioned in the previous studies.

Table I. Risks that may arise from a lack of defect report best management

Implication/risk	**Reference**
Maintenance costs for corrective and planned activities may increase; defects expedite building defects by 4% annually	Faqih and Zayed, 2021
Inaccurate PPM planning due to defects linked with assets, Scarcity of historical asset performance data or incomplete condition surveys	Hassanain *et al.,* 2013; BIFM, 2016
Lack of survey auditing and data quality checks by client; inadequate stakeholder engagement to fully understand the scope of the surveys, specifications, benefits, and survey deliverables	Klee, 2014; Proksch, 2016; Mawed and Al-Hajj, 2017

Contractor might fail to meet key performance indicators (KPIs) and be under deduction and/or dispute with client due to defect report being considered a contract document	Klee, 2014; Proksch, 2016; Mawed and Al-Hajj, 2017
Competency of maintenance surveyors and poor reporting; building defects caused by vulnerabilities in three organisational sub-systems: technical, human resource, and management	Lam, 2008

Table II. Factors impacting the defect report management process.

Factor	**Reference**
Factors of outsourcing, blind focus on cost reduction	BS ISO 37500:2014: Guidance on Outsourcing, 2014
Inefficient or lack of successful communication during contract mobilisation	Talamo and Atta, 2019
Limitation of condition surveys in describing building and maintenance defects	Deniz *et al*., 2021
Contractual conflicts arising from different understanding of ambiguous scope of works	Lai, *et al*., 2004
Type of FM contract: Comprehensive or semi-comprehensive	BSRIA, 2016
Duration of the FM contract	Murthy and Jack, 2014
Implementation of facility condition assessment as a tool for optimising FM contracts	IFMA, 2014; Jones, 1993
Competence of building inspector/condition surveyor	Faqih and Zayed, 2021; Karanja, 2017; David R and Stewart, 2008
Poor maintainability of design and disregard of effective value engineering	Sohi, 2015; Knezevic, 1993; Kelly, 2015; CIBSE, 2014
Well-drafted conflict avoidance and resolution mechanism is essential to avoid contractual risks	Klee, 2014; Proksch, 2016

3. Methods

Abutabenjeh and Jaradat (2018) suggest that when obtaining the overall results, a researcher may utilise quantitative approaches. These include closed-ended questions or numeric data during data collection, as well as statistical analysis and interpretation methods. A combined method aids the development of a thorough understanding and ensures that the results can be confirmed. Literature reviews and questionnaires with open-ended or closed-ended questions provide in-depth knowledge of the concepts. Interviews provide a solid comprehension of the concepts through comparison with real-life examples and experiences. This study used interviews as a secondary methodology. This was to achieve the goal of investigating the survey results and proposing improvements to the defect report management process. To provide industry knowledge and reflect the contracting environment, this study chose the respondents based on their extensive experience in contract management and FM service delivery. Table III outlines the study objectives and research methods.

Table III. Research objectives and methods

Objective	Research method selected
Highlight the value of improving defect reporting and the factors impacting defect report management during a building's lifecycle	Literature review, survey questionnaire, and interviews
Investigate current practices of defect reporting in FM and hard-services procurement, and collate factors associated with defect reporting management, pre- and post-construction	Literature review and survey questionnaire
Propose improvements for defect report management in FM maintenance service contract drafting.	Literature review, survey questionnaire, and interviews

This study used an analytical survey to determine the relationship between the objects of the questionnaire and the collected information from the respondents related to contract management and facilities operations. The aim was to gather feedback from FM employers, consultants, service providers, and other relevant staff on the management of defects or snags during the contract period. The survey was sent to 81 certified International Facility Management Association IFMA and Institute of Workplace & Facilities Management IWFM members, of which 55 responded. The topic of defect reporting was the O&M function, thus limiting the distribution of the survey to other professionals. The survey was shared via LinkedIn messages and posts shared by the United Arab Emirates' (UAE) IFMA groups via e-mail, WhatsApp messages, and text messages. To protect respondents' privacy and comply with ethical considerations, their names, and organisations were withheld. The survey had three sections and was live for 12 days. The average completion time was 11 min and 49 sec. The survey results were used to construct interview questions with industry experts who manged large FM contracts to identify the gaps between the defect reporting and the current practices.

4. Results and analysis

4.1 Section 1: Respondents' profiles and facility types

This section had four multiple-choice questions; respondents had to choose from one of the answers provided for each question. The purpose of the first question was to identify the respondents' stakeholder groups in their various organisations, years of experience in the built environment sector in the FM field, and their individual status in their organisations. Overall, 67% of the respondents were service providers, 24% were clients, and 9% were FM consultants.

The purpose of the second question was to identify the respondents' stakeholder groups in their various organisations and their individual status in their organisations. Overall, 58% of the respondents were FMs, 18% were facility engineers, 18% were project managers, 2% were contract managers, and 2% were property managers.

The third question sought to collect the respondents' years of experience in their organisations, with the goal of categorising their responses and comprehending their suggestions and feedback regarding their experience. Overall, the respondents' experience in the built environment sector in the FM

field ranged from 6–10 years (62%), 3–6 years (15%), 14–20 years (9%), and 20+ years (9%).

The final question sought to ascertain the types of facilities to enrich the research data base and assess whether the criticality of the facility could impact the defect reporting and rectification. Of the facility types, 38% were public facilities, 32% were residential facilities, 11% were school facilities, 14% were a mixture of three facilities, and 4% were airport facilities.

4.2 Section 2: FM contracts

This section contained two questions: the first was to understand the duration of the current FM contract employed; the second was to investigate the clarity of the performance bond clauses and the scope of the relationship for defect reporting. The first question's results were as follows: 56% of FM contracts had a duration of 3 years, 25% were for 2 years, 13% were for one year, and 5% were for five+ years. Most of the contracts employed lasted for 3 years to ensure better supplier–client relationships and cooperation. According to the literature, contract duration has a positive impact on service provider mobilisation because market growth requires higher levels of commitment and capital, which drives the trend towards longer contracts. Longer contracts also give contractors more time to see the benefits of progress and enjoy the profits and returns on their larger investments.

The second question investigated whether the performance bond was clearly mentioned in the contracts; the results show that out of 55 respondents, 55% agreed that the performance bond was clearly linked with demobilisation and defect clearance, and 45% stated that it needed better drafting and clearer terms.

4.3 Section 3: Defect reporting

This section contained eight questions to investigate the current practices of FM defect report management, the factors influencing the process, how defect inspection is conducted, how the defects are approved, and the percentage of the defects' remediation cost to the annual maintenance contract value. The respondents revealed that 80% of contracts were conducted in-house, 7% sought a third party, and 13% adopted a combination of third party and in-house staff.

The second question sought to investigate the costs associated with building defects. The results and practices showed that the defects were unknown risks that must be planned for to avoid yearly budgeting problems. The costs of repairing maintenance defects in some locations exceeded 100% of the contract value, indicating challenges related to defect reporting practices.

The third and fourth questions sought to inspect the practice of mentioning design defects in the FM contracts and the cost of defects; 67.3% of respondents said that they included design defects in the contract, while the remainder of the respondents did not. This result shows a gap between the industry and heterogeneous responses regarding the definition of maintenance as planned or unplanned action that keeps an asset operative either by maintaining spare parts or replacing them. Moreover, the recommissioning of design is not included in maintenance contractor work for existing buildings. However, this question was discussed in depth during the structured interviews. Regarding the cost of design defects compared to the annual maintenance contract value, the approximate percentages shared by the respondents for their project sites showed significant value for repairing defects, which were identified by FM service providers. This shows that the cost of design defects impacts maintenance contract delivery as well as the construction defects discovered during the DLP or after, which results in a continuous increase of the FM budget assigned for the O&M of the facilities. This gap was also identified in the literature review; that is, design errors account for more than half of all building defects or failures, and 45% of claims for faulty building services are due to design mistakes (Wiggins, 2014).

The fifth question had different sections on the factors that contributed to defects in construction projects that were collected from the literature. This question investigated the impact of the factors on the defect report, and the respondents expressed their views based on their industry experience and the contracts they were managing. This question attempted to discover the importance of realising these factors in the defect report management of both parties.

The sixth question investigated the status of the defect remediation within the first year; 27% of the respondents said the defects were repaired within the first year, and 73% confirmed they were not repaired in full or at all. The risk of this practice is that some arguments and conflicts may arise due to asset operation disruption, leading to more issues. Regarding the question on the clarity of the defect report in the contract agreement, 34% of the respondents said this was well defined in the contract's terms, clauses, and payment; 66% said the terms were vague and needed more clarification and improvement.

The final question investigated the consequences of not repairing the defects. All respondents agreed that some defects could have direct or indirect impact on other building assets or systems, which would result in disputes, while some respondents said that some defects could disturb a building's operation and lead to possible payment deduction.

4.4 Interview findings

Interviews were held with four industry experts representing the contract, project, and FM; two experts were employers and two were service providers. The four experts signed an interview consent form for ethical and professional conduct and agreed to share their knowledge and insights on the research topic. The following four questions stemmed from the survey questionnaire for further discussion:

Q1: The survey shows that many defects are not rectified within the first year of the contract. What could be the reasons for that, and the consequences?

Q2: Competitive tendering might affect FM service delivery because while both parties focus on cost reduction, contractors do their best to fill the report full of as many defects as possible. How are defects usually verified, by a third party or client, or someone else?

Q3: In the survey, many contractors mentioned design defects in the FM defect report. Do you agree?

Q4: How can defect report drafting in FM contracts be improved for better management control and dispute avoidance?

Table IV. Sum of the interview responses

Participant	Expert profile
P1: Service provider	Project director, contract manager for different types of contracts and facilities, 20 years of experience in project management
P2: Service provider	12 years of industry experience, MSc with engineering background, project and contract manager, Certified Facility Manager
P3: Client	11+ years of industry experience, MSc with engineering background, Certified member of IWFM, Certified Energy Manager.
P4: Client	20+ years of industry experience, client, facilities and contract, MSc, Certified Facility Manager, Sustainability Facility Professional, Facility Management Professional, Certified Maintenance & Reliability Professional, MIAM, with experience in multiple contract types

Table V. Sum of the interview responses of service provider

Participant (P)/ question	Q1	Q2	Q3	Q4
P1	Major reasons: Improper handover, knowhow of the technology, the short duration of mobilisation & cost reduction	Market is competitive; cost barrier; defect verification usually done by the client; in the FM business, we always follow the client	you need to mention design defects and invite an expert to provide clients a good-quality report	Reports to be reviewed and signed by a senior person before sharing with client; referring to the contract and negotiating with clients; good description of the defect; cost estimation and approval by senior person.

P2:	The contractor has the challenge of condensed steps and tasks of mobilisation, contract scope of work, procedures of client approval and budget submittal, and duration, to build contractual relationships and mutual trust	Verified by the client after joint inspection, but I recommend adopting a mixed approach of client approval as well as through a third-party consultant for major defects, or specific defects with high-cost impact	I think it is better to mention design defects if discovered as this might allow the contractor to support their claim if there are defects with operational consequences	Well-drafted demobilisation or termination assistance plans, allowing more time during mobilisation to inspect defects to avoid misconduct of reporting; well-drafted defect report guidance; defect reporting with cost or schedule of rates; required manpower. The client should allow a contract clause that empowers the contractor to raise hidden defects under agreed reporting quality to avoid KPI and operation disputes

Table IV presents participant's profile and table V & VI presents a sum of the interview responses for service providers and clients respectively. All participants agreed that the defect report system lacked best practices, proper drafting, definition of the agreed cost estimation, report signing by senior service provider representatives, and development of transition-out assistance plans. Poor condition survey practices have been highlighted by the IWFM (2016) as not executing asset surveys during contract mobilisation; using high-level parent assets rather than true assets for planned preventative maintenance regimes; and poor survey planning and specification, resulting in the capture of poor-quality data.

The client-side participants agreed that design defects should not be included in the defect report during the transition-in period, that the service provider's main responsibility is to maintain that which already exists, and that design inspections should not be included in the contractor's scope of work unless stated. Moreover, the design defects that appear during the contractual period should be evaluated separately and solved per client procedure and budget assignment.

However, the service provider-side participants agreed that the service provider had the right to point out defects during mobilisation and contract duration in order to retain the right to claim the costs of rectifying defects. Moreover, they agreed

that there was a dearth of survey auditing and data quality inspections; inadequate stakeholder engagement to fully understand the scope of the surveys, specifications, benefits, and survey deliverables; and a lack of a well-defined strategy for utilising data and improving system knowledge (IWFM). Table V illustrates the current defect report management practices in the UAE.

Table VII. Current defect report management practices

Current defect report practices	**Evidence from the literature**	**Study findings**
Maintenance costs for corrective and planned activities may rise. Defects expedite building defects by 4% annually	Faqih and Zayed, 2021	Survey questionnaire responses showed that the cost of defect repairing mostly varied between 30%–150% of the annual maintenance contract value. Defects are not rectified within the first year.
Inaccurate PPM planning due to defects linked with assets, incomplete condition surveys and Scarcity of historical asset performance data	Hassanain *et al.*, 2013; BIFM, 2016	Survey questionnaire found disputes raised between contractual parties during operation
Lack of survey auditing and data quality checks by clients; inadequate stakeholder engagement to fully understand the scope of the surveys, specifications, benefits, and survey deliverables	Klee, 2014; Proksch, 2016; Mawed and Al-Hajj, 2017	Survey and interview responses showed that currently, the client approves the defect report after joint inspection, without involving a third party in the process
Contractor might fail KPIs and be under deductions and disputes with client	Klee, 2014; Proksch, 2016; Mawed and Al-Hajj, 2017	Almost all the survey respondents agreed that if defects were not rectified within the first year, then disputes and KPI deduction may occur, impacting payment to clients
Competency of maintenance surveyors and poor reporting; building defects were caused by vulnerabilities in three organisational sub-systems: technical, human resources, and management	Lam, 2008	Most of the survey questionnaire respondents agreed that defect inspections were made by the in-house team. The interviews revealed that report quality, defect description, and cost estimations were poor

5. Conclusion

The agreed-upon and defined quality between FM contracting parties during construction requires improvement, research, and argument. Defects occur during all stages of the lifecycle for several reasons, and the lack of best practices for defect reporting causes the outsourcing budget to multiply, significantly increasing outsourcing risks. Furthermore, improving the quality of the defect report in the FM contract improves the chances for better contractual relationship performance. Thus, the defect report management process may affect maintenance costs, asset management surveys, and contractual relationships between parties in the absence of planning and control during the transition-in/transition-out stages.

Knowledge gaps could generate and affect facility asset's maintenance costs, increasing total O&M lifecycle costs. If condition surveys and defect reports are required, the successor contractor will conduct defect reporting after the contract is awarded. In this case, a conflict of interest could arise, as the defect report entitles the contractor to inquire about a variation in the contract price in order to solve defects before contract commencement or during the contract period. However, the exiting contractor might face KPI deduction, performance bond liquidation, or bear defect remediation costs to avoid deductions, knowing that these steps are conducted based on the defect report presented by the successor contractor, whose interests are to generate more revenue using an unspecified and generic defect report.

This study reports that the absence of FM consulting firms may create a wider gap in sourcing strategy outcomes and cause controversy with dominant employers. Moreover, adding value to FM contracts reduces operational and contractual disputes depending on the control and pre-evaluation of the type and duration of the contract, the payment mechanism, well-defined and drafted defect report guidance, acts in mutual trust, negotiation of service level agreements during mobilisation, adequate mobilisation period, and the quality of the defect report.

This study's limitations are, the research was conducted in the UAE, the semi-comprehensive contract type was employed herein. The study was limited to investigating the current practices and risks associated with semi-comprehensive contracts and cost implications related to inaccurate reporting practices due to clients outsourcing strategies. This study proposed improvements for defect report draft management considering the risks associated with the current practices. Finally, the survey respondents were limited to IFMA- and IWFM-certified members in the UAE who managed residential, public government, stadium, school, and healthcare facilities, while the interview participants managed airport, public government, residential, and heritage facilities.

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