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Research Article

Assessment on the Facility Management Practice Related with Buildings in Hawassa University Main Campus

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Abstract

Facility management (FM) has emerged as a critical discipline for sustaining the value, safety, and functional performance of buildings throughout their life cycle, yet its practical implementation within Ethiopian higher education institutions remains inadequately documented. This seminar paper assesses the facility management practice associated with buildings at Hawassa University main campus, with specific emphasis on the roles and responsibilities of facility managers from an engineering perspective, prevailing maintenance and repair trends, and the availability of skilled workmanship for building upkeep. The study is grounded in a review of relevant literature on facility management theory and practice, complemented by primary data gathered through structured interviews, direct site observation, and group discussion involving facility management staff and selected case study areas within the university, including the facility management office and the male dormitory blocks. Findings reveal that although the university's facility management office provides a broad range of services spanning classroom, guesthouse, and administrative facility arrangements, its operations are constrained by the absence of a clearly defined organizational structure, a lack of computerized asset registration and valuation systems, and a shortage of professionally qualified personnel to oversee technical maintenance functions. Maintenance activity, particularly within student dormitories, is predominantly unscheduled and reactive rather than planned, resulting in deteriorating sanitary installations, damaged building fabric, and inadequate storage and handling of maintenance materials. The study concludes that the current practice falls short of internationally recognized facility management standards and recommends that the university strengthen its facility management capacity through structured staffing, professional training, and the early integration of facility management expertise into building planning and design, thereby fostering more sustainable, cost-effective, and safer building operations.

Keywords

Facility Management, Building Maintenance, Hawassa University, Maintenance Practice, Facility Design

1. Introduction

1.1. General Background

Buildings count for half of the primary energy sources consumption as well as half of all consumed raw materials, produce hundreds of million tons of waste and a third of the world's CO2 production, construction and building of low energy buildings has become an international trend. More than transportation, mining industry, or any other type of industry

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it is primarily the area of building industry and building administration that lead to better management of narrow resources as well as to the reduction of greenhouse gases emissions. In this area facility management also plays an important role. [2]

Partly in response to this pressure, facility management (FM) has grown into a large and fast digitalizing global industry. Independent market analyses place the global FM services market at well over one trillion US dollars in 2024, with most forecasts projecting continued mid-to-high single-digit annual growth through the early 2030s, driven by sustainability regulation, corporate ESG commitments, and the adoption of cloud-based and AI enabled management platforms. This growth has been accompanied by formalization of the profession: ISO 41001: 2018 now provides the first certifiable international management-system standard for FM, positioning it as a strategic, auditable function directly linked to the United Nations Sustainable Development Goal 11 (sustainable cities and communities) rather than a discretionary support cost. [13]

Facilities Management (FM) is one of the fastest growing industries with contribution to the general economy. With the rising legislative requirements and targets to tackle global warming, FM is in the forefront in delivering the national and international sustainability targets. There are challenges in the understanding and building a consensual definition of sustainability. The existence of such polarized understanding of the term together with materialized interests of various individuals and organization is a main barrier for achieving sustainability. The lack or the limited understanding of the key concepts of sustainability and lack of practical knowledge contribute to the little implementation and effectiveness of the sustainable practice in the FM industry. The other primary problem preventing the FM sector from driving the sustainability agenda forward is the lack of expertise information and credible practical guidance. However, there is an increasing pressure from organization stakeholders and society as large to act sustainably. FM is a balance between technical, managerial and business acumen that may be related to operational, tactical and strategic decision-making processes. It is essentially a management function and it is at the strategic level that FM can have the greatest impact; to be involved with forward planning decisions. [5]

1.2. Objectives

1.2.1. Major Objectives

The major objective of this term paper is to assess the facility management practice related with buildings in Hawassa University main campus.

1.2.2. Specific Objectives

1) To study the roles and responsibilities of the facility management sector from engineering point of view;
2) To know the maintenance and repair trends of building in the university;
3) To know the availabilities of skilled workmanship for building maintenance and repair.

2. Literature Review

2.1. Facility Management

Facility management (FM) continues to be defined by the International Facility Management Association (IFMA) as the coordination of an organisation's people, place, and process to support its core business, a definition later formalised by the International Organization for Standardization in ISO 41001: 2018, the first global management-system standard dedicated to FM [ISO 41001, 2018]. The standard reframed FM from a cost-centre activity into a strategic management discipline with its own certifiable quality-management architecture, requiring documented policies, risk registers, and continual-improvement cycles similar to ISO 9001. This shift matters for the present study because it gives a benchmark against which the informality of the Hawassa University facility management office can be measured: an ISO-41001-aligned FM function would already possess the organisational structure, asset register, and documented maintenance policy that the original assessment found to be absent.

Recent scholarship has also widened FM's scope beyond the physical building envelope. Facility management is increasingly framed as integrating several disciplines to influence the efficiency and productivity of organisations and communities, and as affecting occupant health, well-being and quality of life through the services it delivers [10]. This broader framing is consistent with, and extends, the original review's treatment of FM as encompassing engineering, architecture, finance and behavioural science, but it foregrounds a dimension largely absent from the original paper: that facility management outcomes are now treated as measurable determinants of institutional performance rather than as background housekeeping.

From the definition of International Facility Management Association, a respected representative of the majority of world facility managers (IFMA) facility management is “a method whose task in organizations is to mutually harmonize employees, work activities and the work environment that includes principles of business administration, architecture and humanities and technical sciences”. Facility management (FM) is an effective form of outreach business management which aims to provide relevant, cost-effective services to support the main business activities (core business) and allow them to optimize. As follow from several studies made at present time, marked by the financial crisis, is the application of facility management most current because it provides savings and optimization of operating costs promotes increased employee performance and thus contributes to increase the profitability of the enterprise. [1]

Facility managers play a crucial role in ensuring the contin-

uous sustainable performance of facilities. They are responsible for the planning and management of facility operations and maintenance to ensure that these are done in a cost-effective manner. Despite the crucial role that they play, the facility design process tends to leave out facility managers. This results in designs that are not easy to operate and maintain. In order to improve facility maintainability there is a need for input from facility managers at the project design stage; involving facility managers in project design should result in designs and material choices that make facilities easy and cost-effective to operate and maintain. [2]

2.2. Roles, Responsibilities and the Changing Skill Profile of Facility Managers

Buildings have a large direct and indirect impact on the environment as they require a lot of resources to construct operate and maintain. From project conception, design, construction and post construction phases of the facility lifecycle, there is a need to design for simple and cost-effective maintenance of the facility. Much has been written about the role of facility managers in relation to existing facilities, but their role in project design is less well documented. [13]

Very often the tasks and competencies of a facility manager correspond with the phase of building use, i.e. building operation, especially with the need of operational costs management. Facility manager though can take part in the building life cycle much earlier. An ideal approach is if the role of a facility manager is implemented already in the initial phases of building life cycle. Such a solution has many advantages and brings about also significant savings of finance both at investment costs as well as later the operational ones. [1]

The concept of FM has continued to develop since it gained a foothold as a discipline and profession within the property and construction industry from the late 1980s. Since then, the role of FM has grown from being perceived in an old-fashioned way as encompassing caretaking, cleaning, repairs and maintenance, to covering real estate management, financial management, change management, human resource management, health and safety and contract management. In addition, the scope of FM has become broader and includes the development of real estate and the use of buildings in both the short-term and long-term, as well as various support services. [6]

The core responsibilities catalogued in the original review electricity accounts, HVAC, transportation and circulation, waste and water services, cleaning and grounds, communication systems, building management systems, security, life-cycle costing and post-occupancy evaluation remain the operational backbone of FM practice. What has changed in the recent literature is the skill profile expected of the facility manager discharging these duties. Where earlier accounts of FM competence emphasized technical trade knowledge and contract administration, recent studies argue that facility managers must now also be competent data stewards: interpreting sensor dashboards, validating asset data captured in BIM models, and translating analytics into maintenance decisions [7]. This re-skilling requirement is directly relevant to the present case study's finding that the university's facility management office lacks professionally qualified personnel; the gap identified locally mirrors a competency transition that the international literature treats as a live challenge even in well-resourced systems.

The facility management functions to consider at project design stage include:

1) Managing the electricity account including emergency power systems
2) Heating, ventilation and air conditioning (HVAC) maintenance
3) Transportation, access and circulation
4) Servicing and waste disposal
5) Water services78
6) Maintenance, cleaning and ground maintenance
7) Communications and control systems
8) Building management systems (BMS)
9) Post occupancy evaluation (POE)
10) Security and life safety
11) Life-cycle costing and churning
12) Space management and furniture
13) Benchmarking

These reflect the day-to-day duties of the facility manager. Decisions at the project design stage must result in design and materials selection that will simplify these functions for the facility manager, and bear in mind the operation and maintenance costs at all times. Involving facility managers in the design process should lead to designs that are easier and more cost-effective to maintain. Some of the respondents also noted that successful facility manager involvement depended on the facility manager having sufficient experience and qualifications in facility management. Facility managers who outsourced many of the day-to-day operations and management functions would have an inadequate level of experience to provide valuable contributions in the design process. [3]

Typically FM might be split into two areas of ‘hard’ and ‘soft’ services. The hard services relate to the actual fabric and building systems and might also be considered as the more traditional PM services. These include:

2.2.1. Hard Services

1) Building fabric maintenance,
2) Decoration and refurbishment,
3) M&E plant maintenance,
4) Plumping and drainage,
5) Air conditioning and maintenance,
6) Lift and escalator maintenance,
7) Fire safety system maintenance and
8) Minor project management.

2.2.2. Soft Services

1) Cleaning
2) Security

3) Handyman service
4) Waste disposal
5) Recycling
6) Pest control
7) Ground maintenance
8) Internal plants

And many other additional services, including benchmarking, space management, contract procurement, performance management, utility management, environmental management, etc. [4]

Facilities management is very complex. The high magnitude of sophistication necessitates a holistic professional approach. Facilities management does not just cover operations and maintenance, although these are a substantive part of facilities management, other non-technical aspects are equally important to ensure proper functioning of the built environment. IFMA espouses nine core competencies, namely:

1) Operation and Maintenance;
2) Real Estate;
3) Human and Environmental Factors;
4) Planning and Project management;
5) Leadership and Management;
6) Finance;
7) Quality Assessment and Innovation;
8) Communication and Technology.

2.3. Facility Management in Higher Education Institutions: Global and African Perspectives

A growing stream of research treats university estates as a distinct FM sub-field because campuses combine residential, academic, laboratory, recreational and administrative functions under a single management authority, and because facility conditions have a demonstrated bearing on teaching and learning quality. A study of public universities in Uganda found that the condition and management of physical facilities is closely linked to the quality of teaching and learning outcomes, positioning FM as an academic-quality issue rather than a purely administrative one [13]. A conceptual framework developed for higher-education institutions in Saudi Arabia likewise argues that university FM requires bespoke governance structures distinct from commercial sector FM because of the diversity of stakeholders' students, faculty, researchers and surrounding communities that campus facilities must simultaneously serve [11].

Within the African context specifically, a recent study of public universities across the continent found that poor facility condition and overcrowding, limited skills and capacity within facility management departments, and inadequate financial resources are the dominant challenges, and recommended stronger government funding prioritisation, better-qualified FM staff, and innovative public-private partnerships as remedies [12]. A related study on financing models for school facilities in a developing-country context similarly found that financing FM practice, rather than technical knowledge alone, is often the binding constraint in the Global South, and proposed diversified financing blueprints as a way of sustaining maintenance programmes beyond conventional government budgets [9].

2.4. Digital Transformation and Advanced Technologies in Facility Management

The most significant development in the FM literature since the sources consulted in the original review is the rapid convergence of digital technologies Building Information Modelling (BIM), the Internet of Things (IoT), digital twins, artificial intelligence (AI) and computerised maintenance platforms into what several authors now term "smart facility management." The following subsections synthesise this literature and relate it to the practices observed at Hawassa University.

2.5. Sustainable and Green Facility Management

Sustainability has moved from a peripheral concern to a defining criterion of contemporary FM practice, reflecting the sector's material and energy footprint noted at the outset of the original review. Recent literature frames sustainable facilities management (SFM) as encompassing energy efficiency, waste minimisation, water stewardship and occupant well-being, delivered through both technological measures (smart HVAC, renewable integration, real-time energy dashboards) and organisational measures (green procurement policies, sustainability reporting, green-building certification). As noted above, however, empirical work on African universities finds that awareness and formal adoption of sustainability frameworks remains limited relative to universities in high-income countries, with financial constraint and limited technical capacity cited as the principal barriers [13]. For Hawassa University, this suggests that any future capacity building programme for the facility management office should treat sustainability literacy as a parallel priority alongside the more immediate organisational and staffing reforms recommended in the original study.

2.6. Common Problems in Buildings, Best Practice in Design Involvement, and Types of Maintenance: A Note on Continuity

The original review's treatment of common building defects, of the case for involving facility managers early in the design process, and of the classical taxonomy of maintenance types (planned/preventive, corrective, emergency and condition-based) remains valid and is not superseded by the technologies discussed above; rather, those technologies change how each of these classical FM activities is executed. Condition-based maintenance, for example, is the maintenance category into which IoT- and AI-enabled predictive maintenance falls,

while post-occupancy evaluation already covered in the original review is increasingly conducted using sensor-derived occupant-comfort data rather than survey instruments alone. Readers of the full paper should therefore treat Sections 2.2, 2.3 (best practice in design involvement) and 2.5 (types of maintenance) of the original document as the operational core that the technologies reviewed in Section 2.4 above are now being used to deliver more efficiently.

2.7. Synthesis and Identified Research Gap

Read together, the literature surveyed above supports three conclusions that sharpen the rationale for the present study. First, the international literature confirms that FM has become a technologically intensive, data-driven discipline in which BIM, IoT, digital twins, AI and CMMS/CAFM platforms are treated as standard even expected tools of practice, a picture considerably more advanced than the wholly manual, paper-based system documented at Hawassa University. Second, the higher-education-specific and African-specific literature, particularly the 2024 Ethiopian exploratory factor analysis [8] and the continent-wide review of public-university facilities challenges [12], indicates that the structural and staffing deficiencies identified in this paper are not unique to Hawassa University but appear to be a systemic feature of public-university FM across Ethiopia and much of Africa, lending external validity to the present case study's findings. Third, and most importantly for practice, the literature suggests a plausible sequencing for reform: because advanced technologies such as BIM, digital twins and AI-enabled predictive maintenance depend on a prior foundation of structured asset data, the most immediately actionable step available to Hawassa University's facility management office is not the adoption of any single advanced technology but the establishment of a basic computerised asset register and maintenance-logging system the CMMS/CAFM layer described in Section 2.4 upon which more advanced digital tools could later be built.

3. Research Methodology

3.1. Research Design

Table 1. *Methodology Matrix.*

Specific Objective	Data Collection Method	Instrument	Primary Source	Analysis Method
Roles/responsibilities of FM from an engineering perspective	Interview; document review	Semi-structured interview guide	FM Office managerial staff	Thematic coding
Maintenance and repair trends of university buildings	Interview; direct observation; group discussion	Interview guide; observation checklist; photographic record	Dormitory proctors and technicians; site visit	Thematic coding; defect-frequency tabulation
Availability of skilled workmanship for maintenance/repair	Interview; document review	Interview guide; staff records	FM Office managerial staff	Descriptive summary (staff counts/qualifications)

3.2. Case Study

Two cases the Facility Management Office (Case One) and the male dormitory maintenance service (Case Two) are presented in full below, consistent with the primary data collected during fieldwork.

Case One: Hawassa University Facility Management Office

Table 2. *Case Study-1 Data Summary.*

Attribute	Recorded Value
Location	Office Block 134, Office 16
Total staff	27 staff members at top and middle managerial levels, plus technical staff distributed across eight maintenance sub-divisions
Managerial qualification	BA degree in Management (first two managerial tiers)

Attribute	Recorded Value
Departmental technical qualification	Skilled, semi-skilled and unskilled workers at department/operational levels
Institutional reporting line	Accountable to the Business Administration Department
Core services (6)	Classroom arrangement; guesthouse arrangement; administrative office arrangement; graduation-programme logistics; landscaping; building maintenance and repair
Maintenance sub-divisions (8)	Plumbing; carpentry; glazing; painting; woodwork; metalwork; electrical works; and one further unspecified division
Property registration/ valuation system	Not computerised; paper-based filing
Documented organisational structure	Not available at time of assessment
Outsourcing practice	Specialised/high-expertise work outsourced to external contractors on a case-by-case basis
User-satisfaction survey	Conducted for administrative facility services only; not extended to residential/technical maintenance services

Case Two: Male Dormitory Maintenance Service

Table 3. *Summary of male dormitory Maintenance Service practice.*

Attribute	Recorded Value
Scope	All 20 male dormitory blocks, main campus
Construction sources	16 blocks Gads Construction; 4 “white house” blocks Yirgalem Contractor
Rooms/shared facilities assessed	Bedrooms, toilets, showers, TV rooms, proctor offices, laundries, lockers, lighting
Building elements observed	Toilets and sanitary fittings, power breakers, windows and doors, ceilings, external and internal walls
Maintenance type in practice	Unscheduled/unplanned (reactive) maintenance
Most frequently repaired items	Door locks, lighting, electrical sockets, lockers, sewer lines
Fault-reporting chain	Proctor → Student Service → Maintenance Directorate → assigned technician

Cross-Case Snapshot

Table 4. *Cross Case data summary.*

Dimension	Case One (FM Office)	Case Two (Male Dormitories)
Organisational documentation	No documented organisational structure	Governed indirectly via FM Office reporting chain
Records/asset registration	Paper-based, not computerised	No independent asset register; faults logged manually via proctors
Maintenance approach	Mixed — direct service plus outsourcing for specialist work	Predominantly reactive/unscheduled
Staff competence	Managerial staff hold BA in Management; limited engineering/technical qualification at senior level	Technicians are trade-skilled but maintenance is executed without design-stage input
User feedback mechanism	Present for administrative services only	Not systematised; issues surface only via proctor reports

4. Analysis and Discussion

This chapter analyses the case data presented in Chapter Four thematically, cross-references findings between the two completed cases, and benchmarks observed practice against the literature synthesised in Chapter Two, including the digital-FM technologies (BIM, IoT, digital twins, AI and CMMS/CAFM) reviewed in the expanded literature review.

4.1. Organisational Structure and Governance

The Facility Management Office coordinates six core services classroom, guesthouse and administrative office arrangement, graduation-programme logistics, landscaping, and building maintenance spanning multiple engineering and non-engineering disciplines. From an organisational-design perspective, however, the office lacks a documented structure showing the chain of accountability among its departments, sub-sections and staff. This is a significant governance gap: without a documented structure, responsibility for specific asset classes or building elements cannot be unambiguously assigned, complicating both day-to-day supervision and post-incident accountability. Benchmarked against ISO 41001: 2018, which requires a documented FM policy and defined roles and responsibilities as a baseline management system requirement, the office's current arrangement falls short of an internationally recognised governance standard, corroborating the study's own overall conclusion in Chapter Six.

4.2. Asset Registration, Recordkeeping and Digitalisation

Property registration and valuation practice under the office is not computerised. This is consequential rather than merely administrative: without a structured, queryable asset register, the office cannot systematically track the age, condition, warranty status or maintenance history of individual assets, which in turn constrains it to reactive rather than planned maintenance. As discussed in the expanded literature review, this is precisely the foundational layer a Computerised Maintenance Management System (CMMS) or Computer Aided Facility Management (CAFM) platform that more advanced technologies such as BIM integrated FM, IoT-based predictive maintenance and digital twins are built upon; an office without a basic digital asset register cannot yet meaningfully adopt these more advanced tools, regardless of their demonstrated benefits elsewhere. This finding also directly corroborates the 2024 Ethiopian exploratory factor analysis of public-university facility maintenance, which identified “internal processes and organisation” as one of four critical factors limiting FM effectiveness nationally, suggesting the Hawassa case is representative of a wider national pattern rather than an isolated institutional weakness.

4.3. Staffing and Professional Competence

The office employs 27 staff at managerial levels, holding BA degrees in Management, supported by skilled, semi-skilled and unskilled technical staff across eight maintenance sub-divisions (plumbing, carpentry, glazing, painting, woodwork, metalwork, electrical work, and one further unspecified trade). While this staffing level is not negligible, the qualification profile is concentrated in general business administration rather than engineering or facility management specific competence at the managerial tier, echoing the international literature's finding that FM teams are often staffed with technically trained maintenance workers but managed by generalists without FM-specific training. The consequence, consistent with both the case data and the wider literature, is a mismatch between the technical complexity of the assets being managed (electrical distribution, sanitary systems, structural fabric) and the professional background of those responsible for planning their upkeep.

4.4. Service Scope and Budget Adequacy

The budget allocated to the office's various activities was reported as fair, suggesting that the primary constraint on service quality is managerial and procedural rather than purely financial: the same respondents indicated that better targeted investment of the existing budget could resolve several of the shortcomings identified during the assessment. This is an important distinction for the recommendations in Chapter Six, since it implies that organisational reform (structure, records, training) may yield more immediate improvement than additional budget alone.

4.5. Maintenance Practice: Type and Trend Analysis

Applying the maintenance type taxonomy set out in Section 2.5 (emergency, unscheduled/ unplanned, routine, planned/programmed, and predictive/preventive maintenance) to the dormitory case, the maintenance service observed is overwhelmingly of the unscheduled/unplanned type: work orders are generated only after a defect is reported by a proctor, rather than through a preventive inspection cycle. The most frequently repaired items door locks, lighting, sockets, lockers and sewer lines are all items for which a routine preventive-inspection regime (of the kind described in Sections 2.5 and 2.6) would be expected to catch early-stage deterioration before failure, suggesting that the shift from unscheduled to preventive/predictive maintenance identified as an international best practice in Chapter Two would have material, not merely theoretical, benefit for this specific facility.

4.6. Materials Storage and Handling

(a)

(b)

(c)

Figure 1. *Outdoor storage of decommissioned window frames, metal offcuts and building materials, main campus (a–c).*

Figure-1 documents the storage practice for maintenance materials and salvaged components. Decommissioned window frames, metal offcuts, cement blocks and miscellaneous hardware are stored in the open, exposed to rain and vegetation growth, with no visible sorting, labelling or covered storage area. This has two consequences worth separating analytically: first, an economic one materials that could be refurbished or their metal content recovered are instead left to deteriorate, representing a sunk cost; and second, a housekeeping and safety one loose metal framing and glazing left at ground level in an open, publicly accessible area is itself a hazard. The absence of a defined store, bin system or disposal contract is consistent with the absence of a documented organisational structure noted in Section 4.1: without a named responsible unit, materials-handling defaults to ad hoc dumping rather than managed storage or disposal.

4.7. Photographic Evidence of Building Fabric Deterioration Male Dormitories

(A) (B) (C)

(D) (E) (F)

Figure 2. *Sanitary and building-fabric deterioration in male dormitory blocks (A–F).*

Panel (A) shows a wash-hand basin used as a substitute toilet, its drainage no longer functioning, indicating that the original sanitary fitting failed and was never repaired or replaced, forcing occupants to misuse an adjacent fixture. Panel (B) shows ceiling collapse with the supporting frame breaking away and an exposed sewer line above, a serious deterioration that also creates an indirect safety and hygiene hazard. Panel (C) shows toilet doors that are damaged and non-functional, together with fallen skirting tiles and damp-affected internal walls. Panel (D) shows an unlit upper slab area with a leaking

waste pipe and an improperly chiselled external wall around a water-supply fitting, left uncovered. Panels (E), and (F), show external wall deterioration attributable to sustained dampness originating from the adjacent, poorly functioning sanitary system. Read together, these six panels indicate a single underlying causal chain rather than six unrelated defects: unresolved plumbing failures are allowed to progress to the point of active water ingress for the facility which then drives secondary damage to ceilings, walls and finishes the textbook signature of a reactive, rather than preventive, maintenance regime.

(G) (H)

Figure 3. *Ad hoc crack repair using cement paste, without prior crack-type diagnosis (G–H).*

Figure 3 (G-H) shows a structural crack repaired by direct application of cement paste along the crack line, without prior diagnosis of crack type, width, depth, or whether the crack is active (still moving) or dormant the diagnostic first step required by standard crack-maintenance practice referenced in Section 2 Because the underlying cause of the crack was not addressed, the cement-paste patch has already begun to detach, both compromising the repair's effectiveness and visibly affecting the building's aesthetic condition. This is a clear illustration of unscheduled/unplanned maintenance being substituted for the predictive/diagnostic maintenance category described in the literature.

(I)

Figure 4. *Uncovered electrical distribution breakers, accessible to building occupants (I).*

Figure 4 (I) shows two electrical distribution breaker enclosures left without covers, exposing live wiring, circuit breakers and terminal connections to direct occupant contact. Respondents indicated that students have been observed operating these breakers themselves, without technician supervision or instruction a direct life-safety risk consistent with the "security and life safety" FM function identified in Section 2 of the literature review as a core, non-negotiable facility-management responsibility. This finding should be treated as the single highest priority item arising from the condition survey, given its potential for fire or electrocution injury, and is flagged accordingly in the recommendations.

(J)

Figure 5. *Further building-fabric condition documented during the site visit (J).*

4.8. Defect-Frequency Summary

Table 5 below summarizes the building-element categories documented during the observation phase by frequency of occurrence within the photographic record, providing a simple descriptive quantification of the condition survey to complement the qualitative narrative above.

Table 5. *Summary Of Defect category and associated maintenance required.*

Defect Category	Panels Documenting Category	Frequency	Associated Maintenance Type Required
Sanitary fittings / plumbing failure	A, D	2	Corrective + preventive inspection
Ceiling / roofing damage	B	1	Corrective (emergency-adjacent)
Doors (non-functional)	C	1	Routine/minor repair
Wall dampness / finish damage	C, D, E, F	4	Corrective + root-cause (drainage) fix
Structural cracking	G, H	2	Predictive/diagnostic + corrective
Electrical installation exposure	I	1	Emergency (life-safety priority)
Outdoor materials storage / disorder	Fig. 5.1 (a–c)	3	Organisational/procedural (not physical repair)

4.9. Cross-Case and Literature-Benchmarked Discussion

Synthesising Sections 4.1–4.8 with Chapter Four's cross-case snapshot (Table 5), a consistent pattern emerges across both the managerial case (Case One) and the operational case (Case Two): governance gaps at the office level (no documented structure, no computerised register) translate directly into operational-level consequences at the dormitory level (reactive maintenance, undiagnosed repairs, unresolved safety hazards). This is consistent with the wider African and Ethiopian literature reviewed in Chapter Two: the 2024 exploratory factor analysis of Ethiopian public university buildings found facility maintenance management nationally to be immature and in need of holistic intervention, while the continent-wide review of African public universities identified limited staff capacity and resource constraints as the dominant barriers to effective FM both patterns visible in the Hawassa data. Where the Hawassa case adds further, concrete detail beyond the aggregate national-level studies is in showing precisely how an unstructured, non-computerised managerial layer propagates into specific, photographable physical consequences (Figures 2–5) at the point of service delivery.

Framed against the advanced-technology literature reviewed in Section 2.4, the university's current practice sits at the pre-digitalisation stage that BIM, IoT, digital-twin and AI-enabled predictive-maintenance research all treat as the starting condition to be improved upon, not as a viable long-term operating model. The most proportionate and immediately implementable technology intervention, consistent with the synthesis in Section 2.7 of the expanded literature review, is the introduction of a basic CMMS/CAFM asset register and digital work-order system a modest, low-capital step relative to BIM or digital twins, but one that would directly resolve the finding and create the data foundation on which more advanced tools could later be built.

Summary of Key Findings

Table 6. *Summary of Findings.*

S/N	Finding	Severity/Priority
1	No documented organisational structure or chain of accountability in the FM Office	High root cause
2	Property/asset registration is paper-based and not computerised	High root cause
3	Managerial staff hold general management, not FM/engineering, qualifications	Medium
4	Dormitory maintenance is reactive/unscheduled rather than planned or preventive	High operational consequence
5	Sanitary-system failures are driving secondary wall, ceiling and finish damage	High

S/N	Finding	Severity/Priority
6	Structural cracks are patched without diagnosis of type or cause	Medium
7	Electrical distribution breakers are left uncovered and accessible to occupants	Critical life safety
8	Salvaged materials and spare parts are stored outdoors without a managed system	Medium
9	User-satisfaction surveys exist only for administrative services, not maintenance	Medium

5. Conclusion

The problem statement motivating this study was that, despite the recognized role of facility managers in sustaining building operations, Hawassa University's main-campus buildings require extensive and recurring maintenance and repair. The findings confirm this problem and trace it to a common root: the Facility Management Office is organizationally under developed relative to the scale of the estate it is responsible for. Against the study's three specific objectives, the study concludes the following.

The office discharges a broad service mandate classroom, guesthouse and administrative-space arrangement, graduation logistics, landscaping and maintenance but has no documented organizational structure and is led at the managerial tier by general-management, not engineering or facility management, qualification. Engineering input is therefore present at the technical/trade level but absent from strategic decision-making, which the primary structural weakness underlying the maintenance problems is observed.

Maintenance, particularly in the dormitories, is reactive and unscheduled rather than planned or preventive. This produces the recurring, escalating defects documented in Chapter Five: sanitary failures left to progress into wall and ceiling damage, structural cracks patched without diagnosis, and most critically electrical distribution breakers left uncovered and accessible to occupants. The absence of a computerized asset register removes the basic precondition (structured maintenance history) for shifting from reactive to planned maintenance.

Staffing is numerically adequate (27 managerial and technical staff across eight trade divisions) but not adequately professionalized: managerial qualification is concentrated in general management rather than engineering/FM, and technicians execute repairs (e.g., crack sealing) without diagnostic training. Skilled workmanship therefore exists in the trades but is not deployed within a professionally supervised maintenance system.

Overall, the practice observed falls short of internationally recognized facility management standards. The problem identified in Section 1.2 is confirmed to be organizational and procedural in origin rather than a simple shortage of funds or labour, and is therefore addressable through the targeted, low-to-moderate-cost interventions recommended below.

6. Recommendations

The following recommendations are ordered by priority and mapped directly to the findings in Section 4.

1) Immediate (safety-critical): Cover and secure all exposed electrical distribution breakers in dormitory blocks and restrict operation to trained technicians.
2) Short term: Establish and publish a formal organizational structure for the Facility Management Office, with a clear chain of accountability from technicians through to management.
3) Short term: Introduce a basic computerized asset register and maintenance-logging system (a CMMS/CAFM platform) to replace paper-based files, enabling a shift from reactive to planned/preventive maintenance.
4) Medium term: Recruit or develop, through targeted training, at least one engineering/FM-qualified professional at managerial level, and train technicians in basic diagnostic methods (e.g., crack-type assessment) before repair.
5) Medium term: Extend the existing user-satisfaction survey from administrative services to residential and maintenance services, to surface recurring defects earlier.
6) Long term: Integrate facility management input at the design and procurement stage of future university buildings, so that maintainability and life-cycle cost are considered before construction rather than remedied after occupation.

Abbreviations

AI	Artificial Intelligence
BA	Bachelor of Art
BIM	Building Information Modelling
BMS	Building Management Systems
CAFM	Computer Aided Facility Management
CMMS	Computerised Maintenance Management System
ESG	Environmental, Social & Governance
FM	Facility Management
HVAC	Heating, Ventilation and Air Conditioning
IFMA	International Facility Management Association
IoT	Internet of Things

ISO	International Organization for Standardization
POE	Post Occupancy Evaluation

Author Contributions

Mikael Ketema Neserane: Conceptualization, Resources

Conflicts of Interest

The author declares no conflicts of interest.

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