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Towards Sustainable Public Park Management in Cairo Through Facilities Management: A Conceptual Review Study

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Abstract: Green spaces have a major role in achieving sustainability in cities and improving the quality of life of their residents. Despite their vital role, they do not receive proper attention and care in Cairo. In addition to their deteriorated condition, Cairo has a limited presence of green spaces and public parks that are poorly distributed. Improving and protecting green spaces in Cairo requires a shift in how they are approached and managed. This paper introduces the concepts and principles of facilities management (FM) to public park management (PPM) in Cairo. It specifies the connection between the two in terms of the expected differences between managing buildings and public parks, and how FM concepts can be applied to meet sustainable PPM requirements. Previous FM theoretical research was reviewed for the conceptual analysis of FM characterising concepts. FM and PPM were compared qualitatively to show connections and expected differences. Observations, interviews, and questionnaires were used to investigate the Cairo PPM problems. A FM framework to restructure the practice of PPM is synthesised based on the identified requirements in Cairo and FM knowledge. FM core concepts can provide PPM with a framework towards a sustainable management practice. By examining the parallels between FM and PPM, this research creates a theoretical basis for FM practice in sustainable PPM. Specified FM knowledge for PPM provides a generic approach to the practice that applies the core concepts of FM even without explicitly referring to the field and introduces FM to others who do not apply them, like in Cairo.

Keywords: public space, green space, public park, strategic management, operation, maintenance

1. Introduction

Half of the world's population currently lives in cities and is expected to rise by the year 2050 to reach 66% [1]. The pressure of urbanisation exposes city residents to a wide range of problems that directly affect their sense of well-being. Large cities often have a dense urban fabric, traffic, and pollution problems [2]. Public green spaces are considered one of the elements that can mitigate such problems and contribute to enhancing people's quality of life [3-6]. In a city environment where people have limited access to nature, green spaces represent an alternative contact with either natural or semi-natural settings [4, 7-9]. They have multiple benefits and positive impacts, including influences on health, productivity, socialisation and engagement [6, 8-11]. From that perspective, green spaces are important assets for cities that require protection and enhancement.

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In Cairo, Egypt, green space insufficiency and poor distribution are prevalent problems. Most of Cairo's parks are small in area, and their distribution leaves many of its residents without proper access to public parks. Despite being limited, green spaces are not receiving proper protection. Many of them are being replaced with other functions, while others suffer serious deterioration [12]. Public park problems in Cairo were found to be closely related to their management approach, especially through public administrations. Their management approach is very limited to creating financial resources. Most managerial processes are done randomly without proper planning and with minimum effort [13]. To manage a public park sustainably, specific requirements need to be met, which are overlooked in Cairo.

Collomb [14] claims that public green spaces are considered "cultural facilities" that require to be managed as "leisure centres without a roof" with the same skill level required for managing other "indoor leisure facilities". This view considers that the management focus is not limited to the physical environment [14]. The sustainable management of public parks, a type of public green space, needs to meet four main requirements: (1) "being responsive to context", (2) "setting direction", (3) "managing performance", and (4) "dealing with resources" [15]. This article examines how facilities management (FM), an established approach to managing the built environment, can be applied to managing public parks to meet these four requirements and improve the public park management (PPM) practice in Cairo.

FM shifts the conventional view of buildings as a drain on resources to being an asset [16]. Public green spaces are sometimes similarly perceived as a financial liability [14]. FM aims to maximise facilities' value and, in return, increase the quality they offer [16, 17], which is a required approach for PPM. FM adapts other concepts that complement that view and correspond to the requirements of managing public parks sustainably. The next section provides a background on FM, followed by a research methodology section. Section 4 analyses the relationship between FM and PPM, while Section 5 identifies how sustainable PPM requirements are being met in Cairo. Finally, a FM framework to be applied in Cairo PPM is proposed in Section 6.

2. Background

The significance of management for public spaces in general and public parks, in particular, is acknowledged repeatedly in literature [14, 18-20]. Undeniably, it has similar importance in dealing with buildings. If a building has a poor environment, it starts to be a burden rather than an asset [21]. Due to the changes in the business environment over the 20th century, organisations have recognised the need to be competitive and more responsive to customers in order to seek continuous overall quality enhancement. This further led to the re-evaluation of all processes in an attempt to find more effective managerial methods [16, 22-25].

Organisations often seek ways to manage buildings' operating processes with lower costs and higher efficiency [16, 26, 27]. When these processes were managed in a fragmented and inefficient manner, FM emerged as an alternative approach to these inadequate practices [21, 28]. According to the International Facility Management Association (IFMA) [29], FM is a profession that encompasses multiple disciplines to ensure the functionality, comfort, safety and efficiency of the built environment by integrating people, place, process and technology. It started as a way of merging and coordinating maintenance and other service-related activities, providing a sole competent reference point for all of them, and it further developed to incorporate a wider scope [16, 26, 27, 30, 31].

Moreover, FM originated due to the increased awareness of the role of the physical environment in work-related social interactions, which was previously believed to play a minimal or no role. Franklin Becker's early work involved focusing on users, showing that enhanced work environments affect people's well-being and have economic benefits [25, 32, 33]. Grimshaw [32] claims that Becker's approach can be rooted in the "humanist tradition" in "social theory", which was a link Becker missed making regarding his position on FM. He sees that this missing link prevented FM from having a strong conceptual base and led FM to be confined to the "functionalist tradition" which is "characterised as it is by a high level of regulation and objectivity, supporting the hierarchical top-down approach that seeks a single 'right' of doing things" [32]. Within that perspective, FM was narrowed to operational cost-cutting functions, the first generation of FM practice [31], an image of FM that still commonly precedes nowadays.

As a result, FM lost its original focus on users and managing change, which linked it to strategic planning [25, 32, 34]. FM is trying to establish a position that goes beyond this narrow view [32, 35-42]. It is not only about minimising costs of operations or carrying out coordinated routine activities, but also about helping organisations improve their work in multiple areas through strategic management, added value, innovation and planning [27, 41, 43, 44].

Section 4 reflects on the core concepts that FM aspires to achieve in dealing with the management of buildings to answer the question of why FM, as an existing applied practice, can be adapted to manage public parks. It also discusses the expected differences in this application between managing buildings and an outdoor environment like a public park.

3. Research methodology

Conceptual analysis examined FM definitions and concepts from previous FM theoretical research. Using comparative analysis, the application of these concepts in PPM was explored, showing the differences and the parallels between FM and PPM. FM concepts were also linked to the requirements of sustainable PPM and the specific needs for Cairo public parks as identified by the research.

The case study of Cairo public parks was investigated using field observations, interviews and questionnaires. 48 of Cairo's parks were observed using a predetermined evaluation tool. 12 representatives from public parks agencies in Cairo were interviewed, in addition to the 40 responses to a questionnaire distributed to managers of individual parks. Parks users in Cairo were also surveyed using an online questionnaire which received 536 responses. The analysis of the results of each of the case study methods revealed insights about public parks in Cairo, their usage and users, and their management. Bringing these results together, a complete picture of the current management practice in Cairo was identified.

The results from each of the case study methods will not be detailed in this article, as it focuses on the application of FM in PPM. Instead, management shortcomings and common problems that the overall investigation revealed will be summarised in Section 5 to demonstrate how the practice in Cairo is not meeting the four PPM requirements. By determining the specific management problems in Cairo and through the integrative literature review and conceptual analysis of FM, a FM framework is synthesised to restructure PPM practice in Cairo.

4. Public park management from the perspective of facilities management

FM, within its current practice of managing a building or group of buildings, can be responsible for its outdoor areas. Differences are to be expected when managing an outdoor area as the sole focus of a FM service, which is what this article is examining, i.e., FM as an approach to the practice of PPM. The park is to become the "facility", not part of it, and FM services are to be defined accordingly. The following two parts discuss FM concepts that can be applied in PPM: core and non-core activities, FM added value, strategic and operational FM, and a service perspective.

4.1 Differentiation between managing indoor environments and public parks

In managing buildings, FM would be catering to the requirements of a specific organisation. Although nowadays organisations are expected to be more responsible towards the environmental and social impacts of their businesses, FM accountability is usually examined internally by the organisation itself with a limited need for public accountability. The uses of buildings, although they might change with time, are to a degree more determined and expected according to the nature of the organisation. On the other hand, public park managers deal with a considerable variety of stakeholders with different expectations and requirements. The uses in parks are accordingly more diverse, with less control over the expectations of users' behaviours. They are not held responsible just by the specific organisation they serve; they are also supposed to be held publicly accountable. Moreover, the ownership of a building is clearer, while in the case of public spaces, the boundaries between public and private ownership can be blurred [28].

Several FM definitions focus on the workplace concept since FM products are considered to be well-performing workplaces [36]. Other definitions focus on the concept of "non-core activities" [30], i.e., FM having a supportive role to an organisation by managing specific processes that assist the core business. FM deals with buildings that have the main function of accommodating a workforce to provide a certain service or product. In doing so, FM can operate within a facility where the targeted users do not interact with the facility and consumption happens elsewhere. The building's users are mainly staff, with a limited presence of visitors. FM services, in this case, do not directly affect these targeted users, but they affect the workers and the processes related to the production and consequently affect the quality

of the products or services users receive [30, 36, 45]. FM also operates in facilities where both employees and end-users interact with the facility and receive the service within it. This makes FM services more closely related to the end-user, and their quality affects them directly [35]. Public parks can be identified with this second category.

Parks cannot be defined as a workplace despite the presence of workers. Within a park, some structures could be used for administrative purposes, but in the end, they will not be the focus of the park's management. FM concepts will be applied in managing these structures, but the scope will be wider than the management of a workplace. If FM is to be applied to parks, its services will become even more crucial and closely related to users' experiences as the park with its different components becomes the service or product. FM services and processes will have a direct influence on the park, its qualities, benefits, and impacts on users.

This brings to attention the issue of differentiating between core and non-core activities that some follow when practising FM. Performing within larger organisations that manage their built environments, FM is often classified as dealing with non-core activities that support the core business [16, 30, 35, 38, 39]. Before the introduction of FM, these activities used to be managed separately and without much coordination. FM, then, started with integrating several services and evolved to the extent of offering a total or integrated FM that also involves property management [30].

The distinction between core and non-core activities is particularly hard to draw, and this is one of the main reasons for the misconception about the field. FM services cannot be entirely isolated from the organisations' primary activities [16, 39]. In identifying the organisation's requirements and reflecting its strategy in the provision of facilities or spaces where different activities take place, FM proves its wide influence on all core or primary activities [40]. FM researchers advocate for leaving behind such differentiation because it introduces FM as an outsider and does not reflect its proper value [39, 41]. Instead, FM should be part of the core competencies of any organisation due to its close relationship with all internal and external actors and how it is "permeating the boundaries of primary activities" [39].

Jensen [46] argues that FM is required to contribute more to the core business and create "added value". He defined a value map for FM that includes both use value and exchange value. It illustrates the values FM can add to both its core businesses and its surroundings. FM can contribute to providing qualitative services if it is to distinguish itself from other cost reduction practises [46]. FM's added value supports the multidimensional and strategic characteristics of FM. Moving beyond operation and cost reduction gives a more holistic view of value and helps FM gain strategic importance within organisations. It also focuses on the importance of subjectivity in determining value, which will vary between different organisations. Hence, it is important to establish good relationships and communication between FM actors and the rest of the organisation [47].

Following the differentiation between core and non-core activities when dealing with public parks becomes even more irrelevant. FM is to become core and overarching to all services and activities that take place in a park. Even the most basic routine processes and services become crucial and closely related to what the park offers to its users. The park system has multiple interrelationships and dependencies among its components. A quality like cleanliness or a function like physical maintenance cannot be separated from the users' overall experience in a park [11, 15]. FM can act as a coherent unit of management, but without distinguishing core and non-core activities.

All functions and services under FM work together towards enhancing the park's quality and the users' experience in it, which is different from FM positions in other types of organisations. In buildings, FM will have its own internal structure where it is only a part of a larger organisational structure. This will be different in a park because the product or service is not separated from the facility. FM in a park will be the only internal overarching framework with different units underneath. The external relationships will not be with other internal departments but with a supervising agency like a general management entity that oversees several parks or with external organisations, users and other stakeholders. In managing buildings, FM often fights for recognition of its role within the organisation it serves, which will not be the case in managing parks. Internally, FM will be the main responsible actor, and its challenges will be more about establishing and communicating the importance of parks, and getting external recognition and support from decision-makers.

4.2 How facilities management concepts can be applied to managing public parks

The previously mentioned differences can make dealing with public parks a more complicated task than managing buildings. However, the above-mentioned FM core concepts still carry a lot of potential to be applied in PPM. FM is applied on different scales and can be tailored to match the organisations it serves, which makes it adaptable to

managing parks. At its lowest level of influence, FM focuses on coordinating and integrating fragmented services [30, 36]. This is a highly regarded requirement in managing parks that traditionally suffer from fragmentation [14, 20, 48-51]. It can be further extended to cover the four PPM requirements.

FM emphasises the importance of not providing standardised services to organisations. To plan facilities services, FM is supposed to work closely with an organisation to tailor FM services to its needs, which is among the important requirements for managing parks. FM changes the traditional way of dealing with organisations from a “goods perspective” to a “service perspective”. The goods perspective focuses on the efficiency of the operations that are used to create the goods [52]. They operate separately from their customers, producing homogenous and standardised goods. Their production is a one-way, linear process, with the supplier at one end and consumers at the other [53]. The degree of effectiveness in the use of these goods will remain dependent on the end-users. On the other hand, a service perspective works with users and organisations to support effectiveness as well as efficiency [52].

Services have distinctive characteristics if compared with goods. FM offers many services that are not as tangible as material goods [42, 54]. However, the effects of these services can be felt; for example, maintaining an air conditioning system will mean better air quality that users will experience. The challenge is that these kinds of effects can pass unnoticed or be taken for granted as long as they are working properly [42]. In general, the upkeep of parks is considered to be more influential on users’ experiences than the design characteristics [18], which increase the tangibility of the services FM will provide in a park despite not being a material good.

The effectiveness of FM is highly dependent on reflecting users’ demands and perspectives. FM services cannot be provided in isolation from their users. They are difficult to generalise and standardise [54]. A service perspective will be beneficial for parks by focusing on users, working on their feedback, and having better communication to understand their requirements.

A service perspective to FM highly considers the co-creation of value with users [44, 52, 53], instead of dealing with them as “passive recipients of value” [44]. It alters the linear process of goods perspective to become more oriented towards users, which introduces feedback to the process. Accordingly, PPM will be more dynamic, adaptive, flexible, and responsive to feedback and users’ demands [16, 33, 42, 53]. FM can then provide services that reflect the real requirements of the park’s users rather than standard services which gives FM a strategic role [55, 56].

If FM is applied only on the operational level, organisations are not making use of its strategic role [30, 34, 36, 43]. Managing parks is not only about the day-to-day operation, but they also require the application of different levels of management. The practise of FM includes the three levels of management required for better performance: strategic, tactical, and operational FM. Operational FM services are those related to short-term activities such as maintenance and cleaning [17, 35, 38, 57, 58]. Operation requires action plans, which are a management function on a tactical level. At a higher management level is strategic FM, which plans and determines the long-term direction [17, 56, 57].

The more FM services are in facilities closer to the end-user experience, for example, in hospitals or hotels, organisations place more importance on FM and its strategic role. In a hospital, for example, patients will not only be affected by the health care service but also by other features like cleanliness, quality of food, ease of mobility, and responsiveness [42]. A strategic FM role in parks would be crucial, as they have similar characteristics to these types of facilities. The strategic side adds genuine value to FM and distinguishes it from previous practises in building management [16, 34, 38, 41].

A strategic approach is important for long-term management. It supports the organisation in managing “changing, uncertain, unpredictable, and competitive circumstances” [37] to minimise risks, utilise available opportunities and create new ones [16, 37, 42, 56]. Planning is seen as key to the FM practise [34, 38]. Through facility planning, managers determine, in close collaboration with the organisation they serve, the requirements for managing the facility. They define performance measures and plan the use of spaces according to these requirements [16, 34, 59]. FM makes decisions related to modifications in response to internal or external influences on change [37]. Planning for change and managing it are essential FM strategic roles [16, 60].

In managing resources, FM provides valuable knowledge about the relationship between resource performance and how it impacts its receivers [39, 61]. Examples of this knowledge are “usage patterns or the preferred level of service”, which “when accumulated and applied systematically to provide an optimum working environment or production facilities can then actually be regarded as a core competence for the organisation” [39]. Facilities managers gain such knowledge through the continuous evaluation of the facilities they manage and feedback from their occupants [42].

Building similar knowledge for PPM and making use of the existing FM knowledge would be beneficial in optimising the use of resources in public parks.

At the tactical level, action plans will be set for the actual functional units to work accordingly on the operational level. The activities they perform and the services they offer are to be monitored and evaluated to determine any shortcomings or areas for possible improvements [25, 42, 45]. The tactical level is the link between the established strategy and the operational level. FM strategy can be established by setting goals and determining areas of strengths, weaknesses, opportunities and threats. After a certain strategy is implemented, a continuous review will be required to make any necessary changes [42]. FM could also be more proactive by searching for areas of possible improvement that can serve the direction [25, 42, 45, 62]. Continuous feedback and evaluation reveal areas of deficiencies and improvements and can help in providing better renovations or better designs for new facilities [42, 62].

Finally, FM added value is an important concept to bring to managing parks. To better utilise parks, the traditional practise of enhancing management through improving the efficiency of operational processes is not sufficient. PPM requires effectiveness and the incorporation of subjective values. These can be easily overlooked when the management focus is solely on maintaining the status quo through day-to-day processes. The park system model includes several qualities, benefits, and impacts that managers can use to set strategies and plan towards achieving goals, which can widen the scope of public parks' influence [11].

By using strategic planning to set a direction for management, FM can improve both the efficiency and effectiveness of PPM as a whole. Strategic FM will help managers stay proactive and avoid being constrained by the limitations of routine operational activities. FM can apply its strategy to manage resources in parks for better long-term utilisation. In addition to the strategic level, FM practise works through deliberate action plans; the tactical level of management that reflects the management direction and paves the way towards sustainable operation.

FM concepts were discussed in the previous section, along with their parallels to PPM. These concepts overlap when applied to meet the management requirements. FM applications can be extended beyond the limits of buildings to be applied to public parks:

- Applying FM to managing parks can emphasise the importance of the strategic level of management. FM concerns itself with having a core competence in managing any organisation, which is required in managing parks as well.
- FM is an approach that promotes proactivity and managing change, which can ensure that PPM is not only a reactive process to emerging problems, which again relates to the strategic and tactical levels of FM, i.e., the FM proactive planning functions that anticipate and look ahead.
- FM, in being user- and organisation-specific and not standardising in the service it provides, would respond well to differentiating between parks and focusing on their specific characteristics and users' needs. It allows more suitability, avoids the waste of resources, increases effectiveness and efficiency, and improves quality.

5. Synthesis of the case study findings: Public park management in Cairo and sustainable management requirements

As mentioned in the previous section, FM can be applied on different levels in an organisation, starting from setting directions, strategic alignment and long-term planning, through tactical short-term planning for operations and performance evaluation, to the actual realisation of the plans in the day-to-day operation. According to the case study investigation, PPM in Cairo, specifically by public administrations, was found to lack the application of the strategic and tactical levels of management, in addition to poor operational level practise. Consequently, the practice of PPM in Cairo is not responding properly to the four management requirements. Based on observations [13], interviews, and questionnaires conducted between November 2020 and May 2021, the following insights into the management of public parks in Cairo contribute to understanding problems that need addressing.

5.1 Being responsive to context

Public parks require to be managed according to their specific characteristics, context and the actual needs of

their users and the surrounding community [15]. In Cairo, public parks were found to be treated the same way, no matter what the circumstances or possibilities were in each park. They are completely detached from the users and the wider community [13]. Participation does not happen at any level, and the public is not informed or consulted about any decisions related to the parks. Feedback from users is not systematically collected, and active involvement in management is minimal.

5.2 Setting direction

Managing public parks cannot be done routinely without planning on different levels. They require strategic direction and goals to guide and coordinate the whole management process [15]. Fragmentation is key to the practise of PPM in Cairo. PPM responsibility is scattered among many entities. They are not managed as a network and are extensively divided and separated [12]. Planning is not practised at any level. The parks are managed individually without reflecting any direction or goals, either specifically inside the parks or regarding their wider influence, especially environmental, cultural and amenity benefits and their associated impacts. Public administrations in Cairo have a very narrow focus when approaching public parks that confines their role to creating revenue [13].

5.3 Managing performance

On the operation level, public parks' daily maintenance processes and activities require to be planned, executed and evaluated [15]. The condition of Cairo's parks is not at a high level and many of them are at a critically poor level. Park managers and workers in Cairo depend on personal experience in doing all operational tasks. The parks' operation is not guided by any plans, standards or regulations. Maintenance is mainly reactive, not unscheduled or coordinated. Neither the operation's performance nor the quality level in the parks is evaluated. Accordingly, potential improvements pass unnoticed because of the lack of feedback from the management cycle. Improving the parks, from the point of view of the administrations, are mainly about including more activities that can bring revenue. They do not plan for any other enhancements in the condition of the elements, improving the operational processes' efficiency and effectiveness, or any other environmental, social, or economic considerations [13].

5.4 Dealing with resources

Sufficiency of resources is important for supporting PPM. Financial, material, and human resources in public parks require efficient allocation and use [15]. Public administrations in Cairo are working with limited financial resources and do not get a proper financial allocation from public funds. Reduced budgets are a common issue many countries face; however, in Cairo, the effect is more overwhelming and has more obvious negative consequences. These are not only related to the condition of the parks but also create a harmful imbalance in management goals towards commercialised activities to increase revenue [12, 13]. The low availability of financial resources is also affecting the sufficiency of material resources.

Human resources are also problematic in Cairo. Public park managers and many of those in higher administrative positions are agriculture engineers [13]. They do not have a managerial background or training. The number of workers is not sufficient to cover the workload and the public administrations do not have the authority or the resources to hire new ones. The current workers do not receive any formal training to improve their skills or guide their work. Their work is dependent mainly on their experience and that of their supervisors.

FM can be applied to managing public parks and meeting the four management requirements. It can provide a clear organisational structure to guide the reframing of PPM in Cairo. As mentioned in Section 4, some differences are to be expected in applying FM to managing public parks compared to buildings. The following section proposes a structure for a FM framework that can be applied in Cairo based on an integrative review of FM literature and the investigation of the PPM problems in Cairo.

6. A proposal for a facilities management framework for public park management in Cairo

Fragmentation in PPM in Cairo will not allow the application of FM concepts or meet the four management requirements. FM is used here to guide the restructuring of Cairo PPM to meet these requirements and become a sustainable practice. The FM framework is a new proposed structure for managing public parks on the three levels of management and within the larger scope of integrated management of all types of green spaces.

However, it is more important to change the perspective of the public administrations about the role of public parks, apply the concepts of FM, and change the whole process to follow the proposed framework. A new structure alone would not enhance PPM in Cairo. Some of the suggested units in this structure already exist, but their approach requires change because the results of their current practice are not positive, as seen in Cairo parks [13].

PPM needs to be integrated with the management of other types of green spaces, as managing all types of green spaces as a network is proven to be more effective [63]. Therefore, the following proposal will include a wider scope of other green space types at the higher levels of management. It would not be realistic to propose the direct removal of existing administrations that are currently involved in managing green spaces and public parks and create a completely new cohesive entity, especially at the beginning of a transformation. Instead, better coordination and integration towards a common goal would be a better start that could leverage the existing experience of these administrations and any future unified structure can also include them.

The FM framework for PPM in Cairo is synthesised based on an integrative review of FM literature and contextualised for Cairo public parks. It is structured as a modified model based on Barrett and Baldry's [42] generic model for FM systems. The framework structure follows the three levels of FM: strategic, tactical, and operational, and consists of both planning and functional units (Figure 1).

6.1 Strategic facilities management

Cairo requires a new strategic-level committee to perform the functions of facility planning. It can act as a unifying guiding framework for all the administrations in Cairo that coordinate their work. At the strategic level, it will manage external influences and strategies, deal with different stakeholders' expectations, and manage users' feedback and participation. It will be responsible for long-term planning to set the future direction and goals for all green spaces, specifically for public parks. Strategies for green spaces could be created with the involvement of potential partners either in the public or private sectors to create common strategies that can maximise the role of green spaces, for example, partnerships with the healthcare sector, the tourism sector, or the ministry of environment. That level of management must also work closely with representatives from each public park administration in Cairo and representatives from the community.

The strategic level will be responsible for the long-term planning for the use of resources: "utilisation strategies", "rationalisation and disposal strategies", and "flexible tenure strategies" [37]. FM experts can be consulted to make use of their resource management knowledge and work on creating specific and similar knowledge for green spaces and public parks. Successful cases in Cairo, for example, the practice of Al-Azhar Park and Merryland [13], would be a support for creating such knowledge and other valuable inputs.

Obtaining sufficient financial resources will be a challenge in Cairo, and an increase in public funding will be required. However, because of the difficulty of achieving an increase in public fund allocations, optimising the use of available resources and reducing wasted resources will be crucial, and FM knowledge can support such goals. The use of material resources can also be more efficient through better coordination. Negotiating public funds would be important, but planning for alternative funding sources would be required without compromising the value of the parks. For example, sponsorships can be agreed upon, partnerships with the private sector or communities can be created, and events can be planned to increase revenues. Other activities that match the agreed-on strategies and do not compromise other important benefits and impacts could be introduced.

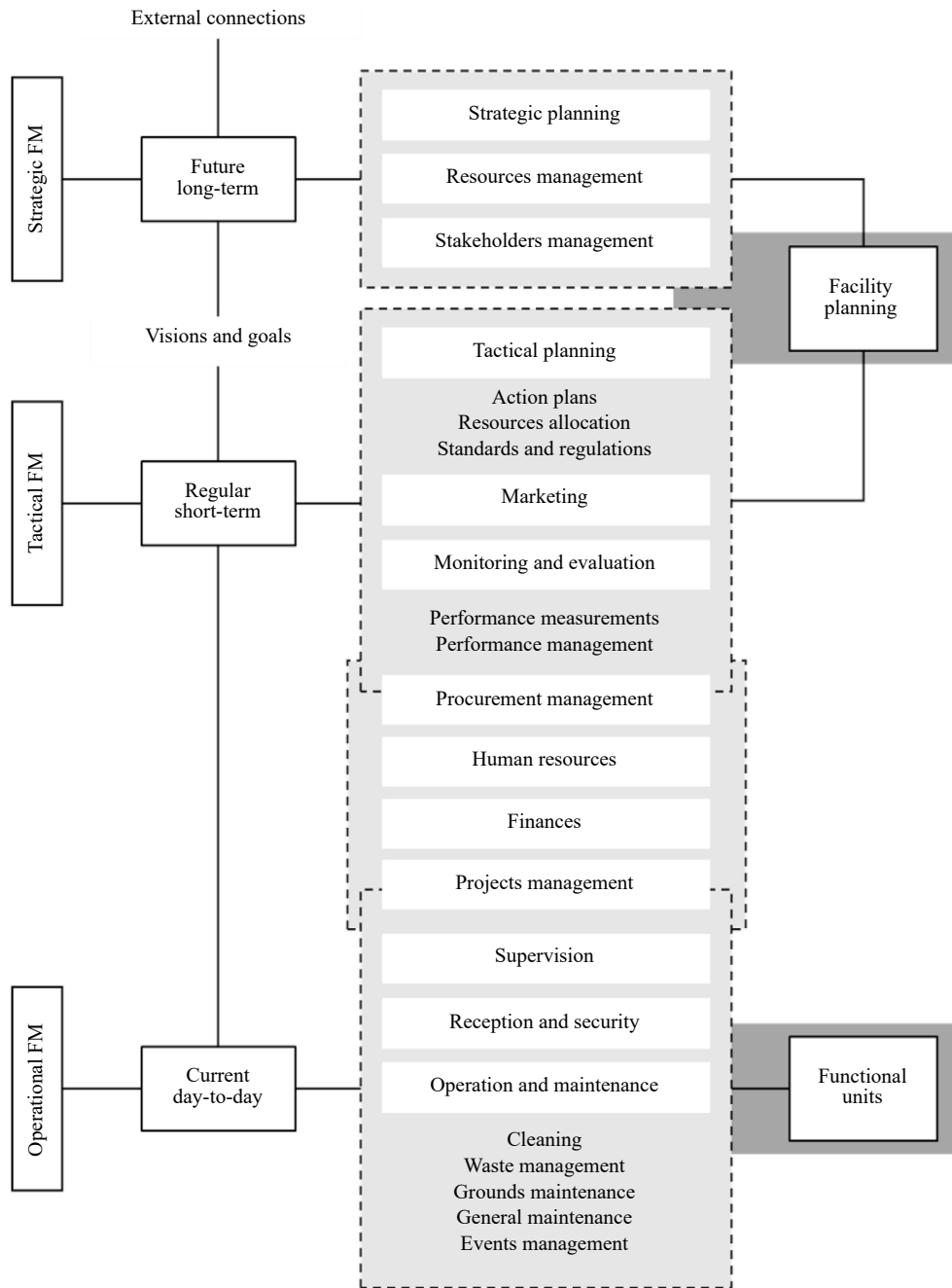


Figure 1. Proposal for FM framework for public parks in Cairo

6.2 Tactical facilities management

At the tactical level, short-term planning is to be established to reflect the strategic plans. This is to include action plans, resource allocation, standards, and regulations. A marketing unit will be required to promote the park's uses, increase the involvement of the public, and alter the existing negative image of green spaces and public parks in Cairo. It will be planning for events and working with event management units to guide them in their operation. The experience of FACILITIES, an Egyptian FM company, at Merryland Park and the Cultural Park for Children, which focuses on creating children's events and activities, can add helpful insights into creating such a practise.

Standards for all processes are to be created to guide the operational FM. The tactical level will be responsible

for monitoring and evaluating the actual operation. An evaluation tool has been used to assess the existing situation of public parks in Cairo and was among the tools that revealed the need for changing the management approach [13]. That tool can be used for the continuous assessment of the parks to monitor if enhancements in their quality have been achieved. In addition, further detailed indicators for the performance of each operational process will be created to be used on a more regular basis. Performance measurements must reflect the standards and regulations created at the strategic level.

Some units will work between the tactical and operational levels because their work will require employees to work directly either in a public administration that manages several parks or inside specific parks, depending on the scale. Their work will still require planning and coordination through the newly created committee. This would include procurement management, human resources management, financial management and project management.

The whole process is expected to be continuous and flexible, allowing plans to be revisited and adjusted when needed. New challenges will need to be addressed and new projects may come up as a result. These projects may include FM knowledge related, for example, to “physical modification strategies”, “adaptation and reconfiguration strategies”, and “change of use strategies” [37]. All emerging projects will get detailed planning at the tactical level and be managed through a project management unit. It does not necessarily have to be a permanent unit, but teams for each project can be created once needed with the involvement of actors from the three levels of management.

6.3 Operational facilities management

For the actual operation inside each park or a group of parks, which can be decided based on their circumstances, different functional units will perform the daily tasks. Functional units will have an operation and maintenance unit that will be responsible for cleaning, waste management, grounds maintenance, general maintenance, and event management. A reception and security unit will be responsible for the smooth operation of users’ entry and administering entrance fees, if needed, in addition to taking the necessary measures to ensure the safety of the park. A supervisory unit will be needed for monitoring and evaluating on a smaller scale and more regularly. It will be the connection point between the actual operation and the larger-scale monitoring and evaluation unit on the tactical level.

Cairo already has a few successful PPM practices that can support the required shift in the managerial approach to public parks. Application of FM in managing public parks has been limited to date, except for the short period when FACILITIES managed Merryland [13], which created useful knowledge that can support widening the application of FM in Cairo parks. They brought marketing to the practice of PPM, which is not a familiar managerial activity in Cairo parks. Through its marketing department, FACILITIES created a series of events to promote the park and alter its negative image. Al-Azhar Park does not apply FM per se, but its practice applies many of its concepts [13]. Al-Azhar Park brought to the park management practice in Cairo another uncommon aspect, which is its public relations department. The park administration places a high focus on the intangible value of public parks, in contrast to the economic perspective dominant in Cairo.

Even within the unsustainable practice of the public administrations, there are years of experience dealing with several managerial issues and first-hand knowledge of the challenges that come with managing parks in the public sector. The community showed a willingness to get more involved in matters related to their green spaces and public parks. Successful community initiatives can be scaled up, and with better guidance, more involvement can be achieved. The private sector is getting more involved in green spaces, but without working within stronger regulations, the results will continue to be similar to what happened at Saray al-Qoba Park, which lost almost all its vegetation in favour of creating several food venues [13]. Together, all the previous actors can be a strong base to cause a change in how green spaces and public parks in Cairo are being managed. FM, through its core concepts and by using the suggested FM restructuring framework, can guide the transformation. The concepts and practices of FM are wired to meet the four defined management requirements and apply the management framework proposed by Aly and Dimitrijevic [15].

7. Conclusion

Similar to any indoor environment, public parks require sustainable management. PPM challenges necessitate a departure from traditional management approaches. FM has been found to carry the potential for improving

management practices in public parks. The application of its concepts can provide an overarching and integrative approach to PPM. This article provides a solid theoretical foundation for the implementation of FM principles in sustainable PPM by specifying FM knowledge for PPM. It demonstrates how FM can be applied to managing parks and highlights expected differences between FM in buildings and parks. An overview of Cairo PPM problems in meeting management requirements is given. A FM framework is proposed that can guide the establishment of FM practice in public parks and restructure the current practice in Cairo. The FM framework would support PPM in Cairo to meet the four management requirements and achieve sustainability. However, the proposed framework offers a generic approach to FM in public parks.

Conflict of interest

The authors declare no conflict of interest in this study.

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