

Rajapaksha.Upendra, et al (eds), 2016, "Building the Future – resilient environments": *Proceedings of the 9<sup>th</sup> International Conference of Faculty of Architecture Research Unit (FARU), University of Moratuwa, Sri Lanka, September 09-10, Colombo* pp. 181 – 193 ©

## FACILITIES MANAGER'S ROLE AT THE DIFFERENT STAGES OF FACILITY LIFECYCLE IN SRI LANKA

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### **Abstract:**

Facilities Management (FM) is a comprehensive approach for building management. Many researchers highlighted that facilities manager should not be restricted to the operational stage. Hence, the role of a facilities manager can be structured throughout the facility lifecycle. However, there is a lack of a study on the facilities manager's role during different stages of the facility lifecycle. Therefore, this research aims to investigate the role of a facilities manager at the different stages of a facility lifecycle. The study used the systematic eight (08) stages defined in RIBA Plan of Work 2013 as a basis for investigating the role of a facilities manager at different stages of facility lifecycle. The study followed qualitative research approach. A literature review and expert opinion survey was carried out to investigate the facilities manager's involvement at the different stages of RIBA Plan of Work 2013. Content analysis was used to analyse the gathered data. Findings reveal that preparation of maintenance, energy and building management strategies as the foremost undertakings of a facilities manager at Concept Design stage. Moreover, at Developed Design and Technical Design stages facilities manager is responsible towards advising on value engineering process and getting planning permissions. Furthermore, facilities manager at Handover and In Use stages attends for technical trainings on building services and portfolio management.

**Keywords:** *Facilities Management, Facilities Manager's Role, Facility Lifecycle, RIBA Plan of Work 2013*

### **1. Introduction**

The design and construction phases of a building lifecycle is often dominated by the project team which consists with various stakeholders including client, contractors, architects, consultants and engineers (Chitkara, 1998). However, the dominance in operation stage is usually driven by a facilities manager to

enhance the useful lifespan of the facility (Lewis and Payant, 2007). Hence, Shah (2008) argued that the role of a facilities manager is important throughout the building lifecycle to effectively manage the facility.

Development of buildings is basically being relied on the needs of the business to create a work setup that is supportive in enhancing the core business functions (Alexander, 2000). Consequently, during the inception of building construction, the business requirements of the client are presented to the design team via a client's brief (Bezella and Brandon, 2006). According to Atkin and Brooks (2009) facilities manager has the exact capacity of knowledge on identifying a supportive environment in preparing the client's brief

Further, Felten et al. (2009) mentioned that the involvement of a facilities manager throughout the construction process is vital in confirmation of data consistency through to the operation and maintenance phase. Furthermore, the construction cost is only regarded during decision making in design and construction phases and such decisions often not fully deem the maintenance requirement of the facility (Dunston and Williamson, 1999). Therefore, as stated by Chanter and Swallow (2008) the scope of Facilities Management (FM) has put a substantial footing for the management of buildings where any single maintenance management cannot be conducted without a facilities manager. Moreover, Bosch and Pearce (2003) and Pitt et al. (2009) stated that deployment of a Facilities Manager during the planning, designing and construction stages have significant and positive impact for ensuring the sustainable strategies. Facilities manager facilitates planning, designing and construction, and managing any type of facility, which encompasses the building services are focused towards the attainment of strategic business objectives (Alexander, 2000; Hendrickson and Au, 2008).

However, there is lack of studies in identifying the involvement of a facilities manager at different stages of facility lifecycle. There is therefore a need to investigate the facilities manager's involvement at different stages of facility lifecycle. The RIBA Plan of Work 2013, organizes the lifecycle of a building including preparation of client's brief, designing and construction, and operation and maintenance into eight (08) systematic stages (RIBA, 2013). Therefore, this study used eight (08) systematic stages defined by RIBA Plan of Work 2013 as a basis to investigate the involvement of a facilities manager at different stages of a facility lifecycle. The four (04) sections below presents comprehensive literature review, research methodology, research findings, and conclusions and recommendations respectively.

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### 2. Literature Review

A robust collaboration among each building lifecycle stage is existing that begins from early planning to deconstruction stage of the facility (Bribian et al., 2009). Decisions made at the planning stages will drastically influence to the performance of the building during the operation stage of the facility (Petersen and Svendsen, 2010). Consequently, the requirement of making precise decisions at each stage is vital to enhance the efficiency and effectiveness throughout the building lifespan. The whole building lifecycle has been laid into eight (08) principal stage by RIBA (2013) as Strategic Definition, Preparation and Brief, Concept Design, Developed Design, Technical Design, Construction, Handover and Close Out, and In Use stage. RIBA plan of works was first developed in the year of 1963 and thereafter, the plan of works was amended and issued in the respective years of 1967, 1973, 1998, 2007 and 2013 to cope with the developments in the construction industry (Architecture, 2013). Therefore, with the evolution of RIBA Plan of Work, the RIBA plan of Work 2013 has become an important step for the construction process map which introduces with new changes (Architecture, 2013).

It was identified the involvement of various professionals throughout project lifecycle in carrying different project tasks. As specified by RIBA (2013), the professionals who involve at different stages consist client advisers, project lead, architect, lead designer, civil, structural and building services engineers, construction lead, contract administrator, quantity surveyor and health and safety adviser. However, in previous research studies the involvement of a facilities manager throughout the lifecycle is less investigated.

The scope of FM has gradually become a significant practice in any organization where the efficiency of that organization is in conjunction with the built environment in which it functions (Amaratunga et al., 2000). Achieving an effectual facility that can be easily operate, maintain, and manage is the foremost focus under the field of FM (Enoma, 2005).

IFMA (2016) defines FM as “a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology”. Furthermore, IFMA (2016) has identified eleven (11) core competency areas of a facilities manager related to (a) communication, (b) emergency preparedness and business continuity, (c) environmental stewardship and sustainability, (d) finance and business, (e) human factors, (f) leadership and strategy, (g) operations and maintenance, (h) project management, (i) quality, (j) real estate and property management and

(k) technology. Further, Tay and Ooi (2001) emphasize that, the term FM covers comprehensive range of activities under several disciplines for the achievement of successful facility.

The efforts of a facilities manager should involve with all designing, construction and, operation and maintenance phases of the building lifecycle (Lewis and Payant, 2007). Therefore, the role of facilities manager spreads across extremely wide range of activities throughout whole building lifecycle. Moreover, according to the findings of Felten et al. (2009) the collaboration of FM throughout the planning, designing and construction phases of the building lifecycle grants the following benefits.

- Reduce the time required for the building commissioning process
- Reduce the costs related in building operation and maintenance while increasing the productivity of users through the creation of the of more need-oriented utilization of the building
- Clearly define the provision of authority and responsibility required for FM planning
- Concern on user at the initial stages will optimize the quality of the building along with the cost of construction
- Deeply evaluate the all FM related concepts
- Concern on the user as a customer with specific needs
- Consider the possible changes during over the time of use through a construction related evaluation
- Coordination of information between construction operation phases

Strategic Definition stage copes with recognizing the business case of the client in respect to the potential project (CIOB, 2002). Whilst, Fewings (2013) revealed that identifying the business case involves in defining the objectives of the client in the perspective of particular project at the inception stage. Further Langston et al. (2008) argued that facilities manager at the inception stage is responsible for making decisions with justifications which are being relied upon the client's objectives. The Preparation and Brief stage vitally involves in initializing the project brief and the objectives of the project (RIBA, 2013). Whereas, facilities manager should play a critical role in establishing the client's need with respect to the preparation of initial project brief (RICS, 2015).

At the Concept Design stage, an initial concept design together with outline proposals for building structure and services are established to derive different natures for the particular project at the completion (RIBA, 2013). These outline proposals are developed in order to obtain an optimal output as per the necessities stipulated in the briefing stage (Jawdeh and Wood, 2010). Whereas,

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preparation of alternative proposals is one of the technical competencies of a facilities manager at building design stage (RICS, 2015). Moreover, the operation and maintenance of such designed and installed building services is a vital aspect, which emerges during the role of facilities manager (Yik et al., 2010).

The design development phase engages in solidifying the design concepts that are derived from the earlier Concept Design stage (Paddon, 2014). Moreover, in the Developed Design phase, the design of the project is further refined and the stage further involves in the preparation of plans and details referring to construction, specifying the arrangement of space and defining all the building services of the project (Jawdeh and Wood, 2010). As argued by Singh et al. (1999) the collaboration of the role of a facilities manager with the design team is significant to provide concern on health and safety, space arrangement, accessibility and maintenance aspects. However, Jawdeh and Wood (2010) explicated that one of the foremost issues confronted by the facilities managers during this stage is the lack of designers' interest towards the aspects in the occupancy phase and the ignorance of the role of facilities manager.

The Technical Design stage involves in characterizing the specifications which is required for the construction purposes (Jawdeh and Wood, 2010). Moreover, Tunstall (2006) stated that this stage is incorporated with the specialist design efforts for the building structure, building service systems including for the electrical and mechanical systems. Whereas, RICS (2015) highlighted the importance of understanding the technical design by a facilities manager, to deliver a facility with holistic FM solutions. Furthermore, RIBA (2013) revealed that the technical design of the project should necessarily be collaborated with the FM-related strategies including the indoor environmental quality, fire safety and building control strategy.

The building construction stage involves the process of assembling materials to actual execution of the design into a building (Merritt and Ricketts, 2001). According, to RICS (2015) the involvement of a facilities manager during the construction is paramount to ensure the construction quality. Moreover, as-constructed information is crucial for a facilities manager towards future operation and maintenance practices (Liu et al., 1994). Once the building construction is completed, commissioning of systems and equipment are undertaken to encompass the performance or the reliability are retained as designed (Wu and Issa, 2012). Further to Akin et al. (2004), after the completion of commissioning, the facility is ready for occupancy. Therefore, commissioning has become a key concern towards the operation and maintenance phase of a building (Wang et al., 2013). As identified by Lewis

and Payant (2007) the dominance of operation and maintenance activities are with the facilities manager. Thereby the role of a facilities manager is significant at the building commissioning stage.

The performance of a building is usually being relied on the effectiveness of operation and maintenance activities conducted on building services (Lai and Yik, 2007). Further, Lai et al. (2008) pointed out that effective operation and maintenance during the facility operation stage is crucial in encompassing the satisfied level of performance of the building. Whereas Shah (2008) emphasized that operation and maintenance management as one of the fundamental job roles in the arena of FM.

By reviewing the above literature, this study was focused to investigate the current practices of a facilities manager, ideal roles of a facilities manager, legal aspects to be considered by a facilities manager and challenges to be faced by the facilities manager in carrying out the job role at different stages of RIBA Plan of Work 2013.

### **3. Research Methodology**

A plan that directs the study from research problem to the conclusion, which is consisted with research approach and research techniques can be identified as a research design (Tan, 2002; Polonsky and Waller, 2011). Consequently, the research design of this research comprised with a literature review, expert opinion survey and data analysis.

The research was subjected to a qualitative research approach as the study vitally deals with in-depth information. Collection of in-depth information from FM experts were limited to eight (08) due to less availability of FM experts who have experience from planning to post construction stage. Purposive sampling technique was used as the sampling criteria for the selection of FM experts.

A comprehensive literature review was carried out to review the role of Facilities Manager and the stages of the RIBA plan of work 2013 which was assisted to develop an interview guideline for data collection. An expert opinion survey was carried out to investigate the current practices of facilities manager, ideal roles of facilities manager, legal aspect to be considered by a facilities manager and challenges to be faced by the facilities manager at different stages of RIBA plan of work 2013. Content analysis with the aid of QSR NVivo 11 was utilized to analyse the gathered data. The final outcome of the research can be used as a guide to practice the role of Facilities Manager throughout the building lifecycle.

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### **4. Research Findings**

The findings of the research study covering the areas of current practice of facilities manager, ideal role of facilities manager, legal aspect to be considered by a facilities manager and challenges to be faced by facilities manager at the different stages stipulated in the RIBA plan of work 2013 are presented in this section of the study.

#### **4.1. STRATEGIC DEFINITION STAGE**

As stated by all experts, facilities manager currently involves during this stage to make the decision on whether to refurbish or expand the existing building or to execute a new construction project to assist the business requirements while rationalising the decisions. Further to the experts, facilities manager's ideal role involves advising the top management on cost effective development option, space and building modification requirements and best source of funding.

In carrying out the tasks at this stage, facilities manager has to be considered on the planning and development regulations due to the stage involves selecting the development option. Convincing the client on best development option based on the existing legal considerations and real time FM related strategies are often challengeable to the facilities manager at the strategic definition stage.

#### **4.2. PREPARATION AND BRIEF STAGE**

Research findings highlighted that currently less number of facilities managers having the practical experience in briefing the client's need with respect to the client's brief preparation. However, it was noted that briefing the client's exact need to the design team as the fundamental role of facilities manager at this stage. Further to the experts, the ideal practices of facilities manager involves engaging for feasibility analysis, selecting the best source of funding, advising the client on energy management, sustainability, and operation and maintenance targets. In addition, planning and development regulations, land and property law, and health and safety regulations are highlighted as the main legal aspects to be considered by the facilities manager while carrying the tasks at the preparation and brief stage. Furthermore, convincing the top management to allocate the required amount of fund to execute the new project is challengeable to the facilities manager at this stage.

#### **4.3. CONCEPT DESIGN STAGE**

According six experts, the current role of facilities manager involves providing the inputs on operation and maintenance implications and selecting the most appropriate design option out of the different outline proposals. However, experts stated the importance of the role of facilities manager in preparation of FM strategies such as indoor environmental quality strategy, fire safety strategy, health and safety strategy, energy management strategy, operation and

maintenance, and building control strategy. Further, facilities manager has to be vigilant on the environmental regulations, planning and development laws and health and safety regulations to conduct the practices during the concept design stage. Moreover, it was found that convincing the design team about the importance of incorporating FM strategies to the design is a confronting task for a facilities manager during the Concept Design stage.

#### 4.4. DEVELOPED DESIGN STAGE

Findings asserts that currently facilities manager having the significant practice of providing value engineering inputs to the proposed facility and advising the client and design team on maintainability, building information and building control systems. In addition, the facilities manager should carry out a performance evaluation on the proposed building. Further, FM strategies should be reviewed by the facilities manager to update them with design variations. While conducting the different FM tasks at this stage, facilities manager has to be thorough on several standards such as American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) standards, British Standards (BS). Further, it was identified the significance of considering the waste management regulations, fire safety and health and safety regulations at the developed design stage. As noted by six (06) experts, similar to the previous stage, facilities manager has to face challenging circumstances when convincing the design team to incorporate FM strategies into the design.

#### 4.5. TECHNICAL DESIGN STAGE

Seven (07) experts highlighted that few number of facilities managers having the experience in reviewing the technical design to confirm compliance with regulatory requirements. However, it was noted that reviewing the technical design to ensure the compliance as a key role of facilities manager at this stage. Moreover, facilities manager should work on to get planning permission from relevant local authorities such as Municipal Councils, Urban Development Authorities. Further, it is important to advise the client to select the sub-contractors at the technical design stage. Accordingly, to carry out the FM practices at this stage, it is vital to adhere with the local and international guidelines and standards such as Sri Lanka Standards, ASHRAE, BS, International Electrotechnical Commission standards to name few. Further, experts highlighted that facilities manager has to make some complicated decisions with technical designers when there are circumstances such as system over designing or under designing issues which is the most challengeable task during the Technical Design stage.



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### 4.6. CONSTRUCTION STAGE

All the experts agreed that facilities manager's current involvement during this stage is to monitor the construction progress on behalf of the client. In addition, it was found that ensuring the site safety, coordinating the public community to handle complaints due to nuisance from construction works as the ideal roles that has to be played by the facilities manager. Moreover, dealing with the public community to handle complaints is the most challengeable task for a facilities manager during the Construction stage. Furthermore, facilities manager should monitor the quality, cost, extra works and variations of the construction and should organize utility supply to the site on behalf of client. While practicing the functions at construction stage it is paramount to ensure the requirements of environmental law and health and safety regulations with respect to construction works.

### 4.7. HANDOVER AND CLOSE OUT STAGE

All experts stated that facilities manager currently involves at this stage to prepare handing over documents and to attend technical trainings conducted by service providers. Moreover, experts noted that facilities manager engages for testing and commissioning activities carried out at the handover stage. Further to the findings, the ideal duties of facilities manager includes inspecting defects in the constructed facility and gathering operation and maintenance manuals, as built drawings, testing and commissioning reports before to commence the facility operations. Furthermore, six (06) experts highlighted the significance of facilities manager's involvement at this stage to review the collateral warranties from supplier/ contractors, to coordinate the services provider for facility maintenance and to cross check the assets with the asset registry prior to accept them under facilities manager's stewardship. Further, all experts emphasized that facilities manager having a paramount duty at this stage with respect to the legal aspects of ensuring whether parties have met the contractual obligations and should thorough on the terms and conditions relevant to the defects liability period of the constructed building. Further, poor corporation and poor documentation practices of contractors will create critical concerns for the duties of a facilities manager during this stage.

### 4.8. IN USE STAGE

As stated by eight (08) experts facilities managers currently practicing most of the FM functions at the In use stage. Hence, the role of facilities manager is there to ensure highly supportive environment to accomplish the core business objectives. Accordingly, tasks of a facilities manager at this stage involves operation and maintenance of building services, structure and infrastructure, water conservation, energy management, building performance evaluation, waste management, occupational health and safety management, and handling

building control systems. Apart from the aforementioned duties, facilities manager has to confirm risk free operation, ensure effective and efficient resource usage and carry out post occupancy evaluation at this stage. As noted by seven (07) experts facilities manager should be knowledgeable in the areas of contract law and procurement guidelines as facilities manager has to often enter into the contracts with various vendors and service providers to conduct duties at the In Use stage. In addition, experts emphasized that insurance law is paramount with the facilities manager's duty of risk minimization due to unforeseen situations. Further, as per the previous stages, facilities manager should fulfil the legal requirements relating to environmental law, fire safety and, health and safety regulations during the facility operations. Moreover, the experts revealed that handling the issues due to variation of end users' level of satisfaction, suppliers' issues, issues due to low fund allocation for FM department as the main challenges, which has to be faced by a facilities manager during the In Use stage.

## **5. Conclusions and Recommendations**

The scope of duties of a facilities manager cannot be limited to the operation stage of the building lifecycle. Therefore, FM efforts should be comprehensively addressed throughout each lifecycle stage to attain a facility that is incisive with the core business requirements. The lifecycle of a facility is clearly specified in the RIBA Plan of Work 2013 which addresses the lifespan from Strategic Definition to In Use stage. Hence, RIBA Plan of Work 2013 was used in this study to investigate the facilities manager's involvement at different building lifecycle stages.

According to the findings, it was identified that the responsibilities of a facilities manager at Strategic Definition stage involves advising the top management on cost effective development option and, space and building modification requirements. During the Preparation and brief, Concept Design and, Developed Design stages facilities manager should advise the client on energy management and sustainability targets, maintenance implications, building control and building information systems, and value engineering methods for the proposed facility. Further, findings revealed that getting planning permissions from local authorities and attending for technical trainings as a vital functions of a facilities manager at Technical design and Handover stages. In addition, it was found that the fundamental responsibilities of a facilities manager at In Use stage involves efficient and effective management of building services to provide supportive environment towards the core business functions.

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Thereby, facilities manager's involvement throughout the whole building lifecycle systematically guides the efficiency and effectiveness of the building performance towards achievement of ultimate business goals by creating the most suited built environment for business operations.

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