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The development of facilities management-development process (FM-DP) integration framework

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ABSTRACT

This paper aims to establish the critical factors for the integration of FM in the development process and to demonstrate the development of the Facilities Management – Development Process (FM-DP) integration framework. The framework will be useful to provide a guideline to enable professionals in FM and/or other professionals in property development industry to optimise the role of FM in the development process. A quantitative approach is adopted in which a statistical analysis was carried out based on the data obtained through the questionnaire survey. The purification of the scale was conducted followed by correlation and MANOVA. The results demonstrate that there are 15 factors to optimise the role of FM across eight (8) stages of RIBA Plan of Work 2013. The literature review reveals that FM has been given a low priority in the property development industry, resulting in FM being inadequately integrated into the development process. There are attempts from the industry and academia to integrate FM in the development process. However, there is a lack of evidence showing the establishment of a systematic generic mechanism for FM-DP integration. The research discovered that there are 15 factors to be considered at distinct stages of the RIBA Plan of Work 2013 to fully harness the role of FM in the development process. The establishment of FM-DP integration framework has satisfied the gap that needs to be filled.

1. Introduction

This paper presents the quantitative findings of a wider mixed-methods approach in order to develop a facilities management-development process (FM-DP) integration framework. It is based on identified critical strategic issues that limit the integration of FM in the property development industry in the UK. The developed framework potentially serves as a guideline to optimise the value of FM in the property development industry.

FM is a relatively a new discipline in the UK [26], and the responsibility of Facilities Managers is wide-ranging, covering various aspects of human wellbeing and physical infrastructure. Nowadays, the role of FM has moved from 'the boiler room to the boardroom' [30], which has also positioned the Facilities Manager in a decision-making process in the development project set up. From the property development industry perspective, the Facilities Manager should be integrated at the early stages of the development process, such as the planning and design stage, rather than being called upon at the commissioning and occupation stages. Although the operational level is the Facilities Manager's 'bread and butter', it has become less important, as Facilities Managers should spend their time in conceptual design, planning, technical design, controlling and monitoring [18]. However, Facilities Managers are frequently neglected from being involved at the early stage of the development process.

It has been argued that the incorporation of FM value at the early stage of the development process would enhance the performance of the property development domain. The Facilities Manager has been acknowledged as an appropriate professional to demonstrate FM value that significantly contributes to the development process in four (4) aspects; decision-making process, innovation, value-added and sustainable development [34]. Moreover, the Facilities Manager is in a strategic position to view every activity in the development process, as well as being the person in the middle to facilitate the coordination of various stakeholders in the development project.

The FM-DP integration framework is essential to upsurge the profile of FM as well as to enhance the achievement of sustainable development in property development industry. In addition, the FM-DP integration framework could be a practical mechanism to guide Facilities Managers and/or other professionals to harness the value of FM in the property development industry, which is based on the RIBA Plan of

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Fig. 1. The benefits to FM from using BIM in the development process.
Source: Abdullah et al. [2].

Works 2013 (which is consists of Stage 0: Strategic Definition, Stage 1: Preparation and Brief, Stage 2: Concept Design, Stage 3: Developed Design, Stage 4: Technical Design, Stage 5: Construction, Stage 6: Handover and Close Out and Stage 7: In Use).

Tucker et al. [35] concluded that the factors to integrate FM in the development process can be classified into nine (9) groups of main themes, namely perception, competence, regulations, organisations, knowledge management, management tools, operations, decision making, and sustainability. The main themes contain 35 sub-themes for the measurement of FM-DP integration. Nevertheless, there are four (4) vital areas that are potential to place FM in a strategic position in the development process.

a. The Integration of (BIM) into FM for sustainable development
b. The ability of FM to implement of post-occupancy evaluation (POE)
c. Having familiarity with Government Soft Landings (GSL) concept
d. Knowledgeable with regard to sustainable initiatives

This paper firstly provides a comprehensive literature review of the necessity to develop the FM-DP integration framework, as a result of the absence of a suitable generic mechanism in all stages of the development process. The literature also touches on the strategic critical issues that give potential for FM-DP integration. Secondly, the paper provides the evidence of the statistical analysis based on the data obtained from a questionnaire survey. The purification of the scale was conducted followed by correlation and MANOVA. Thirdly, the paper explains the findings from the quantitative research methodology adopted, prior to presenting the proposed FM-DP integration framework. The findings obtained from this research form part of a broader sequential exploratory strategy to which the findings of this study is extended from the previous qualitative study conducted by Tucker and Masuri [34] and Tucker et al. [35].

The paper develops a framework that could be used as a guideline for all professionals in the property development industry, including engineers, to integrate FM in the development process based on the eight (8) stages of the RIBA Plan of Work 2013.

2. The Integration of Building Information Modelling (BIM) into FM for sustainable development

BIM has been a buzzword in the built environment and has become ordinary in the property development sector [33]. BIFM [5] has viewed BIM as a one way to create sustainable facilities in the property development project. It has been considered imperative to contribute to sustainable FM. A recent BIFM survey found that 92% of respondents from the FM industry have heard of BIM, with 84% indicating that BIM is already having an impact or will do so in the next five years [3]. However, BIM needs to play its role effectively in knowledge management, particularly in the whole life cycle of the facilities. The potential of BIM to facilitate architects and engineers in design works as well as the construction of the facilities is inarguable. It was claimed that Stage 7 (In Use) will receive the biggest impact if BIM is implemented in the property development project [28]. Pocock et al. [28] suggested how the building owner and the professionals such as engineers and architects could benefit in the implementation of BIM in their projects.

2.1. Building owners

a. Create policies that focus on BIM.
b. Improve staff competencies in BIM.
c. Develop information system in compliance with BIM standards to ensure consistency in BIM application at all development stages.
d. Develop appropriate client requirements for BIM to be connected with the supply chain.
e. Expand BIM usage based on the condition of existing assets prioritised by asset criticality.

2.2. Engineering and Built Environment Professionals

a. Create BIM standards with the consideration of all data needed / anticipated during the building life cycle.
b. Take a ‘whole life-whole system-whole industry’ approach in creating BIM standards.
c. Encourage learning environment in organisations particularly in enhancing the competencies and professional qualifications in BIM.