UNIVERSITY OF CAMBRIDGE
Department of Engineering

CONSTRUCTION ENGINEERING MASTERS DISSERTATION ABSTRACT

The integration of facilities management specialists in the design process to enhance operation and maintenance

Facilities Management (FM) is a relatively new and exciting profession that embraces many essential areas of the built environment. It has witnessed significant growth in the last two decades to the extent that there is a necessity to be clear on its roles both in the industry and organisation. The FM role can be an essential knowledge resource during the design process and play a crucial role in ensuring the continuous sustainable performance of facilities. This study aims to investigate the facility manager's role in the provision of easily maintainable assets; and to understand how to improve the quality of designed assets in terms of operation and maintenance for railway projects through early FM integration in the design process. There are persisting knowledge gaps in the whole lifecycle management of infrastructure project facilities, from the design team to the FM team, which has been documented in several studies. These gaps may lead to a structure that fails to support the FM strategy and results in high operational and maintenance costs after the project is handed over, along with significant repair work and lost FM opportunities. The reduction of operation and maintenance costs requires facility managers and facility designers to collaborate and adopt new technologies to devise facility design and operation and maintenance requirements that are sustainable and fit for purpose. A review of the literature identified a set of criteria and indicators to be applied during the building design phase to achieve cost-effective building maintenance. Evidence from a range of studies established that most maintenance problems in the designed structures were not attributable to construction problems but rather to design. In-depth interviews were undertaken with professionals working on a railway project located in the City of London, with a range of backgrounds including safety compliance, architecture, structural, mechanical, and electrical engineering, and senior project management. A thematic qualitative analysis of the transcripts identified the perceived advantages of design collaboration between FMs and designers, and the obstacles to its effective implementation. The insights obtained from the analysis informed an exploration of how best to integrate FM into construction projects by mitigating constraints and enabling FM knowledge and competence to inform the design process. The main conclusion from the research is that facility manager involvement in project design should lead to designs which facilitate operation and maintenance, particularly for complex assets and facilities.

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