

# Identifying More Dimensions Required for Implementing BIM in Facility Management

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Today's the role of information in construction project is vital. How the information is generated, stored, shared and used is a key in success of construction projects. Building Information Modeling (BIM), as a digital representation of physical and functional characteristics of a facility, has attracted much attention in recent years. BIM is a tool that can enhance stakeholders' understanding about the project by visualizing its physical attributes and integrating its required information. In fact, the goal for the development of a model, is that all the information of the building during its whole lifecycle would be available for different parties involve. In fact, BIM offers a platform for enhanced interdisciplinary collaboration to insert, extract, update, or modify information. During the operation and maintenance phase of a building lifecycle, BIM provides a graphical representation for facility managers to monitor the operation of the building, manage space and also creates an integrated digital repository for all properties of the building. In other words, by adding new dimensions to 3D models, BIM has a potential to be applied in operation and maintenance phase of construction projects. Yet, the question is what and which type of information should be considered in models to cover stakeholders' needs in operation and maintenance phase. The available models consider architectural, structural, mechanical, and electrical maintenance of the building. However, in most cases these models ignore factors such as strategic management of the facility, accounting, and asset value management. Thus, the aim of this research is to find out other dimensions required to consider in BIM that can meet the needs of facility managers. Four methodological phases were defined to reach the aim of the research. First, a comprehensive literature review are carried out to recognize factors that have been considered in facility management information model developed by other researches so far. Second, interviews will be conducted with facility management experts to identify factors that should be added to the available information models for facility management. Interviewing will be continued up to the point that data saturation can be achieved. Third, gathered information will be inputted into Vectorworks (student version) software to develop a new model. Fourth, two real projects with common characteristics will be studied to evaluate the effectiveness of the new model. In the first project (target group) the new model that was developed based on interviewees' ideas will be implemented. In the second project (control group) the model that was developed based on literature review will be used. The result will be compared to recognize which model offers more accurate representation of time, cost and quality. The final product is an integrated digital repository that enables facility managers to enhance their performance during operation and maintenance phase of the project by storing enough information, easier access to them and faster data processing.

**Key Words:** Building Information Modeling (BIM), Facility Management, Multi-Dimensional Models, Operation and Maintenance Phase