Abstract of Master’s Thesis

Master of Engineering Degree (M. Eng.)
International Project Management
(Building, Real Estate and Infrastructure)

DEFINING A FRAMEWORK TO SUPPORT BIM IMPLEMENTATION AND ORGANISATIONAL CHANGE. A CASE STUDY IN A GERMAN MULTINATIONAL REAL ESTATE COMPANY.

Submitted by: Bismark Okuta Bartels BSc. Arch, M.A. Arch, PMP
Matriculation No: 810671
Tutor: Andrej Pustisek, Prof Dr. Dr.
Hochschule fuer Technik Stuttgart
Samir Alzeer, M. Eng. IPM
BAM Deutschland AG, Stuttgart

Submission Date: 21/01/2019
Word Count: 500
ABSTRACT

Building Information Modelling (BIM) is a method that enables project stakeholders to work collaboratively to design, erect and manage the operations of a building based on its virtual and physical representation. BIM helps to streamline information management on building projects, through defined guidelines, processes and accepted standards. BIM implementation is complex and data on its implementation is fragmented and disseminated. This poses a challenge to leaders in organisations as data needs to be collected from a variety of sources and synthesised to develop a strategic BIM implementation framework. Thus, BIM implementation in organisations has received little focus in comparison to its benefits.

This master’s thesis case study is conducted in a large multinational real estate company. The case study identifies the key drivers and impediments to BIM implementation, the relevant BIM use cases, organisational change management factors and defines the BIM maturity level of this company. This is done by evaluating the effectiveness of existing BIM maturity models, BIM standards, frameworks, organisational change management theories and tools as a basis for the development of a BIM implementation framework. The key drivers of BIM implementation are identified as the cost of BIM Implementation, BIM enabled procurement, data security and copyright of BIM models, features of the common data environment and the provision of BIM related training.

Themes that affect BIM implementation are categorised into technological and organisational factors. The technological factors consider BIM standards, maturity levels, processes and use cases. The organisational factors consider individuals, teams, organisational structure, perception, organisational change, advocacy, IT implementation and benefit management methods. Other key factors for BIM implementation are the business value of BIM implementation, readiness for BIM implementation, BIM IT Support, BIM championship and leadership.

Information gathered and analysed from the case study led to the development of a pragmatic BIM Implementation framework that structures BIM implementation in organisation into five main stages, i.e., Pre-BIM, Modelling, Collaboration, Integration and Integrated Project delivery (IPD) and beyond. Each stage is broken down into technological and organisational factors. The focus areas under these two factors are further discussed.

The focus areas under technological factors are BIM Model Uses and BIM Fields. The section on BIM Model uses provides a framework to categorize model uses based on project delivery phases and stakeholders. BIM Fields provides a framework to structure and benchmark
competency in five incremental levels of the three main areas that affect BIM implementation, i.e., technology, policy and process.

The focus areas under organisational factors are engage and educate. The framework provides a structured way to approach BIM implementation by identifying and addressing the training and motivational needs of individuals and teams working in the organisation. It also addresses how the perception of individuals and teams affect BIM implementation. The needs and means to integrate BIM advocates into the organisation, the inclusion of benefits management methods to justify and monitor BIM Implementation and its implications are all discussed in the master's thesis.

**Keywords:** BIM Implementation Framework, BIM Advocacy, BIM Training, BIM IT Support, BIM Readiness