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**Construction Project Management:
Developing Criteria to Adopt Using of BIM with Various
Architectural Projects.**

**A Thesis
submitted in partial fulfilment of the requirements
for the Degree of Master of Science**

**In
Architectural Engineering**

Presented by

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**B.Sc. Science (Architectural Engineering),
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ABSTRACT

The digital transformation of the Architecture, Engineering, and Construction (AEC) industry, driven by Building Information Modeling (BIM), has not yet been fully integrated with established Project Management (PM) practices. BIM is promoted for its ability to improve coordination, reduce errors, enhance communication, and support informed decision-making throughout the project lifecycle. In contrast, PM has developed into a structured discipline guided by recognized standards and frameworks. Ideally, these two evolutions complement each other, allowing digital information to inform decisions on time, cost, quality, and risk. In fact, integration remains limited. BIM is often viewed as a technical add-on for drawings and clash detection, while PM continues to rely on traditional, document-driven paths. This disconnect prompts a key question: how can we assess whether BIM is truly embedded in PM processes and delivers measurable benefits?

This thesis addresses this question by developing and validating a structured assessment model that evaluates BIM use in real projects from three perspectives: readiness, implementation, and performance. Readiness covers the foundational conditions for effective BIM adoption, including clear objectives, defined information requirements, and governance structures. Implementation examines how BIM is integrated into daily management practices, including digital workflows, shared platforms, and coordination routines. Performance is assessed by whether these efforts lead to measurable improvements in project outcomes, such as cost and time control, quality, safety, and client satisfaction.

The proposed Building Information Modeling Management (BIMM) Assessment Model organizes these three dimensions into a tiered framework, with criteria for each level that are scored on a simple scale based on documented evidence and applied to a portfolio of 30 BIM-enabled projects from various countries and contexts. The analysis identified recurring patterns: some projects showed strong readiness but weak implementation, while others had acceptable implementation without clear links to performance. A third group demonstrated balanced strength across all tiers, integrating BIM fully into PM. Statistical analysis confirmed positive relationships among readiness, implementation, and performance, with implementation as the strongest predictor of success. A few exceptional cases achieved high performance through external enforcement rather than internal capability.

Building on these insights, the thesis translates the model into explicit, evidence-based criteria presented in a practical BIMM Practitioner Checklist. This checklist helps clients, project managers, and contractors assess their current position and plan improvements. It supports a step-by-step approach: establishing readiness, embedding BIM in management routines, and linking digital practices to performance indicators. The study concludes by discussing implications for industry practice, education, and policy, highlighting the need for realistic requirements, open standards, and training that includes information governance and collaborative planning. While acknowledging its limitations and the need for further refinement, the research provides a transparent, evidence-based framework for understanding and improving BIM-PM integration, positioning BIM as a managerial system that delivers measurable project value.