

CONSTRUCTION ENGINEERING MASTERS DISSERTATION ABSTRACT

Productisation in Construction; Identification of Productisation Opportunities

While many other industries, such as the manufacturing industry, have seen their productivity rapidly increase, the same trend has not been seen in the Architecture, Engineering and Construction (AEC) industry; it needs to transform and develop to keep pace with these other industries. Productivity increased in the manufacturing industry when it changed from creating bespoke products to mass production, through the use of a productisation approach. Productisation is already extensively used within the AEC industry, but this study explores whether its application can be increased. While full scale productisation is unlikely to be the solution, this study explores how different project teams can embrace productised solutions through the increased use of standardised off-site manufacturing and interchangeable components and sub-assemblies.

It has been suggested that the most beneficial time to integrate productisation within a project is at the initial concept design phase, where there can be the largest effect with the minimum impact. This study sets out to create, trial and evaluate a framework that can be used by project teams to increase the use of productisation within the AEC industry.

A literature review and semi-structured interviews with industry professionals were undertaken to identify factors that affect the implementation of a productisation approach within construction projects and the potential strategies used to identify and then undertake these opportunities. From this, the framework was created.

Following a pilot study and subsequent revisions, the framework was trialled in workshops with project teams from seven individual projects, spanning a range of construction sectors, within the AEC industry. All of these projects had progressed beyond the concept design phase when the trials took place, which allowed the actual design process to be used as a baseline.

In all of the workshops, project teams identified opportunities for productisation that had not previously been considered, and which would have been progressed had they been identified at the concept design stage. In this study, the framework also showed that it could assist project teams in generating productisation opportunities even on projects that had already extensive prior consideration of productisation, as well as those less amiable to productisation and more bespoke projects. Analysing the effectiveness of the framework identified opportunities for further improvement and wider application, but the study demonstrates that the framework resulted in project teams thinking holistically about the subject of productisation and generating new productisation opportunities and strategies that could viably be implemented. It is implied in the literature that was reviewed as part of this study, that the implementation of these generated productisation opportunities, could bring a large range of benefits to the AEC industry.

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