UNIVERSITY OF CAMBRIDGE
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CONSTRUCTION ENGINEERING MASTERS DISSERTATION ABSTRACT

Collaboration within Engineering Design Teams

A lack of collaboration between teams has long been an issue within the engineering and construction industry. The industry currently aims to improve collaboration by using collaborative contracts. However, this method does not positively influence the individuals working within engineering projects to collaborate.

This study aims to answer the following research question:

How can individuals be influenced to increase collaboration within an engineering design team?

In answering the research question, a literature review was undertaken, which found a model for collaboration viability from social science research, the PILAR model. The PILAR model presents five factors that determine whether an individual is willing to collaborate; Prospects, Involved, Liked, Agency and Respect. The research aimed to explore how to increase the PILAR factors within individuals in engineering design teams, and to determine whether these factors would increase the willingness to collaborate in the construction industry.

Semi-structured interviews were undertaken with 17 experienced professionals working in the UK engineering industry. The interviews explored how the PILAR factors could be increased within individuals of project teams, to ultimately improve collaboration. The model developed through the interviews was then tested in a role-play with 190 graduate consultant engineers.

The interviews provided a model that team leaders can use to improve PILAR factors. The model focuses on the factors Prospects and Agency. The factor Prospects was influenced by defining overall project success, broken down to specific objectives relevant to the individual team members. The factor Agency was influenced by team leadership leading by example and providing a forum to share ideas, while providing feedback on all suggestions.

The role-plays indicated that an increase in collaboration occurs if this model is appropriately applied. However, the model was found to reduce collaboration if not implemented properly. A key finding was that project leaders need to be committed to increasing collaboration for the model to work.

Due to the limitations of the role-play, the model requires further testing to prove its reliability and suitability for the wider industry. Further research should be undertaken to target the PILAR factors on real projects. Nonetheless, the research showed that the PILAR based model provides committed team leaders with a tool to improve individuals willingness to collaborate.

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