



Intelligent building contract tendering – potential and exploration

Linda Cusumano, Ricardo Saraiva, Rasmus Rempling, Robert Jockwer

Chalmers University of Technology, Gothenburg, Sweden

Nilla Olsson

NCC Sweden AB, Malmoe, Sweden

Mats Granath

University of Gothenburg, Gothenburg, Sweden

Contact: linda.cusumano@chalmers.se

Abstract

Project tendering is the construction business “Tightrope-walking.” It is a time-limited balance act where technical and business specialists find the best technical proposal at the right price. The purpose and aim of this study were to explore artificial intelligence (AI) in the tender work and to identify challenges and possibilities with data-driven decision-making. An AI work support tool was adopted and used to extract and process client requirements. The tool and digital-work procedure were presented and discussed with tender specialists from a large contractor in a workshop. A two-step survey was performed in connection to the workshop, investigating the potential users’ insights and attitudes for implementation. The main result and conclusion were that AI and digitalization could support tendering; however, successfully generating business value will require higher levels of digitalization, well-structured databases, and access to historical project data.

Keywords: Digitalization; artificial intelligence; tender phase; data-driven decisions; production data; client requirements; text extraction.

1 Introduction

The construction industry is facing the challenge of reducing its emissions of greenhouse gases since the building sector globally is contributing 30% of the total greenhouse gas emissions [1]. Therefore, in several countries, Life Cycle Analysis requirements are introduced to visualize project-specific emissions and create awareness around

the climate issue [2], which escalates the need for data collection and digitalization.

In such an early stage of a construction project as the tender phase, essential decisions such as structural and building service systems are made, decisions that significantly impact production and maintenance costs, greenhouse gas emissions, as well as construction time [3].