

Neural Network Models for Actual Cost and Actual Duration Estimation in Construction Projects: Findings from Greece

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Abstract : Predicting the actual cost and duration in construction projects concern a continuous and existing problem for the construction sector. This paper addresses this problem with modern methods and data available from past public construction projects. 39 bridge projects, constructed in Greece, with a similar type of available data were examined. Considering each project's attributes with the actual cost and the actual duration, correlation analysis is performed and the most appropriate predictive project variables are defined. Additionally, the most efficient subgroup of variables is selected with the use of the WEKA application, through its attribute selection function. The selected variables are used as input neurons for neural network models through correlation analysis. For constructing neural network models, the application FANN Tool is used. The optimum neural network model, for predicting the actual cost, produced a mean squared error with a value of $3.84886e-05$ and it was based on the budgeted cost and the quantity of deck concrete. The optimum neural network model, for predicting the actual duration, produced a mean squared error with a value of $5.89463e-05$ and it also was based on the budgeted cost and the amount of deck concrete.

Keywords : actual cost and duration, attribute selection, bridge construction, neural networks, predicting models, FANN TOOL, WEKA

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