



An Artificial Neural Network Approach to Structural Cost Estimation of Building Projects in the Philippines

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Abstract: The success of any project undertaking is defined by improved quantity and cost estimation techniques that will facilitate effective cost and time control in projects. The objective of this study is to develop an artificial neural network (ANN) model that can predict the total structural cost of building projects in the Philippines. Data from thirty building projects were collected and randomly divided into three sets: 60% for training, 20% for validating the performance and 20% as a completely independent test of network generalization. Six input parameters, namely: number of storeys, number of basements, floor area, volume of concrete, area of formworks, and weight of reinforcing steel. These variables were entered into the ANN architecture and simulated in MATLAB. The feedforward backpropagation technique was used to generate the best model for the total structural cost. The best ANN architecture consists of six input variables, seven nodes in the hidden layer and one output node. The resulting ANN model also reasonably predicted the total structural cost of building projects with favourable training and testing phase outcomes.

Key Words: structural cost; artificial neural network; ANN