

Title of Article: Neural Network-Ant Colony Optimization Model of Residential Building Project Cost: Exploratory Approach.

Author(s): Amusan Lekan M¹, Ayo Charles K², Mosaku Timothy³, Fagbenle Olabosipo⁴, Tunji-Olayeni P⁵, Owolabi James, Omuh Ignatius⁶ and Ogunde Ayodeji⁷

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Abstract: Neural network and ant-colony are two important tools that could be used to provide solution in situation of multivariate environment that requires pareto optima solutions. In this study therefore, combination of neural network and ant colony method was used to generate an optimization cost model. Neural network is a conventional method currently being used in cost modeling, given its advantage over traditional regression method. It is based on this, that this study used the combination of neural network and regression method to model cost of residential building projects. One hundred and fifty (150) samples of residential building projects were selected at random and divided into two; one part is used in developing network algorithm for neural network and ant colony, while the second part is used for model validation. Neural network is used to generate which was divided into modules: the data optimization module, criteria

selection with initializing and terminating modules. Regression analysis was carried out and model validated with Jackknife re-sampling technique and previously developed ant colony model (MOACO, MOTACO and MAWA). The co-linearity analysis indicates high level of tolerance and -0.0756 lowest variation prediction quotients to 0.8678 highest variation quotients. Also the Regression coefficient (R-square) value for determining the model fitness is 0.069 with standard error of 0.045. These results attests to the fitness of the model generated. The model is flexible in accommodating new data and variables, thus, it allows for continuous updating.