Artificial Neural Network Approach for Predicting the Land Values for Blocking-Out Diagrams.

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Abstract:

Land valuation is a complex and subjective process influenced by various global and local economic conditions, such as income levels, population trends, unemployment rates, interest rate movements, transportation infrastructure, and urban planning policies. Physical attributes like size, shape, road frontage, and number of corners also contribute to the uniqueness of each parcel, directly affecting land demand. This study examines advanced valuation approaches using Artificial Neural Networks (ANN) as a decision support tool to estimate accurate and reliable land values. The ANN techniques were applied to two datasets from the Colombo area in Sri Lanka, comprising 24 lots from *Kidelpitiya* and 143 lots from *Meepe*. The model considered factors such as extent, accessibility, class, distance from entrance, number of access sides, road frontage, nature, price of bare land, and price of developed land. The ANN model showed improved prediction accuracy with statistical metrics of RMSE = 0.24505, MAE = 0.17541, and MSE = 0.06005. The model achieved a 96% accuracy level according to the *RICS* property regulation tolerance value (15%), making it suitable for residential land valuation in real estate appraisal.

Keywords: ANN, Land subdivision, Land valuation, Real estate, Price prediction.