

Addressing Uncertainty in Property Depreciation Rate Estimation Using Fuzzy Logic Modelling

Odetha Nyarubaji, Felician Komu and Eric Mwaikambo (Tanzania)

Key words: Real estate development; Valuation; Property Valuation, Depreciation Rate, Fuzzy Logic

SUMMARY

Valuation of immovable property or real estate is critical to businesses transactions and, is done in order to facilitate different purposes including; property transfer, mortgage, rent assessment and compensation. Determination of rate of depreciation though subjective, is a critical aspect of property valuation process especially in the application of the Depreciated Replacement Cost or Cost Method for determination of Market value of a property.

Currently, estimation of depreciation rate is based on personal opinion of the appraiser (valuer). Basically, estimation based on personal opinion is subjective and inherently uncertain and imprecise. This brings about disparities which exceed acceptable limits to property values in case the same property was appraised by more than one person.

This paper investigates applicability of Fuzzy Logic concepts to address imprecise and uncertain estimation of depreciation rate during property valuation and improves the current model for property valuation by estimating depreciation rate using Triangular Fuzzy Numbers (TFN). The results obtained with Fuzzy Logic modelling have been compared with those arising from a deterministic approach through the use of crisp numbers. Results show significant improvement in precision of estimates of depreciation rate when Fuzzy Logic approach is adopted.

Addressing Uncertainty in Property Depreciation Rate Estimation Using
Fuzzy Logic Modelling
(9248)
Odetha Nyarubaji, Felician Komu and Eric Mwaikambo (Tanzania)

FIG Congress 2018
Embracing our smart world where the continents connect: enhancing the geospatial maturity of societies
Istanbul, Turkey, May 6–11, 2018