lower than that of OLS method. The very good fit of the model is depicted in Fig. 10 depicting the correlation between the actual and predicted values.

6 Concluding remarks

Two prediction models have been created by applying the OLS and the GWR methods in ESRI ArcGIS 10.1. Both models show very good fit to the input data, pass all statistical checks and have excellent prediction accuracy. However, as shown through the analysis, GWR method has a number of advantages compared to the OLS one. Table 7 shows a comparison between the two methods in order to extract useful conclusions.

More specifically, GWR method has a much higher coefficient of determination R2 which means that the created model(s) fit much better in the data. The higher percentage shows that the dependent variable (property value) is better explained (by 83.3%) from the selected independent variables, while this percentage is lower in the OLS method (75.8%), though still high. The AICc value of GWR model is lower compared to that of OLS (51,224 versus 51,450 respectively). According to theory, the absolute value of AICc does not mean anything, though models with lower AICc are preferred. As regards the predictive accuracy, both models have a very high Pearson correlation factor (OLS: 0.87, GWR: 0.84) which demonstrate their very good prediction accuracy.

Perhaps the most significant advantages of the GWR method are the three last points, which relate to the ability of this method to create different local equation(s) for each entity or for a set of entities in the nearby area. This ability allows the removal of any variable with spatial concentration, as it creates multicollinearity problem. In this study, the GWR method uses only 5 independent variables compared to OLS method which uses 10 variables. It is not only the fact that more variables do not necessarily lead to better results, but also a more practical difficulty. The calculation of each of the 5 variables' values, that were removed from GWR model, is both a time-consuming process and requires good knowledge of GIS. Additionally, the type of input data that the GWR method requires is solely property data (i.e. information like floor, age, size etc), while OLS method requires spatial data as well (i.e. information like distance from sea/city centre/public transport etc). The calculation of spatial data is again a time-consuming process, but most importantly, requires a number of layers that are not always available (*e.g.* layers of bus stops/lines, educational & health units etc). Last, the ability of GWR to create thematic maps with the variables' coefficients is a key advantage that greatly assists decision-making and extraction of invaluable conclusions.

For all the reasons above, it should be stressed that the GWR method can lead to superior prediction models compared to the traditional OLS method, while it becomes clear that the use of GIS can have great positive impact on mass appraisals field through the application of advanced statistical and spatial analysis techniques.

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