## ABSTRACT IN ENGLISH

### Methodology for coexisting property features significance assessment on the residential property market example.

**Keywords:** market phenomena modeling, decision-making determinants, property features significance, individual investors' preferences, features coexistence, integrated information model.

The dissertation proposes the author's methodology for assessing the significance of coexisting real estate features, considering the individual preferences of real estate market investors. The proposed solution was based on the assumption of information synergy and integration. The analytical procedure presented in the dissertation is an adjustment of the currently used solutions with additional elements of information analysis in response to the developing knowledge and awareness of individual aspects of decision-making in the real estate market.

The main objective of the dissertation was to develop a methodology for assessing the significance of coexisting real estate features on the residential real estate market example. Concerning the main objective, the following specific objectives were assumed and achieved: formulation of the definition and explanation of the concept of "integrated real estate information model"; application of the prioritization technique to the study of housing preferences of real estate market investors; multidimensional analysis of both real estate features significance and coexistence carried out as part of the of buyers' preferences in the real estate market; preparation of the coexisting real estate features groups ranking.

The author's procedure based on the assumptions of selected methods was proposed to achieve the main and specific research objectives. The research methods were selected on the basis of literature review and the author's experience in real estate market analysis. The methodology based on the real estate market investors preferences information was developed in an inductive approach - from the study of cases to the development of general conclusions generalized for objective interpretation. A CAWI (Computer Assisted Web Interview) survey using a prioritization technique was conducted to gather information on the individual preferences of real estate market investors. The method adopted to represent the prioritization technique was the MoSCoW method, the name of which is an acronym for priority categories, i.e., Must Have

(necessary), Should Have (recommended), Could Have (useful), Will Have (welcome). The responses obtained were subjected to a detailed analysis of individual cases to carry out their unification into the form of property feature names. The collected research material was used to build a database for further numerical processing. The numerical recording of qualitative data was carried out using a modified compositional method. Further, the individual multidimensional significance of real estate features was determined. For this purpose, classical mathematical procedures were used, taking into account the number of occurrences of real estate features in the adopted importance categories corresponding to individual priorities under the assumptions of the MoSCoW method. The next stage of the research, consisting of the classification of real estate features in terms of the similarity of their significance, was carried out using a tool from the group of artificial intelligence methods - Kohonen neural networks. Verification of the obtained results of feature classification was conducted using the classical hierarchical method of data agglomeration - Ward's method. In addition, an independent study of the similarity of real estate features was carried out based on the analysis of Euclidean distance matrices and graphical interpretations of the results in the form of multidimensional symbols. In the next stage of the proposed procedure, a study of the coexistence of real estate features was performed according to the adopted types of importance relations named relations (IF...THEN). The obtained results of coexistence were used to assess the rank of groups of real estate features using classical statistical methods, which made it possible to develop a ranking of coexistence groups of real estate features. The results made it possible to develop an integrated real estate information model. The analyses were conducted on a research sample that included a group of potential property buyers in a selected local residential real estate market. To achieve the research objectives, an extensive review of scientific studies of the real estate market was carried out to compare and confront the assumptions made for the analysis. The assumptions were aimed at an in-depth analysis of the problem from its basics, i.e., the perception and understanding of the system's functioning for assessing the significance of real estate features. The Olsztyn district of the Warmia and Mazury voivodeship was selected as the test area. Detailed research related to implementing the adopted research objectives was narrowed down to urban and suburban areas of Olsztyn.