

Crisis Management Model and Recommended System for Construction and Real Estate

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Abstract. Integrated analysis and rational decision-making at the micro-, meso- and macro-levels are needed to mitigate the effects of recession on the construction and real estate sector. Crisis management involves numerous aspects that should be considered in addition to making economic, political and legal/regulatory decisions. These must include social, culture, ethical, psychological, educational, environmental, provisional, technological, technical, organizational and managerial aspects. This article presents a model and system for such considerations and discusses certain composite parts of it.

Keywords: construction, real estate, crisis management, quantitative and qualitative methods, global development trends, alternatives, Lithuania, Model, System, forecasting.

1 Introduction

Various econometrics (e.g., Keynesian models, time-series analysis using multiple regression, Box-Jenkins analysis, Time-varying Parameter Model, duration statistical model, multivariate Logit model, competing-risks hazard models with time-varying covariates, dummy variable approach) and operations research (statistical analysis (discriminant analysis [1], Logit and Probit regression models [2]), artificial neural network models (fuzzy clustering and self-organizing neural networks [3], the back-propagation neural networks model [4]), multiple criteria decision making [5]-[7], artificial intelligence (the support vector machine [8], k-nearest neighbor algorithm [4], and decision tree [9], etc.) methods and models in the construction and real estate sector as well as in separate segments are being applied for crisis management worldwide today. Technical approaches of operations research (decision support systems [5], [10], [11], expert systems [12], mathematical programming [13], multicriteria decision methods [5]) are used for crisis management in different construction and real estate fields.

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It may be noted that above researchers from various countries engaged in the analysis of crisis in the construction and real estate sectors but they did not consider the research object that is being analyzed by the authors of this present research. The latter may be described as a life cycle of the construction and real estate industry, the stakeholders involved and as the micro, meso and macro environments that have some particular impact on a life cycle in making an integral whole. A complex analysis of the formulated research object was performed with the help of Construction and Real Estate Crisis Management Model and Recommended System which were especially developed for this purpose.

This paper is structured as follows: After this introduction, Section 2 describes Construction and Real Estate Crisis management Model. A sketch of the Recommended Construction and Real Estate Crisis Management System appears in Section 3. Finally Section 4 provides some concluding remarks.

2 Construction and Real Estate (CARE) Crisis Management Model

The traditional analysis of a crisis in construction and real estate is based on economic, legal/regulatory, institutional and political aspects. Social, cultural, ethical, psychological and educational aspects of crisis management receive less attention. To perform an integrated analysis of the life cycle of a crisis in the construction and real estate sectors, the cycle must be analyzed in an integrated manner based on a system of criteria (see Figure 1).

The aim of this research was to produce a construction and real estate (hereafter – CARE) crisis management model for Lithuania by undertaking a complex analysis of the micro, meso and macro environmental factors affecting it and to present recommendations on increasing its competitive ability. The research was performed by studying the expertise of advanced industrial economies and by adapting such to Lithuania while taking into consideration its specific history, development level, needs and traditions. A simulation was undertaken to provide insight into the development of an effective environment for the CARE Crisis management Model by choosing rational micro, meso and macro factors.

The word, model, implies “a system of game rules” by which CARE crisis management could be used to its best advantage in Lithuania’s development.

This research includes the following six stages.

Stage I. A comparative description is written on CARE crisis management in developed countries and in Lithuania which includes: a system of criteria that characterizes crisis management efficiency which is determined by using relevant literature and expert methods; a description based on this system of criteria in conceptual (textual, graphical, numerical, etc.) and quantitative forms on the present state of crisis management in developed countries and in Lithuania.