ABSTRACT

The current PhD study focuses on the integration of Earned Value Management (EVM) and Risk Management (RM) in project management practices by addressing the problem of selecting a method for choosing a Planned Value (PV) curve. The thesis of the dissertation is that through conducting a sufficient number of trials of comparable projects, a trend can be found to indicate which method of selecting the PV curve gives results closest to the actual project path. The dissertation consists of an introduction, three chapters, a conclusion and three appendices.

The first chapter Literature review makes an overview of the EVM-related literature. Three questions have been raised about the weaknesses of the theory, the possibilities for overcoming them and the new trends in EVM development. In order to answer them, a careful selection of the literature to be analyzed has been made. A collection of 229 relevant articles published in prestigious scientific journals has been complied for this purpose. The historical evolution of EVM and the trends in the contemporary concept of EVM have been examined. In the latter direction, emphasis has been put on methods of forecasting project duration, statistical forecasting methods based on the concept of EVM and of course the integration of EVM and RM.

The second chapter Methodology for Selecting a Planned Value Curve aims at finding a way to cope with the discovered imperfection in the choice of PV curve. Using the principles of modeling and simulation analysis, a model has been developed, that provides a simulated environment for apprating projects to determine the best way of selecting a PV curve. Argumentation has been given for the selection of the computer environment to implement the model, as well as for the selection of the two PV curve selection methods to be compared. All the steps of the model preparation and its implementation have been described in details.

In the third chapter Approbation of the Model for Selecting a Planned Value curve, the focus is on the approbation that has been made with two groups of projects - for repairs of sections for triggering resistors for rolling stations and for production of buffer resistors for 1000kV motors. Each of them analyzes 5 projects that are comparable to each other. The results of each forecast and each comparison, both overall and interim, have been presented. The data has been analyzed and conclusions have been drawn about the availability of trends in each project group and the appropriate PV curve selection methods, depending on their characteristics. There is a clear trend
in the realization of the projects and the method that gives a better forecast for each group has been
determined. The specific characteristic of the projects that has led to the respective choice has also
been justified. The quality of the simulation is assessed in terms of validity of the inferences.

The conclusion of the current thesis summarizes the findings of the dissertation and proves
the hypothesis made in the study. The applicability of the work as well as its limitations have been
commented on. The contributions of the author as well as the benefits of the proposed model have
been clearly outlined, giving guidance on its future development and potential improvement and
validation.