

## **ABSTRACT**

"Application of Mathematical Methods for Project Performance estimation"

The total size of the master thesis is 130 p., 21 tab., 19 fig., 1 appendix, 28 sources.

Forecasting is an essential element of project management throughout the life of a project and an integral part of the decision-making process under uncertainty.

The purpose of the master thesis is to investigate methods of forecasting project performance, taking in account past performance information, current performance data and uncertainty arising from the random nature of errors in planning and measurement.

The research object is project performance in project management decision-making.

The research subject is the use of mathematical methods for forecasting project schedule and budget, taking into account uncertainties and measurement errors.

The paper provides theoretical information on existing methods and approaches to forecasting schedule and project costs. The example using Bayesian inference is provided. The technique of comparing the effectiveness of different forecasting methods in terms of accuracy, reliability and relevance of generating early warnings on deviation from the original plan is provided. The comparison provided for critical path method, earned value method and Bayesian adaptive approach.

**PROJECT MANAGEMENT, FORECASTING, BAYESIAN INFERENCE,  
DECISION-MAKING SYSTEMS, UNCERTAINTY.**