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TITLE OF DIPLOMA THESIS:

Artificial neural network applied in order time and cost in hydraulic projects to be predicted

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ABSTRACT

Artificial Neural Networks have been proved to be an important tool, used to solve complicated issues. The last decades ANNs have been, also, used in the procedure of project management in several ways such us time and cost prediction, risk management, money drop prediction etc. Predicting precisely a project's construction cost and completion time is, undoubtedly, a basic factor for the right and successful management of the project. Lately, many researchers have been busy by investigating ANNs' way of working. Meanwhile, there have been done many studies about the advantages of ANNs as well as the problems hidden in their use. Finally, an important field of research has been the study of ANNs' ways of education, ANNs' architectural structure and the choice of the appropriate for each problem training algorithm. All these important issues are being negotiated in the present master thesis. The main negotiated issue is the use of ANNs, in order conventional hydraulic projects methods of ΔΕΥΑΚ to be predicted. Specifically, it was tried projects' completion time and construction cost to be predicted. Neural networks models' construction has been achieved by the use of fanntool 1.2 program, while twenty completed hydraulic projects, with nine known variables, have been used as data. Moreover, SPSS program has been used, in order correlation degree of the project's known variables to be found, with the aim the best models for prediction to be created. Furthermore, an extended literature review has been done. This review is about the use of neural networks in predicting time in several projects such us hydraulic projects, road construction projects, concrete's construction, buildings' construction etc. Finally, there are listed nine models, which are about project's completion time prediction, and two about construction cost prediction. The results are satisfactory despite the limited number of data. In the end, the ANNs' ability of precise prediction is shown, while several suggestions for their improved use are proposed.

KEYWORDS

time, cost, prediction, management, hydraulic projects, neural networks