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TITLE OF DIPLOMA THESIS:

Improvement of a Risk Based Decision-Making Methodology

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ABSTRACT

The process of decision making is one of the fields that deeply concerns the scientific community and leads to conducting several surveys so that new methods will be developed and fully understood, in order to solve the decision making problem in the first place. The framework within decisions are made is full of varying parameters and risks necessitating extensive survey. The decisions are influenced by many factors. The concepts of these factors are difficult to determine completely and clearly, let alone to be fully understood and be able to relieve the current issue in question. An important part of the construction industry, the technical projects face this very critical problem of decision making, in the phases of construction or operation management of facilities due to the dangerous nature of the hazards on the construction sites. However, the same problem is faced in all other activities included in the construction sector.

In this thesis, an analysis approach of decision making is carried out both in the generic and the specific context, but also specifically under the light of the risks faced by any decision is being made. Towards tackling the problem, an innovative methodology is analyzed and an effort is made to be optimized, first through review, analysis and editing of existing literature. Then, in order to improve the method, numerical data is thoroughly reviewed, in order to facilitate the configuration of the targets and perform the mathematical mapping of them, which results in the establishment of the strategic action plan, that should be followed according to the risk being faced and hazards that it causes to the statutory objectives and finally the rate of preference of the managers of the problem.

In conclusion, an improved method of making a decision with general application is proposed, that is based on real data through which the subjectivity that characterizes decisions is well documented. This dynamic method, uses directly the value of any risk in the decision making process, as the exclusive factor of making this decision or not but frequent updating is absolutely required.

The above procedure may be performed for a variety of criteria through the researching and allocating of more and more suitable data, which combined with the examining of the amount and mode of interaction, are capable of developing this method as a powerful tool to deal with risk.

KEYWORDS

Decision making theory, Risk analysis, Engineering projects, Methodology