

# **OPINION**

by prof. Virginia Ivanova Zhelyazkova, PhD from  
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on: the dissertation of assoc. prof. Anton Antonov Gerunov, PhD from the  
Faculty of Economics at Sofia University “St. Kliment Ohridski” for awarding  
the scientific degree “Doctor of Sciences”

on the topic: “Automated approaches to operational risk management”

## **1. General information**

This opinion is prepared on the basis of Order № RD 38-232 / 24.06.2020 of the Rector of Sofia University “St. Kliment Ohridski”.

With this order I have been appointed a member of the scientific jury under the procedure for awarding the scientific degree “Doctor of Sciences” to assoc. prof. Anton Gerunov, PhD

## **2. Brief presentation of the dissertation**

The dissertation presented for consideration is dedicated to a topic that is becoming increasingly important for any organization - operational risk management and the discovery and application of automated approaches in this process. The paper consists of a total of 364 pages. Of these, the main text consists of 332 pages, enriched with numerous graphic materials - 141 graphics and 79 tables describing the results of research that the author has conducted on the chosen topic. The author has cited an impressive number of sources - a total of 410 works by scientists from Bulgaria and abroad. The text of the dissertation consists of an introduction, an exposition divided into five chapters, and a conclusion.

The research thesis: "... the process of operational risk management is subject to full automation by applying an algorithmic management approach, a set of algorithms suitable for analysis of large data sets and building an appropriate information system, built on reference architectures known in the literature" is clearly formulated and contains research potential. From the thesis four working hypotheses are logically formulated, the scope of the research is correctly defined, the methodology is chosen appropriately.

In structural terms, the dissertation is balanced and logically constructed, following the principle of considering the issue from general to private. The first chapter is devoted to economic risks and approaches to their management. The second chapter discusses new approaches to managing operational risks specifically. The focus of the third chapter is the automated application of classification algorithms for operational risk management. The object of the fourth chapter is the automated application of regression algorithms for operational risk management. In the fifth chapter, the author discusses an automated operational risk management system.

The inferences from the conducted research within the work, summarized in the conclusion, are clear and definite. The work shows the presence of in-depth knowledge and experience of the author in the field of research.

### **3. Determining and evaluating the contributions in the dissertation**

The author of the dissertation has indicated a total of 9 contributions, which he groups into three categories - 4 scientific, 3 applied and 2 methodological contributions. I believe that they are correctly formulated and accurately reflect what has been achieved in the dissertation.

However, in my opinion the most important for science and practice is the derivation of a common algorithm for automated management of operational risks through analysis and synthesis of existing literature and author's extensions by the

method of design science. This provides a workable solution for a number of organizations on how to structure and monitor their operational risks, which are many, vary significantly, and are often unpredictable.

It is also particularly valuable that the management information system proposed by the author includes ethical criteria developed for the analysis of systems or digital agents with autonomous decision-making. The author has managed to integrate the various aspects of operational risk within a system that functions and provides solutions that are directly useful for the management of organizations in practice.

#### **4. Evaluation of the summary of the dissertation**

The summary correctly reflects in a concise form the dissertation and supplements important information about the author's work with data on his scientific publications and contributions. It fully meets the accepted requirements for the nature and structure of this type of scientific research.

#### **5. Compliance with national minimum requirements**

It is evident from the reference submitted by the author for fulfillment of the national minimum requirements for acquiring the scientific degree “Doctor of Sciences”, set in the Law for the Development of the Academic Staff of the Republic of Bulgaria and the Regulations for its implementation that assoc. prof. Anton Gerunov, PhD fulfills and even exceeds these requirements. He is the author of one chapter in a collective monograph, five independent articles (one of which has been published in an edition, referenced and indexed in Scopus), three independent large articles, and a textbook. In this way he made available to the scientific community the conclusions he reached in the framework of his research on the topic of his dissertation. His works have been cited in various scientific papers, which is indicative of the usefulness of his work on the topic he studied.

## **6. Critical remarks, questions and recommendations**

The dissertation presented for consideration is a completed independent research paper with clear and indisputable contributions to science and practice. The proposed methodological and practical solutions for monitoring and managing operational risk, based on mathematical methods, undoubtedly have many advantages and their application would facilitate the management of organizations that seek clarity in this process.

However, I believe that it is nevertheless impossible to cover all types of operational risks that arise, to quantify them and thus to achieve absolute comfort for the management of organizations that these risks are fully controllable. It should not be forgotten that the human factor, as well as the many different, considered to be accidental, events of macro and microeconomic nature, constantly affect the life of each economic entity. Therefore, I recommend the author to consider the application of a broader comprehensive approach to operational risk management, combining quantitative with qualitative analysis. However, this could be done in the framework of future research on the subject.

## **CONCLUSION**

Assessing the qualities of the dissertation and the candidate's publications on its topic, as well as the implementation of the national minimum requirements under the Law on its implementation, I give my positive assessment of the submitted materials on the procedure and propose to the members of the esteemed scientific jury to award the scientific degree "Doctor of Science" to assoc. prof. Anton Gerunov, PhD.

Reviewer:

prof. Virginia Zhelyazkova, PhD

31 August 2020