

**OPINION**  
**on a dissertation**  
**for the acquisition of the educational and scientific degree "doctor"**

***Prepared the review: Assoc. Dr. Nikolay Penev Ivanov***

Trakia University - Stara Zagora, Faculty of Economics; scientific field 3. Social, economic and legal sciences; in professional field: 3.8. Economics; scientific specialty: "Accounting, control and analysis of economic activity"; appointed according to Order No. 1370 – 22.12.2025 of the Rector of the D. A. Tsenov Academy of Economics - Svishtov as a member of the scientific jury.

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***Topic of the dissertation: "Financial Risk Assessment Using Machine Learning"***

**I. General presentation of the dissertation**

The dissertation submitted for evaluation by doctoral student Antonio Valentinov Dichev on the topic "Financial Risk Assessment through Machine Learning" is a logically connected and in-depth study, developed in a total volume of 197 standard pages.

The main text of the dissertation includes an introduction, three chapters, a conclusion, a list of tables, figures and a list of literature sources used. The dissertation is illustrated and contains 43 tables and 34 figures.

The research is well balanced in structural terms. The dissertation is properly constructed, which allows the problems posed to be investigated with the necessary logical sequence.

The literature used, which was studied by the doctoral student in the research process, consists of 120 titles, in Cyrillic and Latin. An attempt has been made to demonstrate the author's awareness of research on the topic, by both Bulgarian and foreign authors. The sources correspond to the thematic focus, and no unscrupulous use of foreign texts has been established.

**II. Assessment of the form and content of the dissertation work**

The in-depth analysis of the dissertation work allows us to conclude that research on such a topic is relevant in time.

The selected topic is dissertable and allows for reasoned conclusions, proposals and contributing aspects to be formulated.

The subject of the dissertation research are the specific algorithms, tools and methods of machine learning, which can be used for quantitative modeling and building effective tools for assessing the main types of financial risk - credit, market and operational.

The object of research is financial risk.

The research thesis is well formulated. The thesis defended in the dissertation is that the application of machine learning methods can significantly improve the assessment of financial risk by easier detection of otherwise hidden dependencies and interactions, automated processing of large volumes of data, including the ability to quickly adapt to dynamically changing conditions.

The main goal is adequate to the subject and object of the study. It is the discovery of potential added value from the application of machine learning as a tool for assessing individual types of financial risk. The approach to selecting algorithms and methods is based on a comparison between two families of algorithms - the so-called traditionally established (classical) methods for assessing financial risk and algorithms based on machine learning.

The goal and objectives of the study are precisely formulated, which is a prerequisite for in-depth conclusions and recommendations.

The language and style of the presentation in the dissertation are at a good level. No repetitions and deviations in the presentation are identified. The work is properly structured. There is a proportionality of its individual parts. The scientific tools are appropriate for the specific issue and allow for reasoned conclusions to be drawn.

The literary sources used are accurately cited in accordance with the requirements. No significant deviations from the norms of scientific and professional ethics have been identified.

The presented abstract, amounting to 31 pages, presents the complete and accurate content of the dissertation work. It is written in a clear, understandable and scientifically sound style, reflecting the main points in the dissertation and giving a clear idea of the achievements of the doctoral student.

The publications are tied to the dissertation, ensuring the necessary publicity of the author's achievements.

### **III. Scientific and applied contributions of the dissertation work**

The dissertation work contains the positive aspects and achievements of the author, which can be characterized as contributions to theory and practice. The author's scientific achievements stand out with originality and practical applicability:

- A systematic analysis of the concept of financial risk assessment using machine learning tools has been carried out.
- Empirical analysis reveals that in most cases, risk assessment models based on machine learning have significantly better performance than those based on traditional methods.
- The application, resource limitations and situations in which financial risk assessment models using machine learning are not sufficiently effective are outlined, including against the background of classical models, which emphasizes the need for their very precise contextual selection and application.
- Key challenges and limitations in the practical implementation of financial risk management models have been identified through a broad-spectrum empirical analysis.

#### **IV. Critical notes, opinions, questions and recommendations**

A bolder, more explicit, strong and well-argued authorial presence in subsequent works would be a prerequisite for higher-quality research output. The above remarks should be perceived as recommendations in the future development of the doctoral student.

#### **V. Summary conclusion and assessment**

Based on the in-depth analysis of the developed dissertation work, it can be confidently stated that it is a scientific work with significant achievements. The contributing moments, scientific merits and the content of the dissertation work present the author and his results in a positive light.

The research tasks have been successfully completed, and the main goal set has been achieved. The scientific and scientific-applied contributions in the dissertation work enrich scientific knowledge and support practice.

The materials presented to me for the preparation of this review comply with the laws. Therefore, I allow myself, fully convinced and objectively, to give my positive assessment and propose to the esteemed members of the Scientific Jury to award the educational and scientific degree “Doctor” in the scientific field 3. “Social, economic and legal sciences”; professional field 3.8 “Economics”; Doctoral program “Finance, money circulation, credit and insurance (finance)”, to Antonio Valentinov Dichev.

06.02.2026  
Stara Zagora

Prepared the review: .....  
(Assoc. Prof. Dr. Nikolay Penev)