

# OPINION

от **Prof. Evdokia Nikolaeva Sotirova, PhD,**

Burgas State University “Prof. Dr. Asen Zlatarov”

of a dissertation thesis for awarding the educational and scientific degree of “Doctor”

in the field of higher education: 4. Natural Sciences, Mathematics and Informatics,  
Professional field 4.6. “Informatics and Computer Science”,  
Doctoral Program “Informatics”

PhD student: **Todor Atanasov Todorov**

Topic: **Risk analysis in smart farming conditions**

Scientific supervisor **Prof. Stanimir Stoyanov, Phd**

## 1. General presentation of the procedure and PhD student

The opinion was drawn up on the basis of order No. RD ПД-22-1032 / 19.05.2026 of the Plovdiv University „Paisii Hilendarski“ Prof. Rumen Mladenov, PhD and Protocol 1, by which I have been appointed as a member of the scientific jury and entrusted with the task of preparing an opinion within the procedure for the defense of a dissertation entitled: „Risk analysis in smart farming conditions“ with author Todor Atanasov Todorov, for the acquisition of the educational and scientific degree “Doctor” in the field of higher education 4. Natural Sciences, Mathematics and Informatics, Professional field 4.6. Informatics and Computer Science, Doctoral program “Informatics” at the Department of Computer Systems, Faculty of Mathematics and Informatics (FMI).

The materials presented by Todor Atanasov Todorov are in accordance with the Regulations for the Development of the Academic Staff of Plovdiv University “Paisii Hilendarski”.

Todor Atanasov Todorov was born on 30.08.1973. He graduated from Plovdiv University “Paisii Hilendarski” (PU), majoring in Computer Technologies, with the professional qualification of Economist-Informatics Specialist. In 2003, he obtained a Master’s degree in International Economic Relations from the University of National and World Economy – Sofia. In 2018, he was enrolled as a full-time doctoral student in professional field 4.6. Informatics and Computer Science, doctoral programme “Informatics”, at PU “Paisii Hilendarski”. Since 2019, he has been a part-time lecturer at the Faculty of Mathematics and Informatics, and since 2024 he has been an Assistant Professor at PU. At a meeting of the Department Council of the Department of Computer Informatics, Protocol No. 7/14.02.2025, he was discharged with the right to defend his dissertation.

## 2. General assessment of the dissertation research

### Actuality of the topic

The dissertation is devoted to a topical area related to the analysis of financial risk in the context of smart agriculture. Considering the increasing impact of climate change, market instability and digitalisation on the development of the agricultural sector, I believe that the topic is highly relevant. The development of models and systems for risk identification and assessment plays an important role in supporting managerial decision-making and increasing the sustainability of agricultural enterprises.

### **Knowledge of the Problem**

The exposition shows that the doctoral candidate is familiar with the specifics of the subject area and has successfully linked the economic aspects of risk with information models, digital platforms and software implementation. This allows the problem to be examined from both a theoretical and an applied perspective.

### **Research Methodology**

I find the methodology used by the doctoral candidate appropriate and logically related to the aims and objectives of the research. The author applies theoretical analysis, modelling, formalisation of indicators and software implementation of a system for the identification and assessment of financial risk. The methodological approach is consistent and enables a transition from the analysis of the problem area to the development of a mathematical model and its implementation in a software environment. This demonstrates a good connection between the theoretical framework, the proposed solution and the applied orientation of the dissertation.

### **Characteristics and Evaluation of the Dissertation**

The dissertation of Todor Atanasov Todorov has a total length of 131 pages. It consists of a list of figures, a list of tables, an introduction, four chapters, a conclusion, scientific and scientific-applied results, a list of publications related to the dissertation, acknowledgements, a declaration of originality and reliability, and a bibliography. The bibliography contains 102 literary sources, all in Latin script.

The introduction presents the relevance of the research in a well-argued manner and emphasises the need for new approaches to the identification and analysis of financial risk in the context of smart agriculture. The aim, object, subject and tasks of the dissertation are clearly formulated. The first chapter presents the main characteristics of financial risk in the agricultural sector and examines the role of electronic systems and digital technologies in its management. The second chapter is devoted to the theoretical foundations of financial and agricultural risks, their classification, characteristics and management principles. The third chapter develops a mathematical model for the identification of financial risk by defining parametric, index and interval spaces. The fourth chapter presents the software implementation of a system for studying financial risk in the context of smart agriculture, including its architecture, development environment, software implementation and testing. The conclusion summarises the main results of the research, formulates the scientific and scientific-applied results and outlines opportunities for future development.

The dissertation is logically and consistently structured and complies with established academic requirements. The research is well substantiated, and its individual parts are related to the defined aim and tasks. The theoretical analysis, the developed mathematical model and the software implementation demonstrate a consistent research approach. The obtained results are well grounded and have both scientific and scientific-applied value.

### **3. Assessment of the publications and personal contribution of the PhD student**

For the present procedure, Todor Atanasov Todorov has submitted two publications presenting results from his research. One of them was published in the proceedings of the international scientific conference InfoTech-2025, indexed in Scopus, and the other is in press, having been presented at the 13th International Conference on Intelligent Systems, 2026.

The publications are related to the topic of the dissertation and reflect specific aspects of the doctoral candidate's research, connected with the application of modern information technologies, modelling and analysis of financial risks in the context of smart agriculture.

#### **4. Contributions and Significance of the Dissertation**

I support the scientific and scientific-applied results formulated by the doctoral candidate and presented on pp. 114–115 of the dissertation. They correspond to the content of the work and reflect both the theoretical contribution of the research, related to the modelling and analysis of financial risk in the context of smart agriculture, and its practical orientation, expressed in the proposed architecture, methodology and opportunities for implementation in a real information environment.

I consider the formulated results to be well substantiated, correctly derived from the conducted research, and significant both for the development of the scientific field and for practice in the area of smart agriculture and financial risk management. The opportunities and ideas for future applications presented by the doctoral candidate further support the significance of the dissertation.

The obtained results are original, have high value and offer concrete solutions with potential for real practical implementation. They correspond to the aim set in the dissertation and confirm the relevance and applicability of the conducted research.

#### **5. Abstract**

The abstract has a total length of 32 pages, is well structured, and accurately and comprehensively reflects the content of the dissertation, the obtained results and the conclusions drawn from the research.

#### **6. Critical Remarks and Questions**

I have no critical remarks regarding the doctoral candidate. Some technical inaccuracies have been identified, but they do not diminish the value of the conducted research.

#### **7. Conclusion**

My assessment of the dissertation, the abstract, the publications and the scientific activity of Todor Atanasov Todorov is entirely positive. The dissertation contains scientific and scientific-applied results that represent an original contribution and demonstrate that the doctoral candidate possesses solid theoretical knowledge, skills for critical analysis and the ability to conduct independent scientific research.

The dissertation fully complies with the requirements of the Development of the Academic Staff in the Republic of Bulgaria Act, the Regulations for its implementation, as well as the criteria of the Regulations for the Development of the Academic Staff at Plovdiv University “Paisii Hilendarski”. The specific requirements of the Faculty of Mathematics and Informatics have also been met.

This gives me grounds to confidently recommend to the esteemed members of the Scientific Jury to award Todor Atanasov Todorov the educational and scientific degree “Doctor” in professional field 4.6. “Informatics and Computer Science”.

23.06.2026  
Burgas

Prepared the opinion:.....  
(Prof. Evdokia Sotirova, PhD)