

## REVIEW

**By Prof. Dr. Vasko Nikolov Koprivlenski , Agrarian University - Plovdiv**, Field of higher education: 3. Social, economic and legal sciences, Professional field 3.7. Administration and management, Scientific specialty : Organization and management of production o. Appointed as a member of the scientific jury by order No. RD-22-45 of 09.01.2026 of the Rector of the "Paisiy Hilendarski" University

regarding materials submitted for participation in a competition  
for the academic position of " **professor** "  
**in Plovdiv University "Paisiy Hilendarski" ,**

by : Field of higher education : 3. Social , economic and legal sciences,  
Professional field 3.7. Administration and management ,  
( Quantitative Methods and Modeling in Management )

In the competition for " professor " , announced in the State Gazette, No. 96 of 11. 11. 2025 and on the website of Plovdiv University " Paisiy Hilendarski " , for the needs of Department of "Management and Quantitative Methods in Economics" of the Faculty of Economic and Social Sciences , **as the only candidate participates** Assoc. Prof. Dr. Tanya Petrova Yankova-Lilov from the Paisii Hilendarski University.

### 1. General presentation of the received materials

Presented by Assoc. Prof. Dr. Tanya Petrova Yankova- Lilov The set of materials on paper is in accordance with the Regulations for the Development of the Academic Staff of the University of Plovdiv and includes all documents required for the competition (20 in number), described in her Application to the Rector of the University of Plovdiv.

The candidate Assoc . Prof. Dr. Tanya Petrova Yankova-Lilov is the author of a rich and diverse scientific production. The total list of her scientific works is 59 works . Of these, 9 are related to the acquisition of the ONS "doctor" , and 27 - to the competition for "associate professor". They are not peer-reviewed and are not included in the scientific output of this competition.

List of The scientific papers for participation in this competition include 21 publications . One of them is independent and one is in Bulgarian, and all the remaining 19 are in English. The scientific publications for this competition are distributed as follows:

- Articles and reports (numbered 2 to 4 and 8 to 21), published in scientific journals, refereed and indexed in world-renowned scientific information databases Scopus and Web of Science – 17 , all of them with an Impact Factor.
- Articles and reports published in non-refereed journals with scientific review – 3 issues.
- Monograph 1 pc.
- Published teaching aids – 1 pc.

The certificate of fulfillment of the minimum national scientometric requirements for the academic position "Professor", according to the ZRAS in the Republic of Bulgaria and the requirements of the PRAS of Plovdiv University, shows that the candidate Tanya Petrova Yankova fulfills the necessary criteria as follows:

- For group of indicators A – 50 points with a required minimum of 50 points or 100%.
- For group of indicators B – 100 points with a required minimum of 100 points or - 100%
- By indicator group D – 228.125 points with a required minimum of 200 points or - 114.06%
- By group of indicators D – 175 points with a required minimum of 100 points or - 175%
- By group of indicators E – 280 points with a required minimum of 100 points or - 280%

Or with the required minimum of 550 points for " professor " , the candidate reaches 83 3.125 points, i.e. 151.48 % more. A detailed report on the implementation of the scientometric indicators, according to the Regulations for the PRAS of the P U , is attached .

My overall assessment is that Assoc. Prof. Dr. Tanya Petrova Yankova-Lilov presents scientific production that, in quantity and quality, exceeds the scientometric indicators and requirements of the University of Prussia for occupying the scientific position of "professor".

**The main areas of the candidate's scientific activity** include research in the field of mathematical modeling and quantitative methods, optimization methods and their application, the application of fuzzy set theory, probability and statistics, financial mathematics, digitalization, data processing and rational management decision-making.

The topics of the scientific papers from the list for participation in the competition for "professor" correspond to the scientific specialty. The candidate submits a personally signed declaration of originality and reliability of the information provided.

## **2. Brief biographical data of the candidate**

Tanya Petrova Yankova was born on 05.11.1971. She completed her secondary education in 1989 at the Model Mathematical High School "Acad. Kiril Popov" - Plovdiv, majoring in "EIM Operator-Programmer". In 1994, she graduated with honors (6.00) from her higher education as a Master's degree at the Plovdiv University "Paisiy Hilendarski", majoring in "Mathematics" and "Mathematical Structures", as well as a second major in "Teacher of Mathematics and Informatics". For the period from 2000 to 2009, she worked at the Institute of Management and Systems Research - BAS, where she became a Research Associate III degree (2002-2003), Research Associate II degree (2003-2004) and Research Associate I degree (2004-2009). In 2007, he obtained the educational and scientific degree of "Doctor" in the scientific specialty 02.21.06 Automation of engineering work and automated design systems, based on a successfully defended dissertation on the topic: "System for optimization parametric synthesis and kinematic analysis of plane lever mechanisms of the II class and with n degrees of freedom". For the period from 1995 to 2009, he worked as a part-time assistant in Mathematics, Quantitative methods in economics, Statistics, Linear and nonlinear optimization, etc. at the University of Plovdiv, the Technical University - Plovdiv branch, the University of Food Technologies - Plovdiv, the European College of Economics and Management - Plovdiv. From 2009 to the present, he has been a full-time lecturer at the Plovdiv University "Paisiy Hilendarski", where he has successively held the positions of Assistant (2010-2011), Chief Assistant (2011-2016) and Associate Professor (12.04.2016 - until now) in the field of higher education 3. Social, economic and legal sciences, professional field 3.8 Economics (Quantitative methods and modeling).

The professional development of Assoc. Prof. Dr. T. Yankova meets the requirements of the ZRASRB.

## **3. General characteristics of the candidate's activities**

### **Evaluation of the candidate's teaching and learning activities and preparation**

The candidate's honorary teaching activity began and has not been interrupted since 1994. Before joining the Bulgarian University, during the period 2000-2009, she worked under an employment contract at the Institute of Management and Systems Studies of the Bulgarian Academy of Sciences. There she also engaged in scientific research.

Practically, Tanya Petrova Yankova-Lilova is a lecturer with a basic employment contract at the University of Plovdiv, since 28.09.2009 in the Department of "Management and Classical Methods in Economics" at the Faculty of Economic and Social Sciences, where she continues to work to this day. As of 16.12.25, she has a total work experience of 25 years, 10 months and 05 days, of which 16 years, 03 months and 28 days are teaching. She has a work experience of 09 years, 08 months and 04 days as an "associate professor" and has acquired the ONS "doctor" 17 years, 11 months and 09 days ago.

Over the past 5 years, Assoc. Prof. Tanya Yankova has carried out her teaching and learning activities at the "Paisiy Hilendarski" University with full classroom attendance, as follows: 2020/2021 - 345 hours, 2021/2022 - 375 hours, 2022/2023 - 275 hours, 2023/2024 - 287 hours, 2024/2025 - 351 hours. For the same period, she has delivered full lecture courses and exercises to students in the Bachelor's program in the disciplines: Applied Mathematics, Financial Mathematics, Quantitative Methods in Management - A total of 225 hours of lectures and 150 hours of exercises. For the needs of teaching in these disciplines in the Bachelor's program, she has developed the relevant curricula. In the Master's program, the candidate has prepared curricula in the disciplines Mathematics and Operations Research in Economics.

Assoc. Prof. Tanya Yankova is the scientific supervisor of two full-time doctoral students, one of whom successfully defended her dissertation in 2023, and the other is still in the process of studying. With each of the doctoral students, the candidate has published one scientific article.

In the course of his work as a teacher Tanya Yankova participated in the writing of a textbook.

He is the head of 1 scientific project under the Research Fund of the Paisiy Hilendarski University. He participates as a member of the team in the development of another 12 scientific projects, funded respectively by the Ministry of Education, Science and Technology, the National Science and Technology Fund at the University, under the INTERREG VA Greece-Bulgaria program and the program "Innovative Actions in the Field of Sustainable Development".

Over the years, Tanya Yankova has built a successful teaching and scientific career and has gained additional competencies and knowledge acquired in her work on scientific projects and as a teacher. She has high computer literacy, which she applies in her work on scientific projects and in teaching.

The candidate's teaching and pedagogical activities exceed the requirements of the Academic Staff Development Act and the Regulations for its implementation at the University of Plovdiv.

#### **Evaluation of the candidate's scientific and applied scientific activities**

The scientific activity of Assoc. Prof. Dr. Tanya Yankova is diverse and up-to-date. It contains scientific-theoretical, methodological and clearly expressed practical-applied results that contribute to the enrichment of existing research by introducing new analytical and methodological approaches and tools. Thus, they become a good basis for future studies in the field of quantitative modeling, digital transformation and intelligent analysis of socio-economic systems, process optimization, making rational management decisions, preparing valuable recommendations and strategies.

In terms of thematic aspects and in accordance with the requirements of Article 76 of the PRASUP, the research results indicated in the candidate's scientific publications can be grouped into the following main areas:

1. Scientific results in the field of multi-criteria management decision-making and intelligent modeling (2,3,9,10,11,20).
2. Scientific results related to digital transformation, Industry 4.0 and Industry 5.0 (7,17,21).
3. Scientific results in educational activities and intelligent learning environments (2,4,8,14,19).
4. Scientific results from the study of consumer behavior, satisfaction and adoption of digital services (12,13,15,16,20).
5. Scientific results related to sustainability, environmental impact and public health (5,6,18).

#### **Evaluation of contributions**

The main contributions can be summarized as follows:

##### **I. Scientific and methodological contributions**

1. New criteria and adapted methodological approaches and methods for decision-making under uncertainty have been developed and proposed, which increase the accuracy, stability and applicability of models when working with subjective and uncertain expert assessments (2,3,9,10,11,20).

2. A combined interdisciplinary approach is proposed, by mixing classical statistical methods, fuzzy sets, structural equation modeling and multi-criteria analysis for the study of complex, multi-factorial and dynamic socio-economic processes (1,2,8,11,12,13,15,16,18).

3. Analytical models for static and dynamic assessment and benchmarking have been developed, which allow for continuous monitoring, evaluation and well-founded making of effective management decisions (1,3,9,11,20).

4. Adapted methodological approaches for data analysis in education and intelligent assessment have been proposed (2,4,8,14,19).

## **II. Scientific contributions of theoretical significance.**

5. The impact of digitalization, simulation modeling and generative artificial intelligence on the productivity, competitiveness and sustainable development of industrial systems, small and medium-sized enterprises and the tourism sector is theoretically justified (7,17,21).

6. Empirically based management models have been developed in the fields of e-commerce, tourism services, education, healthcare and environmental sustainability (5,6,11,12,13,15,16,17,18)

## **III. Scientific and applied contributions.**

7. Empirically validated models and recommendations have been developed for making rational management decisions in business, education and the public sphere (1,3,9,12,13,15,16,20).

8. Approaches and policies are recommended to achieve sustainable development of the industry and the transition to a green economy (5,6,21).

**The presented monograph** entitled: "Mathematical Modeling in Economic Research - Selected Methods and Approaches" is an independent work of Assoc. Prof. Dr. Tanya Yankova. It is 216 pages long. It is structured by an introduction, seven chapters, a conclusion, appendices and a bibliography of 94 titles. It systematically presents and analyzes modern quantitative methods and models applicable in economics and management. **The object of the study** is the economic processes, objects and phenomena that can be studied through mathematical modeling. **The subject of the study** is the various mathematical methods and techniques for modeling and optimization, with their focus on solving specific economic problems. **The main goal** is to offer adapted models for solving real management and economic problems. The relationship between theoretical approaches and their practical significance for making effective management decisions is clearly outlined. **All this emphasizes the practical and applied nature of the monograph.**

### **4. Assessment of the candidate's personal contribution**

**The report on the contributions** clearly highlights the main positive aspects of the work of Assoc. Prof. Tanya Yankova. It shows that in her research work the candidate is able to apply appropriate theoretical and methodological approaches and tools, to analyze problems, to systematize research results and to propose rational and justified solutions, ideas and models with clear scientific and practical value.

### **Significance on the offerings for science and practice**

The stated contributions and results are the personal work of the candidate and are not borrowed from research and publications in which she has no participation. The publications are dedicated on weak researched problems. The scientific developments are distinguished by originality, precision and systematicity of the studies. New ideas, approaches and solutions are proposed. The scientific works demonstrate broad literary awareness, the ability to apply both traditional and established scientific methods and new and adapted methodological tools. This makes the achieved results clear, understandable and easily applicable in practice.

**The reference for the noticed quotation** on Assoc. Prof. Dr. Tanya Yankova includes total 47 citations from which: 39 pcs. in scientific publications, referenced and indexed in world-renowned databases, monographs and collective volumes, 8 pcs. in non-refereed journals with scientific review. All 47 citations were found in foreign publications. The scientific publications of Tanya Yankova have good response in the scientific literature.

## **5. Critical remarks and recommendations**

My recommendations to Assoc. Prof. Dr. Tanya Yankova are to continue and expand her scientific and applied research , adapting and using it for the purposes of teaching students, managing scientific projects, and preparing doctoral and master's students .

## **CONCLUSION**

The documents and materials presented by Assoc. Prof. Dr. Tanya Yankova meet all requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADRB) and the Regulations for its implementation at the Paisii Hilendarski University. The candidate's scientific and teaching qualifications are unquestionable.

After reviewing the materials and scientific papers presented in the competition and in view of the analysis of their significance and the original scientific, applied and applied contributions contained therein, I find it reasonable to give my positive assessment and to recommend to the Scientific Jury to prepare a report proposal to the Faculty Council of the Faculty of Economic and Social Sciences for the election of Assoc. Prof. Dr. Tanya Petrova Yankova-Lilova to the academic position of "professor" at the "Paisiy Hilendarski" University in: Field of higher education 3. Social, economic and legal sciences, Professional field 3.7. Administration and management, ( Quantitative methods and modeling in management )

**Date 5.03.2026**

**City of Plovdiv**

**Reviewer: .....**

**(Prof. Dr. Vasko Koprivlenski )**