R E V I E W

on a competition for the occupation of the academic position "PROFESSOR" under

professional field **5.13 "General engineering"**, course **"Production management"**

……
(professional field and spatiality)

announced in SG no. 02/05.01.2024
with candidate~~/s~~ **Assoc. Professor Dr. Eng. Tanya Pencheva Panayotova**
(the three names, scientific degree, academic position)

Reviewer **prof. DSc.(econ) Nikolay Hristov Sterev**
(the three names, scientific degree, academic position)

1. General and biographical data

The competition has been announced for the needs of the "Industrial Management" department, Faculty of Mechanical Engineering at the Technical University - Varna according to the decision of the AC of 27.11.2023 (protocol No. 5 / 27.11.2023. I participate in the scientific jury for the competition according to Order no 109 / 28.02.2024, corrected by order No. 218 / 05.04.2024 of the Rector of the Technical University – Varna.

In the competition for the academic position "PROFESSOR" of the Technical University - Varna in professional осева **5.13 General Engineering**, course **Production Management**, there is only one candidate: **Assoc. Professor Dr. Eng. Tanya Pencheva Panayotova**.

The candidate graduated from Technical University - Varna, majoring in "Technology of Mechanical Engineering, Metal Cutting Machines, Quality Management" in 1994. In 2005 acquires a PhD in the scientific specialty "Organization and Management of Production" with a dissertation on the topic: Modelling of organizational relationships in the development of complex project tasks in conditions of Competitive Engineering.

Professionally, she started as an assistant in 1994 in the "General Education" department at the Institute of Chemical Industry and Mechanical Engineering - Varna (Institute of Chemical Industry and Mechanical Engineering / College of TU-Varna), where she gradually became: senior assistant and chief assistant. In 2008, she was elected "ASSOCIATE PROFESSOR" to the Department of "Industrial Management". In the period 2016-2020, she is the head of the Department of "Industrial Management" at the Technical University - Varna.

Outside the university, **Assoc. Professor Dr. Eng. Tanya Pencheva Panayotova** is an independent expert holding certificates of appraiser competence from the Chamber of Independent Appraisers in Bulgaria for Commercial Enterprises and Receivables, Industrial and Intellectual Property Rights, Machinery and Equipment, Real Estate, Agricultural lands and permanent crops; Expert person for the Registry Agency and Expert person for the judicial district of the District Court – Varna.

2. General description of the presented materials

The following summaries can be made from the presented report on the fulfilment of the minimum National requirements for holding the academic position "PROFESSOR"

- The candidate submitted for review a total of 39 scientific works, books, textbooks and teaching aids and a list of 13 scientific research developments. All 39 scientific papers that are not the dissertation are accepted for review and 1 textbook and 2 teaching aids and 13 research projects are counted in the final evaluation.
- The reference is correctly made and reflects the main scientific achievements (published books, studies, articles and reports from conferences, and citations of scientific publications)

of the candidate for PROFESSOR of the Technical University - Varna: **Assoc. Professor Dr. Eng. Tanya Pencheva Panayotova**.

- It is clear from the reference that all minimum requirements have been met, including:
    - The candidate has acquired the ESQ "Doctor" with diploma No. 29832 in 2005, issued by the HEC.
    - The candidate has acquired the academic position of "ASSOCIATE PROFESSOR" with diploma No. 25126 in 2008, issued by HEC
    - The candidate has a published monograph on the topic of the competition for PROFESSOR on the topic: "Investigation of the impact of intellectual capital on the value of the industrial enterprise", reviewed by 2 reviewers in 2023, published by IC "Gea-print", V., ISBN 978-619-184-063-2
    - The candidate participates in the competition additionally with 17 articles and studies (incl. 2 indexed) and 18 reports from conferences, which form 436.72 points (minimum number of 200 points according to the Regulations for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria)
    - The candidate has indicated in the reference a total of 39 citations, incl. 9 citations in SCOPUS and WoS, which form 156 points (minimum number of 100 points according to the Regulations for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria)
    - The candidate also meets the additional requirements for holding the academic position of PROFESSOR Technical University - Varna by submitting evidence of 263.33 points (minimum number of 150 points) in the following areas:
        - Submitted reference for 2 successfully defended doctoral students under her supervision;
        - Reference submitted for leadership of 5 national project teams and participation in 8 more national projects
        - 1 university textbook and 2 teaching aids were published.

3. General characteristics of the candidate's research and scientific-applied activity.

The presented 39 publications accepted for review can be grouped according to their subject matter and content into 3 groups:

1st group: production management /production management/:

In this group of publications, which is very precisely oriented to the competition for PROFESSOR, there are 1 monograph on the competition, 9 articles and 8 reports, which consider the main problems of organization and management of production. The main results of the candidate's theoretical and applied research include:

- The main elements determining the use of the value approach in enterprise management have been identified and systematized. Special emphasis is placed on the methods and means of determining values in corporate management;
- Main problems for effective planning and use of production capacity have been identified, which are closely related to the optimization of processes and activities in corporate management. An important emphasis is also that appropriate methods and means have been proposed to optimize the production capacity in the conditions of Industry 4.0 and the transition to Industry 5.0;
- Based on a thorough literature analysis, 18 key factors have been identified that have a profound impact on the effective capacity planning and management of a manufacturing organization. The relationships between the key factors were analysed using a structural interaction matrix;
- An overview of the definition of intellectual capital (IC) as an expression of the non-property advantages of business was made, and on this basis, through an analysis of the creation of

value in industrial enterprises, an appropriate model was proposed for the analysis and evaluation of IC and the value of the enterprise as a whole;
- A formal model for improvement (reengineering) of business networks in industrial management is proposed.

2nd group: customer management:
In this group of publications, which examines some main groups of questions within the scope of the thematic area of the competition for PROFESSOR, there are 4 articles and 6 reports that consider the main problems of the factors and conditions for increasing customer satisfaction and the means of managing this satisfaction. The main results of the candidate's theoretical and applied research include:

- Basic elements of user satisfaction have been systematized and the foundations for coding user information for the purpose of customer management have been laid.
- The flexibility of the modern enterprise by choosing the appropriate business strategies for fragmenting mass markets into market niches is explored. An approach of flexibility management through intellectual capital management is proposed;
- Business process reengineering methodology has been adapted as an advanced management tool in terms of market management and the 4P concept.
- A positive relationship between the awareness of the brand and its value was investigated; between consumer attitudes towards the brand and its value; between consumer perceptions of brand quality and value; between the positive reputation of the brand and its value; between consumer loyalty to the brand and its value.
- The modern tools and trends in the development of virtual design are reviewed. Special attention is paid to the organizational forms of functioning of the virtual design system. It has been established that, in addition to communication and information technologies, the development of organizational forms is strongly influenced by the development of markets, globalization, increased requirements for products, the implementation of new technologies and innovations, etc.

3rd group: competence of production managers:
In this group, publications cover various aspects of human resource management necessary for production management Publications that report on internal communication between people in a team are reported here. These questions are directly related to the scope of the thematic area of the contest for PROFESSOR, and here they refer: 4 articles and 4 reports. The main results of the candidate's theoretical and applied research include:

- Based on a thorough literature review and personal interviews with various functional managers from industrial enterprises, a model for the selection of specialists and experts for solving complex problems related to production management in industrial enterprises and an algorithm for applying this model is proposed;
- The development of Competitive Engineering (CI) has been analysed and the guidelines for its development as a complete complex integrated process have been systematized. On this basis, the requirements for digitalization of design and production activities in the industrial enterprise have been identified, thus a model has been proposed to identify their suitability for new production conditions, such as digitalization, artificial intelligence and virtual reality.
- The need for graduates to have skills to interact in a global environment is identified and a scheme is proposed for how academic institutions can successfully respond to the challenges of globalization.

With regard to the monographic work submitted for review for participation in the competition for PROFESSOR with the title: **RESEARCH THE IMPACT OF INTELLECTUAL CAPITAL ON THE VALUE OF THE INDUSTRIAL ENTERPRISE**, the following summaries can be made:

- The monograph is devoted to the study of the modern phenomenon called INTELLECTUAL CAPITAL. It is structured in 3 main chapters, a preface and a conclusion with a total volume of 218 publishing pages, i.e. 14 publishing cars.
- The first chapter is devoted to the study of the conceptual clash of "FINANCIAL vs. ECONOMIC values" of the enterprise. The chapter offers a theoretical reading of the theories for determining the value of the enterprise as the emphasis is placed on the systematization of criteria for evaluating the value of the enterprise. The introduction of INTELLECTUAL CAPITAL as the main source of value for the enterprise, based on the innovativeness of production management processes, can be positively evaluated. The relationship between the value of the enterprise, its intellectual capital and the role of human capital in exploiting this same intellectual capital has been highlighted quite correctly.
- In the second chapter, basic theoretical and methodological concepts related to deriving the value of the enterprise are systematized and analysed. Systematized and analysed various financial and/or economic indicators for evaluating the enterprise. In this context, the concept of INTELLECTUAL CAPITAL VALUE has been correctly introduced, presenting and analysing the model for measuring and evaluating the value of the enterprise's intellectual capital.
- The third chapter of the monograph presents the author's methodology for applying the value approach in the management of the industrial enterprise. In this chapter, both the algorithm of the author's methodology and the sequence of steps in its implementation are revealed. Examples of the application of the author's methodology and the proposal in the monograph Algorithms are completely correctly presented.

Overall, my assessment is that the monographic work emphasizes an important issue for the modern economy: the creation of value for the enterprise and all stakeholders, with an emphasis on the formation of intellectual capital necessary to optimize and improve this value.

4. Evaluation of the pedagogical preparation and activity of the candidate

The candidate for the academic position of PROFESSOR: **Associate Professor Dr. Eng. Tanya Pencheva Panayotova** was appointed ASSOCIATE PROFESSOR in the scientific specialty 05.02.21 "Organization and Management of Production (Engineering)" at the Technical University - Varna in 2008. The main fields of teaching work are the following:

- Business evaluation; Industrial Engineering; Disaster and accident damage assessment; Operations Management; Production management; Making management decisions; Economics – at EQL Bachelor;
- Business evaluation; Industrial Engineering - at EQL Bachelor, English language training;
- Engineering and production management; Management of corporate intellectual property; Competitive Engineering; Patent law; Knowledge Management - in EQL Master
- Competitive engineering; Knowledge Management - in EQL Master, English language training.

Assoc. Prof. Dr. Eng. Panayotova actively participates in the exchange of students under the Erasmus + program.

5. Basic scientific and scientific-applied contributions

The candidate for the academic position "PROFESSOR" of the Technical University - Varna: **Associate Professor Dr. Eng. Tanya Pencheva Panayotova**, participated in the competition with 39

publications, incl. 1 monograph on the competition, 18 articles and 17 reports, 1 textbook and 2 study aids. The publications are: 22 in Bulgarian and 17 in English. The evaluation of the publications presented in the competition for PROFESSOR allows to accept the following main CONTRIBUTION MOMENTS from the monograph on the competition and from the accompanying publications:

1. There is a serious theoretical and applied analysis of the place and role of production management for the development of modern enterprises, incl.
    a. An author's model of creation and development of the production capacity is proposed as a key parameter of the enterprise, incl. and a methodical scheme for its effective planning and management leading to an increase in its value;
    b. Based on an in-depth theoretical and methodological analysis of the main characteristics of the market environment, the need for a new, advanced concept for the construction and operation of the production subsystem has been identified with a view to increasing the competitiveness of the enterprise and the challenges that stand in the era of Industry 4.0.
    c. A historical analysis of the development of Competitive Engineering (CI) was conducted and the guidelines for its development as a complete complex integrated process were systematized. Special attention is paid to the organizational forms used in the various stages of functioning of the system for virtual design of industrial products.
    d. Based on the theoretical synthesis, the value approach in enterprise management is proposed and theoretically substantiated. The possible situations and determination of the necessary degree of value creation were analysed, taking into account the influence of intellectual capital.

2. There is respectable research on the applied aspects of production engineering and reengineering of enterprise networks, incl.
    a. An author's model has been developed to assess the interaction of key factors influencing the effective planning of production capacity. An appropriate methodology for identifying the key factors and the dependencies between them is proposed.
    b. An experimental model and an algorithm for its application are presented to evaluate the competence of production managers in response to a real practical need set as a research task by business.
    c. On the basis of an applied analysis, the use of the network approach in the engineering of company management processes is proposed. Moreover, this engineering approach has been proposed for different types of business networks. Accordingly, a formal model for the reengineering of business networks is also proposed, which would support the development of integrated and long-term relationships between individual enterprises in a given business network.
    d. The possibility of applying the main results of knowledge engineering, namely the formulation of a specific strategy for effective knowledge management, has been investigated. Solutions are presented related to how the organization acquires knowledge from the experience, skills of associates and other sources and how the accumulated intellectual potential is used to increase the efficiency and adaptability of the company.

In summary, there are sufficiently significant theoretical-methodical and scientific-applied contributions of the candidate, which contributions are entirely within the scope of the thematic

direction of the competition for "PROFESSOR" of Technical University - Varna in professional field **5.13 General engineering**, course **Production Management**.

6. **Significance of contributions to science and practice.**

The contributions of the candidate for the academic position "PROFESSOR" of the Technical University - Varna: **Associate Professor Dr. Eng. Tanya Pencheva Panayotova**, are indisputable. Recognition for scientific and applied contributions are:

- Joint publications with Bulgarian and foreign authors.
- Publications that are indexed in primary and referenced in secondary indexing systems.
- The reported 39 citations in monographs, indexed and referenced publications.

7. **Critical notes and recommendations.**

In essence, the scientific and creative results of the candidate for the academic position "PROFESSOR" of the Technical University - Varna correspond to the direction of the competition. Regardless of the fact that partial criticisms and remarks can be made to individual elements of the candidate's scientific production submitted for review, I consider that, as a whole, no significant criticisms can be made to him.

8. **Personal impressions and opinion of the review.**

I know the candidate for "PROFESSOR" of the Technical University - Varna: **Associate Professor Dr. Eng. Tanya Pencheva Panayotova** from participation in conferences organized by various universities in the country and abroad. My impressions of the candidate are good - concise presentations of the main issues important to him. She does not hesitate to enter into public discussion on the topics presented or discussed, in which he has sufficient competence.

As Chairman of the Board of APEMI, I also have good impressions of the participation of **Associate Professor Dr. Eng. Tanya Pencheva Panayotova** in various forums of the Association. Actively participates in the activities and tasks of the annual meetings of the colleagues in Economy and Industry Management from the country.

CONCLUSION

In accordance with the above, I give a **POSITIVE ASSESSMENT** to the only candidate in the competition for the academic position of "PROFESSOR" at the Technical University - Varna: **Associate Professor Dr. Eng. Tanya Pencheva Panayotova** in professional field 5.13 General engineering, course **Production management** for the needs of the department "Industrial Management", Faculty of Mechanical Engineering at Technical University - Varna.

The assessment of the works submitted for review gives reason to highlight sufficient scientific and applied contributions, on the basis of which I find it reasonable to **PROPOSE** to the members of the Honourable Scientific Jury to support the selection of the only candidate **Associate Professor Dr. Eng. Tanya Pencheva Panayotova** for the academic position "PROFESSOR" in professional field **5.13 General engineering**, course **Production Management**.

Date:
22.May 2024

RE

Заличена информация
по Регламент (ЕС)
2016/679