REVIEW

in a competition for the academic position of "Professor" in professional field: 5.13 General engineering, specialty Logistics, at the Department of Industrial Management, at the Faculty of Manufacturing Engeneering and Tehnologies – Technical University Varna, Announced in SG № 40/31.05.2022

Candidate: Associate Professor Siyka Dimitrova Demirova, PhD

Member of the Scientific Jury: Prof.Ognyan Andreev, Technical University Sofia

1. General characteristics of the research and scientific-applied activity of the candidate.

According to the competition for the academic position "Professor", only one candidate submitted regular documents - Assoc.Prof. Siyka Dimitrova Demirova. The applicant's documents have been prepared and submitted in full compliance with the current regulations (the Rules for the Terms and Conditions for Occupying Academic Positions at TU-Varna). Ther review has been prepared in accordance with the criteria of TU-Varna for awarding the academic position "Professor", which the candidate fully satisfies.

Assoc.Prof. Siyka Demirova was born on January 28, 1970 in the city of Varna. She finished her higher education in 2007 at VSU, Varna. In 2010 she was awarded a doctorate by the HAC. Since 2012, he has been working in TU Varna. She specialized in Lithuania and Latvia under the Erasmus+ program - teaching mobility, in Germany - successfully completed a specialized course in Logistics and again in Germany, Karlsruhe conducted a two-week specialization at the Institute of Information Technologies.

2. General description of the presented materials

A total of 28 scientific papers were submitted for participation in the competition for the academic position "Professor", distributed as follows:

1. Indicator B.3 - Monograph 1
2. Indicator D.7 - Scientific publications in publications referenced and indexed in world-renowned databases with scientific information - 11
3. Indicator D.8 - Scientific publications in non-refereed journals with scientific review or in edited collective volumes - 9
4. Indicator E.23 - Published textbooks - 3
5. Indicator E.24 - Published teaching aids 4

Order of participation in the publications:

- 11 publications are independent, incl. the monograph;
- in 5 publications she is the first author;
- in 5 publications she is the second author.

According to the language in which they are written:

- 20 publications are in English;
- 8 of the scientific works are in Bulgarian (including monographs, textbooks and manuals).

I accept for review all works presented by the candidate.

A Reference for the candidate's educational activities, as well as Declarations of authenticity and originality, are presented.

During the period 2016-2022 Assoc. Prof. Siyka Demirova further develops her active research and development activity in the field of logistics, innovation and entrepreneurship.

Citations of the applicant's works that reflect her professional competence and recognition on an international scale should also be noted. The list submitted for participation in the competition includes:

- citations in scientific publications, referenced and indexed in world-famous databases with scientific information - **34 in Scopus, as according to the reference the candidate's h-index is 4;**
- citations in **monographs and collective volumes with scientific review - 7;**
- citations - **Google Science - from 2017 - 80 pcs., h-index - 5 and i10-index - 2.**

To date, the candidate is the supervisor of seven doctoral students and has successfully defended two.

For the period from 2016 to date, Assoc. Prof. Siyka Demirova participated in seven scientific and educational projects, and she was the leader of two of them.

According to the presented reference and the certificates attached to it, Assoc. Prof. Siyka Demirova is:

[1]Member of the Scientific and Technical Union

[2]Chairman of the "Industrial Management" section at NTS

[3]Member of the editorial board of the research journal "Business Systems and Economics", publisher "Mykola Romeris University", Lithuania

[4]Member of the editorial board in "Science Journal of Business and Management (SJBM), number 10183459/2017

[5]Member of the National Organizing Committee of the Scientific Congress "Innovations", 2015 -

[6]Member of the organizing committee of the International Conference on High Technology for Sustainable Development

[7]Member of the editorial board of the journal Business Systems and Economics (BSE), scientific journal, Micolas Romeris University

[8]Member of the International Program Committee 5th International Conference on Machine Design and Manufacturing Engineering (ICMDME2018), Jakarta, Republic of Indonesia, Certificate of Review Member

[9]Member of the editorial board of the journal TEMEL JOURNAL, Technology, Engineering, Management, Entrepreneurship, Learning (TEMEL) – International Journal

[10]Member of the editorial board of the International Journal of Transportation Engineering and Technology (IJTET)

In the documents for the recruitment competition for AP "Professor" there is a reference for peer-reviewed dissertations, habilitation materials, monographs, reports, articles from international scientific forums and project proposals, according to which Associate Professor Siyka Demirova is:

1. Participated in scientific juries and prepared reviews and opinions of dissertation works - 4 times;
2. Participated in scientific juries and prepared reviews and opinions on habilitation materials for holding AP "Docent" and AP "Professor" - 4 times;
3. Reviewer of 2 monographic works;
4. Reviewer in 7 international scientific journals and forums, some of which:

✓ International Scientific Journal Special Issue, Sustainable Innovation - Social Responsibility and Governance in the Agri-Food Value Chains, Impact Factor, 3.251, Citescore 5.0 Scopus, (ISSN 2071-1050), 2022;

✓ Journal "Mathematics" Volume 10 Issue 8, 2022, 10.3390/math10081243;

✓ Scientific Journal Sustainable Energy, https://www.mdpi.com/journal/energies/sections/sustainable_energy, New Perspectives and Regulations for Logistics and Management Processes in the Energy Sector, https://www.mdpi.com/journal/ energies/special_issues/E_S, 2022;

✓ 5th International Conference on Machine designed and Manufacturing Engineering (ICMDME 2018), Jakarta, Republic of Indonesia

5. Reviewer of 1 research project.

From the above, I come to the conclusion that Assoc. Prof. Siyka Demirova is an active scientist, with accumulated experience, who constantly expands her international professional contacts in the areas in which he works

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

The candidate has a significant contribution to science and practice, which is evident from the readings in the previous analysis point. The minimum quantitative requirements for candidates for the academic position "Professor" are given in Appendix 1 of the Regulations for the terms and conditions for the occupation of academic positions at the Technical University - Varna. They are met and even exceeded, which can be seen in the table below.

Minimum required points by groups of indicators for occupying the academic position "Professor", area 5. Technical sciences, professional direction 5.13. General engineering

A group of indicators	Content	Professor	Total number of points of Assoc.Prof. Siyka Demirova
A	Indicator 1	50	50
B	Indicator 2	-	
C	Indicators 3 и 4	100	100
D	Sum of indicators from 5 to 11	200	441
E	Sum of indicators from 12 to 15	100	241
F	Sum of indicators from 16 to 28	150	272
G	Indicator 29	120	1265
	Total points:	**720**	**2369**

The submitted materials for the competition satisfy the minimum national requirements and those of TU - Varna for occupying the academic position "Professor".

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

The lectures given by the candidate (1265 hours according to indicator G from the reference) are in the disciplines of Logistics, Logistics Management, Technology and organization of sea transportation, Planning and forecasting in logistics, Integrated

information systems in logistics, Micro- and macroeconomics, Creativity and methods of generating new ideas, Fundamentals of entrepreneurship, Human resource management, Economics and management, Management of entrepreneurial networks, Industrial management, etc.

Every year, the candidate also participates in the training of incoming students under the Erasmus+ program.

In the period from 2016 until now Assoc. Prof. Siyka Demirova has been the supervisor of 58 graduate students and a reviewer of 29 diploma theses in "Bachelor" and "Master".

In addition, she is a mentor of the Student Club "Entrepreneurship and Innovation" at the Department of "Industrial Management" since 2016.

According to the competition for the employment of AP "Professor", Assoc. Prof. Siyka Demirova presented educational and methodological works, including 3 textbooks and 4 teaching aids necessary to meet the needs of the educational process.

On the basis of the proposed documents, I give a very high assessment of the candidate's pedagogical preparation and activity.

5. Basic scientific and applied scientific contributions

I accept the contributions presented in the report of Assoc. Prof. Siyka Demirova. They are reduced to: hypothesis, scientific, scientific-applied and applied, with which: *1. new aspects of existing scientific tasks and problems are proven and enrichment of existing knowledge and 2. application of scientific achievements in practice, such as creating new classifications, research methods, new constructions, technologies, obtaining and proving new facts, obtaining confirmatory facts.*

5.1. Hypothesis

The technical-economic essence of the concept of "innovative obsolescence" has been analyzed. On this basis, it has been analytically investigated and theoretically proven that innovation obsolescence grows at a faster rate than the physical wear and tear of products. The peculiarities of this process were investigated and it was established that this is a regularity in its development and on this basis the following were formulated: a) the change in the parameters and consumer qualities of the products under the influence of innovation obsolescence; b) alternatives are proposed for its partial or total removal. (Publications D8.6, D8.7).

5.2. Scientific contributions

- direction "innovations":

1. On the basis of scientific research, the essence of the "continuous integration cycle" approach has been clarified, as an alternative to rapid innovation obsolescence. The direct and indirect impacts of rapid innovation obsolescence on industrial products are investigated. (D8.5).

2. Through an analytical study, the role of Totally Integrated Automation (TIA) has been clarified, as an open system architecture that covers the entire production process and ensures effective interaction of all components for the functioning of the production system. The possibilities for using the available software packages in the proposed alternative method are formulated (B3.1, D8.5).

3. It has been proven that novelty in the innovation project is a mandatory condition, but it is not always decisive for the marketability of the innovation product. (D8.5, D8.9).

4. It has been researched and proven that knowledge is the basis or foundation for the formation of an innovation concept. (D7.5).

-direction "logistics":

1. It has been proven that L-ACS are a new type of automated control systems with the possibility of embedding E-components and those with artificial intelligence. (B3.1, D7.7).

5.3. Scientific and applied contributions

-direction "logistics":

1. Approaches are proposed for the structural changes that must be made in the logistics system to bring it in line with the requirements of Industry 4.0. (D8.9).

2. It has been proven that the hybrid approach is most suitable for the step-by-step reorganization of logistics processes and bringing the logistics system in line with the requirements of Industry 4.0 (D8.3, D8.9).

3. The possibilities for automating the various information flows in the logistics system were investigated using a mathematical toolkit. The sequence of solutions that provide automated management of the material flow is formulated. (D7.10, D8.3).

4. The dependence and binding of technological and business processes with the high degree of automation as a result of the entry of new information and communication technologies into industrial activities is analyzed. (D7.6).

5. It has been proven that the material logistics chain in Smart Factory is adapted in the structural essence of intelligent production and defines its manifestations in both technological and business processes. (B3.1, D7.6, D8.3).

6. The defining characteristics of the logistics information systems are derived, which define a higher level in the functional spectrum of the logistics systems. The guidelines for the formation of logistic information depots for the storage of information modules in virtual reality are defined (D7.6).

7. A fundamentally new model for the development of electronic logistics is proposed. (B3.1, D7.4, D8.3).

8. Through a mathematical apparatus, it has been proven that the successful selection of indicators and criteria that effectively satisfy the logistics information system is of extreme importance for the use of artificial intelligence both when working with customers and for improving the quality of the service (D8.3, D7.1, D7.4).

9. It has been proven that the information flows in the business organization should be formed based on the characteristics of the production and economic activity of the entire chain, through which the product from raw materials becomes a final product and then through the sales system reaches the final consumer. (B3.1, D7.7).

10. On the basis of analysis, it was established that the digitalization of logistics systems is a complex problem, closely related and dependent on the digitalization of other production activities and processes. There determines the need for step-by-step digitization of logistics processes and systems (D7.7).

- direction "entrepreneurship":

1. It has been researched and proven that the achievement of intelligent growth and the construction of a knowledge-based society will be realized by increasing the quality of scientific research and education. (D8.1).

5.4. Applied contributions

-direction "logistics":

1. An approach for monitoring and control of the logistics chain for the production and supply of liquid fuels is proposed. An algorithm has been developed for a more correct selection of a system for the transport and storage of liquid fuels, which would improve the logistics chain for their transportation. (D7.11).

2. The digital logistics levels and their interaction with the other components of the cyber-systems are determined. The problem of digitization and standardization of

logistics systems as a prerequisite for the functioning of intelligent production systems was examined (B3.1, D7.9, D8.3).

3. Solutions are proposed to create conditions that ensure interaction and faster flow of the logistics process based on intelligent production, optimization of the processes occurring in the supply chain. (D7.8).

4. The conditions for the application of digital dimensions in logistics activities and the creation of a single digital market are defined (D7.8).

- direction "entrepreneurship" and "innovations":

1. On the basis of analysis and research, proposals have been made to improve innovation development and competitiveness in SMEs. (D7.3, D7.2).

2. Through a practical study, the main barriers faced by entrepreneurs were defined. The factors influencing the practical implementation of innovative ideas have been identified. (D8.2, D8.4).

6. Significance of contributions for science and practice

The scientific works of Assoc. Prof. Siyka Demirova are written in a high academic style and with sufficient competence in the field of the competition. There is no doubt that the contributions in them have weight in their scientific significance and could be useful in science and practice.

7. Critical notes and recommendations

I have no critical remarks about the candidate.

8. Personal impressions and opinion of the reviewer

I personally know Assoc. Prof. Siyka Demirova. Over the years, she has proven herself as a built, erudite and hardworking specialist and teacher. I am impressed by her professional activity, expediency and responsible attitude towards everything she undertakes. I believe that he has an exceptional sense of accuracy and ability to work on current research tasks, which is confirmed by continuous and upward development.

CONCLUSION

The presented materials are devoted to a topic that fully corresponds to the requirements of the competition for the appointment of AP "Professor" in 5.13. "General Engineering", discipline "Logistics".

Based on the high scientific significance of the presented works and the results of the candidate's pedagogical activity, **I strongly suggest that the academic position of "Professor" be awarded to Assoc. Prof. Siyka Dimitrova Demirova in the professional direction 5.13 "General Engineering", discipline "Logistics".**

04.10.2022

Reviewer:

(Prof. Dr Eng