EVALUATION REVIEW

By prof. Dr. Matilda Ivanova Alexandrova

Professional Field 3.7 „Administration and Management“, scientific specialty „Management“, University of National and World Economy – Sofia

About: Application on Procedure for Academic Position „Professor“, Professional Field 3.7 „Administration and Management“, scientific specialty „Implementation of ICT in Economy“, Subject „Information Technologies“, Procedure Code: ABM-P-1119-27.

A candidate applying on the Procedure announced in State Gazette No. 10 / 27.12.2019 г. in the website of the University of Forestry for the needs of “Computer Systems and Informatics” Department, Faculty „Business Management“, is **Associate Prof. Dr. Marina Petrova Mladenova,** University of Forestry – Sofia.

1. Short biographical information

Associate Prof. Dr. Marina Petrova Mladenova is born in 1967 in Sofia where she graduates the Technical University of Sofia in 1991 with a specialty „Electronic Technics and Microelectronics“ (qualification profile “Engineer on Electronics and Automatics”). In 2009 she successfully defended her doctoral dissertation on "Research and results of the use of IT in the management of the furniture industry" in the scientific specialty "Organization and management of production (by industry and sub-industry)". She worked as a designer in the base for development and implementation SC "Electron" from 1990 to 1993. She began her academic career as an assistant professor at the University of Forestry (UF) in 1996, since 2000 she has been promoted to senior assistant professor, and since 2005 – to head assistant professor. Since 2011 Dr. Marina Mladenova has held the academic position of "Associate Professor" at the UF. Her teaching activity is at the Department of Computer Systems and Informatics, teaching in the disciplines "Information Technology", "Informatics", "Computer Aided Design CAD CAM Systems" to students in Bachelor and Master degree programs in various specialties at UF. Her total work experience in the profession is 30 years, of which 23 years at UF. She speaks English and Russian. Dr. Mladenova has an additional qualification as a "System Administrator of the E-learning Platform Blackboard Learn" and a trainer to utilization of the same platform. She has experience as a leader of research projects funded by UF as well as a key expert in research and applied projects, and projects funded by OP "Human Resources Development". She possesses a high level of digital competencies as well as good communication skills.

2. General description of the submitted materials.

The candidate Dr. Mladenova has submitted to the Procedure 32 publications, including:

- Monographs - 3 issues (including a habilitation thesis and a book published on the basis of a defended dissertation);
- Publications in scientific journals, referenced and indexed in world-known databases - 1 paper in an international conference proceedings indexed in Scopus;
- Publications in journals with scientific review or in edited collective volumes - 18.
- Peer-reviewed studies, published as independent editions - 2.
- Textbooks – 3.
- University study editions – 5.

Her publications can be classified as follows:
By type:

- Publications in scientific journals – 10;
- Publications in proceedings of scientific forums – 9, incl. reports in proceedings of international scientific forums – 6 (including 1 paper published in a collection indexed in Scopus; 1 paper indexed in Google Scholar); papers in proceedings of national scientific conferences, sessions and seminars – 3.

Language in which they are published:

- In Bulgarian - 20;
- In a foreign language - 12.

Number of co-authors:

- Single-author - 13;
- With one co-author - 16;
- With two co-authors - 2;
- With three or more co-authors - 1 pc.

The materials presented for participation in the competition are correctly systematized and allow the evaluation of the scientific achievements of the candidate.

3. Impact of the candidate's publications in the literature (known citations)

A total of 34 citations are found, which according to the type of citing publications are:

- in scientific journals indexed in world-known databases – 4;
- in monographs and collective volumes with scientific review – 28;
- in non-indexed editions with scientific review – 2.

The citations of the candidate's published works testify that her publishing activity has a notable impact on the scientific literature specialized on the thematic area of this Procedure.

4. General overview of candidate's activities

4.1. Pedagogical activity

The candidate Dr. Marina Mladenova delivers lecture courses and conducts seminar classes for students in Bachelor and Master degree programs at the Faculty of Business Management at UF on the courses "Information Technology /Part 1/", "Informatics", "Information Technology", "Computer Project Management Systems", and "Computer Aided Design: CAD CAM Systems". The quality of the teaching activity of the candidate is additionally ensured through the participation in the project "Development of a center for electronic forms of distance learning at University of Forestry" funded by OP "Human Resources Development 2007-2013" (where she participates as an Administrator of the electronic platform Blackboard Learn, as well as trainer). Dr. Mladenova has been the leader of two projects in the field of modern methods and forms of education, namely "Introduction of hightech interactive methods for teaching and research at UF" and "Virtual laboratory for innovation in research and training in Biological Resources". The candidate also successfully participates in projects for updating curricula of the specialties in the Faculties "Business Management" and "Biology and Landscape Architecture" at UF facing the needs of the labor market.

According to the report on the fulfilment of the quantitative requirements for the occupation of academic position "Professor" at UF the applicant fulfils the requirements – she has 23 years of experience at academic positions and over 1800 lecture hours of employment for the last 5 years. During the same period the candidate has conducted exercise classes in English by the subject "Informatics" for students in "Veterinary Medicine". The total number

of auditorium hours in English amounts to 42 hours. Dr. Marina Mladenova has developed educational and methodological materials for the courses it teaches with emphasis on innovative content courses for E-learning and distance learning education – university textbooks on "Information Technologies", "Databases" (in Bulgarian) and "Informatics for Students of Veterinary Medicine" (in English), which provides modern training in these disciplines. In addition, the teaching guides and manuals, e.g. "Working with MS Office 2010 (Word, Excel, Powerpoint)", "AutoCAD" and "Databases", support the practical preparation of students in a real learning environment. The employment of the applicant includes semester exams, doctoral exams and participation in the State Examination Commissions.

4.2. Research activities

The candidate – Dr. Marina Mladenova – participates in the Procedure for occupation of the academic position "Professor" with a total of 32 publications, of which 13 as a single author. The materials of the competition are different from those presented for the acquisition of PhD degree and in the procedure for the occupation of academic position "Associate Professor", according to article 29 of the Law on Academic Staff Development (LASD). The applicant fulfils the quantitative requirements for the academic position "Professor" at the University of Forestry – over 1200 points with a minimum threshold of 550, thus exceeding over twice the required minimum points. According to the citations report, a total of 34 citations were found, of which 4 in scientific journals refereed and indexed in world-known databases.

The publications submitted by the candidate for participation in the competition, can be categorized into two main thematic areas as follows:

- Modern development of ICT in the context of digital competencies and labour market requirements (B 3.1, D 5.1, D 6.1, D 8.7, D 8.11, D 9.1);
- Modern development of university e-Learning and evaluation systems of the educational service (D 7.1, D 7.2, D 8.1, D 8.2, D 8.3, D 8.4, D 8.5, D 8.6, D 8.8, D 8.9, D 8.10, D 8.11, D 8.12, D 8.13, D 8.14, D 8.15, D 8.16, D 8.17, D 9.2).

In the field of modern development of ICT in the context of digital competencies and labour market requirements the candidate presents for participation in the Procedure 6 titles, of which 3 monographic works (including habilitation thesis); 1 extended article and 2 articles. The monograph "Impact of information and communication technologies on jobs. Part 2: The Work of Tomorrow "(B 3.1) reveals important aspects of the role of digital technologies in transforming jobs in all areas of human activity. This problem is seen as a challenge and as an opportunity of our time. The author identifies the information technologies with the strongest impact to transforming the labour market – big data, robotics, information security, virtualization, cloud computing, cognitive computing and artificial intelligence. The responsibilities, obligations and requirements for new jobs emerging from the technological revolution and the necessary skills associated with them have been synthesized. An analysis is suggested concerning the current situation in the labour market, related to new jobs in Bulgaria, in the EU and globally.

The monographic work "Impact of ICTs on Workplace. Part 1: Developing the concept of digital competence. European Digital Competence Frameworks" (D 5.1) examines the level of digital competence of the individual, the role of digital systems to redefine competitive advantages, and the role of consumer confidence in digital systems. The digital competitiveness is argumented as a function of two factors: state of digitalization at the moment, and a rate of digitalization over time. It is concluded that shortages and mismatches in digital skills lead to a digital divide between people in the labour market and negatively affect growth, competitiveness, innovation, employment and social cohesion. Emphasis is placed on Bulgaria

in the context of the development of digital competence, economy and market compared to other countries in the EU and the world.

A specific aspect within this strand is the study of problems related to the use of cloud computing in the framework of the "Cloud computing: nature, advantages, disadvantages and risks, condition and prospects" (D 9.1). The paper substantiates the characteristics, current status, prospects, opportunities, risks, pros and cons of using cloud computing. An innovative approach is used, based on the modern management paradigm for the trinity of economic, social, and environmental aspects (in the context of the sustainable development). Significant evidence is revealed about the impact of entrepreneurial orientation on the results achieved by the organisations. Cloud computing is presented as a potential "fifth communal service", which can change the perception of information technology (which, before the emergence of cloud computing, has been perceived as assets, and later: as services). Good impression originates makes the focus on current challenges for cloud computing providers.

In the field of modern development of university E-learning and evaluation systems of the educational service the candidate has submitted for the Procedure 19 titles, of which 1 extended article, 9 articles and 9 conference papers in proceedings of national and international scientific forums.

The focus of this group of publications is put on the problems of evaluation of the educational and scientific product of the HEIs in Bulgaria. A paper presented at international conference ("Development of "Alumni Network" as a mechanism for monitoring and analysis of indicators Group 5. Prestige and Group 6. Implementation and relation to the labor market by University Ranking system") suggests a mechanism for monitoring and analysis of the indicators of Group 5 "Prestige" and Group 6 "Realization and connection with the labour market" from the Bulgarian HEIs Rating System. The proposed "Alumni Network" system, a product of the UF, makes possible the improvement of the rating indicators. Specific measures are derived which would significantly increase the sustainability of the results achieved, and would improve the quality of the educational product offered. Similar ideas have been developed in "Use of the Alumni Network as a mechanism for monitoring and evaluating indicator groups from the Rating System" and "System capabilities of "Alumni network" in University of Forestry for monitoring and evaluation of the indicators of Groups 5 and 6 of University Ranking System" through increasing the quality of university activities and products in accordance with the criteria in the HEIs Rating System, as a results of conducted stakeholder survey.

A significant part of the studied issues in this thematic area is aimed at modernising e-learning and distance education in a university environment, and the role of the interaction learner-interface in web-based learning. These problems are the focus of the Scopus-indexed conference paper entitled "Role of Student Interaction Interface in Web-Based Distance Learning" presented at the Seventh International Conference Advances in Computer-Human Interactions 2014 (Barcelona). A practice-oriented study has been conducted among two target groups on working with the web-based system, access to learning content, receiving news and up-to-date information on evaluations. The use of the electronic platform on the final outcome of the training and the knowledge obtained is assessed. It has been argued that the lack of difficulties in the learner-interface interaction plays an essential role in improving students' personal achievements.

Similar issues are under consideration in the article "Virtual environment for training and development of research" (focused on the virtual environment for training in the interdisciplinary areas, application of modern GIS technologies and remote methods for conservation, monitoring and reproduction of the environment) and the article "Challenges in

the application of ICT in the training of the "generation of social networks"' (focusing on promoting creativity and innovation through new tools using modern ICT). The focus of the attention here is the improvement of the educational process organized in a way that meets the individual needs of the students and allows the building of important digital competencies to achieve a knowledge-based economy. The candidate's scientific publications, as a priority, set out the application of ICT in training, which requires a holistic and carefully planned approach, supported by up-to-date information and taking into account important factors such as teaching method, quality of training, accessibility, infrastructure and resources, capacity of staff and others. The author successfully argued that the use of ICT should be accompanied with a clear vision, goals and strategy based on the understanding of the strengths, weaknesses and key competencies of the training organization.

The submitted works of the candidate provide clear evidence of her scientific competence, prominent research capacity and opportunities for conducting independent research, with recognition in specialized professional circles.

4.3. Research and development

The R&D orientation of the candidate's activities is evidenced by her participation in specialized projects activities, directly related to her scientific interests – in particular, acting as a project leader of two methodological projects of innovative character, as well as her participation in 11 specialized university projects. The results of these projects are implemented with a view to improving the training and research activities in the UF in the following areas:

- Introduction of high-tech interactive methods for training and research;
- Initiating and developing a virtual laboratory for innovation in research and training in the field of Biological Resources;
- Application of simulation modelling and virtual reality methods in priority areas within UF scientific fields;
- Initiate, develop and maintain a system for evaluating electronic training materials.

4.4. Scientific and applied contributions

The focus of the scientific publications and research activities of Dr. Marina Mladenova provides me with the opportunity to derive the basic contributions to science and practice, as a synthesis of scientific knowledge and practically applicable results regarding the contemporary development of ICT, the transformations in the labour market and the digital competencies, the improvement of electronic forms of training and indicators for evaluation of educational services. In the scientific and methodological field, the contributions complement and substantiate current aspects of responsibilities, obligations and requirements for new professions and jobs based on digital competences. Part of the contributions of applied nature result from the analysis of the state-of-art of the labour market in Bulgaria, the EU and globally, linking the educational process and the suitability of graduates to higher education to successfully adapt to new professions and jobs. A methodological toolkit was proposed and a survey was conducted on the monitoring, maintenance and sustainable development of the indicators from the University Rating Sustem in Bulgaria through the use of the alumni system of the University of Forestry.

The characteristics, current status, prospects and risks of using cloud computing are systematized in terms of the trinity of economic, social and environmental aspects. Electronic means and interactive methods developed within the Blackboard Learn platform can be evaluated as applicable contributions to teaching work. In particular, the methodology developed for the complex assessment of learners by introducing a weighting factor for each assigned task should receive a definite attention.

5. Assessment of the candidate's personal contribution

The review of the submitted materials on the procedure shows the comprehensive approach and systematic summarization of the achievements of the applicant. In addition to the detailed analysis, there is a clear strive for upgrading the existing knowledge through personal contribution. This appears evident both from the habilitation work of the candidate and from the scientific publications presented for this Procedure. I have a good reason to conclude that the resulting achievements are a personal contribution of the candidate, combining her critical and creative thinking.

6. Critical remarks and recommendations

I have no critical remarks on the materials submitted on the application. My main recommendation to Dr. Marina Mladenova is to continue her efforts in the search for opportunities to promote the results of her research work in prestigious international editions, indexed in world bibliographic systems. I believe that the candidate has the undeniable potential to expand her participation in research projects in the European Research Area.

7. Personal Impressions

I have no personal impressions of the candidate.

8. Conclusion

In summary, it must be stated that the volume and quality of the applicant's teaching and research activities fully satisfy the requirements and regulations for implementation of the LASD as well as the Regulation for the Development of the Academic Staff at the University of Forestry – Sofia. The quantitative requirements for occupation of the academic position "Professor" are fulfilled, as well as scientific and applied contributions in the candidate's publications have been identified.

As a result from the review I suggest **Associate Prof. Dr. Marina Petrova Mladenova to be elected as a "Professor"** in the professional field 3.7 „Administration and Management“, scientific specialty „Implementation of ICT in Economy“, Subject „Information Technologies“.

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Sofia / Prof. Dr. Matilda Alexandrova/