

OPINION

on a competition for acquiring an academic position "Associate professor"

Higher education field: Natural sciences, mathematics, and informatics

Professional field: 4.6. "Informatics and computer science"

Faculty of Informatics, Department of Informatics at the University of Economics
– Varna

1. General information

This opinion is prepared by associate professor Zlatko Georgiev Varbanov, PhD, University of Veliko Tarnovo "St. Cyril and St. Methodius", Faculty "Mathematics and informatics", Department "Information technologies".

By Order No RD-06-181 from 06.12.2021 of the Vice Rector of the University of Economics – Varna I am appointed as a member of a scientific jury for the competition for academic position "Associate professor". The opinion is given in accordance with the first meeting of the scientific jury held on 17.12.2021.

2. Data for the competition

The competition for the academic position "Associate professor" is announced in the field of higher education 4. "Natural Sciences, Mathematics and Informatics", professional field 4.6. "Informatics", scientific specialty "Informatics" for the needs of the Faculty of Informatics at the University of Economics – Varna. The competition is announced in the State Gazette No 85/ 12.10.2021.

3. Candidates for the competition

The only candidate for the competition is **chief assist. prof. Yanka Georgieva Aleksandrova, PhD**. The candidate has submitted all the necessary documents listed in the application for admission to the competition.

4. Quantitative and content characteristic of the submitted scientific works of the candidate

- By group of indicators A (50 points): the candidate has presented a dissertation for the award of educational and scientific degree "Doctor" (PhD) on "Architecture of an analytical system for customer relationship management", successfully defended in 2016. The diploma is numbered 084 from 09.11.2016. A list of 4 publications on the topic of the dissertation is presented, all of which have been published in journals with a scientific review. On this indicator the points are sufficient;
- By group of indicators B (100 points): a monograph on "Machine learning for credit risk prediction in peer-to-peer lending platforms" is published in the Monograph Library "Prof. Tsani Kalyandzhiev", book 79, ISBN 978-954-21-1090-3, in 2021. On this indicator the points are sufficient;
- By group of indicators G (200 points): a total of 1 published book is presented based on a defended dissertation thesis (20 points); 5 publications in referenced scientific sources – one with quartile Q2 (60 points), one with quartile Q3 (45 points), one with quartile Q4 (36 points) and two with SJR without impact factor (60 points); three chapters of different co-authoring monographs (for a total of 42 points). Two of the publications are single authored and the rest are co-authored. Dividing protocols have been submitted showing that the applicant's contribution to the publications in co-authorship is equivalent. Publications are not declared in previous procedures for the award of scientific degrees or the academic position "Associate professor". By this indicator, the points (263 in total) are sufficient;
- By group of indicators D (100 points): a report including a total of 79 citations is submitted, 22 citations of 4 publications of the applicant are included for the fulfilment of the minimum national scientific requirements, with 1 of the publications being single authored and 3 being co-authored. Each of the 22 citations submitted gives 8 points to the candidate, as they are cited in scientific publications referenced and indexed by Web of Science and Scopus. By this indicator, points (176 in total) are sufficient.

5. Quantitative and qualitative assessment of the applicant's teaching work

According to the documents submitted, the applicant chief assist. prof. Yanka Aleksandrova, PhD, has participated in the development of 10 curricula for Bachelor's degree. They are in different areas, but especially in the field of intelligent systems, business information systems, the application of information systems in the financial sector and other topics related to the modern IT training.

The candidate participates in the development of 11 curricula for Master's degree. In addition to the areas listed above, other current IT areas include: business process management systems, customer relationship management systems, digital marketing technologies, intelligent business analytics. The applicant is also involved in the development of a curriculum for the doctoral program "Application of computing technologies in economics".

With regard to the workload in the bachelor's degree for the last 2 years as a chief assistant, the applicant has conducted 7 subjects during the 2019/2020 school year (with a total audience workload of 322 hours). During the 2020/2021 school year, the applicant's workload includes 6 disciplines (with a total audience workload of 338 hours). The total workload in bachelor's degree for these 2 school years amounts to 660 hours.

In the master's degree, the applicant's workload amounts to 170 hours for the 2019/2020 school year (a total of 6 disciplines are included, one in English). For the 2020/2021 school year, the workload is 172 hours, divided into 6 disciplines. The total workload in the master's degree for these 2 years amounts to 342 hours. The conducted disciplines in bachelor's and master's degrees overlap with the curricula developed by the applicant.

6. Identification of the scientific contributions

Due to the substantial amount of the presented publications in reputable journals, I will not focus on individual publications, but will emphasize the essence of some of the candidate's contributions. With regard to the scientific and applied contributions,

the main monograph "Machine learning for credit risk forecasting on shared lending platforms" is making a significant impression. In addition to exploring the possibilities of peer-to-peer lending as a form of alternative financing (mandatory overview study for monographs of this kind), here of a great importance is the proposed modified methodology based on the Microsoft Team Data Science Process for credit risk prediction for peer-to-peer lending platforms. A new stage "Model interpretation" has been added to the modified methodology, and at the modeling stage an innovative approach for combining multinominal and binominal classification models for machine learning has been proposed. As a significant contribution there can be distinguished the proposed approach for calculating the optimal threshold for generated predictions which considers a classification cost matrix and the graph of the cumulative financial result (presented in section 3.2.2 of the monograph).

As another very significant contribution of the applicant, the development and approbation of several approaches to the application of machine learning and statistical methods in various business activities and economic areas can be evaluated, which are addressed in several monographs, articles, and reports (13 in total). Among the business activities and economic areas researched are: integration into business processes of a logistics company; examination of the influence of various factors on taste changes in patients with chronic kidney diseases; use of social media in higher education institutions; predicting student success in exams and more. As it is shown, the areas and activities are quite heterogeneous, but through their research the candidate shows that machine learning can be applied to all of them.

The candidate also contributes to approaches to the application of business intelligence systems, approaches to the integration of CRM and ERP systems, as well as to the use of social media in the field of higher education. In summary, after reading the published articles and summaries, I agree with the contributions described by the applicant in the scientific contribution report.

7. Critical remarks and recommendations

Given the above in paragraphs 4, 5 and 6, it is clear that the candidate chief assist. prof. Yanka Alexandrova fulfills all the indicators, and for some of them there is a significant excess of the required points, I do not have any critical remarks and recommendations. The documents for the competition are a complete set, well arranged and comprehensively describing the achievements of the candidate.


8. Conclusion

The presented scientific and applied results represent an original contribution to the science and meet the requirements of the Law on Development of Academic Staff in the Republic of Bulgaria, the Regulations for implementation of the Law Development of Academic Staff in the Republic of Bulgaria and the Rules of the Procedure for acquiring scientific degrees and holding academic positions at the University of Economics – Varna. The applicant demonstrates in-depth scientific knowledge and research capabilities in the scientific field 4.6. "Informatics and Computer Science". As a chief assistant at the University of Varna, she has participated in the development of 21 curricula at the bachelor's and master's degree, as well as carried out a serious educational workload in different specialties from the two educational degrees, for the last two school years. The candidate participated in 7 projects, of which one international and two national ones. She participates also in the Erasmus+ programme as a guest lecturer in the Netherlands, Czech republic, Ukraine and Portugal.

As a result of the above, I am confident to give my *positive proposal* that the candidate chief assist. prof. Yanka Georgieva Aleksandrova, PhD has all the required qualities and achievements for acquiring the academic position "Associate professor" for the announced competition.

25.01.2022

Prepared the opinion:



/Assoc. prof. Zlatko Varbanov, PhD/



ИКОНОМИЧЕСКИ УНИВЕРСИТЕТ ВАРНА

OPINION

Bx. № PA20-202 (26.01.2022) for the academic position of "Associate Professor"
in a competition announced by the University of Economics - Varna

by Assoc. Prof. Dr. Pavel Stoyanov Petrov, University of Economics - Varna,
Faculty of Informatics, Department of Informatics

1. General information

The opinion was prepared by Assoc. Prof. Dr. Pavel Stoyanov Petrov, PF 4.6. "Informatics and Computer Science", based on the Law on the Development of Academic Staff in the Republic of Bulgaria (LDASB), Rules for Implementation of the Law on the Development of Academic Staff in the Republic of Bulgaria (RILDASB), Rules for Development of Academic Staff at University of Economics - Varna (RDASUEV), Order of the Rector UE-Varna № RD 06-181/06.12.2021 and Decision of the Scientific Jury of 17.12.2021.

2. Data for the competition

The competition for the academic position "Associate Professor" in a professional field (PF) 4.6. "Informatics and Computer Science", scientific specialty "Informatics", was published in the State Gazette, issue 85/12.10.2021 for the needs of the Department of Informatics.

3. Candidate for the competition

The only candidate in the competition for the academic position of "Associate Professor" is Chief Assist. Prof. Dr. Yanka Georgieva Alexandrova, Lecturer at the University of Economics - Varna, Faculty of Informatics, Department of Informatics. She graduated from the Secondary School "Dr. Peter Beron" - Varna in 1990. She graduated from the University of Economics - Varna in 1995. She defended her doctoral dissertation on "Architecture of an analytical system for customer relationship management" in 2016. In 1999 she entered the

Department of Informatics at the University of Economics - Varna, and in 2011 she held the position of Chief Assistant.

In the course of her teaching activity Chief Assist. Prof. Dr. Yanka Alexandrova works actively and is part of the teams of a number of projects: BG05M2OP001-2.016-0002 "Modernization of higher education to achieve interdisciplinary and innovative learning in the digital transformation" under OP "Science and Education for Smart Growth" (2021-2023); BG05M2OP001-1.002-0002-C02 Digitization of the Economy in a Big Data Environment (BIG) under OP "Science and Education for Smart Growth" (2018-2023); A FINancial supervision and TECHnology compliance training program (FIN-TECH) - Call: Horizon 2020-ICT-2018-2020 (2019-2020); NPI-45 "Digitalization of management processes and educational services in a university environment" (2020-2022); NPI-13 "Social media in business and education - innovative models, opportunities and challenges" (2017-2019); NPI-156 "Methodology for intelligent analysis of data for students and creating a knowledge base" (2015-2016); NAP-160 "Architecture of analytical CRM system" under Ordinance No. 9 for the development of the empirical part of the dissertation (2015-2016).

4. General description of the submitted scientific papers after the last procedure

For the participation in the competition for the academic position "Associate Professor" Chief Assist. Prof. Dr. Yanka Georgieva Alexandrova presents a total of 32 publications, with a total volume of 893 pages:

- monographs and chapters from books - 4;
- studios - 1;
- scientific articles - 7;
- scientific reports - 12;
- textbooks and teaching aids - 8.

The presented monographic work "Machine training for credit risk forecasting in shared lending platforms" with a volume of 258 pages meets the requirements of Article 62, item 3 and Article 71, paragraph 2 of the Regulations

for the development of academic staff in University of Economics - Varna, as the published monograph does not repeat publications for obtaining the educational and scientific degree "Doctor", is published in a specialized scientific publishing house, is discussed in a specialized primary unit within the meaning of § 1, item 6 of LDASB and is peer-reviewed by two habilitated persons.

The monographic work of Chief Assist. Prof. Dr. Yanka Alexandrova is an in-depth study of current scientific and applied issues at a high modern level. It proposes a methodology for applying machine learning for credit risk forecasting in online platforms for shared lending. A modification of the Microsoft Team Data Science Process has been proposed by adding the Interpretation of Models stage. Ways are proposed to calculate case weights in training sets to achieve better model representation. At the stage of interpreting the models, different approaches to building agnostic models have been studied. The methodology has been tested using real data from a shared lending platform.

The other scientific publications submitted for participation in the competition also meet the requirements. Most of them are in English and have been published in authoritative Bulgarian and foreign scientific journals, referenced and indexed in world-famous databases of scientific information, such as Scopus and Web of Science.

The attached references show that 79 citations of scientific publications were found, including 29 citations in Scopus and Web of Science.

In its entirety, the presented publications fully cover the minimum national requirements set in LDASB, RILDASB, as well as the internal requirements set in RDASUEV for holding the academic position "Associate Professor" in PF 4.6. Informatics and Computer Science. They enrich the existing theoretical knowledge and are applicable in practice.

5. General evaluation of the teaching work

Chief Assist. Prof. Dr. Yanka Alexandrova has held for over 22 academic positions "Assistant" and "Chief Assistant" at the University of Economics - Varna, which meets the requirements of Art. 62, item 2 of the Regulations for

development of the academic staff at the University of Economics - Varna. In addition, there are mobilizations for teaching under the Erasmus + program at Fontys University of Applied Sciences, Eindhoven, Nederland's (2018), Czech University of Life Sciences Prague, Czech Republic (2019), Kyiv National University of Trade and Economics, Ukraine (2021) and University of Coimbra, Coimbra, Portugal (2021). Her teaching employment covers and corresponds to the field in which the competition was announced, and shows the presence of extensive teaching experience and competence.

Chief Assist. Prof. Dr. Yanka Alexandrova has participated in the development of a number of lecture courses - 10 for Bachelor's degree, 11 for Master's degree and 1 for Doctor's degree. She has given lectures and exercises in a number of disciplines related to the announced competition, such as: "Informatics", "Accounting Software", "Information Systems Design", "Fundamentals of Information Systems", "Business Intelligent Systems", "E- Business", "Business Analysis and Knowledge Extraction", "Business Intelligence and Big Data", "Technologies in Digital Marketing", etc.

The published teaching materials are textbooks and teaching aids in certain disciplines, as well as methodological manuals - a total of 8, all co-authored. She works together with students and PhD students in 3 research projects, has joint publications with 2 PhD students, and has led 7 graduates. She has an award from a scientific forum, actively performs consulting and expert work - developed 3 information systems and functional modules, as well as 4 trainings for employees in different companies.

6. Identification of scientific contributions

In the works with which Chief Assist. Prof. Dr. Yanka Alexandrova participates in the competition for the academic position of "Associate Professor" in PF 4.6 "Informatics and Computer Science", 8 contributions can be distinguished, described in the Reference for scientific and scientific-applied contributions. I accept the contributions as significant, real and enriching the existing theory and practice by further developing established methodologies. I

believe that they can be defined as scientific and applied contributions.

7. Critical remarks, questions and recommendations

I believe that Chief Assist. Prof. Dr. Yanka Alexandrova has significant scientific and teaching potential, which will continue to develop over time. I recommend:


- To continue the work in author teams on publications indexed and referenced in world-famous databases with scientific information;
- To focus its efforts on taking the lead in the development of textbooks and teaching aids, perhaps independently.

8. Conclusion

Based on the above, it is evident that the candidate has significant experience in research and teaching activities in the scientific field of the announced competition and fully meets the requirements set out in LDASB, RILDASB and RDASUEV. This gives me reason to give a positive assessment of the candidacy of Chief Assist. Prof. Dr. Yanka Georgieva Alexandrova for holding the academic position of "Associate Professor" in the professional field 4.6. "Informatics and Computer Science".

Date: 25.01.2022

Member of the jury:



/Assoc. Prof. Dr. Pavel Petrov/



OPINION

of a member of a scientific jury for a competition for an academic position of „Associate Professor“ published in the State Gazette by University of Economics - Varna

1. General information

This opinion is prepared by prof. Evdokia Nikolaeva Sotirova, PhD, Burgas "Prof. Assen Zlatarov" University.

Reason for giving the opinion on the competition: Order of the Rector of the University of Economics – Varna No RD 06-181/06.12.2021 for the appointment of a scientific jury and a decision at the first meeting of the scientific jury of 17.12.2021.

2. Data for the competition

The competition is announced in the field of higher education 4. "Natural Sciences, Mathematics and Informatics", professional field 4.6. "Informatics", scientific specialty "Informatics" for the needs of the Faculty of Informatics at the University of Economics – Varna.

Number and date of the State Gazette where the announcement is published: No 85/12.10.2021.

The following opinion is prepared in accordance with the Law on the Development of Academic Staff in the Republic of Bulgaria, Rules for application of the Law for the Development of the Academic Staff in the Republic of Bulgaria, Regulations for the Development of the Academic staff at University of Economics – Varna.

The only candidate in the competition for an academic position of "associate professor" is chief assist. Prof Yanka Georgieva Aleksandrova, PhD.

The presented set of materials and documents for the participation in the competition is in accordance with Art. 65. (1) of the Rules for the Development of Academic Staff at University of Economics – Varna.

3. Candidate for the competition

Chief assist. Prof Yanka Georgieva Aleksandrova, PhD, is born on 12.01.1972. She completed her secondary education at Second Math School "D-r P. Beron" – Varna in 1990, and in 1995 she received her master's degree from University of Economics – Varna. In 2016 she acquired an educational and scientific degree "Doctor" (PhD) in "Application of computing



technologies in the economics” at University of Economics - Varna for defended doctoral thesis on “Architecture of an analytical customer relationship management system”.

As evident from the provided documents the candidate started her work career in 1999 as an assistant professor at University of Economics – Varna. Following the successfully defense of the dissertation since 2017 she is a chief assistant professor at the same university.

According the submitted report, the total number of publications of chief assist. prof. Yanka Aleksandrova, PhD, is 38, including 1 single author monograph; 4 co-authored monographs; 1 book (based on defended doctoral thesis); 2 studios, 9 scientific articles in journals and series; 14 research papers in conference proceedings; 8 textbooks and practical textbooks. All works are published in sources included in the National reference list maintained by the National Centre for Information and Documentation. A report for 79 citations of the candidate’s scientific papers has been submitted.

Chief assist. prof. Yanka Aleksandrova, PhD, has participated as a member of the teams of 7 research projects – 1 international under Horizon 2020 Call, 2 national under the Operational Programme “Science and Education for Smart Growth” and 4 university projects. Four projects have been completed, three are ongoing.

The candidate’s competences are also demonstrated by the teaching mobilities under Erasmus+ program. Chief assist. Prof. Yanka Aleksandrova has implemented 3 scientific and applied developments in the information systems field and has carried out trainings of employees of more than 10 external companies.

The scientific interests of the candidate are in the fields of artificial intelligence, business intelligence, design of information systems, modeling of systems and business processes, databases, digital marketing, etc.

4. General description of the submitted scientific papers after the last procedure

Chief assist. prof. Yanka Georgieva Aleksandrova, PhD, participate in the competition with 24 scientific works. They are distributed as follows: 1 monograph (habilitation work), 3 published chapters of books or collective monographs in co-authoring, 1 single authored studio, 7 scientific articles and 12 research papers in conference proceedings. A list of 8 textbooks and practical textbooks is also attached. Five of the scientific articles have SJR factor and are indexed in Scopus.

The scientific works submitted for participation in the competition are not used for the acquisition of the educational and scientific degree “Doctor” (PhD) and are subject to review.

According to the reference declaration presented from chief assist. Prof Yanka Georgieva Aleksandrova, PhD, on the meeting the minimum national requirements for the academic position "Associate Professor", she participated in the competition with 10 scientific works: 1 monograph (habilitation work); 1 book (based on defended dissertation work); 5 scientific publications in



publications referenced and indexed in Scopus or Web of Science (3 in journals and 2 in conference proceedings); 3 published chapters of a book or collective monograph in co-authorship. The candidate participates in the competition with 29 citations of 4 of his publications, in works of other authors indexed in the world-known databases of scientific information, which shows that the results obtained are of high scientific value.

According to the Rules for application of the Law for the Development of the Academic Staff in the Republic of Bulgaria, candidates for the academic position "Associate Professor" in professional field 4.6 "Informatics and Computer Science" must have 50 points by group of indicators A; at least 100 points by group of indicators B; at least 200 points per group of indicators G; at least 50 points by group of indicators D. Chief assist. Prof. Yanka Georgieva Alexandrova, PhD documents she has the following points by the indicator groups: 50 points by group of indicators A; 100 points by group B; 265 points by group of indicators G; 232 points by indicator group D.

Therefore, the minimum national requirements for the academic position "Associate Professor" in professional field 4.6. "Informatics and computer science" are fully met and exceeded substantially in group of indicators G by chief assist. prof. Yanka Aleksandrova, PhD.

According to the attached Reference Declaration for acquiring the academic position "Associate Professor" in the higher education field 4. "Natural Sciences, Mathematics and Informatics" at University of Varna (effective as of 01.07.2021) chief assist. Prof. Yanka Georgieva Alexandrova, PhD, participates in the competition with 12 research paper and 11 scientific articles and studios and thus have 106.83 points (with a minimum requirement of 30 points) in the "Scientific Papers" section and 137.53 points (with a minimum requirement of 80 points) in the "Scientific articles and studios" section. The requirements for the acquiring of an academic "Associate Professor" in the field of higher education 4 in University of Economics – Varna are fully satisfied.

5. General evaluation of the teaching work

It is apparent from the submitted reports for workload in Bachelor's and Master's Degree that chief assist. prof. Yanka Aleksandrova fulfills the quantitative indicators for the teaching work. She teaches 5 disciplines to Bachelor's degree students and 7 disciplines to Master's degree students, 2 of which are in English.

The candidate has participated in the development of curricula for 10 disciplines for Bachelor's degree, 11 disciplines for Master's degree and the discipline "Modeling of information systems" for the doctoral program "Application of computing technologies in the economics". She is a co-author of 6 textbooks and 2 practical textbooks.

Chief assist. prof Yanka Aleksandrova is an active participant in the Erasmus+ programme. She has conducted teaching mobility in Fontys University of Applied Sciences, Eindhoven,



Netherlands (2018), Czech University of Life Sciences Prague, Czech Republic (2019), Kyiv National University of Trade and Economics, Ukraine (2021), University of Coimbra, Coimbra, Portugal (2021).

This gives me reason to highly appreciate the educational and pedagogical experience of the candidate in the competition.

6. Identification of the scientific contributions

I fully support the scientific contributions mentioned in the submitted report. I believe that they denote the results obtained from the scientific research activities carried by chief assist. prof. Yanka Aleksandrova, PhD.

I believe that the greatest attention deserves the monograph "Machine learning for credit risk prediction in peer-to-peer lending platforms", with the idea that a good level of credit risk prediction can be achieved by machine learning. The high value of the proposed modified credit risk prediction methodology based on the Microsoft Team Data Science Process has been demonstrated by its successful approbation on a real subject area.

The contributions of chief assist. prof Yanka Aleksandrova, PhD, can be described as scientific and scientifically applied as follows:

- a modified methodology for credit risk prediction in peer-to-peer lending platforms which has been proposed and approbated;
- methodologies and methodological foundations are proposed in different areas: methodology for realization of a project for digitization and preparation of a conceptual budget for digitization for a construction company; methodological foundations of modeling of business processes in the context of digital transformation;
- approaches to the application of machine learning and statistical methods have been developed and approbated in various business activities and economic areas and approaches to the use of business intelligent systems are justified;
- approaches are presented for CRM and ERP systems integration and for combining and integration of different aspects of virtualization in SOA applications;
- analyses and proposals have been made aimed at the universities in Bulgaria, teaching students in the field of social, economic and legal sciences – orientation of the content of the curricula for the preparation of specialists in the field of digital transformation; exploiting the benefits of social media in the context of training management systems and integrated social media tools.

The information provided gives me reason to appreciate chief assist. prof. Yanka Aleksandrova as a scientist with proven achievements in the field of information and communication technologies and their application in the economy. Her knowledge in the field of information systems, business analytics and knowledge mining technologies, digital marketing



technologies, business intelligent systems allow for justified own research and validate her as a competent researcher.

7. Critical remarks, questions, and recommendations

I recommend to chief assist. Prof. Yanka Aleksandrova to focus her efforts on higher publication activity in sources referenced and indexed in world-known databases of scientific information.

8. Conclusion

After reviewing the provided by chief assist. prof. Yanka Aleksandrova materials and scientific works I confirm that they satisfy the requirements of the Rules for application of the Law for the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the Development of the Academic staff at University of Economics - Varna for the academic position "Associate Professor" in the professional field "Informatics and Computer Science". The candidate satisfies the minimum national requirements in the professional field and plagiarism has not been detected in the publications presented in the competition.

Based on the above, I give a **positive assessment** of the candidacy of chief assist. Prof. Yanka Aleksandrova, PhD.

I recommend to the scientific jury to propose to the Faculty Council of the Faculty of Informatics at the University of Economics – Varna to choose chief assist. **Yanka Georgieva Alexandrova, PhD** to take the academic position "Associate Professor" in the field of higher education: 4. "Natural sciences, mathematics and informatics", professional field 4.6. "Informatics and Computer Science", scientific specialty "Informatics".

31.01.2022

Burgas

Prepared the opinion:...

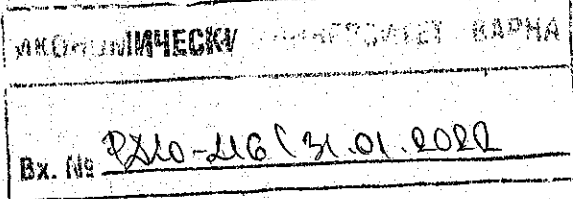
(Prof. E.Sofirova)



ИКОНОМИЧЕСКИ УНИВЕРСИТЕТ - ВАРНА

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OPINION

by Prof. DSc. Ivan Ganchev Garvanov

University of Library Studies and Information Technologies,
member of a scientific jury according to the Order of the Rector of UE-Varna №
RD 06-181 / 06.12.2021 and Decision of the Scientific Jury of 17.12.2021, on a
competition for the academic position of „Associate Professor“ in the field of
higher education 4. Natural sciences, mathematics and informatics, professional
field: 4.6. Informatics and Computer Science, published in the State Gazette, issue
no. 85/12.10.2021

The only candidate in the competition is: Assist. Prof. Dr. Yanka Georgieva
Aleksandrova

1. General information

The opinion was prepared by Prof. DSc. Ivan Ganchev Garvanov, PF 4.6.
"Informatics and Computer Science", according to the Order of the Rector of UE-
Varna Д RD 06-181 / 06.12.2021 and Decision of the Scientific Jury of
17.12.2021, Law on the Development of Academic Staff in the Republic of
Bulgaria, Rules for application of the Law for the development of the academic
staff in the Republic of Bulgaria, Regulations for the development of the academic
staff in the University of Economics - Varna.

2. Data for the competition

The competition for the academic position "Associate Professor" in the field
of higher education 4. "Natural Sciences, Mathematics and Informatics", PF 4.6.

"Informatics and Computer Science", scientific specialty "Informatics", was announced in the State Gazette, issue 85 / 12.10.2021 for the needs of the Department of Informatics.

3. Candidate for the competition

The only candidate in the competition for the academic position of "Associate Professor" is Assistant Professor Dr. Yanka Georgieva Alexandrova, lecturer at the Department of Informatics at the Faculty of Informatics at the University of Economics - Varna.

The candidate completed her secondary education at the MG "Dr. Peter Beron" - Varna in 1990. In 1995 she completed her higher education at the University of Economics - Varna. In 1999 he entered the Department of Informatics at the University of Economics - Varna. In 2016 he defended his doctoral dissertation on "Architecture of an analytical system for customer relationship management". In 2011 he held the position of Chief Assistant in the Department of Informatics at the University of Economics - Varna.

4. General description of the submitted scientific papers after the last procedure

The candidate for the academic position "Associate Professor" Ch. Assistant Professor Dr. Yanka Georgieva Alexandrova participated in the competition with 32 publications, as follows: four monographs and book chapters; one studio; seven scientific articles; twelve scientific reports; eight textbooks and teaching aids.

The attached scientific papers are not used to obtain the educational and scientific degree "Doctor" and are on the subject of the competition.

The monographic work "Machine training for credit risk forecasting on shared lending platforms" with a volume of 258 pages meets the requirements of Article 62, item 3 and Article 71, paragraph 2 of the Regulations for the development of academic staff in Economics. University of Varna, as the published monograph does not repeat publications for obtaining the educational

and scientific degree "Doctor", is published in a specialized scientific publishing house, discussed in a specialized primary unit within the meaning of § 1, item 6 of the Law on the Development of the Academic Staff in the Republic of Bulgaria and is peer-reviewed by two habilitated persons.

The monographic work of Ch. Assistant Professor Dr. Yanka Alexandrova is an in-depth research offering a methodology for applying machine learning to predict credit risk in online platforms for shared lending. The methodology has been tested using real data from a shared lending platform.

The fulfillment of the minimum national requirements for the groups of indicators for the academic position "Associate Professor" is as follows:

For group "A" the candidate has submitted a certificate for proving the educational and scientific degree "doctor".

For group "B" the candidate has presented a monograph - 100 points.

For group "G" the sum of the indicators from 5 to 10 forms a total of 316 points of the required 200 points.

For group "D" the sum of the points is 176 at the required 50 points.

From the analysis made in this way it was established that the evidence presented by Ch. Assoc. Associate Professor" in PF 4.6. Informatics and Computer Science.

A check made on 30.01.2021 for the scientometric indicators of the candidate in Scopus, Web of Science and Google Scholar established the following:

The number of publications in Scopus is 5, the number of citations is 26 and h-index 3.

The number of publications in WoS is 2, the number of citations is 15 and h-index 2.

The number of citations in Google Scholar is 95 and h-index 5.

5. General evaluation of the teaching work

Assistant Professor Dr. Yanka Alexandrova has held 22 academic positions

of "Assistant" and "Chief Assistant" at the University of Economics - Varna, which meets the requirements of Art. 62, item 2 of the Regulations for development of the academic staff at the University of Economics - Varna.

Assistant Professor Alexandrova has participated in the training and development of numerous lecture courses, respectively 10 for Bachelor's degree, 11 for Master's degree and 1 for Doctor's degree. Her teaching employment covers and corresponds to the field in which the competition was announced, and shows the presence of extensive teaching experience and competence. She has worked actively on three research projects. She was the scientific supervisor of 7 graduates.

From the attached documents for the competition it can be seen that Assistant Professor Alexandrova is extremely active and takes part in consulting and expert activities, development of information systems and functional modules, training of employees in various companies and others. Assistant Professor Alexandrova has an award from a scientific forum.

6. Identification of scientific contributions

The contributions presented by Assistant Professor Dr. Yanka Alexandrova are of scientific and applied nature. I accept all the contributions of the candidate as significant and enriching the existing theory and practice.

7. Critical remarks, questions and recommendations

I allow myself to recommend to Assistant Professor Dr. Yanka Alexandrova to continue her research and strive to publish more in the future in prestigious scientific journals and conferences with IF and / or SJR.

8. Conclusions

After getting acquainted with the materials and scientific papers presented in the competition and based on the analysis of their significance and the scientific and scientific-applied contributions contained in them, I confirm that the scientific

achievements meet the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the procedure for acquiring scientific degrees and for holding academic positions at the UE-Varna. Assistant Professor Dr. Yanka Alexandrova satisfies the minimum national requirements in the professional field and no plagiarism has been established in the scientific papers submitted at the competition.

All this gives me reason to give my positive assessment of the candidacy of Ch. Assistant Professor Dr. Yanka Alexandrova for holding the academic position of "Associate Professor" in the professional field 4.6. Informatics and Computer Science.

30.01.2022

Reviewer:

(Prof. DSc. Ivan Garvanov)

17.

OPINION

from

Prof. Mariya Petkova Hristova, PhD

on the materials submitted for participation in the competition to hold the academic position "Associate professor"

in higher education field 4. "Natural sciences, mathematics, and informatics",
professional field 4.6. "Informatics and computer science",
specialty "Informatics",

for the needs of Department of Informatics at the University of Economics – Varna with
candidate chief assist. prof. Yanka Georgieva Aleksandrova, PhD

1. General presentation of the procedure and the applicant

With Order of the Vice-Rector for Research and Professional Development at the University of Economics No 06-181/ 06.12.2021 I am appointed as a member of a scientific jury according to the announced in State Gazette No 85/ 12.10.2021 competition for the academic position "Associate professor" in professional field 4.6. "Informatics and computer science", scientific specialty "Informatics". The opinion is prepared in accordance with the decision of the first meeting of the scientific jury on 17.12.2021 and is in accordance with the requirements of Art.2, para. 5 of the Rules for application of the Law for the Development of the Academic Staff in the Republic of Bulgaria and Art. 83 of the Regulations for the Development of the Academic staff at University of Economics – Varna.

The only candidate in the competition is chief assist. Prof. Yanka Georgieva Aleksandrova, PhD, who has submitted documents for participation within the required time frame. As a member of the scientific jury, I have received all the 18 documents (except the application by form for admission to the competition) from which it is established that the applicant meets all the requirements under Art. 53 of Rules for application of the Law for the Development of the Academic Staff in the Republic of Bulgaria and Art. 62 of the Regulations for the Development of the Academic staff at University of Economics – Varna.

Chief assist. prof. Yanka Georgieva Aleksandrova, PhD, graduated from the University of Economics – Varna in 1995. She has a Master's degree with a specialty Economist in Socio-Economic information. In 2016 she defended her dissertation on "Architecture of an analytical system for customer relationships management" and was awarded the educational and scientific degree "Doctor" (PhD) in the scientific field "Application of computing technologies in economics". Since 1999 she has been an assistant professor at the University of Varna and since 2011 she has been chief assistant professor in the Department of Informatics, Faculty of Informatics of the University of Economics – Varna. She is a member of the Scientific and Technical Union - Varna.

According to the submitted report, the teaching workload of the applicant in the Bachelor's degree in the last two years is a total of 660 hours, during the 2019/2020 school

year, the lecture hours were 157 hours, from exercises – 165 hours (total 322 hours), and for 2020-2021 the lectures were 112 hours, the exercises – 226 h (total 338 h). In the Master's degree, the workload for 2019/2020 is 170 hours and for 2021/2022 – 172 h (total 342 h). These data prove the provision of the announced competition for "Associate professor".

2. General description of the submitted scientific works after the last procedure

According to the Rules for application of the Law for the Development of the Academic Staff in the Republic of Bulgaria and Art. 62, para. 3 of the Regulations for the Development of the Academic staff at University of Economics – Varna, chief assist. prof. Aleksandrova has presented a standalone single authored monograph on "Machine learning for credit risk prediction in peer-to-peer lending platforms". Varna: Science and Economics, (Monograph Library Prof. Tsani Kalyandzhiev; book 79), ISBN: 978-954-21-1090-3 (2021).

The monograph corresponds to the Law for the Development of the Academic Staff in the Republic of Bulgaria, Additional provisions, para. 10. (new – State Gazette No 30 from 2018 effective from 04.05.2018). The work is well structured in introduction, 5 chapters, conclusion, bibliography with 213 sources (210 in English) and applications. It consists of 233 pages. The monograph has been previously discussed in a specialized primary unit and has been reviewed by two habilitated persons.

For participation in the competition for the academic position "Associate professor" the candidate has submitted a list of a total of 36 works, including 4 scientific publications on the dissertation thesis and the monograph work. Pursuant to Art. 53 para. 3 of the Rules for application of the Law for the Development of the Academic Staff in the Republic of Bulgaria and Art. 62, para 3 of the Regulations for the Development of the Academic staff at University of Economics – Varna publications from the dissertation thesis are not accepted for review in the competition for "Associate professor", i.e. the list is reduced to 32 publications, including: 4 monographs and studies (two of them single authored), 7 scientific articles (3 single authored), 12 research papers (6 single authored) and 8 textbooks and practical textbooks. Fifteen of the publications are in English, 5 are published abroad.

From the applicant's report on the fulfilment of the minimum national requirements for the academic position "Associate Professor" in the field of higher education 4. "Natural Sciences, Mathematics and Informatics", pursuant to Art. 2b, para. 2 and 3 of the Law for the Development of the Academic Staff in the Republic of Bulgaria it's evident that for a group of indicators "G" (publications) with 200 points required, the candidate has 263 points. The quantitative requirements for the holding of an academic position "Associate professor" at the University of Varna, based on Art. 2b, para. 5 of the Regulations for the Development of the Academic staff at University of Economics – Varna are fulfilled as follows: at the required number of points from scientific reports 30, the points declared by the applicant are 106,83; from scientific articles and studios, the candidate declares 137,53 points with 80 needed.

The entire scientific production of the applicant is thematic in the professional field 4.6 "Informatics and Computer Science" according to the announced competition.

Reports are submitted for publications included in indexing, referencing and evaluation systems, including in editions from the National reference list maintained by the National Centre for Information and Documentation (NCID). According to these reports, 5 publications are indexed in SCOPUS (2 of them are single authored), h-index is 3; publications in WoS are 2, h-index is 2. Thirty-eight publications of the candidate are presented in the NCID. Dr. Aleksandrova has submitted a report on the journals included in SCIMAGO Journal Rankings - *TEM Journal (Technology, Education, Management, Informatics)* and *International Journal of Emerging Technologies in Learning (iJET)*, in which she has 3 publications. There are also reports on publications in editions included in the RePEc Author Service and Google Scholar.

The applicant has submitted a declaration of originality, which states that "the information submitted in connection with the competition is credible and prepared in accordance with the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria and the rules on the terms and conditions for acquiring scientific degrees and holding academic positions in the University of Varna", that the presented monographic work and the publications thereto are the personal work of the applicant, and that the copyright requirements for the sources used are met. There is no statutory plagiarism in the work submitted for review and evaluation.

3. Reflection of the candidate's scientific publications in our and foreign scientific literature

The publications of chief assist. prof. Yanka Aleksandrova, PhD, according to the attached list have 79 citations from our and foreign scientists. An impression make the following works: Aleksandrova, Y., Parusheva, S. *Social Media Usage Patterns in Higher Education Institutions - An Empirical Study*. iJET, Vienna, (2019, with 27 citations (13 in SCOPUS); Parusheva, S., Aleksandrova, Y., Hadzhikolev, A., *Use of Social Media in Higher Education Institutions – an Empirical Study Based on Bulgarian Learning Experience*. TEM Journal (2018) with 25 citations (9 in SCOPUS) and others. Almost all citations are made in foreign journals and sources such as: Communications in Computer and Information Science, Springer, Singapore; Innovation and Technology in Education (MITE); International Journal of Computer Science and Network Security, International Journal of Learning, Teaching and Educational Research; Journal of Business and Management Research (JBMER), International Journal of e-Collaboration; Computer and Software Engineering Advances; International Journal of Emerging Technologies in Learning, etc.

It is apparent from the publications reports of the candidate in the competition that she has 26 citations and 5 publications in SCOPUS and 15 citations of 2 publications in WoS.

According to the report on the fulfilment of the minimum national requirements for the academic position "Associate professor" in the field of higher education 4. "Natural Sciences, Mathematics and Informatics", pursuant to Art. 2b, para 2 and 3 of the Law for the Development of the Academic Staff in the Republic of Bulgaria, with 50 points required in the "D" group (citations) indicators, the candidate has 232 points.

4. General assessment of teaching and training work

The teaching and methodological activity of the applicant consists in:

- conducting lecture courses and exercises in eight disciplines in UE - Varna: *Design of information systems, Business intelligent systems, Business analysis and knowledge mining, Modeling of business processes, Technologies in digital marketing, Basics of information systems, Accounting software, Informatics*;
- developed curricula of 10 disciplines for the Bachelor's degree and 11 for the Master's degree in various specialties in UE – Varna, as well as for one discipline for the doctoral program "Application of Computing Technologies in the Economics";
- international teaching activities through mobility carried out for the purpose of teaching under the Erasmus+ programme at Fontys University of Applied Sciences, Eindhoven, Netherlands (2018), Czech University of Life Sciences Prague, Czech Republic (2019), Kyiv National University of Trade and Economics, Ukraine (2021), University of Coimbra, Coimbra, Portugal (2021);
- guidance of 16 students with a Bachelor's theses and one with a Master's thesis;
- review of 20 Bachelor's theses;
- working with students and PhD students on three scientific projects: "Methodology for intelligent data analysis for students and creation of a knowledge base", "Social media in business and education – innovative models, opportunities and challenges", "Digitization of management processes and educational services in a university environment";
- joint publications with students and PhD students;
- conducting short-term training and consulting courses of employees from Energo Pro AD, Electrodistribution North, Energo Pro Sales AD, Agropolychim AD, Daphne OOD, etc.

I appreciate the teaching work of chief assist. prof. Alexandrova as rich and significant for the professional field 4.6 "Informatics and Computer Science" in the University of Economics - Varna.

5. Main scientific, applied, and educational-methodological contributions

Based on the works of dr. Yanka Aleksandrova, several basic areas of her scientific interests can be distinguished in up-to-date areas of informatics: *machine learning, artificial intelligence, business intelligence, design of information systems, modeling of systems and business processes, databases, digital marketing, etc.* According to the author's report, contributions can be grouped as follows:

5.1 Scientific and applied contributions in the field of:

- **Machine learning**, as of paramount importance here is the main monograph of the applicant (No1), which proposed a modified methodology for credit risk prediction in peer-to-peer lending platforms based on the existing Microsoft Team Data Science Process methodology. The author's contributions are in a proposed way of calculating the relative

weights of the cases from the training set and an approach to calculating the optimal threshold for generating predictions with accounting for a classification costs matrix and the graph of the cumulative financial result. The methodology is applied to a real-world subject area;

- proposed **methodologies and methodological foundations** in different areas: (works No 2, 3, 7): for the realization of a digitalization project; modeling of business processes in the context of digital transformation; possibilities for integrating SADT and DFD methodologies when building a functional information system model;

- **developed and approbated approaches to the application of machine learning and statistical methods in various business activities and economic areas** (the main monograph for the competition, monographs and studies No 1, 4; scientific articles No 1, 2, 5, 6; reports No 2, 3, 4, 7, 8, 10): predictive analysis for integration into business processes in a logistics company; unsupervised machine learning methods in the field of social media use in higher education institutions; combining machine learning methods and RFM analysis; predicting student success rates; study of the influence of various factors on taste changes in patients with chronic kidney diseases.

5.2. Applied contributions

- The methodology for applying machine learning for the credit risk prediction in peer-to-peer lending platforms is approbated using real data provided by a leading global peer-to-peer lending platform – Lending Club

- Approaches are presented for: use of business intelligent systems; integration of CRM and ERP systems; to combine and integrate different aspects of virtualization in SOA applications, etc.

- The use of social media in higher education has been explored.

- Guidelines have been proposed for improving the educational process in higher education institutions in Bulgaria.

5.3. Teaching-methodological contributions

The candidate has published 8 textbooks and practical textbooks (all co-authored), of which one is in English, one electronic textbook, a guide to preparing for a national competition in informatics

Chief assist. prof Aleksandrova has participated in 7 research projects, including one international under Horizon 2020 Call, 2 national under Operation Programme "Science and Education for Smart Growth" and 4 university projects. So far, four of the projects have been completed and three are ongoing. The candidate has participated in 3 scientific and applied developments in companies "Devnya Trade" Ltd., "KUL" Ltd. and "Zodiac Maritime" Ltd.

Based on the general characteristic of the applicant's scientific, applied and methodological contributions, it can be concluded that the contributions are the personal work of the applicant or are the result of teamwork with her significant participation and have an academic weight for the development of the professional field 4.6 "Informatics and Computer Science" for the competition in University of Varna.

6. Critical remarks and recommendations

In some of the reports submitted for the competition the numbering is made in Latin alphabet letters, which is not a good style.

This remark does not impair the positive impression of the results in the scientific production of the candidate in the competition.

CONCLUSION

Based on the analysis of the overall successful teaching and research activity, and the scientific production of the only candidate in the competition chief assist. prof. Yanka Georgieva Aleksandrova, which fully meets the requirements of the Law on Development of Academic Staff in the Republic of Bulgaria, the Rules for Application of the Law on Development of Academic Staff in the Republic of Bulgaria, minimal national requirements for the holding of the academic position "Associate professor", according to Art. 2b, para.2 and 3 of the Law on Development of Academic Staff in the Republic of Bulgaria; the Regulations for the Development of the Academic staff at University of Economics – Varna and the requirements for the holding of the academic position "Associate professor" in the University of Economics – Varna based on Art. 2b, para.5 from the Law on Development of Academic Staff in the Republic of Bulgaria, I give my entirely **positive assessment** of the submitted materials and propose to the scientific jury to vote on a proposal to the Council of the Faculty of Informatics at the University of Economics – Varna to **choose chief assist. prof. Yanka Georgieva Aleksandrova, PhD, for the academic position "Associate professor" in professional field 4.6. "Informatics and computer science"**.

30.01.2022

Prepared the opinion: _____

/Prof. Mariya Hristova, PhD/

