

## POSITION

**From Prof. Dr. Silvia Trifonova Trifonova-Pramatarova,  
University of National and World Economy (UNWE), Sofia**

of a dissertation for the award of the scientific degree “Doctor of Sciences”

in Area of Study 3. Social Sciences, Economics and Law, Field of Study 3.8. Economics, Higher School of Insurance and Finance (VUZF University), Sofia

**Author: Dr. Maria Borovska**

**Title: „Increasing the financial and economic competitiveness of logistics companies using analytical models”**

### **1. General description of the presented materials**

By Order № 82/08.04.2021 of the Rector of the Higher School of Insurance and Finance (VUZF University) Assoc. Prof. Dr. Grigorii Vazov I have been appointed a member of the scientific jury for providing a procedure for defense of a dissertation on the topic “**Increasing the financial and economic competitiveness of logistics companies using analytical models**” for obtaining an scientific degree “Doctor of Sciences” in the Area of study 3. Social Sciences, Economics and Law, field of study 3.8. Economics.

The author of the dissertation is Dr. Maria Borovska. The materials submitted by the Center for Scientific Research and Doctoral Studies at the VUZF University include the following documents: CV in Russian, dissertation in Russian, abstract in Bulgarian and in Russian, list and summaries of the publications on the topic of dissertation in Bulgarian and Russian, the publications of the doctoral student on the topic of the dissertation, reference of the scientific and scientific-applied contributions in Russian, reference for fulfillment of the requirements of the Law for Development of the Academic Staff in the Republic of Bulgaria (ZRASRB) and the Regulations for application of ZRASRB. I don't have the copy of the diploma for the acquired educational qualification degree “Doctor”.

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

Maria Borovska was born on September 28, 1952 in the town of Staleva Wola, Poland.

In 1976, she received a master's degree in Mathematics from the Faculty of Mathematics, Physics and Chemistry at the Maria Curie-Skłodowska University in Lublin, Poland. In 1995, she received a Ph.D. in Economics from the Faculty of Management and Informatics of the University of Economics and Business in Wrocław, Poland. Her professional work dates back to 1983 as a Mathematics teacher in various high schools (for 19 years) and a lecturer in higher education. During her professional work she has received various awards. She has actively participated in the work of various scientific conferences in Poland and abroad. She has about 70 scientific publications.

### **3. Relevance of the topic and expediency of the set goals and objectives**

The topic of the dissertation research is relevant for the modern economy, as it relates to the process of managing logistics systems and improving the performance of logistics companies so as to increase their competitiveness.

The main goal of the dissertation is to present a new innovative method for forecasting, supporting the process of service management in the direction of increasing the financial and economic competitiveness of logistics companies based on the laws of operation of probabilistic logistics system, i.e. based on analytical models and systems of equations. It is written that the research also has tasks, but such are not presented.

### **4. Knowledge of the problem**

The author is well acquainted with the problem of scientific research. This is evidenced by the correct formulation of the object of study. The object of the study is the logistics system that maintains a service center. The paper proposes a new innovative methodology for building quantitative forecasts, which characterize and describe the management process and the functioning of a logistics system and a service center. A research thesis of the dissertation has been formulated, but in a very extensive manner.

The subject of the study is: „to check the functioning of the logistics system, which ensures the efficient operation of the service center, which ensures increased financial and economic competitiveness of logistics companies”. However, this wording can rather be accepted as a research hypothesis.

### **5. Research methodology**

Various research methods have been used for the development of the dissertation work – theoretical and methodological analysis, systematic approach, descriptive analysis, method of analysis and synthesis, quantitative methods, etc. The main tools are quantitative methods - mathematical, probabilistic, statistical, forecasting, econometric.

### **6. Characteristics and evaluation of the dissertation**

Structurally, the dissertation consists of the following parts: introduction, three sections, conclusion, appendices, keywords, list of figures, list of tables, list of used models (formulas) and bibliography. The dissertation is accompanied by an abstract, which synthesizes the structure and content of the work, the author's theses and research results. The dissertation is written in Russian, and the abstract is in Bulgarian and Russian. The total volume of the dissertation is 288 pages. The dissertation presents 5 tables and 26 figures. Appendices take from page 192 to page 266 inclusive, where derivation of mathematical formulas is presented.

The bibliography includes 165 literature sources, of which the majority are in Polish and very few in English.

The first section of the dissertation is devoted to the theoretical aspects of increasing the financial and economic competitiveness of logistics companies. The author describes the subject of the research and introduces the necessary concepts together with their mathematical notation. The essence of logistics, its genesis, logistics services, their features and types are clarified. The classification of logistics systems, their characteristics and conditions are presented, and the quantitative (mathematical) models supporting the process of service management in logistics systems are derived. However, it is not argued why this section is entitled „Theoretical aspects of increasing the financial and economic competitiveness of logistics companies”.

The second section is devoted to the analysis of the functioning of the logistics system of the enterprise. This analysis was made in two cases - an aggregate and a systematic process of product delivery. In the case of an aggregated process of product delivery, the intermediate state and the lower and upper limits of the process describing the stock level are mathematically derived. In the case of a systematic process of product delivery, the mathematically are derived non-critical level and the lower and upper limits of the level of stocks in the logistics company.

The third section is devoted to forecasting the functioning of the logistics activities of the enterprise. Probabilistic models of the functioning of the logistics system are presented and the quantitative characteristics of the activities of the logistics system, which maintains a service center, are mathematically derived. On this basis, the author receives quantitative forecasts for characteristics describing the functioning of the logistics system, generated according to the constructed model.

Finally, the conclusions drawn as a result of the analysis of the functioning of the logistics system are presented, and suggestions for their practical use are given.

## **7. Contributions and significance of dissertation for science and practice**

The author's contributions are listed in the Reference of contributions. The author has presented 5 scientific contributions to her dissertation. In addition, she gave four areas of practical and theoretical application of the solutions presented in the dissertation. However, the contributions are not indicated in the abstract, as is generally accepted.

I agree with the formulated contribution that the dissertation presents an original and innovative methodology for making forecasts that support the process of managing the services of a logistics system, as the methodology is based on the laws of operation of a probabilistic logistics system, taking into account the dynamics of its parameters.

The regularities of the functioning of the logistics system are derived in the form of obtained analytical models - systems of differential equations, describing the processes taking place in the logistics system and its subsystems.

The novelty of the forecasts obtained in this way lies in the fact that they depend on the parameters of the studied logistics system and its subsystems. The significance of the forecasts obtained

in this way is of scientific value, as it allows to correct potentially unfavourable forecasts by improving the values of these parameters in order to obtain favourable forecasts expected by managers.

### **8. Evaluation of publications on the dissertation**

The candidate has presented 18 scientific publications on the topic of the dissertation. Most of them are individual and less are co-authored. These publications are listed in the Reference of scientific publications on the topic of the dissertation, where summaries of the publications in Bulgarian are presented. They are also mentioned in the abstract of dissertation. The author's abstract also presents 3 publications in print.

### **9. Assessment of compliance with the minimum national requirements**

From the submitted Reference for fulfillment of the minimum national requirements for awarding the scientific degree "Doctor of Sciences", which the applicant has applied, it is evident that there is an overfulfillment of these requirements. The publications and citations of the candidate's scientific production show that her research has received the necessary degree of popularization.

### **10. Personal participation of the candidate**

There is all the evidence that the dissertation is the work of the candidate herself.

### **11. Abstract**

The abstract corresponds to the content of the dissertation. The abstract is prepared in Bulgarian and Russian, and the dissertation – only in Russian. But the abstract does not include the Reference of contributions.

### **12. Critical remarks and recommendations**

I have the following notes and recommendations about the dissertation:

It is not clear what is meant by financial and economic competitiveness, what definition is used for it and what are the concepts for it. The correct term is competitiveness, without the need to specify financial and / or economic. The dissertation is mainly mathematically oriented. Greater attention should be given to the competitiveness problems of logistics companies.

It is stated that the subject of the study is „to check the functioning of the logistics system, which ensures the efficient operation of the service center, which provides increased financial and economic competitiveness of logistics companies”. Rather, this wording can be considered a research hypothesis. In my opinion, the subject of the study is the financial and economic competitiveness of logistics companies and its increase through the use of analytical models.

Section 1 of the dissertation – “Theoretical aspects of increasing the financial and economic competitiveness of logistics companies” is incorrectly defined. It does not analyze the theoretical aspects of financial and economic competitiveness, but describes the logistics services, logistics systems and quantitative (mathematical) models for them. It is therefore not appropriate that the title of the

section mentions financial and economic competitiveness. It would be better for the section to be entitled “Theoretical aspects of logistics, logistics services and logistics systems”.

Section 1 devotes too much space to the emergence of military logistics centuries ago - from page 20 to page 35 inclusive, and subsequently to its development in the 19<sup>th</sup> and 20<sup>th</sup> centuries. I do not think that military logistics is the focus of the study, which is why this part should either have been shorter or not at all included. In addition, the object and subject of the study states that an example of a service center is a storage warehouse, for example, of bulk feed, agricultural fertilizers, coal, gravel, sand, gas, oil, etc., and the recipient of this product are, for example, large farms, power and heat plants, construction plants, etc. Examples of a logistics system for a service center are a system for delivering bulk feed and agricultural fertilizers to a large farm, coal for power plants or fuels for combined heat and power plants or bulk materials such as gravel, sand and more, for a specific recipient, which may be a construction services center. Furthermore, the example given later in Section 3 concerns the production of brown coal in the TURÓW mine (Lower Silesian Voivodeship) by month for a 6-year period.

In the part concerning the analysis of the logistic systems, their characteristics and conditions, it is noticeable that very few literature sources are cited (pp. 49-74). These are basically 2 literature sources - Korzeń, Z., 1995 and Nowakowski, T., 2011, as Korzeń, Z., 1995 is cited on almost every page. Also, are cited Abt, S., 1995, Coyle, J. J., 2010 (in one or two places) and Tamže, who is not even present in the bibliography, so the title of this publication and the place and year of publication are not clear.

The whole dissertation needed a more complete synchrony and symbiosis of scientific and substantive nature between the separate sections, so that the first section did not look like sewn and weakly connected with the next two sections.

The numbering of the subsections in the dissertation is confusing. Instead of each section having subsections starting with one, they are presented cumulatively, so the second section starts with a fourth subsection, not a first sub-item, and the third section starts with a sixth subsection.

### **13. Personal impressions**

I do not know the candidate and I have no personal impressions of her.

### **CONCLUSION**

The dissertation on the topic “**Increasing the financial and economic competitiveness of logistics companies using analytical models**”, developed by Dr. Maria Borovska is an interesting study of the problems of logistics companies, which presents an original and innovative methodology for making forecasts that support the process of managing the services of the logistics system. The presented materials comply with the requirements of the Law for the Development of the Academic

Staff in the Republic of Bulgaria (ZRASRB) and the Regulations for implementation of ZRASRB, and the Regulations for admission and training of doctoral students at VUZF University.

Based on this, I give my **positive assessment** of the research presented by the above-reviewed dissertation and abstract, and **I propose to the esteemed scientific jury to award the scientific degree of “*Doctor of Sciences*”** to Maria Borovska in the area of study 3. Social Sciences, Economics and Law, field of study 3.8. Economics, Higher School of Insurance and Finance (VUZF University), Sofia.

27.05.2021

Sofia

Reviewer: .....

(Prof. Dr. Silvia Trifonova-Pramatarova)