OPINION

by Prof. Angel Atanasov Golev, PhD

University of Plovdiv "Paisii Hilendarski"

on a PhD thesis for acquisition of the educational and scientific degree "Doctor"

in higher education field: 4. Natural Sciences, Mathematics and Informatics

professional field: 4.6. Informatics and Computer Science

Doctoral Program: Informatics

Author: Laska Delkova Kostadinova-Tsankova

Title: Modeling of an Intelligent Supply Chain in Smart Agriculture Systems

Scientific supervisor: Assoc. Prof. Emil Hristov Doychev, PhD, University of Plovdiv "Paisii Hilendarski"

1. General description of the procedure and the PhD candidate

By Order № RD-22-692 dated 30.03.2026 of the Rector of the University of Plovdiv "Paisii Hilendarski" (PU), I was appointed as a member of the scientific jury for the procedure for the defense of a PhD thesis entitled "Modeling of an Intelligent Supply Chain in Smart Agriculture Systems" for awarding the educational and scientific degree "Doctor" in the higher education field 4. Natural Sciences, Mathematics and Informatics, professional field 4.6. Informatics and Computer Science, doctoral program Informatics.

The author of the dissertation is Laska Delkova Kostadinova-Tsankova – a part-time PhD candidate at the Department of Computer Systems, Faculty of Mathematics and Informatics at PU, with scientific supervisor Assoc. Prof. Emil Doychev, PhD.

The set of materials submitted by Laska Kostadinova-Tsankova complies with Art. 36 (1) of the Regulations for the Development of the Academic Staff of PU and includes the following documents:

– application to the Rector of PU for opening the procedure for PhD thesis defense;
– curriculum vitae in European format;
– minutes from the departmental council regarding the reporting of readiness for opening the procedure and preliminary discussion of the dissertation;
– abstract in Bulgarian and English;
– declaration of originality and authenticity of the submitted documents;
– report on compliance with the minimum national requirements;
– list of scientific publications related to the dissertation topic;
– PhD thesis;
– copies of scientific publications;
– declaration of originality and authenticity of the submitted documents;
– set of documents on paper;
– set of documents in electronic format.

Laska Kostadinova-Tsankova holds a Master's degree in "Computer Technologies with professional qualification – Informatics Economist" obtained at the University of Plovdiv "Paisii Hilendarski" (1994–1999). She also holds Master's degrees in "Macroeconomics, specialization – Organization

and Technology of Accounting" (PU, 2002) and in "Finance and Accounting, Financial Audit" (Varna Free University "Chernorizets Hrabar", 2020).

From 2003 to 2017 she worked as an accountant at Insurance Fund Laska – Plovdiv, and since 2017 she has been managing a company for accounting consulting and services. Since 2022 she has been enrolled as a part-time PhD candidate at the Faculty of Mathematics and Informatics at PU "Paisii Hilendarski".

2. Relevance of the topic

The subject area of the dissertation is supply chain management, and more specifically: improving logistics processes and risk management in supply delivery to various key public structures. In recent years, the business environment has been characterized by rapid technological changes, political and economic instability, pandemic and geopolitical crises, which require companies to adopt flexible approaches for planning, organizing, and controlling their activities. This dynamic environment also provides new opportunities for scientific and applied research. The PhD candidate has justified the relevance of the research in the Introduction and Chapter 1 of the dissertation.

3. Knowledge of the problem

Laska Kostadinova-Tsankova demonstrates very good knowledge of the research area related to the dissertation. Contemporary supply chain models and risk management approaches are thoroughly described and systematized. Examples of well-known companies and their supply chain management practices are presented.

4. Research methodology

The applied research conducted by the PhD candidate has led to solving the defined tasks and achieving the main objectives of the dissertation. The stages of the research are described in the introduction. As a result, a model and an intelligent system for supply chain management are presented, utilizing modern software tools and technologies.

5. Characteristics and evaluation of the dissertation and contributions

Chapter One presents the results of the study on supply chains. Concepts, main supply chain models, risks, and vulnerability areas in supply chain management are examined. An analysis of existing problems and practices for risk reduction is carried out. Basic concepts of intelligent supply chains are outlined. Based on the analysis, the PhD candidate summarizes the main trends in the field.

Chapter Two provides a detailed analysis of the efficiency of the food supply chain implemented through public procurement by a supplier in the city of Plovdiv to municipal and private childcare institutions. Specific solutions for optimization and improvement of the overall process are proposed.

Chapter Three presents the event-driven model of the supply chain, the regional platform for smart agriculture "Zemela", and its adaptation for building a supply chain management system for agricultural products. I accept as scientific-applied contributions:

– "Development of a conceptual event-driven model and architecture for intelligent supply chain management as an extension of the ZEMELA platform";

– "Creation of a methodology for integration of the event model, demonstrating the use of artificial intelligence, logical inference, and adaptive behavior in a real logistics environment".

Chapter Four examines the software technologies used: analysis of the flex expert system toolkit, its integration into the LPA software package, and its connection with the Prolog language.

Chapter Five describes the implemented prototype of the intelligent supply chain management system and the event engine used in the prototype. Example sessions for generating food delivery schedules are provided. I accept as an applied contribution:
– "Implementation of a prototype intelligent supply chain management system and its testing under real conditions".

The conclusion presents the contributions of the dissertation and outlines possibilities for future development. The bibliography includes 234 references.

6. Evaluation of publications and personal contribution

The two publications related to the dissertation are indexed in Scopus and published in proceedings of an international conference. Both publications have six co-authors. Despite the co-authorship, the conducted scientific-applied research and the achieved results in the dissertation demonstrate the significant role of the PhD candidate in these publications. No citations of these publications are reported.

7. Abstract

The abstract consists of 32 pages, meets the necessary requirements, correctly reflects the content of the dissertation, and adequately presents the achieved scientific-applied results.

8. Recommendations for future use of the contributions

The topic of the dissertation allows for obtaining new results and their practical application in business. *A question and recommendation for future development*: Is it possible to provide a quantitative evaluation of the efficiency of the proposed model and the specific implementation of intelligent supply chain management, and to compare it with the efficiency of other similar models and systems?

CONCLUSION

The PhD thesis ***contains scientific-applied and applied results that represent an original contribution to science and meet all the requirements*** of the Law for Academic Staff Development in the Republic of Bulgaria, its implementing regulations, and the respective regulations of the University of Plovdiv "Paisii Hilendarski".

The dissertation demonstrates that the PhD candidate Laska Kostadinova-Tsankova ***possesses*** in-depth theoretical knowledge and professional skills in the scientific specialty 4.6. "Informatics and Computer Science***", showing the ability*** to independently conduct scientific research.

Based on the above, I confidently give my ***positive*** assessment of the research presented in the reviewed dissertation, abstract, results, and contributions, ***and I invite the highly respectable Scientific Jury to award the educational and scientific degree "Doctor"*** to Laska Delkova Kostadinova-Tsankova in the field of higher education: 4. Natural Sciences, Mathematics and Informatics, professional field 4.6. Informatics and Computer Science, doctoral program Informatics.

30.04.2026 **Signature:** .....

(Prof. Angel Golev, PhD)