OPINION

on a thesis submitted for acquisition of the educational and scientific degree "Doctor" in the professional field 3.8. 'Economics', doctoral programme 'Application of Computing in Economics' at D. A. Tsenov Academy of Economics - Svishtov

Prepared by: Assoc. Prof. Natalia Stoyanova Marinova, PhD

Author of the dissertation: eng. Penka Stefanova Chernaeva, full-time PhD student in the Department of Business Informatics at The D. A. Tsenov Academy of Economics – Svishtov

Topic of the dissertation: Role of the Information System in the Process of Digital Transformation of the Agricultural Enterprise

I. General presentation of the dissertation.

The dissertation work of PhD student Penka Chernaeva explores *the importance of information systems for the process of digital transformation of the agricultural enterprise and proposes a model for their effective optimization.* The development is a complete and in-depth scientific study with **a volume of *244 pages***, supported by graphic, tabular and empirical material.

The dissertation and its abstract are distinguished by ***a balanced structure,*** consisting of a list of abbreviations used, a list of figures used, a list of tables used, an introduction, three chapters, a conclusion, a bibliography, eight appendices and a declaration of originality and reliability of the research. The material is illustrated by 34 tables and 48 figures in the main text and in the appendices.

To develop the topic, the PhD student has studied a significant volume of literature of ***222 titles*** - 15 Bulgarian and 207 foreign.

II. Assessment of the form and content of the dissertation.

The topic of the dissertation is **relevant** and of interest from a scientific and applied point of view. It is determined by the constant strengthening of the role of information systems, integrating information technologies, organizational processes and management practices, supporting the activities of analysis, planning and control in the agricultural enterprise. The significance and nature of the problems in the chosen subject area provoke active scientific work in the direction of searching for the right solutions, technologies and methodologies for increasing the efficiency and sustainability of Bulgarian grain-producing enterprises. Therefore, I believe that the choice of the topic provides a wide field for creative expression and analysis.

From the large volume of literary sources used and the presentation in the main text, it is clear that the author **knows** the current state of the problems of the process of digital transformation of the agricultural enterprise. On this basis, she has correctly defined the goal and tasks of the dissertation. Consistently and with arguments, the PhD student also proves her main research **thesis** - that "*the evolution of information systems in agricultural enterprises from reporting to intelligent and analytical platforms is a determining prerequisite for the implementation of a full-fledged digital transformation of production and management processes*".

In developing the dissertation, a set of scientific research approaches and methods was used - a mixed approach (quantitative and qualitative methods), systematic, historical-theoretical, statistical, comparative and critical analyses, modeling, expert assessment, etc. PhD student Chernaeva demonstrated skills in systematizing, analyzing and summarizing a huge volume of theoretical material and in appropriately presenting processed empirical data for the purposes of her research. The style used in the manuscript is scientifically sound and meets the requirements for developing such a scientific work.

The dissertation is of a standard size, and the sources used are cited and described correctly. The structuring and content of the research are logically and correctly constructed, methodologically sound and supported by the application of appropriate analytical tools and means of expression.

The abstract proposed for review fully and accurately reflects the content of the dissertation itself meets the requirements for developing this type of scientific research and contains all the required elements.

III. Scientific and scientific-applied contributions of the dissertation work.

The dissertation work of PhD student Chernaeva has convincing evidence of scientific and applied results, presented as solutions to the researched problems. The main contributions of the work can be outlined in the following directions:

First. **Enriching of existing knowledge** about the problems of application and integration of key modern information systems and technologies in the process of digital transformation of the agricultural grain production enterprise.

Second. **Developing and approbation** of an integrated author's model for effective digital transformation of a grain production enterprise, integrating IoT, AI/ML, FMIS/ERP, BI and other information technologies.

Third. **Offering a platform approach** for more sustainable and effective management of land lease, cultivation and management relationships through the use of artificial intelligence technologies.

IV. Questions about the dissertation.

All questions and comments on the scientific manuscript submitted for review were addressed to the PhD student during the departmental discussions of the versions of the submitted thesis and were promptly reflected by him. I have no other comments on the final version of the dissertation.

V. Summary evaluation of the dissertation work and conclusion.

The presented dissertation work has a completed form and contains the contributions reflected in three directions of this opinion. The author shows in an indisputable way that she can formulate scientific goals, carry out scientific research and knows the existing practice on the dissertation problem. The development has an original character and represents a current scientific and applied research in the field of application of information systems for intelligent digital transformation of the agricultural grain production enterprise.

Based on the above, I recommend to the scientific jury **to award** Penka Stefanova Chernaeva the educational and scientific degree "Doctor of Philosophy" in the scientific specialty "Application of Computer Technology in Economics".

Date: 20.05.2026

Prepared the opinion: .

(Assoc. Prof. Natalia Marinova, PhD)