OPINION

By: **Assoc. prof. Irena Emilova Lyubenova, PhD**, Scientific specialty - "Social Management", Faculty of "Management and Marketing", Department of "Management", D. A. Tsenov Academy of Economics, Svishtov

Subject: dissertation submitted for admission to defense of the educational and scientific degree "Doctor of Philosophy", in the field of higher education 3. "Social, economic and legal sciences", professional field: 3.8. Economics; doctoral program "Application of Computing in Economics"

Author of the dissertation: **Abrar Ashraf**, doctoral student at the Department of Business Informatics, doctoral program "Application of Computing in Economics"

Topic of the dissertation: **The potential of information and communication technology in the transition towards green economy**

Reason for writing the opinion: participation in the Scientific Jury for the defense of the dissertation, according to Order No. 324/16.04.2025 of the Rector of the D. A. Tsenov Academy of Economics, Svishtov and decision of the Scientific Jury of 17.04.2025.

I. General characteristics of the presented dissertation

The dissertation on the topic: *„The potential of information and communication technology in the transition towards green economy"* has as a subject of study: the possibilities of information and communication technologies to accelerate the transition to a Green Economy through the implementation of a comprehensive Framework for the transition to a Green Economy.

The dissertation is 223 pages long. It is structured as follows: introduction, three chapters and conclusion. The list of references includes 194 literary sources. In support of the above, 33 tables and 9 figures are included, which allows achieving a good balance between the text and the illustrative part and helps to build a comprehensive vision of the researched issues.

II. Evaluation of the form and content of the dissertation

A detailed acquaintance with the dissertation submitted for opinion creates the opportunity to express that the choice of topic is precise and justified by the significance of the problem under consideration.

The volume of the dissertation is enough. The structure is balanced. There is good logical consistency and purposefulness in the development of individual questions and a precise and clear style of expression.

The tasks of the dissertation are formulated in accordance with the set goal and have found their successful implementation in the development.

The main research thesis is logical and directs the analytical focus in the presentation in order to adequately meet the necessary requirements of the conceptual part and the organized empirical material.

Skilful handling of the tools of scientific research is observed. In the research process, the following were used: mixed research methods, methods for qualitative presentation of cases, information collection, triangulation, economic analysis, comparative analysis, modelling methods, quantitative studies and data analysis.

The abstract correctly and accurately reflects the structure and content of the dissertation and meets the requirements.

With the presented publications, doctoral student Abrar Ashraf meets the minimum national requirements for obtaining the educational and scientific degree "Doctor of Philosophy".

III. Scientific and applied scientific contributions of the dissertation

The scientific and applied scientific contributions indicated by the doctoral student demonstrate in-depth theoretical knowledge in the researched issues and the ability to conduct independent scientific research. They are expressed in the following:

- *in theoretical aspect:*

1) A new, authors definition of the concept of Green Economy is proposed, expanding the traditional concept of sustainability by integrating the principles of cooperation, inclusion, sustainability and integration of information and communication technologies.

2) The structural shortcomings of the Linear Economy are analised in the context of case studies highlighting the important role of information and communication technologies in the transition to a Green Economy.

3) A conceptual framework for the transition to a green economy has been developed, which positions information and communication technologies as a major transformative factor for resource optimization, energy efficiency and transition to a low-carbon, circular economy.

- *in practical aspect:*

4) A methodology for reducing the carbon footprint in information and communication technologies has been introduced and strategies suitable for Bulgarian practice for energy-efficient design and operation of digital technologies have been proposed.

5) A mathematical framework has been introduced to optimize the integration of integration and communication technologies in the technology sector of the Green Economy of Bulgaria in order to improve the analysis of environmental data.

6) The concept of the "Billion Tree Tsunami Project" has been adapted to the Bulgarian practice as a potential opportunity to accelerate the green transition of the city of Plovdiv in the direction of increasing the urban forest cover, improving air quality, increasing community resilience and promoting local biodiversity.

I believe that the stated contributions by the doctoral student meet the requirements of the current regulations for obtaining the educational and scientific degree "Doctor of Philosophy" in the Republic of Bulgaria.

IV. Questions on the dissertation

I have no critical comments, recommendations or questions regarding the dissertation submitted for opinion.

V. Summary evaluation of the dissertation and conclusion

The presented dissertation on the topic: *„The potential of information and communication technology in the transition towards green economy“*, with author *Abrar Ashraf*, meets the requirements for awarding the educational and scientific degree of "Doctor of Philosophy", according to the Law on the Development of the Academic Staff in the Republic of Bulgaria, Regulations for the Implementation of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the requirements of the Regulations for the Development of Academic Staff in the A. Tsenov Academy of Economics, Svishtov.

I believe that the formulated goal and objectives of the dissertation have been achieved. The scientific and applied scientific contributions formulated in the conclusion and the results of the practical study conducted can be defined as real achievements of the doctoral student.

This gives me reason to state a **categorical positive assessment** and to recommend to the esteemed members of the Scientific Jury to support a decision "**FOR**" awarding the educational and scientific degree "Doctor of Philosophy". in the field of higher education 3. "Social, economic and legal sciences", professional field: 3.8. Economics; doctoral program "Application of Computing in Economics", doctoral program "Application of Computing in Economics" on **Abrar Ashraf**.

30.04.2025

Svishtov

Author of the opinion: .

(Assoc. prof. Irena Emilova Lyubenova, PhD)