

NEW BULGARIAN UNIVERSITY

DEPARTMENT OF NATIONAL AND INTERNATIONAL SECURITY

OPINION

from

Prof. Dr. Eng. Yordan Ivanov Bakalov

in regard to dissertation work for the acquisition of the scientific degree "**doctor**" in professional direction 9. Security and defense, with candidate **Teodora Kirilova Licheva** on topic "**BLOCKCHAIN SECURITY IN GOVERNMENT**"

The author of the dissertation **Teodora Kirilova Licheva** is a part-time doctoral student at NBU – Sofia. The topic of the dissertation is: "**BLOCKCHAIN SECURITY IN PUBLIC ADMINISTRATION**". The content of the dissertation is structured in an introduction, three chapters, and a conclusion, with a total volume of 204 pages of main text and a list of used literature, of which 13 in Cyrillic, 15 in Latin and about 70 internet publications.

1. Significance of the researched problem in scientific and scientific-applied terms.

The dissertation submitted for evaluation on the topic "**Blockchain Security in Public Administration**" explores the application of the new technological possibility to apply the blockchain concept, system and data processing tools for the provision of services and record keeping in the public administration of the country. The researched problem has a high relevance and significance, both in scientific and scientific-applied terms. The author convincingly argues his thesis that the application of the blockchain toolkit is able to improve the quality, efficiency and effectiveness of the work of the state

administration, as well as the reliability and security of the processed data for the state administration.

A major question in the modern society of fast-developing and changing information technologies is to what extent digital information can be trusted, and the research done gives an accurate and definite answer to the question. It is with the introduction of blockchain technology that the integrity, credibility and possibility of data security are guaranteed. Coordination and cooperation between state institutions and society will lead to an increase in economic and social activity to ensure civil security. This will make it possible to increase public trust in the state administration and ensure information reliability and public security.

2. On the validity of the objectives and tasks in the dissertation work.

The author defines the main purpose of the work, connecting it to the research thesis. Accepts that the purpose of the research is to prove the thesis that "...with the introduction of the blockchain system, the state administration will be transformed, modernized and updated, increasing citizens' trust in it, administrative services will be digitized and data collection will be on the "**just once**" principle, which will significantly facilitate administrative services for Bulgarian citizens. The analysis of information security problems in our country are presented in the light of the possibilities of rapidly developing technologies, and the focus is on their application in specific administrative services, storage of digital information from the institutions and information systems of the Ministry of Interior and security services, it can be interpreted as a study, presentation of the possibilities and arguments for the implementation of appropriate blockchain methodologies in data processing in public administration. The author analyzes the experience of leading countries in the world such as the USA, China, South Korea and other countries of Western

Europe and argues the necessity, possibility and conditions for transition from Electronic to Digital Government.

The tasks of the research are essentially fulfilled by the three chapters of the research:

Clarifying the nature and elements of blockchain security; Conceptualization of the relationship between blockchain management and the security of the state administration, as well as conditions for the implementation and offering of a digital governance model of the state administration based on blockchain.

These tasks demonstrate accumulated theoretical and applied knowledge of the researched scientific field and the author's ability for independent research of the related issues.

3. Correspondence between the chosen methodology and research method and the set goal and tasks of the dissertation work.

The methodology of the dissertation study was chosen properly and correctly. It is aimed both at achieving the goals and objectives of the research investigation, and at proving the main scientific idea. The applied methodology includes three private methodologies:

- Development and implementation of a three-layer model for the introduction of the blockchain system in the state administration;
- Using blockchain to create a smart border;
- The use of blockchain in law enforcement;

It applies general scientific methods of deduction, basic and comparative analysis. It uses system analysis and a method for researching the possibilities of implementing new blockchain technological solutions.

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

Scientific and scientific-applied contributions have been achieved in the dissertation.

4.1. The scientific contributions of the work include:

- Proposal of contemporary and modern solutions to change the administration, as part of the state rule.
- Argument of the potential and applicability of blockchain technology in various sectors of government.
- Defining the concept of "management security".

I accept these contributions as accomplished with the addition that governance security is defined with the main benefits of implementing blockchain technology in government. To them can be added:

4.2. Scientific and applied contributions include:

- Identification of the problems and limitations in the implementation of blockchain technology in the public administration in the country.
- A proposal for a transition to digital government management, as well as possible problems in this transition.
- Assessment of the expected effects of application of blockchain technology to improve management in the transition from electronic government to digital government.

5. Evaluation of the publications of the dissertation work: number, nature of the editions in which they were published.

On the topic of the dissertation, the author has published two monographs – Digital transformations in archival work (2022) and Modern security in management (2023). Both were issued by the NTS for mechanical engineering "Industria-4.0". Apart from them, he has published nine articles and reports on the same topic. Two of their articles on the implementation of blockchain technology were published in the magazine "Security and Defense", (2022 and 2023). Two other reports were issued in Sb. Proceedings of the Scientific Conference "Current Issues in Security", (2022) on the topics "Blockchain and the Security Ecosystem" and "Information Security in Public Administration through Blockchain". Two more are published in Sat. reports

from the international scientific conference "CONFSEC 2022", (2022) on the topics "Information Security in Archival Science" and "The Blockchain System – an Information Security Challenge". Two more are published in Sat. reports from the annual scientific conference of VTU "Vasil Levski", (2023) on the topics "Data security in blockchain technology" and "Digital transformation and information security in the public and private sector". A report was published in Sb. reports from the international scientific conference "Rights and Security" of the NBU (2023).

6. The presented publications guarantee high publicity of the author's research in the country.

It is recommended to publish the research results in international and refereed sources to achieve greater publicity.

7. Citation by other authors, reviews in the scientific press, etc.

I have no data on citations of works by other authors and reviews in the scientific press. There is no doubt that the researched problematics are new and such exist or will be made. The obtained results are the basis of the comparisons, summaries and recommendations .

8. Opinions, recommendations and notes.

The dissertation work and the accompanying abstract were developed according to the requirements of the NBU – Sofia.

The research presented and the results obtained are the personal work of the author. I accept that the proposed work contains significant ideas and scholarly and scientific-applied results, clarifying the conditions, possibilities and norms for the implementation of blockchain technology in the state administration of the country. The conducted research offers new ideas and contributing results, the realization of which can make a significant contribution to bring up to date the state administration in the country. It would be useful to develop lists of abbreviations used, tables and figures, and a glossary of terms to facilitate the use of the work.

An important point of the research is clarifying the criteria for evaluating the results of the blockchain digitization process of the state administration, because with the increase in the degree of state control regarding the personal behavior of citizens, it is also necessary to guarantee their rights and freedoms.

It is good to avoid some spelling mistakes as well.

9. Conclusion with a clearly formulated positive or negative assessment of the dissertation .

In general, the scientific work explores a topic that is very relevant nowadays and sets an ambitious goal. Uses a clear and logical presentation style, well-founded scholarly and scientific-applied contributions of a research nature. With it, the author shows the ability to analyze and offer new ideas for solutions to complex problems in the transformation of state administration in the country. The theoretical summaries made and the scientific contributions obtained, as final results, correspond to the requirements of the Law on the Development of the Academic Staff and the Regulations for its Application, which gives me the reason to propose to the Honorable Scientific Jury of the NBU to award the educational and scientific degree "**doctor**" of Teodora Kirilova Licheva in the field of higher education 9. Security and defense, professional direction 9.1 National security.

Date: 18.03.2024

Signature:

Prof. Dr. Eng. Yordan Bakalov