

O P I N I O N

of a dissertation for the acquisition of an educational and scientific degree "doctor"

Author: Mag. Eng. Milvina Todorova Terzieva

Topic: Integration and synergy between information and communication technologies and modern banking

Field: 5. Technical sciences, **Direction:** 5.3 Communication and computer technology

Doctoral program: Computer systems, complexes and networks

Member of the Scientific Jury: Prof. Dr. Sc. Eng. Ivo Malakov, TU - Sofia, Order No. 27/29.01.2024 of the Director of IICT of BAS

The submitted thesis for opinion is 168 pages long and is structured in 5 chapters, conclusion, contributions, list of publications on the thesis, bibliography, declaration of originality, list of used abbreviations and two appendices. The bibliography includes 108 literary sources. In connection with the work, 8 scientific publications are presented, of which two are independent, and in five others the doctoral student is the first author. No citation reference is given.

The work was developed at IICT - BAS under the scientific supervision of Prof. Dr. Eng. Dimitar Karastoyanov.

1. Relevance of the problem developed in the dissertation

The dissertation is in a prospective and current field of application of modern information and communication technologies in banking, which has been the subject of intensive research and development in recent years. These technologies are increasingly entering banking services, represent a key element of them and predetermine to a significant extent the effectiveness and competitiveness of the offered services.

The proposed approach to integration and synergy of modern financial, information and communication technologies and the new banking service developed on its basis enrich and further develop the knowledge and methods of solving problems in the field under consideration, lead to an increase in the speed of transfers, a reduction in costs, relief of the application, improving security, personal data protection, etc.

All this determines the relevance and significance of the research in scientific and applied terms.

2. Degree of knowledge of the state of the problem and creative interpretation of the literary material

The paper provides an analytical overview of existing information and communication technologies (ICT) in the banking sector, using 108 literary sources, a significant part of which are from the last 5 years. As a result, trends for the development of banking services and their interaction with modern ICT achievements have been defined. On this basis, as well as the good professional qualification, the doctoral student has correctly formulated the purpose of the dissertation work and the tasks for its achievement.

I believe that the candidate knows very well the current state in the field under consideration and has the necessary capacity to obtain new results.

3. Correspondence of the chosen research methodology and the set goal and tasks of the dissertation with the contributions achieved

In accordance with the purpose and tasks of the dissertation, an innovative approach to the integration of modern financial, information and communication technologies was proposed, and a new banking service was developed on its basis. It has been compared to known solutions and proven to have advantages in terms of speed, users, cost and scope. Improvements to the new banking service have been developed, including a "space profile" to expand the reach of the platforms, the integration of artificial intelligence (chatbot) and biometric data of the user for the purpose of speed of communications and security of personal data. The new service has been validated and proven advantages over existing banking technologies. A detailed analysis of the test results and the risk of using the advanced service has been made. Adequate methods for overcoming possible risk situations are proposed.

From the presented results, it can be concluded that the chosen research methodology is adequate to the set goal and tasks of the dissertation work, which fully correspond to the achieved results and contributions.

4. Characterization and evaluation of the dissertation work

The doctoral student demonstrates the in-depth knowledge of the problems in the field under consideration and the use of appropriate modern tools to solve the assigned tasks.

The obtained results have been thoroughly analyzed and the effectiveness of the development has been proven. On their basis, the relevant implications and conclusions were drawn. I believe that the set goal and the tasks related to it were fulfilled correctly, in the necessary volume and content.

I appreciate the results of research and development positively. They have a markedly practical character and potential for future application.

5. Scientific and/or scientific-applied contributions of the dissertation work

I accept the contributions formulated by the author, which are of a scientific-applied and applied nature, but it is recommended that they be summarized, edited and systematized.

The contributions demonstrate convincingly that the candidate can independently carry out research and development activities in the field of the dissertation work.

6. Evaluation of the degree of personal participation of the dissertation student in the contributions

I appreciate the contributions in the dissertation work as a result of the joint work of the author and his supervisor. I am convinced of the overwhelming personal involvement of the PhD student and his personal contributions in the development of the dissertation work, which is clearly evident in the publications covering the main research results. Two of the works are independent, and in five others he is the first author. This is supported by the entire scientific output of the doctoral student, as well as his professional biography.

7. Evaluation of publications on the dissertation work

In connection with the dissertation, 8 papers were made. publications, of which 2 are independent. Two of the publications are in refereed editions indexed in the Scopus and SHS databases. The doctoral student significantly exceeds (more than 3 times) in indicators G7 and G8 the minimum requirements of the Regulations for the specific conditions for acquiring scientific degrees and holding academic positions at IICT-BAS. I have no information about the author's work citations.

The presented publications on the dissertation work sufficiently fully and accurately reflect essential aspects of its content and popularize the work performed.

8. Significance of the results of the dissertation work in science and practice

The results of the dissertation work have significant potential for application by banking institutions in the development of new services. Due to their proven advantages, they are also of interest to users of banking services.

9. Recommendations and critical notes

I have no substantive objections to challenge the applicant's main contributions.

Notes may be made regarding uncorrected editorial, terminological and technical errors.

CONCLUSION

Based on my familiarity with the dissertation work and its materials, the fulfilled educational goal of the doctoral studies, the relevance and significance of the achieved contributions, I give a POSITIVE evaluation of the dissertation work. All the requirements of the Law on the Development of the Academic Staff in Bulgaria, of the Regulations for its application, as well as the specific requirements for acquiring scientific degrees at IICT-BAS in terms of scope, volume and quality of the dissertation work have been fulfilled.

On these grounds, I suggest to mag. Eng. Milvina Todorova Terzieva to be awarded the educational and scientific degree "doctor" in area 5. Technical sciences, professional direction 5.3 Communication and computer technology, scientific specialty Computer systems, complexes and networks.

19.02.2024

Jury

