

REVIEW

By Atanas Dimitrov Georgiev, Associate Professor (3.8) at the Faculty of Economics and Business Administration, Sofia University "St. Kliment Ohridski", PhD (3.8)

Of dissertation for awarding the educational and scientific degree "Doctor" in the field of higher education 3. Social, economic and legal sciences, Professional field 3.8. Economics, doctoral program "Finance, Insurance and Social Security" at VUZF – Sofia

Author: *Volodymyr Busygin*

Topic: *Development and Research of Applied Digital Economy Basis: Blockchain and Optional Approach*

Supervisor: *Assoc. Prof. Radostin Vazov, PhD*

1. General description of the presented materials

With an order by the Rector of VUZV Prof. Dr of legal sciences Boris Velchev (N 188 from 05.05.2022) I have been appointed as a member of the scientific jury under the procedure for defense of the dissertation of doctoral student Volodymyr Busygin, author of dissertation for awarding the educational and scientific degree "Doctor" in the field of higher education 3. Social, economic and legal sciences, Professional field 3.8. Economics, doctoral program "Finance, Insurance and Social Security" at VUZF – Sofia. The author of the dissertation is Volodymyr Busygin, PhD student at the doctoral program "Finance, Insurance and Social Security" at the Higher School of Insurance and Finance (VUZF) – Sofia.

The materials submitted by Volodymyr Busygin include documents on the presented inventory: CV, abstracts in Bulgarian and English, dissertation in English, reference for fulfillment of the minimum national requirements for obtaining the educational and scientific degree "Doctor" in professional field 3. 8 Economics, list and summaries of publications (in Bulgarian and English).

The doctoral student has submitted 29 publications in which he is an author together with other researchers.

2. Brief biographical data about the doctoral student

Vladymyr Busygin has been a doctoral student since September. 2020 - at VUZV and at the Oles Honchar Dnipropetrovsk National University (Ukraine). Since March 2013 he has been

co-founder and CEO of Sports Innovations and Development Laboratory (Ukraine). Prior to that, he had experience as a specialist in International Relations in several companies in the period 2005-2013.

He holds a master's degree in Computer Science and Agronomy, as well as a bachelor's degree in Finance. He has completed specializations in Dnipro, Kharkiv and Lviv (Ukraine) and has conducted international internships in Bulgaria, India, UAE and Poland.

His research interests are related to blockchain, real options, multiprocessor computer systems. As can be seen from the candidate's profiles in SCOPUS and ORCID, he is a co-author of a number of scientific publications in renowned refereed and indexed publications.

3. Characteristics and evaluation of the dissertation

The dissertation has a volume of 190 pages, including lists of abbreviations, figures and tables used. The content includes an introduction, six chapters, a conclusion, a bibliography with 183 sources. The text uses 60 figures and 8 tables.

The introduction to the dissertation correctly indicates the object of research, the subject of the research, the goal and main tasks, as well as the author's hypotheses.

The results of the research are presented in six thematic chapters, the content of which corresponds to the set tasks and is in line with the formulated hypotheses.

The sources used by the author are cited correctly. Their scope corresponds to the goals and objectives set by the author.

4. Contributions and significance of the study for science and practice

The author indicates 12 contributions, without explicitly classifying them. Among them I would highlight the following:

A) Scientific contributions:

N 8. A new approach to option pricing based on parallel algorithms of the Monte Carlo method has been developed.

N 10. The numerical-analytical method for solving partial differential equations on the basis of modern parallel computational technologies for determining the price of the option has been further

developed, which allowed to increase the accuracy and achieve high efficiency of calculations compared to the traditional approach. reduce processing time.

B) Applied science contributions:

N 7. A new author's concept for classification of methods for determining the pricing of options is derived, distinguishing a class of promising methods developed in the dissertation.

N 11. The created mathematical models, methods and tools are proven in practical implementation in software and industrial design.

C) Practical contributions:

N 4. A new model for analysing the security of blockchain protocols has been developed, based on the segmentation procedure, in order to assess the probability of failure of one node and then of each blockchain chain.

N 6. It is shown that the digital economy can use a special tool, a smart contract that allows the formalization of contractual relations between participants in digital transactions.

N 9. A model of a multiprocessor computing system has been developed, which creates opportunities for solving applied problems of the digital economy, designed for such a computing field.

N 12. The new options pricing methods developed in the dissertation allow obtaining accurate and reliable information about the financial assets of enterprises.

The mentioned contributions of the dissertation open new possible fields for research in this direction.

5. Evaluation of the publications on the dissertation

The main results of the doctoral student's research are presented in the 29 scientific publications declared by the author in co-authorship with other scientists. Among the mentioned publications are:

- 6 publications in SCOPUS-indexed journals;
- 6 publications accepted for publication
- 8 publications in scientific journals
- 3 monographs
- 6 publications / reports in scientific-practical conferences.

Most of the publications are in the period 2020-2022 during the candidate's doctoral studies.

For now, the author's profile in SCOPUS shows IF = 1 for one of the publications indexed there.

There are no independent publications.

In the declaration for fulfilment of the NACID national criteria the declared publications have three or more co-authors.

In the declaration regarding all the 29 publications of the author there are:

- 3 publications with one co-author
- 5 publications with two co-authors
- 21 publications with three or more co-authors

6. Assessment of compliance with the minimum national requirements

The candidate Volodymyr Busygin provided a detailed reference with a list and summaries of his publications, as well as a separate reference for the implementation of the minimum national requirements for obtaining the educational and scientific degree "Doctor" in the professional field 3.8. Economics. I confirm the points (32.5) declared in the declaration, which are more than the required 30 points under Group G (Г) according to the Regulations for implementation of the Bulgarian law for development of academic staff.

As can be seen from the information provided on the doctoral student's overall research contribution, he has other publications that clearly show the fulfilment of the national criteria.

7. Abstract of dissertation

The Abstract correctly reflects the content of the dissertation. The candidate has provided abstracts in Bulgarian and English.

The content of the Abstract includes a summary of the content, a summary of the scientific, scientific-applied and applied contributions of the dissertation, a list of publications on the topic of the dissertation, etc.

The Abstract is prepared according to the requirements and reflects the main results of the dissertation.

8. Critical remarks and recommendations

I have no critical remarks on the dissertation. I recommend to the candidate to participate in conferences and scientific publications, as far as possible, as an independent author of research / publications. This also applies to participation in conferences.

CONCLUSION

The dissertation **contains scientific, scientific-applied and practical results, which represent an original contribution to science and meet all the requirements** of the Law on the Development of Academic Staff in the Republic of Bulgaria (ZRASRB) and the Regulations for the implementation of ZRASRB. The presented materials and dissertation results **fully** comply with the specific requirements of the Regulations for admission and training of doctoral students at the Higher School of Insurance and Finance.

The dissertation shows that the candidate Volodymyr Busygin **has** in-depth theoretical knowledge and professional skills in Professional field 3. 8. Economics, **demonstrating** qualities and skills for independent research.

Due to the above, I confidently give my **positive assessment** of the research presented by the above reviewed dissertation, abstract, results and contributions, and **I propose to the esteemed scientific jury to award the educational and scientific degree "Doctor"** of Volodymyr Busygin in Higher Education. education 3. Social, economic and legal sciences; Professional field 3. 8. Economics.

06.06.2022

Reviewer: .....

Assoc. Prof. Atanas Georgiev, PhD