

SOFIA UNIVERSITY „ST. KLIMENT OHRIDSKI“
FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION

REVIEW

by

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PhD Programme “Analytical data research (Data Science)”
in Sofia University “St. Kliment Ohridski”

1. Introduction and general information

I have been appointed as a member of the scientific committee reviewing applications for associate professor in the field of 3. Social sciences, Economics and Law, 3.8. Economics, PhD Programme “Analytical data research (Data Science)” by order № ПД 38-205 from 26.04.2022 of the Rector of Sofia University “St. Kliment Ohridski”.

Boyko Moisoov Amarov, a PhD student, has presented his thesis and supplementary materials for the defense. All submitted documents are following legal requirements. Research papers submitted are relevant to the PhD thesis topic and are accepted for review.

Table 1 provides a compliance summary in accordance with PhD requirements at the Faculty of Economics and Business Administration, Sofia University “St. Kliment Ohridski”:

Group	Minimal requirements	Boyko Amarov
Educational program	60 credits	60
Teaching and research experience	50 credits	65
PhD thesis related scientific papers	40	45

Table 1. Compliance summary in accordance with PhD requirements at the Faculty of Economics and Business Administration, Sofia University “St. Kliment Ohridski”

2. Relevance of the PhD thesis topic, goals and tasks

The thesis addresses important and contemporary problems that have a direct impact on the economic and social development of the country. The author defines two core goals, according to which the subject and tasks of the research are set. I believe that it would be of great benefit for readers to justify why this particular combination of objects has been chosen, as well as to explicitly state limitations of the study in its introductory part.

The study of administrative electronic services and forms of voting in Bulgaria is a prerequisite for the immediate applicability of the obtained results and is essential for their distribution and popularization.

3. In-depth knowledge

Chapter I provides a detailed overview of Bayesian regression models and indicates that Boyko Amarov is well aware of recent developments in the area. Each chapter has a dedicated section with discussion on relevant papers and studies, thus confirming the excellent preparation of the author. Individual chapters are in very good logical order, self-contained and with well balanced discussion on used analytical methods and contemporary research that is dedicated to the studied problems (like machine voting, administrative electronic services).

4. Research methodology

The author carefully selected tools and approaches that are adequate to the assigned tasks. In the first chapter, he examines the impact of choosing an a priori distributions, which choice is thoroughly justified in the subsequent parts of the research. As a side note, I would like to point out that the comprehension of the text would be improved by using the Bulgarian equivalent of the "frequentist" term.

The appendix to the thesis contains all the necessary tables, graphs and detailed results, supporting the conclusions drawn and allowing the reader to familiarize himself with the conducted studies in detail.

5. Assessment of the PhD thesis

The dissertation has 161 pages, of which 127 pages as the main body (consisting of introduction, six chapters, a conclusion, a list of the used research and a single appendix). In total, 174 sources have been used – most of them in English language.

Two core research objectives have been defined - to study the characteristics of users and non-users of electronic government services in Bulgaria, and to analyze the use of electronic voting machines in Bulgarian elections, as well as the effect of their introduction on turnout and the percentage of invalid votes.

Mr. Amarov focuses on (a) Internet users in Bulgaria, and (b) the elections for the Parliament in Bulgaria in April, July and November 2021, the elections for the European Parliament and the local elections in 2019.

The combination of objects and goals emphasizes the ambitious tasks that the PhD student pursues with his research. Five study tasks have been defined in order to achieve the original goals. It should be noted that task No. 3 essentially contains two distinct sub-tasks.

Mr. Amarov has used an interesting method, where each chapter has its own introduction, review of related research, methodology, results and conclusions. Although not common, this approach allows to highlight the specific features of individual applications, analytical tools used, and results obtained.

6. Research contributions

The PhD thesis, as well as the publications attached to it, contain interesting scientific and applied contributions. In my opinion, the following items deserve special attention:

- factors that impact use of administrative electronic services are analyzed and specific recommendations to improve accessibility and remove impediments have been provided;
- impact of machine voting has been analyzed with special attention paid to invalid votes and how their share is affected by introduction of machine voting;
- detailed and specific recommendations to improve important electronic services have been suggested.

I have no reason to doubt the personal contribution and original developments of the PhD student.

7. Assessment of submitted research papers

The author has submitted three publications in full text - two of them in journals and one in proceedings of an international conference. Research papers contain important aspects of the thesis, giving an opportunity to communicate the results.

The publications clearly highlight the personal contribution, position and arguments of the PhD student. They also allow for other researchers to become familiar with the study and assess it.

8. Abstract

The abstract has a total of 55 pages (48 of core content) and reflects all the major results and findings of the research. Its structure and content comply with the requirements specified in the relevant regulations.

9. Remarks and recommendations

The research has a focus on important issues and analyzes processes that have a significant impact on the development of Bulgarian society. The presentation of the results and the models used is robust and concise, allowing the reader to focus on the main findings and conclusions. I believe that the study would benefit if the author presents in more details the assumptions and limitations of the models used and their presence in the experiments carried out.

CONCLUSION

The dissertation contains interesting scientific and applied results. The reviewed PhD thesis and research papers meet all the relevant national and internal legal requirements and regulations.

The submitted research papers and thesis prove that the PhD student Boyko Moisov Amarov possesses theoretical knowledge and skills in the field of data analysis. He has also proven his qualities and skills for independently conducting scientific research.

I would like to state my **positive** assessment of the conducted research, PhD thesis, abstract and scientific results. I would also like to propose to the scientific committee **to award** the educational and scientific degree “doctor” (PhD) in 3.8 Economics (Analytical data research (Data Science)) to Boyko Moisov Amarov.

13.06.2023

Reviewer:

/ prof. Stanimir Kabaivanov, PhD /