

## OPINION

by **Prof. Tania Koleva Pencheva, PhD**  
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on the Thesis for awarding educational and scientific degree **PhD**  
under the Scientific Field **4. Natural sciences, mathematics and informatics**,  
Professional Area **4.6. Computer sciences**,  
PhD Programme **Informatics**

Author of the Thesis: **Rumen Rumenov Ketipov**  
Theme of the Thesis: **Personality and Decision-making Models in Internet**

In accordance with Order 129/27.05.2021 of the Director of the Institute of Information and Communication Technologies (IICT) at the Bulgarian Academy of Sciences, I have been appointed as a member of the Scientific Jury regarding the PhD thesis of the PhD student **Rumen Rumenov Ketipov** for awarding the educational and scientific degree "**Doctor of Philosophy**" (PhD).

As a member of the Scientific Jury, I have been provided with:

1. A copy of the dissertation thesis for awarding the educational and scientific degree "Doctor of Philosophy".
2. A copy of the PhD thesis synopsis.
3. Copies of the publications related to the PhD thesis.
4. Reference by Rumen Ketipov regarding the fulfilment of the minimal requirements formulated by IICT for awarding the educational and scientific degree "Doctor of Philosophy".

The PhD thesis of Rumen Ketipov is 181 pages long and it consists of an Introduction, three chapters, a Conclusion, a section with formulated applied scientific results, a list of 9 publications related to the PhD thesis, a declaration for originality of the results obtained, and a Bibliography containing 273 references. The PhD thesis is illustrated with the 27 tables and 36 figures, and, as a part of it, two Appendices (A and B) of total volume of 80 pages are presented. In this form, the thesis conforms to the specific requirements, as defined in Article 27(2) from the Regulations for application of Development of Academic Staff Act in the Republic of Bulgaria.

**The aim** of the PhD thesis is to analyse personal psychology and to assess the influence of individuality as a factor in decision-making on the Internet, and in particular – in e-shops.

For realizing the **aim** of the thesis, some specific **tasks** have been formulated:

- study of the existing various theories and concepts for personality measurement;
- selection of an appropriate psychometric model for the study;
- selection of a set of e-shops functionalities that are typical and applicable to most of them;
- development of a research strategy and design, taking into consideration the basic standards of ethics and neutrality;
- analysis of the study results and establishing if there is a relationship between chosen independent and dependent variables;
- proposal and implementation of two (or more) machine learning models in order to achieve reliable prediction of the dependent variables in the existing significant correlations;
- selection of an appropriate machine learning model for which optimization is to be proposed and implemented;
- development of consumer behaviour models when taking decisions in e-commerce.

Due to the indisputable fact that the Internet is an integral part of our daily lives, the goal of the PhD thesis is undoubtedly **up to date**, and the formulated tasks imply the possibility for practical application of the obtained results in the decision-making processes in the field of e-commerce.

In the presented list of publications made with respect to the PhD thesis, 9 papers are included, all of them written in co-authorship. Three of these publications are referred in the worldwide known databases, with SJR rank, and 1 is in a journal, while 5 are in the thematic collections. The PhD candidate is the first author of 5 out of 9 publications, which unequivocally shows his contribution to the obtained and presented results. A list of 3 citations is provided, which confirms the timeliness of the topic of the dissertation presented and the results achieved.

The presented synopsis of the PhD thesis consists of 57 pages in Bulgarian and 51 pages in English. It reflects the essence and contents of the thesis, including the aim and tasks, as well as their execution and the results achieved in the research conducted.

With respect to the PhD thesis, I would like to draw attention to the relatively large volume of the first two theoretical chapters, at the expense of the application-oriented third chapter. Appendices A and B actually bring a balance in the exposition, from the point of view of a literature review of basic theories and existing methodologies and obtained original results.

No contributions are presented in the PhD thesis. However, 5 results of applied science nature have been formulated, as a reflection of the results achieved in the dissertation. I accept the presented results of applied science nature **as contributions of applied science nature** of the dissertation. As significant contributions of applied science nature I consider the created research strategy and design of the empirical research in 3 languages, with added "6<sup>th</sup>" personal determinant "risk avoidance", as well as the developed 3 machine learning models – through linear decisions tree, and random forests, the latter being further optimized.

The final assessment of the PhD thesis also demands taking into consideration the requirements stipulated by the Development of Academic Staff Act, and the IICT-BAS internal regulations for its application. According to the presented reference for the fulfilment of the minimal requirements of IICT-BAS, the PhD candidate **Rumen Ketipov meets**, and even **exceeds**, the requirements for awarding the educational and scientific degree "Doctor of Philosophy", stipulated in the IICT-BAS Regulations for application of the Development of Academic Staff Act in the Republic of Bulgaria.

In the light of the foregoing, I confirm that the **requirements for awarding the educational and scientific degree "Doctor of Philosophy" of the Development of Academic Staff Act in the Republic of Bulgaria, as well as of the Internal Regulations for its application in IICT-BAS have been fulfilled**. My impressions from the presented PhD thesis and the publications that give visibility of the achieved results, the analysis of their significance and the contained achievements therein give me the reason to express my **positive assessment** of the dissertation thesis, and to recommend to the respected members of the Scientific Jury to vote positively for awarding **Rumen Rumenov Ketipov the educational and scientific degree "Doctor of Philosophy"** in Professional Area **4.6. Computer sciences, PhD Programme Informatics**.

June 25, 2021  
Sofia

Signature: .....  
(Prof. Tania Pencheva, PhD)

