

## STATEMENT

about the Ph.D. thesis

Professional field of study: 4.6 „Informatics and computer sciences“

Scientific specialty: „Informatics”

**Ph.D. student:** Veselina Rumenova Naneva

**Title of the Ph.D. thesis:** Web-Based Data Visualization Tools

**Member of the jury:** prof. D.Sc. Ph.D. Eng. Todor Atanasov Stoilov, Institute of information and communication technologies – Bulgarian Academy of Sciences, Sofia, Acad.G.Bontchev str., BL.2

### 1. Actuality of the problems in the PhD thesis

The thematic content of the Ph.D. work is to unify the type of input data to two types of software products that graphically interpret these data in different graphical presentations. The two software products used in the Ph.D. work are Microsoft Power BI and Tableau. These products graphically interpret data that has content for evaluating business management and thematically supports the "business intelligence" direction (Business Intelligence). This direction aims to analyze the past states of the business organization in order to evaluate the current management and predict future state and results. The Ph.D. work does not aim at the formal preparation of data for the assessment of business intelligence, but at the ways of graphical presentation of these data. It is recognized that the graphical presentation and interpretation of such data is essential for their understanding and evaluation. The main problem defined and solved in the Ph.D. thesis is to construct such a model of the input data that can be interpreted in the same way by the two software products used in the dissertation.

I appreciate that the given task has a difficult and abstract nature. This is related to knowledge of the information structure and processes of both products and their graphical interpretation capabilities.

## **2. Degree of knowledge of the state of the problem and academic interpretation of the literary material**

The analysis of the two software products Microsoft Power BI and Tableau in chapter 1 of the Ph.D. thesis allowed the doctoral student to make a comparative table about the characteristics of the two products. The conclusion made is that the two products are functionally similar. What the PhD student considers a limitation of both products is the ability to implement customized graphical interpretations. The personalized interpretation is not specified in terms of content and structure in the Ph.D. work, but is set as a requirement to expand the functional capabilities of the two software products. From the analysis of chapter 1, I consider that the student demonstrated knowledge of the way of operation and functional capabilities of the two software products.

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

The Ph.D. research uses a highly abstract domain to implement advanced graphical interpretation of data related to business management. The advanced graphical representation of data is motivated in the Ph.D. work to achieve customized graphical interpretations. A positive effect and benefit of this extension is not commented on, which would show the substantial need for such a customized graphical interpretation. The methodology chosen in the dissertation work is to make an input intermediate module that will generate the necessary content and format data for visualization to two different software products.

## **4. Scientific and practical achievements in the PhD thesis**

A scientific-applied contribution can be defined in the development of a common structure and format of input data, which format allows the creation of different graphical objects and interpretations. I appreciate as an applied contribution the application of customized graphic interpretations in insurance.

## **5. Correspondence with the minimal national legislative requirements**

Four scientific publications are included in the Ph.D. research. One of them is in an indexed journal in our country with SJR=0.14 and quantile Q4. The other 3 publications were made at the IConTech conference in Turkey, 2 issues, and one at the AMEE conference in Sozopol. According to the internal rules of Plovdiv University "Paisiy Hilendarski" they satisfy the requested threshold of points through categories A, G7 and G8.

## **6. Few assessments, recommendations and remarks**

As a recommendation, I express the opinion that the Ph.D. research should strongly define the scientific component of the dissertation work and not create the impression that the doctoral student has become familiar only with the way of working with two software products work.

## **7. Conclusion**

I give positive assessment about the scientific-applied and applied results in the PhD thesis of Veselina Rumenova Naneva . I found that the legislative requirements of the Law for academic growth in Bulgaria, the Regulations for its application are satisfied. This gives me the reason to recommend to the honorable Scientific Jury to award **Veselina Rumenova Naneva** the educational and scientific degree "Doctor" in professional field 4.6 "Informatics and computer sciences", scientific specialty "Informatics".

6.12.2023

Member of the jury:

Prof. D.Sc. Ph.D. Eng. Todor Stoilov