

REVIEW

from

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of a dissertation for awarding the educational and scientific degree" **doctor "**

by: field of higher education **3. Social, economic and legal sciences**
professional direction **3.8 Economy**
doctoral program **Economics and Management (Industry)**

Author: *Megi Zdravkova Dakova*

Topic : *"Interaction of higher education and the industrial enterprise in
The conditions of a competitive business environment"*

Research supervisor: *Assoc.prof. Dr. Angel Dimitrov – Plovdiv University "Paisii
Hilendarski"*

1. General description of the presented materials

I have been appointed as a member of the scientific jury by order No. RD-21-221/ 01.02.2023 of the Rector of Plovdiv University "Paisii Hilendarski" (PU), to ensure a procedure for the defense of a dissertation on the topic "Interaction of higher education and the industrial enterprise in the conditions of a competitive business environment" for the acquisition of the educational and scientific degree 'doctor' in field of higher education 3. Social, economic and legal sciences, professional direction 3.8 Economics, doctoral program Economics and Management (Industry).

The author of the dissertation is Megi Zdravkova Dakova – full-time doctoral student form of study at the department "Management and Quantitative Methods in Economics" with supervisor, Assoc.prof. Dr. Angel Dimitrov - Paisiy Hilendarski University of Plovdiv.

The set of paper materials presented by Megi Dakova is in accordance with Article 36 (1) of the Regulations for the Development of the Academic Staff of the PU, includes the following documents:

- *application form to the rector for opening a procedure;*
- *resume in European format;*
- *diploma for educational and qualification degree "master";*
- *protocol of the preliminary discussion in the department;*
- *abstract;*
- *declaration of originality and authenticity of the attached documents;*
- *certificate of compliance with the minimum national requirements;*
- *list of publications;*
- *dissertation work;*
- *copies of publications on the topic of the dissertation work;*
- *order for enrollment in doctoral studies;*
- *order for dismissal from doctoral studies;*

- *official note certifying participation in projects;*
- *a list of certificates obtained during the training period;*
- *set of paper documents from item 1 to item 10 – 3 pieces;*
- *set of documents from items 1, 2, 3, 4, 6, 7, 8 – 7 pieces;*

The doctoral student proposed 6 /six/ publications.

I accept that the doctoral student has submitted the materials required for the procedure for review, in accordance with the requirements of Art. 4. of the ZRASRB, art. 2 (2), art. 30. (3) PPZASRB, and art. 3 7. (1) PRASPU.

2. Brief biographical data of the PhD student

Doctoral student Megi Dakova obtained the Bachelor's degree in Biology and Chemistry from Paisii Hilendarski Polytechnic in 2013. In the period 2013-2015, she studied for a master's degree at the same university in "Human Resource Management" and acquired skills in "Team Building ", "Organizational Innovations", "Qualification and Retraining of Personnel", "Human resource management models' and others.

In the period 2015-2016, the doctoral student studied in the second master's program in "Marketing" at the PU "Paisii Hilendarski" , acquiring professional skills in "Brand Management", "Marketing Audit", "Marketing of Services", "International Markets and prices" etc.

In 2019, Megi Dakova was enrolled as a full-time doctoral student in the doctoral program "Economics and Management (Industry)", at the Department "Management and Quantitative Methods in the Economy", Faculty of Economic and Social Sciences of the PU "Paisii Hilendarski". Her main research interests as a PhD student focus on innovation in education and science, commercialization, technology transfer, researcher profile, education 4.0/5.0.

In addition to good theoretical training in the issues of educational innovations and human resources management, Megi Dakova exercises the acquired competences in the Ministry of Education and Science (MES), Sofia, as an intern - Expert at the "OPES" Directorate. From 4.09.2015 until now she holds the position of expert at NPD – administration of scientific projects, at PU "Paisii Hilendarski".

She participates in voluntary youth organizations as well as in national scientific conferences and seminars, which helps her develop good communication and social skills. As a member of the Student Council at PU "Paisii Hilendarski", she works in a multicultural environment, as well as in a team with people with different intellectual and cultural interests. Megi Dakova has extensive administrative experience, experience in working in a team, managing budgets and people, implementing projects with educational and cultural goals. She is a member of the Union of Scientists in Bulgaria - Plovdiv branch. Actively participates in the candidate student campaign of Plovdiv University "Paisii Hilendarski".

The doctoral student uses English at a very good level. Has excellent skills for working with Linux, OS MAC, Microsoft Office (Microsoft Word, Microsoft Excel, Microsoft PowerPoint , Microsoft Access), Internet, programs for simulations and statistical data processing, laboratory equipment.

Therefore, the doctoral student Megi Dakova has an excellent basis for in-depth research work in the field of strategic management and good practices for achieving competitive advantages in the interaction of industrial enterprises with higher education.

3. Actuality of the topic and appropriateness of the set goals and tasks

In terms of content, the dissertation deals with an extremely topical economic problem related to the study of the connections, relationships and forms of cooperation and innovation between higher education and industrial enterprises in Bulgaria.

Despite numerous scientific studies on this topic, basic issues, such as the interaction between higher education and industrial enterprises, innovation policies to build and establish an effective link between education, science and business, in order to achieve a sustainable economy need further study and analysis.

The bilateral benefits of effective interaction between higher education institutions and industrial enterprises are mainly expressed in increasing the quality of education; adapting knowledge to the requirements of dynamically changing business; successful career realization; provision of highly qualified staff for business purposes; generating new ideas with specific practical applicability; use of scientific achievements and innovations. The stated benefits create the competitive advantages of both higher education institutions and industrial enterprises.

In this context, the chosen topic treats important and current aspects of the interaction between the higher education institution and the industrial enterprises, proving the need to identify the factors and specific opportunities for the cooperation between the higher education institution and the business organizations.

Insufficient research in the field of the strategic development of the scientific research system in Bulgaria, including the research activity in higher education, the national framework for the development of higher education and business, the main strategies and policies for the development of R&D, gives rise to the need for scientific work with a similar focus.

It is for the above reasons that I claim that the topic of the dissertation has been successfully chosen. **It is extremely up-to-date, very original and has great practical significance.**

4. Knowing the problem

The dissertation was developed on the basis of an in-depth study of a large volume of theoretical and practical research. A total of **138 sources** are indicated in the list of used literary sources, of which 36 titles are in Bulgarian, 42 - in Latin and 60 Internet sources. The indicated literary sources are up-to-date and directly related to the topic of the dissertation work. The doctoral student has carried out a serious literature review and has made a synthesis of theoretical foundations of strategic management and of the relationship and interaction between education-science-business. The systematizations and summaries made show thoroughness and conscientious work with literary sources, skills in applying analytical and deductive techniques for processing a significant amount of information with various research methods. Correctly, all citations and comments of the author are underlined, which makes it easier to refer to the cited sources. The author's participation in the discussions on the researched problems is active and reflects skills to express one's own critical thinking and to formulate new conclusions and findings.

The presented dissertation is **205 pages** long. Structurally, it includes an introduction, 3 chapters, a conclusion, a bibliography and 6 appendices. The results were obtained using modern instrumentation and are illustrated with appropriately selected **39 figures** and **6 tables**, which is proof of the doctoral student's qualities as a very good researcher.

In the introduction of the dissertation, the main goal and **five logically related tasks** for its achievement are formulated. **The object** and **subject of the research** are correctly defined, as well as **the main thesis** of the author, according to which education, science and business can successfully cooperate, with the rational use of available resources based on trust and mutual benefits. To achieve the goal, **five research tasks** were solved. The object and subject of the study fully serve the purpose and tasks. The tasks are completed in the course of the research, and the formulated research thesis is proven. For the needs of the research, a basic scientific hypothesis was drawn up, namely that the effective partnership between education, science and business results in an increase in the quality of education, acceleration of the transfer of knowledge and technology, which is of significant benefit to business. The main hypothesis is decomposed into **three specific additional hypotheses** that complement and enrich it.

The realization of the goals and tasks of the research, as well as proving the hypothesis and sub-hypotheses, is achieved through a specially **developed methodology**. The dissertation contains specific results and empirical evidence, which objectively reflect the real achievements of the conducted scientific research regarding the effectiveness of the cooperation between higher education, science and business organizations.

Both the objective and the tasks are clearly stated and properly formulated, providing ample opportunities for conclusions and recommendations in the research and conclusion.

I give a very high assessment of the methodology used, as well as in relation to the raised hypotheses and the fulfillment of the tasks set to achieve the goal of the dissertation. The detailed literature review, the skillful systematization of the main theoretical concepts and views on the issue under consideration, as well as the carefully selected bibliography prove that the doctoral student knows the problem in depth.

5. Research methodology

The methodological toolkit is appropriately selected, in accordance with the set goals and objectives. The conducted research is based on a specially developed methodology in accordance with the object, the subject, the goal, the tasks and the hypothesis. When interpreting the data, the doctoral student is based on data from scientific publications and works of Bulgarian and foreign authors; information bulletins of international organizations, periodical and specialized scientific publications and Internet information sources, public data from national and international organizations: Ministry of Education and Science, National Statistical Institute, Europe 2020, Horizon 2020, OP NOIR, etc.

A combined research strategy was used, which included the application of both quantitative and qualitative methods. Of the field methods, a questionnaire survey was used. The empirical material is obtained from primary information from the author's empirical research, conducted among representatives directly involved in research and development activities at PU "Paisiy Hilendarski" and representatives of business organizations. The analysis of the obtained results was carried out with the application of the following basic general scientific methods: observation, comparison and analysis. The following statistical methods were applied: - χ^2 test for checking dependence between categorical features; - Kramer's coefficient (V) – for evaluating the degree of dependence established with χ^2 . The obtained data were processed with specialized social research software IBM SPSS, version 26.0 and Microsoft Excel 2019.

It can be summarized that the research methodology was developed on the basis of constructing research solutions, built by using modern quantitative methods, which allow reliable results to be obtained in the process of analysis .

6. Characterization and evaluation of the dissertation work

In **the first chapter**, the key concepts for the dissertation - university, science, industrial enterprise, etc. are clarified in a theoretical aspect. The need for interaction between the university and the industrial enterprise is substantiated. The relationship between business and higher education is analyzed based on the higher education, science and business model. As a result of a critical analysis of the opinions of leading authors on the subject, various modifications of the model, including society and the state, have been reported. The position is advocated that education contributes not only to the creation of highly qualified personnel, which can be successfully realized in the labor market, but is also a user of such personnel. In this context, the importance of universities as distributors of knowledge and generators of new ideas, many of which have practical implementation. The importance of science as a prerequisite for scientific progress and an intermediary between education and business is emphasized. It is proven that their active support leads to an accelerated development of education and R&D, and in this way, the "triangle" model is moved to the "spiral of knowledge" model. A major contribution of this chapter is the idea of considering innovation as a means of bringing higher education, science and their relationship with business closer together. It is logically summarized that the promotion of innovation activity and its results are of crucial importance for the commercialization of the final scientific product.

In the second chapter an analysis of the state of research and development in Bulgarian universities was carried out. The factors and forms of interaction between higher education institutions and industrial enterprises in Bulgaria have been revealed. The strategic guidelines for the development of higher education institutions in Bulgaria are indicated. Emphasis is placed on the statement that the implementation of international and national programs and strategies for the development of education in Bulgaria are directly related to the country's economy and have an impact on the labor market. An author's interpretation of the interaction between the university and business organizations was made. A thorough analysis of the scientific research system in Bulgaria was carried out, with the main emphasis being placed on the development of innovations and scientific research and development activities. The position is defended that "investment in education is a strategic investment", which is linked to the increase of the country's competitiveness . In this regard, the main priorities in the field of education and science leading to an increase in the quality of education, ensuring equal access, tying curricula to the real needs of business, attracting and retaining young specialists in science and increasing their qualifications are indicated . The strengths and weaknesses of the country's scientific research system are revealed. The main contribution of this chapter is the propositions by the author a conceptual model for establishing the process of interaction between higher education and industry. The model is presented in two parts: - Areas of interaction between HEIs and business, - Indicators for evaluating the results of cooperation between HEIs, business organizations and R&D.

In this chapter, in order to achieve the set goals and objectives, methods and techniques for working with primary and secondary data are presented in detail . The methodological framework of empirical research. includes four stages for registering, summarizing, processing and analyzing the received data.

In the third chapter they are presented and analyzed results of an empirical study, through a survey card aimed at the industrial sector and business organizations and through direct interviews with representatives who are directly involved in the research and development activity at PU "Paisiy Hilendarski". Basic conclusions are drawn that prove the formulated hypothesis and additional hypotheses. The main contribution of this chapter is a presented and authored web-based platform in the university space, developed for the needs of the Faculty of Economic and Social Sciences, and its possibilities are revealed. The platform provides direct contact between students, teachers and businesses, leading to curriculum updates, exchange of ideas, sharing of experience and more .

The conclusion of the dissertation summarizes the conclusions and findings of the results of the conducted research. They provide grounds for establishing that the main goal and tasks have been achieved, and the thesis has been confirmed.

The structure of the dissertation research is logically built and corresponds to the set goal and tasks. The work contains specific results and empirical evidence that objectively reflect the real achievements of the conducted scientific research.

7. Contributions and significance of the development for science and practice

Contributions can be divided into scientific and scientific-applied. **I accept the contributions as real, credible and proven in the course of the dissertation research.**

Scientific contributions include :

- On the basis of an extensive, critical literature review, a thorough theoretical analysis of the interaction between higher education, science and industrial enterprise has been made .
- Based on a number of normative and strategic documents, an analysis of the state of research and development in higher education in Bulgaria was made for the period 2017-2021 , with the strengths and weaknesses revealed.
- Based on theoretical justifications and proven empirical results, an author's conceptual model was developed for the development of cooperation between the higher education institution and business organizations in areas of interaction and evaluation indicators.

To scientific and applied include :

- The results obtained from the researched connections and dependencies between the University of Plovdiv "Paisiy Hilendarski", research centers and business organizations in the territory of the South Central Region can be used by the management of the university to formulate key management decisions for effective cooperation.
- Specific recommendations for increasing cooperation between education, science and business have been formulated.
- Good practices at the University have been systematized as a basis for establishing stable partnership relationships with other higher education institutions and business organizations.
- An author's web-based platform in the university space is presented, which enables direct contact between students and business organizations, and better communication for exchanging ideas, consulting, sharing experience.

I consider the achievements to be the personal work of the doctoral student. The conclusions and proposals in the dissertation present Megi Dakova as an erudite researcher with good theoretical training, with opportunities for creative generalizations and formulating solutions for practice.

8. Evaluation of publications on the dissertation work

6 publications in Bulgarian, dedicated to the dissertation work, are presented. All have been published in prestigious Bulgarian scientific publications. Of these, **four** publications are co-authored (with one co-author 2 issues and with two co-authors – 2 issues) and **two** – independent. They have a total volume of 50 pages and have become available to the scientific community in and outside Plovdiv University "Paisiy Hilendarski". The publications are proof of popularization of the results of the conducted research, as well as for the doctoral student's skills to work effectively in a team and to express her individual critical opinion. In terms of volume and quality, they correspond to the requirements for receiving the ESD "**doctor**".

I accept all publications as directly relevant to the dissertation work. They summarize and publish essential problems and results of research in the dissertation work.

9. Personal participation of the doctoral student

After my careful acquaintance with the scientific work, I consider that its development is a personal merit of the doctoral student. I give high marks for the personal participation of the doctoral student in the conducted dissertation research, and the formulated contributions and obtained results, I consider to be her personal merit.

10. Abstract

The presented abstract reflects objectively the structure and content of the dissertation work. It includes the main chapters, results of the research done, conclusions, conclusion, contributions and bibliography.

11. Critical remarks and recommendation

- **Main opinion** : quality thesis, excellently illustrated, clearly outlined contributions with potential for development.
- **Critical Notes**: I have no significant critical notes on the dissertation research.
- **Question 1**: What are the main reasons for the lack of will to develop academic entrepreneurship in Bulgarian universities?
- **Question 2**: According to the doctoral student, to what extent is technology transfer carried out and what is the effect of it in Bulgarian higher education institutions

12. Personal impressions

I know Megi Dakova and I watch live and indirectly (mostly through some of her publications and academic appearances) her personal, intellectual and, in particular, her scientific evolution. I can confirm with complete conviction that she is a thorough, creative, disciplined young scientist who possesses undeniable analytical abilities, emotional intelligence and effective teamwork skills.

She has proven herself and is known as an extremely correct, competent specialist who is distinguished by scientific dignity and professional modesty.

13. Recommendations for future use of dissertation contributions and results

- To initiate meetings, seminars, round tables with the participation of representatives of business and higher education in the city of Plovdiv, at which to promote the good practice of Plovdiv University to unite and ensure good cooperation between them, as well as the author's web-based platform in the university space.
- To publish the results from dissertation work in prestigious scientific impact journals - factor and impact rankin English.

CONCLUSION

The dissertation *contains scientific, scientific-applied and applied results, which represent an original contribution to science* and **meet all** the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for the Implementation of ZRASRB and the relevant Regulations of PU "Paisiy Hilendarski".

The dissertation shows that the doctoral student **Megi Zdravkova Dakova possesses** in-depth theoretical knowledge and professional skills in the scientific specialty of **Economics and Management (industry), demonstrating qualities and skills for independent conduct** of scientific research.

Due to the above, I confidently give my positive assessment of the conducted research presented by the above-reviewed dissertation work, abstract, achieved results and contributions, and *I offer to the honorables cientific jury Yes awarded the educational and scientific degree "doctor"* to **Maggie Zdravkova Dakova** in the field of higher education: **3. Social, economic and legal sciences, professional direction 3.8 "Economy" Doctoral Program Economics and Management (Industry).**

03/01/2023

Reviewer:

Prof. Dr. V. Nikolova -Alexieva