UNIVERSITY OF INSURANCE AND FINANCE

TO THE MEMBERS OF THE ACADEMIC JURY FOR THE PROCEDURE FOR AWARDING THE EDUCATIONAL AND SCIENTIFIC DEGREE OF "DOCTOR" IN THE DOCTORAL PROGRAMME: "ACCOUNTING, CONTROL AND ANALYSIS"

REVIEW

by Prof. Emilia Milanova, PhD. *Department of Accounting and Auditing, University of Insurance and Finance – Sofia, professional field 3.8. "Economics", scientific specialisation "Accounting, Control and Analysis of Economic Activity"*

Re: doctoral thesis for the award of the educational and scientific degree ***of "Doctor"*** in the field of higher education 3. Social, Economic and Legal Sciences, professional field 3.8. Economics, *doctoral programme "Accounting, Control and Analysis"*

Reason for submitting this review: participation as a member of the academic jury for the defence of the doctoral thesis in accordance with Order No. 269 of 8 July 2026 issued by the Rector of the University of Insurance and Finance (UIF), Corresponding Member Prof. Boris Velchev, Doctor of Law.

Author of the doctoral thesis : ***Veselin Pavlov Yolov***
Thesis title: ***"PROBLEMS OF FINANCIAL MANAGEMENT AND CONTROL IN HEALTHCARE FACILITIES DURING CRISES"***
Supervisor: ***Assoc. Prof. Diyana Bankova, PhD.***

This review has been prepared in accordance with the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria, the Regulations for its implementation and *the Regulations for the Admission and Training of PhD candidates at the University of Insurance and Finance.*

The PhD candidate has submitted all the necessary documents in accordance with Article 50(2) of the Regulations on the Admission and Training of PhD candidates at the University of Insurance and Finance.

1. Information about the PhD candidate

The author of the doctoral thesis, Veselin Pavlov Yolov, is a PhD candidate undertaking independent study at the Department of Accounting and Auditing at the University of Insurance and Finance and has been granted the right to defend his thesis by Order No. 268 of the Rector of the University of Insurance and Finance dated 8 July 2026. The PhD candidate graduated from *the Medical University of Sofia* in 2002, obtaining the qualification *of ""master"s degree*

in medicine (Physician)", and in 2011 *specialised in anaesthesiology and intensive care*. Between 2011 and 2014, following completion of postgraduate qualification courses for doctors, he obtained *a specialism in anaesthesiology and intensive care from the CEEA,* and in 2019 he acquired a new qualification: *a Master"s degree in "Public Health and Health Management"* from the Medical University of Sofia.

His academic career began in 2006 and, until 2013, Veselin Yolov was *a Research Fellow (Grade III)* at the Department of Anaesthesiology and Intensive Care at the Medical Institute of the Ministry of the Interior, and from 2013 to the present day, he has been Deputy Head of the Department of "Anaesthesiology and Intensive Care" at the Medical Institute of the Ministry of the Interior. Since 2007, he has been *an adjunct lecturer at the Academy of the Ministry of the Interior* and is a co-author of the textbook "First Aid: A Textbook for Ministry of the Interior Staff", published by the Academy of the Ministry of the Interior. Since 2003, he has been *a member of the Bulgarian Medical Association*, and since 2007, he has been *a member* of *the Bulgarian Society of Anaesthesiologists* and *the National Police Union.* For more than 15 years, Veselin Yolov has participated in international missions with the Border Police Directorate and the Migration Directorate of the Ministry of the Interior through the Frontex agency, for which he has received numerous honours and awards: a badge from the Medical Institute of the Ministry of the Interior (2015); a Third Class Medal from the Ministry of the Interior for his participation in a rescue mission following the earthquake in the Republic of Turkey and a Certificate of Commendation from the President of the Republic of Bulgaria, Mr Rumen Radev (2023); by Order of the Minister of the Interior, he has been repeatedly awarded for the performance of important official duties and for demonstrating professionalism, competence and appropriate conduct during the forced escort of high-risk migrants.

2. General description of the submitted doctoral thesis

The thesis comprises a total of 175 pages, with the main text spanning 143 pages; the presentation is structured into an introduction, three chapters, a conclusion, a bibliography and appendices (6 tables, 5 figures and 5 appendices). The bibliography comprises 124 sources in Bulgarian and 156 foreign sources, including 134 sources from websites.

The introduction sets out **the relevance** of the topic, which is linked to the need to improve the supervisory function of healthcare facilities and ensure an adequate response during a crisis, as well as to enhance the transparency of activities within medical units during crises. **The scope** of the study has been correctly defined – healthcare facilities providing inpatient care in Bulgaria, considered as specific economic entities, and their organisational and managerial relationships with the control and supervisory bodies in the sector under conditions of force majeure and global crises; and **the subject** of the study – the contemporary challenges to the system of financial management and control faced by those responsible for the overall management of healthcare facilities and the regulators of their activities.

In our view, **the aim** of the study is precisely defined – to analyse the theoretical and practical aspects of the control function in healthcare and, on the basis of the good practices examined, *to synthesise control methods and risk management models.* To achieve the aim of the thesis, **the** following research **objectives** have been set:

1. A theoretical study of the nature, scope and specific characteristics of the control function and supervisory mechanisms in the healthcare sector at national level, as well as the identification of opportunities for their improvement, which should be suitable for adaptation during crises.
2. To identify the current challenges facing healthcare institutions and regulatory bodies through a retrospective analysis of their responses during financial and health crises (using the COVID-19 pandemic as an example).
3. Assessing the applicability of contemporary management tools – the COSO model,

the Financial Management and Control System (FMCS), the international standard for business continuity ISO 22301, and digitalisation processes – as means of improving the control function in the healthcare sector.

4. Examining the methodological foundations of the financing and digitalisation of the health insurance system at the macro level with a view to formulating proposals for more sustainable financial management.

5. Conducting an empirical study to assess the actual implementation and effectiveness of digitalisation on management processes in healthcare facilities in the Republic of Bulgaria.

The thesis put forward in the dissertation is that *financial management and the control function in healthcare facilities must be continuously improved,* and *appropriate approaches* must be *applied during crises in order to maintain financial stability and ensure the uninterrupted flow of business processes.* In addition, legislative and organisational changes could be initiated in Bulgaria to introduce certain best practices applied in other countries (ISO standards).

Appropriate research **methods** have been used in the thesis, which are presented in the introduction: the historical approach, the analogy method, the systems approach, quantitative and qualitative content analysis, empirical analysis, comparison, analysis and synthesis.

The limitations of the study are also outlined: the information used is solely publicly available, with the main area of research being the financial management and control system; no internal documents from healthcare institutions, which are of a confidential nature, have been used; the empirical part of the thesis is limited to a representative sample of 30 healthcare institutions in Bulgaria for the year 2024, whose official annual activity reports are examined through the information published in the Commercial Register.

The individual sections of the thesis are structured in a logical sequence, namely:

The introduction highlights the relevance, aim, objectives, scope and subject matter. The research thesis is formulated. The research methods are outlined. The limitations are presented.

Chapter One is entitled " " ("The *Nature of Financing and Control in Healthcare Institutions"*). This chapter systematically presents the nature and significance of healthcare management in healthcare facilities; the financing of the health insurance system in the Republic of Bulgaria and the associated problems; and the forms of control and audit in healthcare.

As a result of this brief study, a well-founded conclusion has been drawn that modern healthcare management goes beyond the scope of traditional administrative activities, evolving into a digitally-based process of strategic management.

The following conclusions in Chapter One merit particular recognition:

- *Control in healthcare*: At national level, the control function of the main institutions in the healthcare sector in the Republic of Bulgaria – the Ministry of Health, the Executive Agency "Medical Supervision" and the Regional Health Inspectorates – has been systematised. The integrated COSO (Internal Control Framework) and COSO ERM (Enterprise Risk Management) models are defined as fundamental to financial management and control systems (FMCS);
- *The shift from reactive to preventive control*: The management of modern healthcare systems in a context of macroeconomic instability demonstrates the ineffectiveness of traditional models if they are based solely on reactive control. The stability and fiscal sustainability of healthcare institutions require a shift towards the concept of real-time risk identification and the implementation of preventative financial controls;
- *The need to institutionalise the "social audit" mechanism in the Bulgarian healthcare system*: a review of international best practices and experience from other countries

(the USA, France, the UK) shows that social auditing enables the appropriate and effective allocation of public fiscal resources based on the actual quality of medical services provided, rather than solely on volume;

- *Methodological distinction between the applicable audits in the healthcare sector:* financial audit, carried out in the cases specified by the Accounting Act; clinical and medical audits, focused specifically on assessing treatment outcomes and the quality of medical care; social audit, corporate social responsibility (CSR) audit and ESG audit (subject to the relevant conditions), which assess the hospital organisation's relationship with its internal and external environment;
- *An attempt at the practical implementation of the five components of the Internal Control Framework,* in accordance with the COSO framework at the micro-level within the hospital structure, through a more detailed definition of:

✓*"Control Environment" component:* the healthcare organisation's code of ethics, a clear organisational structure and delegation of authority; human resources and competence policy;

✓ *"Risk Management" component:* healthcare management develops an internal Risk Management Strategy which classifies and assesses threats in three main areas – financial and liquidity risks; medical and clinical risks; technological and information risks;

✓ *"Control Activities" component:* through the inclusion of a system for ex-ante compliance checks, a dual-signature system, and segregation of duties; procedures for access to assets and information;

✓ *"Information and Communication*" *component*: implementation requires full system integration of: internal information flow (micro-level); external information flow (macro-level); reporting under the FMCS;

✓ *"Monitoring" component:* ongoing monitoring by management; auditing by the third line of defence.

Chapter Two – "Economic and Management Issues in the Healthcare Sector during Crises" – analyses the impact of the global financial crisis on the healthcare sector, the challenges facing healthcare institutions, and the crisis caused by the COVID-19 pandemic. As a result of the retrospective, comparative and institutional analysis of the manifestations of the global financial crisis (2008) and the pandemic shock caused by the COVID-19 health crisis in the healthcare sector, the PhD candidate has formulated *the following key conclusions, which we view favourably:*

✓ Following the successful implementation of the National Health Information System (NHIS) and the provisions of Regulation No. H-6, the National Health Insurance Fund (NHIF) has evolved from a passive payer of medical services into an active digital regulator. The introduction of the electronic health record and real-time reporting of activities are completely transforming the nature of the supervisory function in the sector, turning it into *a proactive and preventive tool for managing public resources*;

✓ *The methodological role of crisis management*: a healthcare facility's crisis-response capacity is a direct function of pre-developed, simulated and integrated management protocols. Crisis management is presented as a permanent, dynamic element of the organisation's overall long-term strategy. Overcoming resource shortages requires a qualitatively new methodological framework and justifies the need to study and build upon the FMCS and the integrated controls of the COSO model.

Chapter 3 *– "Ways to improve financial management and control in healthcare facilities during crises"* – includes the following from the table of contents: ISO 22301:2019 (Security and resilience – Business continuity management systems – Requirements); the digitisation of processes in the healthcare sector and healthcare facilities, and the results of an empirical study – a sample and analysis of activity reports from healthcare facilities. The scientific

findings of the study in this chapter are summarised in *the following conclusions:*

- At national level, the Bulgarian Institute for Standardisation has officially adopted and adapted the BDS EN ISO 22301 standard, which *defines the requirements for business continuity management systems.* A structural analysis of this regulatory instrument enables the identification of the key components for the operational resilience of healthcare facilities in the event of force majeure. Business Impact Analysis (BIA) is presented as a management tool used to determine the Maximum Permissible Downtime (MTPD) and the Recovery Time Objective (RTO) for resources. *Risk assessment* is used to define pandemic and liquidity threats that have a negative impact on the stability of the hospital structure, based on the systematic grouping of risks into several strategic areas;
- *The need to institutionalise business continuity* (ISO 22301:2019), insofar as the implementation of the Standard within the FMCS architecture shifts the paradigm of crisis management in healthcare facilities and will transform management from a reactive, paper-based administrative tool into a dynamic strategy. By establishing measurable recovery indicators (RTO and RPO), it is possible to simultaneously neutralise operational threats and capitalise on emerging opportunities;
- *Digitalisation of healthcare in Bulgaria:* There is a significant disconnect between the macro- and micro-levels of digitalisation in the sector. Whilst at the macro level Bulgaria demonstrates significant technological progress with a composite e-health index of 87 per cent (exceeding the EU average), at the micro level (hospital management) this resource is used primarily for formal reporting of clinical pathways to the National Health Insurance Fund (NHIF). According to the author, the "survey" conducted reveals a complete lack of strategic information relating to digital risk management *in the official activity reports of the healthcare facilities studied*. In our view, the reason is that the appropriate information has not been selected; clearly, the annual activity reports of hospital organisations are not the place where information to support the study can be found;
- *Cybersecurity is presented as a systemic financial risk, rather than merely an IT issue:* the conclusion reached is that the problem in our country is no longer a lack of digital infrastructure (at the macro level), but rather its full operational utilisation and protection at the micro level (within the hospitals themselves). The country's technological progress is outpacing management and control practices, which necessitates the modernisation of the FMCS in this regard.

The conclusion sets out the doctoral candidate's main findings and assessments as a summary of the content of the three parts, which form the basis for identifying and formulating the most important achievements and contributions of the doctoral thesis. *The research thesis put forward in the doctoral thesis* – that the financial management and control system in healthcare institutions is a dynamic system that must be continuously improved – *is confirmed*. In addition, it is necessary to apply up-to-date approaches to crisis management in order to maintain financial stability in the healthcare sector.

Overall, the thesis is well written. It is well structured, with its constituent parts being well-formulated, complete and balanced. *We consider it to be the doctoral candidate's own original work. As a result of the verification carried out, we confirm that there is no plagiarism in the thesis under assessment.*

The literature and applicable legislation have been used in good faith and correctly.

3. Assessment of the scientific and applied scientific contributions

Having carefully reviewed the doctoral candidate's stated scientific and applied scientific contributions, I confirm the following:

1. *A multidisciplinary conceptual analysis and definition of the category "crisis" in the health sector.* A study has been carried out on the genesis of the concept of "crisis", tracing its evolution from a classical medical-psychological category to a specific managerial and economic category in healthcare. A crisis is defined as a sudden, critical shortage of financial, material and human resources, threatening the operational continuity and financial liquidity of healthcare facilities at the micro-level.
2. *The scientific understanding of risk management* in healthcare management *has* been *enriched*, with the concept of digitalisation successfully transformed from a technical specificity into an economic category for financial risk management through the COSO model and appropriate reforms to the Public Finance and Public Sector Accounting Act. The need to define a new, independent component within the economic theory of healthcare control – *"information-digital risk"* – has been scientifically substantiated as a critical factor for the continuity of business processes in crisis situations.
3. *A practical matrix for implementing the requirements of the international standard ISO 22301* in the day-to-day operations of healthcare facilities *has been examined*. By analysing the indicators for maximum permissible downtime (MTPD), target recovery time (RTO) and target recovery point (RPO), healthcare management is provided with a summarised algorithm for quantifying the financial losses resulting from software failures, and steps are defined for establishing crisis liquidity buffers.
4. *A model has been adapted to transform the classic COSO framework* (internal environment, risk as sessment, control activities, information and communication, monitoring) *to meet the specific needs of digital healthcare*. *A three-factor mathematical model for the quantitative measurement of risks* is integrated into the FMCS architecture, *using the Risk Priority Number* (RPN = S × O × D): S (Severity) – the impact of the consequences of the risk materialising on operational processes; O (Occurrence Probability) – the probability (frequency) of the risk event occurring within the context of an emergency; D (Detectability) – the probability of the threat being detected and identified in a timely manner by the organisation's existing control mechanisms). The model incorporates automated control activities (digital filters) in an environment where electronic document flow predominates, and its implementation is of crucial importance in the event of a crisis.
The contributions correspond to the content of the doctoral thesis and the results of the research.

4. Assessment of the publications related to the thesis

The PhD candidate has submitted three publications related to the thesis:

1. Yolov, V. (2024): Economic challenges facing the healthcare sector during the Covid-19 crisis, e-journal "Money and Culture", 3/2024, ISSN 2683-0965, pp. 37–54.
2. Yolov, V. (2025): Combating Fraud in Healthcare, Faculty of Police Bulletin No. 18, AMVR, Sofia, ISSN 2683-0957 (online) and ISSN 1312-6679 (print), pp. 55–63.
3. Yolov, V. (2025): Digital Investments for the Economic Resilience of Healthcare Facilities in Times of Crisis, Scientific Conference "Contemporary Challenges in the Economy, Security and the Social Sphere: Solutions and Prospects", 10 December 2025, Veliko Tarnovo, Published by the "Institute for Knowledge, Science and Innovation", ISBN 978-619-7668-30-8, pp. 216–232.

The publications presented include key sections of the doctoral thesis and contain significant findings from the research conducted, which provides grounds for considering that the thesis has been sufficiently validated and disseminated through academic publication.

5. Assessment of the abstract

An abstract is attached to the doctoral thesis, which meets the requirements. It is 50 pages in length and accurately and fully reflects the content of the doctoral thesis.

6. Assessment of compliance with the minimum national requirements: upon reviewing the submitted Report on the doctoral candidate's fulfilment of the minimum national requirements for the award of the educational and scientific degree of "Doctor" in the professional field 3.8. "Economics", we have established that the minimum national requirements have been met – a total of 80 points.

7. Critical comments and recommendations

During the preliminary discussion, many recommendations were made, the majority of which have been appropriately addressed by the PhD candidate. I have no further critical remarks beyond those already raised during the preliminary review.

I recommend that Veselin Yolov continue his research into the challenges facing the Financial Management and Control System in relation to digital transformation, artificial intelligence and the sustainability of the public sector.

Question for the PhD student: Please carry out *a comparative analysis* of the current risk management model in healthcare facilities – as a component of the FMCS – and the three-factor mathematical model proposed by the PhD student for the quantitative measurement of risks using the Risk Priority Number (RPN = S × O × D). Can we measure the effect of implementing the new model, whilst bearing in mind the "cost-benefit" balance?

8. Conclusion

On the basis of the above regarding the doctoral thesis ***"Problems of Financial Management and Control in Healthcare Institutions during Crises"*** by ***Veselin Pavlov Yolov***, we consider that ***all the requirements*** of the Law on the Development of Academic Staff in the Republic of Bulgaria and the Regulations for its implementation have been ***met***. The materials presented and the findings of the doctoral thesis **fully *comply*** with the specific requirements of the Regulations on the Admission and Training of PhD candidates at *the University of Insurance and Finance.*

The doctoral candidate has presented a completed piece of research, thereby convincingly demonstrating the ability to systematise unresolved problems and scientific theses within the specific field of study; to critically interpret the issues under discussion; and to successfully conduct independent research. The doctoral thesis contains scientific and applied scientific results which can be assessed as *original in both theoretical and practical terms.*

In view of all that has been set out so far, **I am convinced** that the research carried out in the thesis **merits a positive evaluation**, and ***I propose that the distinguished academic jury award the educational and scientific degree of "Doctor"*** to **Veselin Pavlov Yolov** in Field of Higher Education 3. Social, Economic and Legal Sciences; Professional field 3.8. Economics; *doctoral programme "Accounting, Control and Analysis".*

7 September 2026 / Sofia

Signature: ……

(Prof. E. Milanova, PhD)