OPINION

By Assoc. Prof. Irina Petkova Kazandzhieva-Yordanova, PhD, Department of Finance, UNWE

regarding dissertation for awarding the educational and scientific degree **Ph.D**

in the field of higher education 3. Social, Economic and Legal Sciences

Professional Field 3.8. Economics

Author: Kiril Georgiev Anatchkov

Title: *„Impact of Financial Technologies on the Credit Risk Management in Banks"*

1. General description of Submitted Materials

By order № 135 as of 15/04/2025 issued by the Rector of VUZF University, Corresponding Member Prof. Boris Velchev, DSc, Ph.D., I have been appointed as a member of the scientific committee responsible for ensuring the procedure for the defense of the dissertation titled *„Impact of Financial Technologies on the Credit Risk Management in Banks" for awarding scientific and educational degree Ph.D. in the field of Higher education* 3. Social, Economic and Legal Sciences, Professional field 3.8. Economics. The author of the dissertation thesis is Kiril Georgiev Anatchkov – a PhD candidate in individual study mode at VUZF University, under the scientific supervision of Prof. Daniela Bobeva, Ph.D.

The documents submitted by the Ph.D candidate include the following: an application for admission to public defense, a report on the fulfillment of the minimum national requirements for obtaining the educational and scientific degree Ph.D in professional field 3.8. Economics, a declaration of originality and authenticity of the dissertation thesis, an abstract in Bulgarian and English, the dissertation thesis itself, and four publications related to the topic of the dissertation.

2. Short Personal Data of the Candidate

Kiril Georgiev Anatchkov holds a Master degree in International Banking and Financial Markets from the University of National and World Economy (UNWE). He has participated in financial conferences, he has got a scholarship from Burov Foundation, and has been recognized

with the Young Economist award. In 2023, he won First Place in the "Talent of the Year" competition in the category "Economics, Business, and Banking" organized by Postbank. During his studies, he took part in several internship programs.

His professional career began at Raiffeisenbank, where he worked as a Business Analyst in the Corporate Clients Division. Later, he joined Maxima Bulgaria as a Business Analyst, and he currently holds the position of Head of the Business Analysis Department at the same company.

3. Characteristics of the Dissertation

The dissertation has a total volume of 213 pages and it is structured in the following way: an introduction, three chapters, a conclusion, and a list of references consisting of 149 sources in both Bulgarian and English. In my opinion, the sources cited in the bibliography have been properly used.

The **dissertation thesis** is that financial technologies are becoming a significant factor in the effective management of credit risk in banks. By integrating modern financial technologies, banks enhance their processes, which leads to credit risk reduction.

The dissertation thesis is tested by several hypothesis:

Hypothesis 1: The application of financial technologies enables banks to improve their credit risk management processes and, accordingly, to reduce the volume of non-performing loans.

Hypothesis 2: Financial technologies have the potential to significantly transform credit risk management in banks through process automation, advanced data analysis, and innovative models.

Hypothesis 3: The improper application of financial technologies poses serious risks to banks, which may lead to increased risk levels.

The subject and the tasks of the dissertation have been clearly formulated.

The following objectives of the dissertation have been defined: to determine the application of financial technologies in credit risk management and the possibilities for its improvement through them; to investigate the factors influencing the share of non-performing loans in leading banks in Bulgaria; and to examine the relationship between the application of financial technologies and ESG criteria.

The subject of the research is credit risk management and the opportunities provided by modern financial technologies for its improvement.

The dissertation thesis is proved through the following steps: the theoretical framework for credit risk management and banking regulation has been examined; the possibilities offered by financial technologies to improve credit risk management have been analyzed, as the challenges associated with them are also outlined. Econometric models have been developed to assess the micro- and macroeconomic factors influencing the share of non-performing loans. Furthermore, the

relationship between financial technologies and the implementation of ESG criteria has been investigated.

The first chapter of the dissertation, titled "Conceptual Framework of Credit Risk Management and Financial Technologies" aims to outline the theoretical foundation for understanding the role of financial technologies in credit risk management in the banking sector. The evolution of approaches to credit risk management is described, and lessons from major banking crises are analyzed. Financial technologies are defined, along with the opportunities they create for banks, such as improved process automation, more accurate data analysis, and the development of more precise credit models. The benefits of applying fintech solutions in credit approval and management processes are examined, while the author also highlights the existing risks, including the potential for systemic errors, ethical challenges, and data protection concerns.

The second chapter "Application of Financial Technologies in Banks' Credit Risk Management" explores the potential for utilizing financial technologies in the management of credit risk. It provides a detailed description of how artificial intelligence, blockchain technologies, cloud computing, and big data can be applied in credit risk management, including comparisons with traditional statistical models. The chapter concludes that combining conventional methods with financial technologies is crucial for more effective credit risk management in banks. The Ph.D. candidate emphasizes that the implementation of financial technologies in credit risk management should be guided by a strategic approach on the part of banks, with attention paid to the regulatory framework and the real preparedness of banks.

The third chapter "Application of Financial Technologies in Banks' Credit Risk Management" presents two types of econometric models. The first consists of individual econometric models for each of the eight largest banks in Bulgaria, using microeconomic data for the period 2015–2022. The second model is based on macroeconomic data, assessing the impact of key macroeconomic indicators on non-performing loans in Bulgaria, also covering the same period. The results for the eight banks indicate a common conclusion: the implementation of financial technologies - such as IT improvements and process automation - leads to a reduction in the share of non-performing loans. Furthermore, an increase in the share of loans in the banking portfolio and in the number of employees generally raises credit risk if it is not accompanied by technological support.

The macroeconomic analysis leads to the conclusion that there is a positive relationship between the unemployment rate and the share of non-performing loans—i.e. as unemployment increases, the share of non-performing loans also rises. In contrast, there is a negative relationship between the average wage level and the share of non-performing loans—i.e. as wages increase, the

share of non-performing loans decreases. These relationships have been proven to be statistically significant and logically justified.

This chapter also examines the relationship between the application of financial technologies and the achievement of ESG requirements, concluding that financial technologies can serve as a tool for enhancing the monitoring and management of ESG factors through improved measurement, accountability, and analysis.

4. Contributions and Significance of the Research for Science and Practice

The methodology used in the dissertation includes theoretical analysis, comparative analysis, descriptive analysis, statistical analysis, and econometric modeling for the empirical identification and evaluation of the impact of various factors affecting the share of non-performing loans.

The scientific contributions of the dissertation include: the development of a classification of the main groups of financial technologies used in the banking sector - artificial intelligence, blockchain, cloud computing, and big data; the presentation of a model for the combined use of fintech and statistical methods aimed at optimizing credit risk management; the analysis of the role of financial technologies in achieving ESG objectives within the banking sector; the examination of potential risks associated with the implementation of financial technologies in credit risk assessment.

A significant contribution in the research is the development of econometric models and the identification of macroeconomic factors that have the most substantial impact on the share of non-performing loans—namely, the unemployment rate and the average wage level. Another important contribution is the investigation of the effect of the implementation of financial technologies in credit risk management through an individual bank-level study for the period 2015–2022, examining the impact of increased IT expenditures on the share of non-performing loans.

The research results have practical applications, such as the formulation of specific recommendations for the implementation of financial technologies in credit risk management, aimed at increasing process efficiency and reducing the share of non-performing loans.

5. Assessment of the Publications Related to the Dissertation

The Ph.D. candidate has presented four publications, three of which, in my opinion, are directly related to the topic of the dissertation. One of the publications appeared in the UNWE journal *Economic and Social Alternatives*, while the others are included in the proceedings of scientific conferences. All publications were written independently by the doctoral candidate.

The presented articles examine the consequences of the COVID-19 pandemic on the Bulgarian economy and the banking sector, examining the macroeconomic effects, the impact on specific sectors, the labor market, inflation, and the banking system. They also address the use of artificial intelligence by banks to improve credit risk management, the enhancement of credit risk management through financial technologies, and the potential effects on the banking system from the country's accession to the Eurozone.

6. Assessment of Compliance with the Minimum National Requirements

Based on the submitted Reference for the Fulfillment of the Minimum National Requirements for the acquisition of the Educational and Scientific Degree Ph.D in the professional field 3.8. Economics by the Ph.D candidate Kiril Anatchkov, I firmly believe that the requirements have been met. I have found no evidence of plagiarism in the dissertation.

7. Dissertation Abstract

The abstract corresponds to the content presented in the dissertation.

8. Critical Remarks and Recommendations

The dissertation contains scientific contributions and original research. No examples of plagiarism have been detected. The cited sources in the bibliography have been properly used.

I would like to make the following suggestions for improvement of the dissertation: a language and stylistic revision of the dissertation should be carried out, and the conclusions for each chapter should be presented immediately after the respective chapter rather than grouped together in the final conclusion, as it the current case.

A more detailed analysis of the results obtained from the econometric studies should be conducted. For example, an examination of the reasons behind the differences in the achieved results for various dependent and independent variables could be included. Additionally, I would recommend working with more recent data, although the choice of the end date was made due to the merger between Raiffeisen Bank and United Bulgarian Bank (UBB)—combining the data could probably complicate and potentially call into question the validity of the results.

CONCLUSION

The dissertation contains scientific, scientific-applied, and applied results that constitute an original contribution to the field of science and comply with all requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB) and the Regulations for the Implementation of LDASRB. The presented materials and dissertation results fully meet the

specific requirements of the Regulations for Admission and Training of Ph.D. Students at the Higher School of Insurance and Finance.

The dissertation demonstrates that the candidate, Kiril Georgiev Anachkov, possesses in-depth theoretical knowledge and professional skills in the professional field 3.8. Economics, while also demonstrating the qualities and abilities necessary for conducting independent scientific research.

Based on the above, I confidently give my positive evaluation of the conducted research presented in the reviewed dissertation, abstract, achieved results, and contributions, and I recommend that the esteemed academic jury award the educational and scientific degree Ph.D to Kiril Georgiev Anatchkov in the field of higher education 3. Social, Economic, and Legal Sciences; Professional Field 3.8. Economics.

23/05/2025 г.

Reviewer:

Assoc. Prof. Irina Kazandzhieva, Ph.D