

## ABSTRACT

**Actuality.** The relevance of the topic in the current conditions is due, first of all, to the riskiness of the commercial bank's loan portfolio in its formation, as well as the need for timely and complete assessment of the status of both individual and all loans. Successful lending leads to a profit for banks, which enhances the credibility and sustainability of the lending institution. Also, a bank loan has the important advantage of being able to flexibly meet the borrower's changing needs for funds. Thus, both banks and borrowers are interested in the development of the bank lending system.

**The purpose of the research** is impulse system and pay-offs, we take the decision for the effective management of the loan portfolio.

To achieve this goal, you must perform the following tasks:

- to study theoretical and methodological bases of credit portfolio quality assessment;
- review the main approaches;
- to carry out modeling;
- analyze the results of modeling and evaluation to make a reasonable choice of the best model;
- implement software implementation of the decision support system using the selected model;
- to carry out research of efficiency of the developed information technology.

**The object of the research** is analysis of the loan portfolio of the bank.

**The subject of the research** is to analyze the loan portfolio of the bank and the model of effective management.

**Methods of research** are machine learning methods based on the stochastic gradient descent algorithm.

**The scientific novelty.** A decision support system for efficient credit portfolio management based on machine learning algorithms and capable of classifying loans

based on a large number of important loan and customer parameters is established, which significantly improves the quality of analysis and efficiency of credit management.

The developed system is universal and can be used by any bank and allows the user to choose by what criteria to classify.

**The practical significance of the obtained results** is determined by the fact that the proposed algorithm is really effective for the classification of bank loans, and the developed system significantly improves the quality of credit portfolio analysis.

**Publications.** The following materials were published in the direction of the study:

1) Романовский Ю. А. Информационная система поддержки принятия решений в управлении кредитной задолженностью // Романовский Ю. А., Селин Ю.Н./ Материали за XV международна научна практична конференция, Образованието и науката на XXI век - 2019 , 15 - 22 октомври 2019 г. Закон. Икономики. Публичната администрация. Философия. : София. « Бял ГРАД-БГ » - с.6-9.

2) Романовский Ю. А. Анализ кредитного портфеля банка // Романовский Ю. А., Селин Ю.Н./ Materiały XV Międzynarodowej naukowo-praktycznej konferencji , «Perspektywiczne opracowania są nauką i technikami - 2019» , 07 – 15 listopada 2019 roku po sekcjach: Ekonomiczne nauki.- с.34-38.

**Keywords:** CREDIT PORTFOLIO, MACHINE LEARNING, CREDIT DEBT, DECISION MAKING SYSTEMS, STOCHASTIC GRADIENT.