DIGITAL TECHNOLOGIES IN BANKING: APPLICATIONS FOR INVESTMENT PROJECTS

CZU: [005.53+005.915]:004.8
DOI: https://doi.org/10.53486/csc2025.25

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Abstract. Digitalization of investment lending and project financing processes is an important factor for increasing economic potential on a global scale. The specifics of the mechanisms of the investment projects consist of extraordinarily financing structures, the scale of projects and its demand by economic entities. The prospects for the development of new technologies, including digitalization, are considered in order to increase investment financing in the global market. Methods of comparative analysis, expert assessments and a systematic approach were applied in the research. It is noted that, with the development of the economy, using digital platform and technologies, it is possible to ensure more transparent and timely communication and structuring of transactions between participants in project financing, investment lending, including application of econometric models and artificial intelligence.

Keywords: digitalization, investment lending, project financing, credit risk management.

JEL Classification: G20, G21, O33

INTRODUCTION

Digitalization is a transformation aimed to optimize business processes, increase company's productivity and improve customer relationship. The targets of digitalization are: product (or service) improvement: its quality, attractiveness, usability; automatization of production and other internal processes of the company; simplification of internal and external communications.

With the introduction of the digital economy, new mechanisms using platform and digital technologies are emerging. In this regard, stimulating innovation and creating favorable business conditions are important factors for increasing economic potential on a global scale, including through the digitalization of investment processes (Matkovskaya 22).

One of the main challenges that can be solved with the help of digital services is to increase the efficiency and acceleration of processing loan applications. Currently, the process of project financing transactions can take a long time and requires significant costs for analyzing documents and data. However, using digital technologies and data analytics, it is possible to automate most of the process and speed up decision-making. In addition, digital services can help ensure the security and confidentiality of data and protect against fraud. They can also help to simplify the management of a project finance transaction. Using digital tools, you can track the progress of a project and respond to changes in the situation in a timely manner.

Digitalization processes can provide more transparent and timely communication between project finance participants in syndicated lending transactions, speed up the decision-making process and reduce the time spent on resolving controversial issues.

The purpose of this scientific study is to analyze the opportunities of applying digitalization processes in financing investment projects by banks and reducing the overall level of credit risk on transactions. Taking into account the analysis, the main tasks are the possibilities of blockchain and decentralized finance mechanisms, the introduction of modern mathematical methods into credit risk assessment processes in order to increase efficiency when working with investment projects.

MAIN CONTENT

1. Materials and Methods

Nowadays, blockchain is gaining relevance for online users as the implementation option for a distributed leger network. Used in the blockchain distributes registries technology allows to store, process and update media. It's being adopted for transfer of valuables as property rights, securities, debt, obligations, property assets, cryptocurrencies. Large banks and some governments have implemented blockchain technology. However, their goal is related to the acceleration of information processing, low cost of services, and system security: fewer failures and the absence of a main server as an attractive target for hackers (Tapscott et al. 48).

Blockchain and smart contracts have created a new paradigm of financial cooperation without intermediaries. Decentralized finance is a combination of specialized services based on smart contracts and decentralized applications (Dapps) that make up a financial ecosystem and provide users with access to a variety of financial services such as investing, lending, trading on exchanges, etc. (Volodina et al. 32).

These financial services are provided without restrictions to everyone for 24 hours a day due to the active development of blockchain technology in general and, in particular, Ethereum platform. The Ethereum was originally created not so much as a payment system, but as a base for the affordable implementation of blockchain technology in third-party projects. Not only new startups project to express interest to that platform but also large developers, including Banks: Grupo Santander, UBS, Deutsche Bank, Credit Agricole, BNP Paribas, Intesa Sanpaolo, as well as payment systems (Visa, Mastercard, PayPal), auditing companies (Deloitte, Ernst & Young).

The development of credit risk management in recent years has been driven by the use of modern mathematical methods: probabilistic and statistical modeling, mathematical programming, game theory, etc. When developing credit risk assessment models, banks typically use econometric models based on linear, regression, and multidimensional discriminant analysis to obtain estimates of the likelihood of events such as the probability of default. In addition, banks use neural models as computer algorithms that simulate the work of the human brain, while using the same data as in econometric models. In optimized models based on mathematical forecasting methods, it is possible to minimize the lender's errors in terms of forming the terms of the loan product. At the same time, expert models are also used that simulate the risk assessment process carried out by experienced analysts when making credit decisions based on a set of logical rules. Hybrid models using statistical data and simulation can be based on causal relationships. The sequence of model construction as a whole is based on identifying the relationship between variables in the choice of methods for estimating input parameters (David et al. 131).

2. Results and Discussion

The use of digital services can significantly improve the organization of project financing, increase its efficiency and speed up the decision-making process. Automatization platform can provide the following opportunities:

- Processing of loan applications: the borrower submits an application through an online form and downloads the documentation in electronic form for the project. The application will be automatically analyzed using machine learning algorithms and data analytics, while simultaneously verifying them with data from tax authorities and credit bureaus. In addition, the financial model will be analyzed for the correctness of filling out formulas, comparing model data, including the CAPEX of the project with average market data. That will reduce the time for processing applications, standardize the financial model and calculations based on it, and speed up the decision-making process for granting a loan.
- Credit risk assessment: The platform has used machine learning algorithms and uploaded data analytics, including a PD model to assess a borrower's credit risk. Based on the analysis of various factors, such as project risk assessment, financial state, cash flow, the platform will issue recommendations on the loan and its terms, such as the need to extend the financing period, issue additional collateral, increase the loan rate, and calculate the reserve for the transaction.
- Project monitoring: The platform will enable surveyors, shareholders, and creditors to monitor project execution in real time. The platform will host all the necessary documents related to the project, including contracts, plans and reports on the performance of work, as monitor the fulfillment of projected financial indicators. Thanks to this, participants will be able to easily monitor the implementation of the project and respond in a timely manner to changes in the situation.

If a syndicated lending scheme is involved in the process, all information will be promptly available to investors and ensure real-time coordination processes.

Today, views across risk/return outcomes and asset allocation are table stakes. Institutions want to unlock value and scale, while uncovering insights across horizontal functions, strategies, geographies and everything in between. BlackRock Aladdin is a platform that uses artificial intelligence and machine learning to analyze financial data and provide real–time risk management solutions. Aladdin® is a tech platform that unifies the investment management process through a common data language. Aladdin® Risk combines sophisticated risk analytics with quality-controlled data and highly scalable processing capabilities, allowing clients to know what they own across their portfolio, identify opportunities and make more informed decisions (Alladin® by BlackRock 16.02.2025).

Alladin technology based on:

- Stable Foundation: Built by and for the industry—with stability as the prime directive to achieve target operating models and scale.
- Open Innovation: Empowering unique outcomes from our API-first approach across shared services and data.
- Built for Change: Ensuring ongoing investment in both R&D and input from experienced technologists, with a rigorous release schedule/

Table 1. Stakes of Alladin in U.S banks, 2023

Name	Sector	Asset Class	Market Value	Weight (%)	Notional Value
CITIGROUP INC	Financials	Equity	USD 41,075,376	7.22	41,075,376.15
WELLS FARGO	Financials	Equity	USD 41,028,988	7.21	41,028,988.35
BANK OF AMERICA CORP	Financials	Equity	USD 38,441,497	6.75	38,441,496.50
US BANCORP	Financials	Equity	USD 36,690,721	6.45	36,690,720.75
JPMORGAN CHASE & CO	Financials	Equity	USD 36,418,760	6.40	36,418,759.75
FIRST REPUBLIC BANK	Financials	Equity	USD 24,916,970	4.38	24,916,970.05
TRUIST FINANCIAL CORP	Financials	Equity	USD 23,549,511	4.14	23,549,510.75
M&T BANK CORP	Financials	Equity	USD 23,511,562	4.13	23,511,562.34
PNC FINANCIAL SERVICES GROUP INC	Financials	Equity	USD 22,810,575	4.01	22,810,575.20
FIFTH THIRD BANCORP	Financials	Equity	USD 21,023,966	3.69	21,023,965.83

Source: *"Stocks & Futures Trading Magazine, 2023"*

The company is so influential that its assets under management are larger than the GDP of almost every country in the world. With over nine trillion dollars Blackrock services and holdings include several Sovereign Wealth Funds, Central Banks, Retirement accounts for everyday average folk in the form of Pension Funds, Fortune 500 companies and millions of individual investors.

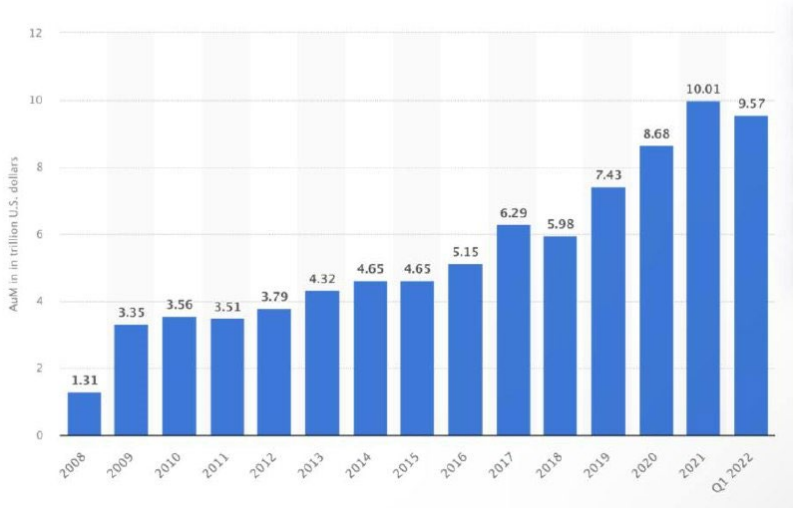

Figure 1. Trends in Assets under management Growth.
Source: *Statista, 2022.*

CONCLUSIONS

It is noted that, with the development of the economy, using digital platform and technologies, it is possible to ensure more transparent and timely communication and structuring of transactions between participants in project financing, investment lending, including application of econometric models and artificial intelligence.

According to forecasts of the research company Autonomous Next, by 2030, the use of artificial intelligence technologies will allow banks all around the world to reduce costs of $1 billions, which is 22% more profitable (Morris 16.02.2025). In view of the foregoing, the use of digitalization in the implementation of investment financing is an additional incentive for development, innovation and macroeconomic growth.

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