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FINANCE IN DIGITAL ECONOMY

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The article examines the impact of the digital currency on the Belarussian economy. In addition, it examines the advantages, disadvantages and potential risks of implementation.

***Keywords*:** digital currency financial system; structure of financial system; digital economy; digital finance; cybersecurity.

ФИНАНСЫ В ЦИФРОВОЙ ЭКОНОМИКЕ

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В статье рассматривается влияние цифровой валюты на экономику Беларуси. Кроме того, рассматриваются преимущества, недостатки и потенциальные риски внедрения.

Ключевые слова: цифровая валютная финансовая система, структура финансовой системы, цифровая экономика, цифровые финансы, кибербезопасность.

As it's widely acknowledged, a fully digital economy integrates digital technologies into various industries, spanning from agriculture to pharmaceuticals, thereby enhancing economic performance. Businesses across diverse sectors are embracing digitalization to maximize productivity, leveraging the increasing speed, power, and affordability of digital technologies, particularly in digital financial services delivery. Projections suggest that the digital economy could contribute up to 25% of the global GDP by 2025. Digital finance, particularly efficient digital payment systems, has proven crucial in countries with thriving digital economies. This study employed a descriptive research methodology, utilizing secondary data from CBN publications and employing multiple linear regression analysis. The findings highlight the significant role of digital finance in the development of a digital economy.

Although there isn't a universally accepted definition of Digital Finance, there's a general agreement that it encompasses a wide array of products, services, technologies, and infrastructure facilitating individuals' and companies' access to online payments, savings, and credit facilities. This not only reduces the cost of such services but also promotes financial inclusion. To establish a conceptual framework for this research, I will examine several definitions of digital finance found in literature. Shen & Huang (2016), in their article titled "Introduction to the special issue: Internet finance in China," describe Internet finance, often termed as "digital finance" or "Fintech," as a novel business model utilizing the Internet and information communication technologies to conduct various financial activities, including third-party payments, online lending, fund sales, crowdfunding, online insurance, and banking. They highlight how the Internet can lower transaction costs, reduce information asymmetry, enhance risk-based pricing and management efficiency, and expand the range of feasible transactions. On the other hand, Ozili (2018) defines digital finance as encompassing all products, services, technologies, and infrastructure enabling individuals and companies to access online payments, savings, and credit facilities without the necessity of visiting bank branches or directly dealing with financial service providers. Furthermore, with the latest technological advancements, digital finance includes financial technology (fintech), which offers diverse investment products like digital gold, stocks, financial derivatives, and commodities.

Digital Financial Services (DFS), facilitated by fintech, hold the promise of reducing costs, enhancing speed, security, and transparency, and offering more personalized financial solutions to underserved populations on a large scale. DFS exhibit low marginal costs and increased transparency, addressing both the supply- side obstacles to financial access, such as high operational expenses and limited competition, as well as the demand-side challenges, including unpredictable and modest incomes among the poor, lack of identification, trust, formality, and geographical constraints. Mobile money has capitalized on widespread mobile phone adoption in many developing nations to introduce an initial wave of DFS.

Haider (2018) characterized it as "Innovative financial technologies to support livelihoods and economic outcomes," investigating how innovative financial technologies can bolster people's livelihoods. The study explored how access to digital technologies, particularly mobile phones, internet connectivity, and biometric authentication, expands the range of financial services available, including online banking, mobile phone banking, and digital credit for the unbanked. Digital financial services offer greater convenience and affordability compared to traditional banking services, enabling low-income and impoverished individuals in developing nations to participate in formal

financial systems, earn financial returns, and manage their consumption more effectively.

Durai and Stella (2019), in their paper "Digital Finance and Its Impact on Financial Inclusion," defined digital finance as financial services delivered through mobile phones, personal computers, the internet, or cards linked to a reliable digital payment system. They highlighted the potential of digital finance to provide affordable, convenient, and secure banking services, granting customers greater control over their finances, facilitating quick decision-making, and enabling seamless payments. This encompasses Internet banking, mobile banking, mobile wallets (apps), credit cards, and debit cards.

According to Manyika et al. (2016), as outlined in the McKinsey Report, Digital Finance refers to financial services delivered via mobile phones, the internet, or cards. It serves as an overarching term encompassing a wide range of new financial products, financial businesses, finance-related software, and innovative forms of customer communication and interaction provided by fintech companies and innovative financial service providers.

In the realm of digital finance, vigilance regarding cybersecurity is paramount due to the sensitive nature of financial data and transactions.

Phishing Attacks. Cybercriminals send fraudulent emails or messages posing as legitimate financial institutions to deceive users into divulging sensitive information like login credentials or personal data.

Data Breaches: Hackers target financial institutions to gain unauthorized access to customer data such as account numbers, credit card details, or social security numbers, which can then be sold on the dark web.

Malware. Malicious software like viruses, ransomware, or keyloggers can infect computers or mobile devices, enabling hackers to steal financial information or control banking transactions.

Man-in-the-Middle (MitM) Attacks. Attackers intercept communication between users and financial institutions to eavesdrop on sensitive information or alter transaction details, leading to unauthorized fund transfers or account compromises.

Insider Threats. Employees or contractors with access to sensitive financial systems may misuse their privileges to steal data, manipulate transactions, or introduce vulnerabilities intentionally or unintentionally.

Distributed Denial of Service (DDoS) Attacks. Attackers flood financial websites or servers with high volumes of traffic, disrupting services and preventing legitimate users from accessing their accounts or conducting transactions.

Social Engineering. Cybercriminals manipulate individuals through psychological tactics to trick them into divulging confidential information or performing actions that compromise security, such as transferring funds to

fraudulent accounts.

Blockchain Vulnerabilities. While blockchain technology is relatively secure, vulnerabilities in smart contracts, wallets, or decentralized finance (DeFi) platforms can be exploited by attackers to steal cryptocurrencies or disrupt financial transactions.

To mitigate these threats, digital finance companies implement robust cybersecurity measures such as encryption, multi-factor authentication, intrusion detection systems, regular security audits, employee training, and collaboration with law enforcement agencies and cybersecurity experts.

The idea of introducing national digital currencies emerged somewhere in the tenth years of the XXI century and was a consequence of the then boom of cryptocurrencies based on blockchain technologies. The growing popularity of bitcoin and other cryptocurrencies put financial analysts of central banks before the task of seizing the initiative from private issuers and creating an instrument similar to cryptocurrencies, but centrally issued by the state, rather than a distributed decentralized private network. The most active proponents of this idea have been the central banks of China, Russia, Japan, the Netherlands and Ecuador. Currently, Ecuador, China, Senegal, Singapore, Tunisia, Saudi Arabia, Tunisia, United Arab Emirates, Singapore, Malaysia, South Africa, Thailand, South Korea, Russia and several small countries in the Caribbean region use their national digital currencies to varying degrees. Many large economically developed and developing countries have CBDCs in the development and research phase. These include the USA, India, Brazil, many European countries, Japan, Canada, Australia, Indonesia, Kazakhstan and others. In total, about 40 countries are testing their CBDCs, and 114 are still studying the experience of other countries in this area.

In Belarus, a strategic project "Determining the Possibility and Feasibility of Introducing the Digital Belarusian Ruble" was launched in September 2021. Such a need has arisen in the context of unprecedented changes caused by the rapid and widespread spread of digital financial technologies. Today, the Belarusian system faces new challenges, such as the need to meet the changing demands of consumers of banking services, to improve the reliability, speed, and convenience of payments, to increase the share of non-cash settlements in the economy, and to reduce the use of cash in circulation.

One of the important points when introducing CBDC is the degree of technological readiness of the information and communication infrastructure, the availability of access to home and mobile Internet, and the degree of use of remote financial services.

There is a trend toward an increase in the number of individual users due to wireless broadband Internet access, which speaks of the widespread use of mobile devices, and this, in turn, gives access to mobile digital technologies.

On the one hand, the widespread use of the digital infrastructure of banks makes it possible to apply the experience of the Russian Federation, in which the CBDC infrastructure is closely connected with existing digital tools; in this case, you can save on conducting independent research and development.

According to S. Osmolovets, "The introduction of a digital Belarusian ruble would contribute to the improvement of payments and settlements with the Russian Federation... The digital Belarusian ruble may have a compatible technological platform with the digital Russian ruble, which will provide additional advantages in the integration of financial markets". On the other hand, at the moment the Belarusian banking system contains a small number of banks with a predominant state share of ownership, which control a significant part of the country's financial sector.

As part of the above project, the National Bank developed conceptual approaches to the implementation of the digital Belarusian ruble. A hybrid model has been identified as the target functional model of the Central Bank, which provides for the availability of the Central Bank for individuals and legal entities with the participation of banks (financial organizations), which use their infrastructure to serve clients. In this regard, the hybrid model corresponds to the characteristics of a two-tier banking system.

The CBR platform is expected to operate on the basis of distributed ledger technology, which will allow for the full implementation of decentralized finance functionality for the national currency and integration of the digital Belarusian ruble platform with digital currency platforms of central banks of partner countries. It is planned to implement smart contracts, offline payments, and anonymous transactions on the CBR platform.

As part of the research initiated by the National Bank, a demo version of the CBR platform was created, on which conceptual approaches to the project implementation were tested. The results obtained indicate the prospects for further development of the CBR platform.

In December 2023, the joint proposals of the National Bank and the Government on the implementation of the project aimed at introducing the digital Belarusian ruble were approved by the President of the Republic of Belarus.

On January 31, 2024, the Board of the National Bank approved the Concept of the Digital Belarusian Ruble, which contains:

– Detailed information on the main approaches to the implementation of the CBR;

– CBR Roadmap, reflecting the types and sequence of work to be performed to implement this project in 2024-2026.

In the medium term, a number of large-scale and complex works on the implementation of the CBR are to be carried out. The issuance of the national

digital currency should be carried out simultaneously with measures to stabilize inflation rates, reduce the level of dollarization of the national monetary system, and increase the stability of the Belarusian ruble, therefore, experience in the conduct of monetary policy in other countries should be used in developing the CBDC tools.

To summarize the study of international experience, let us outline the advantages of introducing CBDC in the Republic of Belarus:

– significant increase in the transparency of payments and reduction of risks in combating money laundering and terrorist financing;
– low tariffs for settlements;
– improving financial accessibility for the population;
– increasing the safety, reliability and stability of the banking system through more modern means of control and monitoring of funds;
– increasing the technological effectiveness of settlement instruments;
– ensuring the attractiveness of national means of payment in comparison with neighboring countries;
– stimulating innovative solutions in the financial sector and increasing competition;
– acquisition by the National Bank of new tools that can be effectively used in monetary policy and ensuring financial stability;
– ensuring independence from international payment systems and resisting sanctions pressure on the financial system, subject to close interaction with partner countries.
– no attachment to a single bank,
– lowering the entry threshold for new entrants to the market,
– expansion of business opportunities through the use of smart contracts,
– reducing the need for intraday liquidity and lowering the cost of cross-border payments;
– use of the digital Belarusian ruble in social support of the population, simplification of cross-border payments.

The disadvantages of implementing this concept include:

– high cost of development and construction of architecture, optimization or restructuring of the existing financial infrastructure;
– growth of potential risks and threats not identified at the stage of development and implementation of the concept;
– insufficient selectivity of effective and sustainable implementation practices, which increases the risk of one-sided dependence on CBDC standards adopted in the Russian Federation.

Thus, CBDCs can significantly impact the functioning of both national and global economies. Since most sovereign digital currencies are still in the research or development stage, varying in design, functions and goals

depending on the country, many of the benefits and risks associated with CBDC are still theoretical and untested in practice. Therefore, the possible implementation by the National Bank of CBDC carries with it both many potential risks of various types, as well as many obvious and not entirely obvious advantages. International experience in the development and implementation of CBDC will certainly be useful to the National Bank in developing the architecture of the national digital currency and will reduce the costs of designing the concept of the digital Belarusian ruble.

The objective of this study is to evaluate the role of digital finance in driving the digital economy. The digital economy has facilitated rapid revenue growth for numerous firms, spurred the transition from tangible flows of physical goods to intangible flows of data and information, enabled cross-border connectivity for firms in developing economies, and catalyzed a surge in cross-border data flows. Digital economy firms have disrupted traditional players across various sectors, leveraging platform-centered business models that have proven remarkably successful.

These innovations have the potential to diversify the economy, generate more employment opportunities, and enhance the standard of living for its citizens. E-Government initiatives will spawn new businesses, while effective taxation of digital platforms will augment government revenue. Furthermore, increased utilization of existing internet infrastructure, particularly in rural areas, and the implementation of an effective national broadband policy will harmonize broadband connectivity throughout the country. Indeed, nurturing the digital sector has the potential to usher in a new era of economic growth and development.

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