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Prospects for the Incorporation of the Digital Ruble into Russia's Monetary Turnover: Attributes and Principles for Developing a Trusted Digital Environment

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ABSTRACT

The rapid nature of the modernization of monetary turnover, accompanied by geopolitical risks against the background of post-pandemic economic recovery and the regionalization process, no longer just arouses the discursive interest of society, but becomes an indispensable condition of the new reality. The process of money turnover transformation by introducing digital currencies into circulation in the wave of digitalization among world powers lagging behind the evolving environment of the cryptocurrency industry is developing into a process of formalization of metaverses and penetrates deeper into the socio-economic reality. The **problem** of the Russian practice of developing the payment environment consists in its catching-up character, caused by the spontaneous formation of the digital society, resulting in the expansion of the scope of alternative finance outside the legal field. The **purpose** of the paper is to determine the inherent attributes of the digital trusted environment necessary to ensure digital ruble turnover, based on an empirical study of society's perceptions about the prospects for using the digital form of the national monetary unit by representatives of various generations. We used systematization, grouping, comparative and content analysis, surveys, and the quota **method** to achieve the paper's purpose. The survey involved 35,327 residents from different regions. As a **result**, the authors revealed the low level of readiness of society for the introduction of the digital ruble as a substitute for cash and cryptocurrency. The paper focuses on the need for an integrated approach to the disclosure of the digital ruble's value and benefits, which contributes to its successful launch and promotion in the market. The **results** of the research highlight the importance of correspondence in the digital ruble category "digital currencies", and also the impossibility of making incorrect decisions in the transformation of money turnover, which leads to the growth of risks of digital inequality, the clash of interests of certain groups of the population in the prevailing behavioral patterns in the form of a cautious attitude to digital finance with insufficient financial literacy.

Keywords: alternative finance; money turnover; cryptocurrency; digital currency; digital environment; digital ruble; trusted digital space; CBDC

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INTRODUCTION

The issues of sustainable development have significantly intensified in the modern world as a result of the pandemic's tragic repercussions and the impact of geopolitical elements of forced catastrophe. It is known that, in the context of the economy's digital revolution, society need a fundamentally different approach to its solution. This is supported by the continued popularization of countless inventions, which are characterized by spontaneous, "unobtrusive" advertising and widespread user coverage against the backdrop of a lack of actual regulatory oversight, control, and assurances by institutions of power. One such example is the so-called "ideal digital money", which evolved from public cryptocurrency to formal financial assets.

By early 2023, only Nigeria (eNaira based on DLT Hyperledger Fabric) and Cambodia (Bakong based on Hyperledger Iroha) had explicitly stated that they would realize the potential of cryptocurrency technology by making publicly available, but limited and specialized information on the underlying innovations.

The unprecedented statements of the Bank of Russia and the People's Bank of China on the Central bank digital currency (CBDC), available to the public for evaluation and analysis of pilot projects, are reflected in the report of the Bank of Russia for public consultations "Digital Ruble" concepts of digital ruble, "White Book" of the new digital currency of China E-CNY, the key provisions of which are duplicated in many aspects.

At the moment, Russia, such as the other countries that announced the active phase of CBDC pilot testing in 2021, has not specified the type of technological solutions used as the foundation of the platform being developed, making it impossible to check compliance with the developed monetary innovation criteria "digital currencies".

Moreover, indirect signs of announced projects¹ indicate that the Chinese government is promoting the creation of a national digital payment space based on distributed ledger technology (DLT). At the same time, reviews of the Russian blockchain platform "Masterchain",² and the analysis of open data on the pilot project of the Bank of Russia in terms of regulatory activity on the digital circulation of monetary value suggest the inability of the created digital ruble, integrated into the national payment system, realize the innovative nature and fundamental properties of digital assets, and translate into reality the potential of alternative finance. Skepticism intensifies both the insufficient informative potential of "digitization" of money turnover at the piloting stage of innovation, and the closed character of the tested project "Digital Ruble" at a time of increasing populist skepticism of new developments. These statements are based on the results of the conducted sociological research, the perspective of which allows to reveal the peculiarities of perception of CBDC by representatives of different generations, fundamentally different philosophy and worldview, transforming under the influence of the digital economy.

MATERIALS AND METHODS

A survey of residents of various age groups in various regions of the Russian Federation was conducted to assess the population's perception of the prospects for the introduction of the digital ruble into money circulation and to identify the problems of

¹ Red Date Technology launched the decentralized Spartan Network (an alternative non-cryptocurrency infrastructure that combines publicly available forks of Ethereum, Cosmos and Polygon Edge blockchains) and introduces a cross-border system for transferring stakeblocoins and CBDC Universal Digital Payments Network, claiming an initial common standard for a new generation of digital assets.

² Cnews. URL: https://www.cnews.ru/news/top/2019-07-03_sberbank_raskritikoval_ofitsialnyj_rossijskij (accessed on 22.12.2022).

its launch as a key direction of the digital transformation of the monetary sphere.³

The survey was conducted from August 2021 to December 2022. In the period for the study, 35 327 questionnaires were analyzed, and the condition of one response from one respondent was established. The basic selection of respondents was a targeted quota sample. The final set of respondents was formed with the following parameters: gender; territorial integrity; age.

The conditional grouping of respondents into four age categories allowed for the identification of generational differences in perception regarding technological digital developments⁴: The number of baby boomer generation respondents (born between 1946 and 1964) was 9.93% of the total number of respondents, generation X (born between 1965 and 1980) — 24.57%, millennial (Y, born between 1981 and 1996) — 30.35%, zoomers (Z, born between 1997 and 2012) — 35.14%.

Online questionnaire was divided into groups with consistent communication. If the primary question was answered negatively, the logically agreed on paragraphs would become inactive because the answers were evident and not required for the analysis. No additional explanations were given to respondents before the survey.

RESULTS OF THE STUDY

The results of analyzing a representative sample of surveys lead to several conclusions.

³ Based on the representativeness, interrelationship and interrelationship of qualitative characteristics and features of social objects, as well as the legitimacy of conclusions about the whole on the basis of the study of its part, provided that this part is a micromodel of the whole, the sample was designed so that the distribution of the elements in the sample was the same as the distribution in the whole.

⁴ Generational theory conventionally delineates age boundaries, providing an opportunity to understand typical characteristics of categories of people living at different stages of historical, political, economic and technological development. Different speed and characteristics of development of science and technology, modes of data transmission and trends are adding differences and misunderstandings between them. PROSTUDIO. URL: <https://prostudio.ru/journal/generation-x-y-z/> (accessed on 08.02.2023).

As a result, the boundary between the “reality” (material) and the virtual world is being obliterated from generation to generation, resulting in the originality of modern society’s perspective of the unpredictable expansion of the digital transformation of money turnover.

The baby boomer generation, on average, is an inactive Internet user (this fact confirms the senior generation’s low share of “digitalized” clients in the banking sector, despite credit organizations’ stated growth of the segment, which includes both active and passive⁵ users). Respondents of this group pointed to superficial knowledge in the field of cryptocurrencies / stablecoins, lack of any value of digital ruble and understanding of the advisability of its development. Over 94% of respondents indicated that restrictive epidemiological measures and political tensions contributed to an increase in their share of cash payments. They are also not ready to give up the use of cash as a means of saving neither in favor of non-cash money (deposits) nor, especially, the “unknown” digital ruble. In the course of further analysis, the answers of representatives of the baby boomer’s generation due to their resistance to radical innovation of money turnover are excluded.

Members of the X, Y and Z generations, totaling 31 819 people, are recognized as active Internet users, which confirms the relatively even distribution of survey participants’ responses. All respondents confirmed their awareness of the existence of alternative finance and the intention of the Bank of Russia to issue a digital ruble. For 76% of them, the concepts of “cryptocurrency”, “stablecoin/altcoin” and “CBDC” are not identical, respectively, 24%, including mainly the older generation, have some knowledge about them. In the total number of authentic “crypto-enthusiasts” who left a footprint in the

⁵ Users who do not work independently in the personal account of “online bank”: the client comes to the bank personally, the consultant logs in and performs all operations on behalf of the client in his presence in order to achieve the targets.

Table

Structure of the Respondents Sample who Confirmed Practical Experience in the Digital Field of Alternative Finance

Generation	Number of respondents participation in the survey	Number of respondents who confirmed practical experience in the cryptocurrency industry		
		people	share in the total number of digital users, percent	share in the respondents of the appropriate generation, percent (column 3 / column 2)
1	2	3	4	5
X	8681	776	9.59	8.94
Y	10 723	4166	51.49	38.85
Z	12 415	3149	38.92	25.36
Total	31 819	8091	100.00	–

Source: Compiled by the authors.

digital world (8091 people), members of the X generation have little practical experience⁶ outside the legal field (Table 1).

Analysis of the answers shows that millennials (Y) have the most active behavior in the digital space — more than 50% of them are participants in the digital transformation. At the same time, 38.85% of them received practical experience in the cryptocurrency industry. This is not accidental: the rapid backstage digitization of finance initiated by the representatives of the Y generation, most of them at the time interested in the possibility of quickly speculative income. At the same time, the prolonged period of “crypto winter” did not have a negative impact on the popularity of the crypto industry and the dynamism of the digital space. In the new realities, the millennials and zoomers unanimously recognize the value of philosophy and the boundless potential of innovation, the primary importance of which is also emphasized by respondents

in the questionnaire responses (Fig. 1). It should be noted that the Z-generation has not experienced a period of rapid earnings on exchange rates and are not mass clients of banks; they have no experience with financial crises, which either leads to underestimation or revaluation of risk, despite the fact that their fourth part (25.36%) has already joined the informal digital environment.

Another important trend confirmed by the results of the study — is the public’s sustained interest in a high-tech optional metaverse with a built-in mechanism for the circulation of digital currencies, allowing to eliminate the function of intermediation in the transmission of information, but giving the right of full access and control to the personal account in which all information about the owner of personal data is stored.

According to the interviewees, the digital platform model on the scale of industrial operation, preserving the ideology of DLT with built-in derivatives of centralization and regulation as the basis of the new economic order is quite acceptable for the formation of the Russian metaverse, which could become a reality in the foreseeable

⁶ As part of the study of practical work experience, we consider activity of any type in the DLT system: from opening a crypto wallet to actions with units of alternative finance / smart contracts.

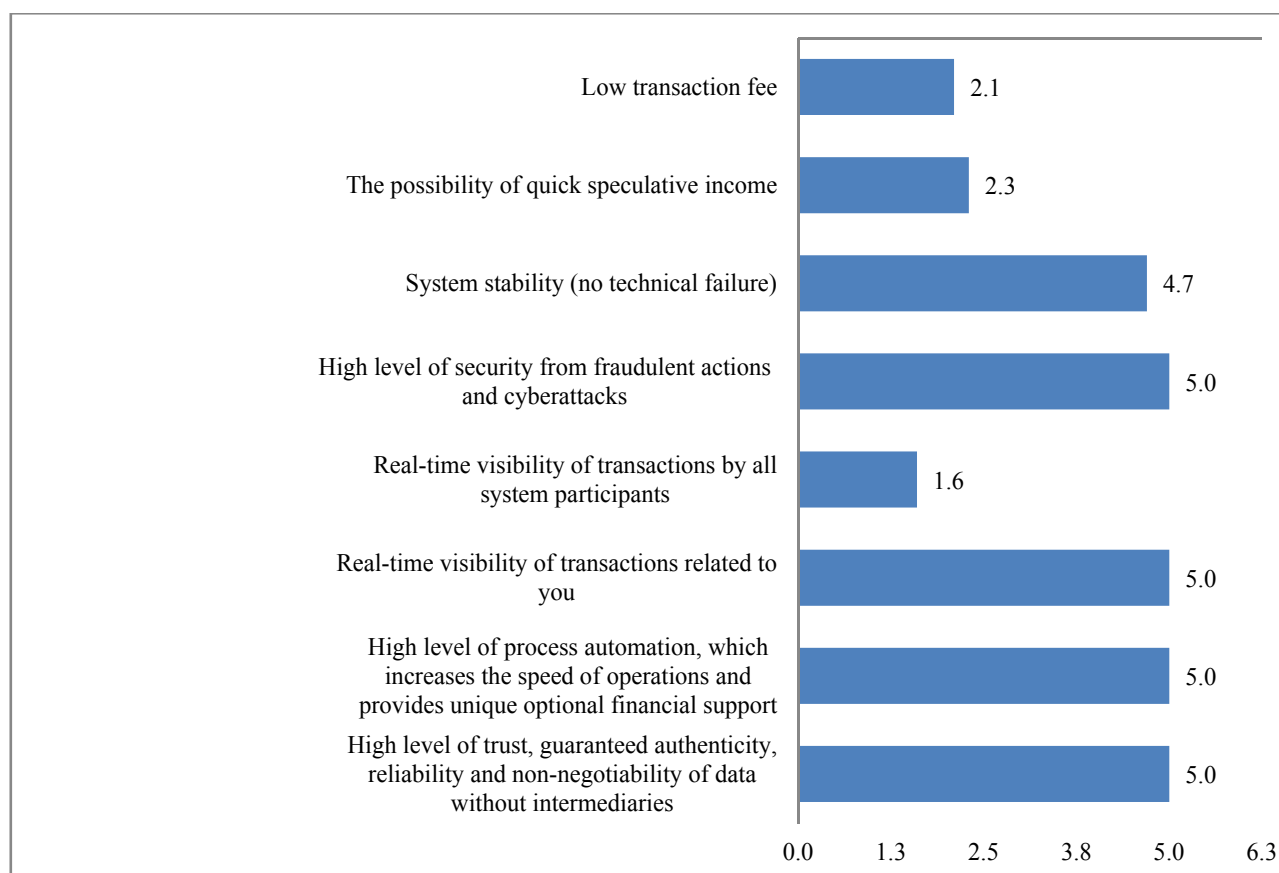


Fig. 1. Attractiveness of Trusted Digital Environment Attributes, Average Score

Source: Author's calculations.

Note: The average values of the received responses were assessed on a five-point Likert scale: the lowest significant attribute was assessed at 1 point; the highest one was assessed at 5 points. The answer fields were active in all options for answering other questions except for awareness of alternative finances.

future. At the same time, respondents agreed on the impossibility of its compliance on the basis of the classical banking infrastructure, so the digital ruble circulation platform, in their opinion, most likely will not embody the attributes of the trusted digital environment and will not provide a legitimate solution to the opposition to alternative finance (Fig. 2).

Along with this, respondents observe the main reason for deliberate evasion of constructive digital transformation of money turnover in the reluctance of representatives of the upper and middle stratification levels of society in terms of attitude to power to disclose their personal financial flow (in acceptable openness for tracking), property position, and business

interests, which is underpinned, inter alia, by contradictory legislative activities⁷ and has only increased the mistrust for new digital development.

The results of the research allowed to predict the absence of spontaneous demand for the use of digital ruble by users. However, in case of extreme necessity⁸ or significant economic attractiveness due to the implementation of loyalty programs Russians will not reject this opportunity, adhering to the principle of "single use" (Fig. 3).

⁷ Technology Law Source WEB. URL: <http://publication.pravo.gov.ru/Document/View/0001202302060005?index=0&rangeSize=1> (accessed on 12.02.2023).

⁸ Introduction of digital ruble into monetary circulation is compulsory, comparable with the introduction of the card payment system MIR.

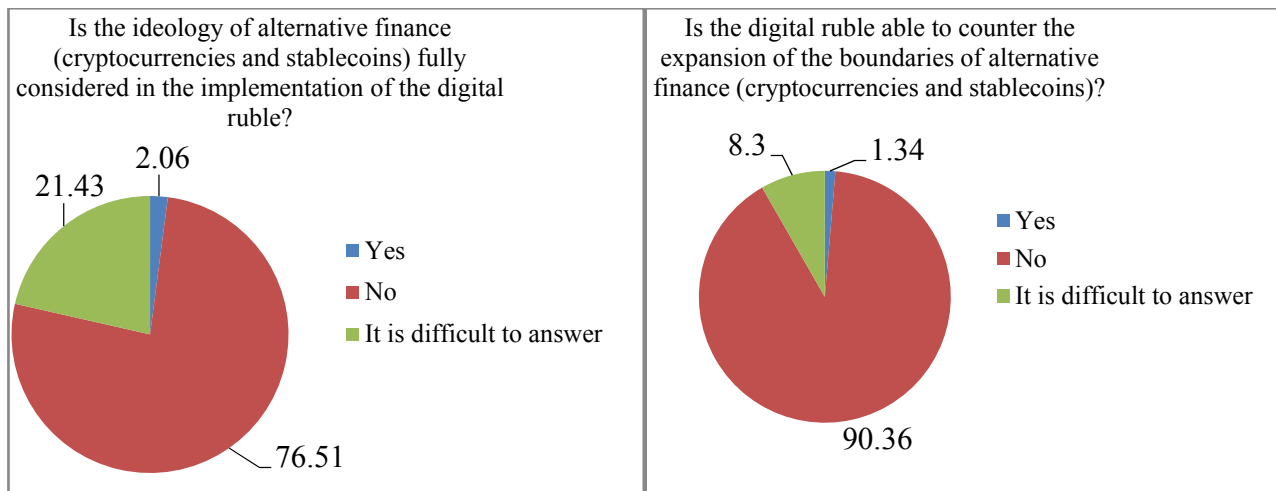


Fig. 2. Compliance of the New Form of the Ruble with the Digital Currency Required by the Information Society: Respondents Perception, % of the Total Number of Respondents

Source: Author's calculations.

* It is assumed that the digital ruble is seamlessly embedded in the general system of non-cash transfers, but the declared seamless payment space is not provided due to the lack of a bundle in transferring from one form to another "digital ruble – cash ruble".

Of course, respondents consider the digital ruble as a feasible alternative to non-cash money, but not cash and DeFi cash surrogates, as the Bank of Russia expects (Fig. 4).

Unpreparedness of Russians to recognize the role of digital ruble and the prevailing rejection of classic forms of money (all indicated only partial substitution) is by bias about the authorities' intention to control the financial flows of the population to the detriment of its interests.

Thus, under the influence of spontaneous negative public opinion, potential users do not understand the unique benefits of the digital ruble (provided it is actually implemented as a variety of "ideal digital currencies" or no such in an alternative development of events) may lead to a serious problem that Nigeria once faced with the introduction of the eNaira digital platform. The Central Bank launched eNaira as a national digital currency, presenting it as an improved analogue of Bitcoin and focusing on the benefits of the secondary type: low transaction costs, high transfer speed and universal availability. However, Nigerians did not meet the expected demand for CBDC, ignored the proposed innovation, which became a symbol of distrust

to the ruling elite due to non-compliance with user requirements focused on the slogan "honest currency on DLT".

DISCUSSION OF PROSPECTS FOR DIGITALIZATION OF MONEY TURNOVER

In Russia, the current monetary innovation is focused mainly on the generation NEXT (millennials and zoomers), but the older generation, which is difficult to perceive innovative solutions, ignores the fundamental differences between "digital currencies" and "non-cash / electronic money" [1, p. 60, 61].

As a result, the population associatively perceives this monetary innovation as a limitation of human rights by controlling its behavior through the digitization of the money turnover, in other words, as a measure to deprive the DeFi environment of universal observability and accessibility of information. It is difficult to disagree with this, as the authorities in the media claim the advantages of the digital ruble, beneficial only to the state: the ability to directly track all cash flows, addresses by coloring accounting units, making instant blocking of accounts, the implementation of the automatic element of deflation / inflation,

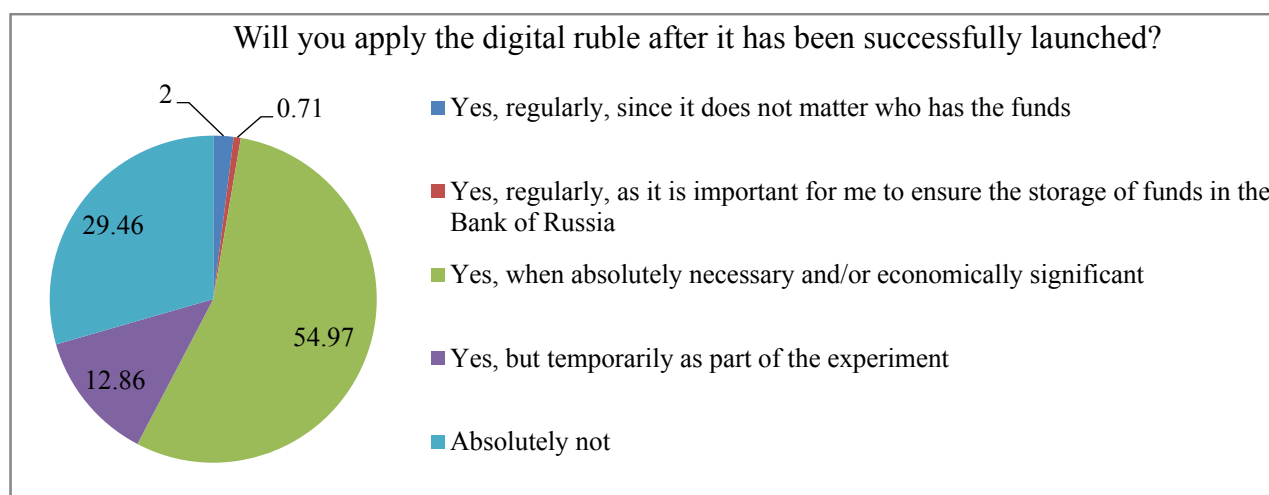


Fig. 3. The Degree of Readiness of Russian Society to Accept the Digital Ruble of the Bank of Russia, % of the Total Number of Respondents from Generations X, Y, Z

Source: Author's calculations.

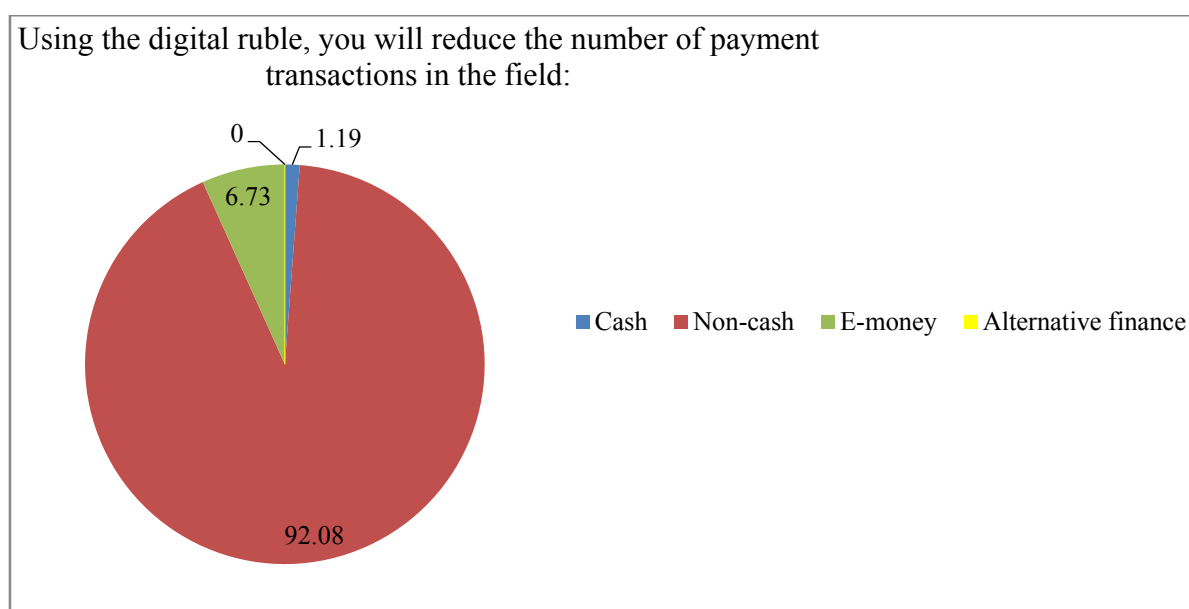


Fig. 4. Respondents' Perception of the Role of the Digital Ruble as an Alternative Method of Settlement and Payment Transactions, % of the Total Number of Respondents From Generations X, Y, Z

Source: Author's calculations.

etc. At the same time, the weighty arguments in favor of public acceptance of the digital ruble are not disclosed, which is unacceptable in the context of the perception of the monetary innovation by different generations⁹ who

⁹ Members of generations X, Y, Z make positive decisions in the event of an accurate understanding of the benefits of the product and the personal benefits of its use. Generation Y is distinguished by the fact that their environment from childhood listens to their demands and desires, so it is important that the proposed innovation fully meet their

make up the economically active population. As a result, all State measures may not be effective in achieving the goal of digital transformation, namely — task of development and sustainability of a national payment system capable of resisting the expanding informal

expectations. As part of the research presented above only they have given a response-consent to the temporary use of digital ruble in the experiment, which demonstrates their willingness to dialogue.

sector of alternative finance. One of the reasons, in our opinion, is not quite correctly formulated the main goal of the project “Digital Ruble”, implemented in a certain rush: synchronization of the financial system of the country with the modern flow of digitalization. Ideally, the result of the project is not intended to be an impulse for synchronization, but a restructuring of the world order, lifestyle and behavior of the population as stakeholders of innovations in the financial market. So, regulators, understanding the hopelessness of the situation, are faced with a dilemma: maintaining the usual way or building a digital economy that requires inevitable radical changes in the fundamental, organizational, and regulatory fundamentals of the monetary system. All kinds of attempts to introduce the digital ruble, capable of competing with the sidelines alternative finance, and at the same time to maintain the traditional monetary system, just formed a negative public opinion. In today’s realities, neither the investment experience [2], nor the financial literacy [3], nor the social factors [4, 5] that determine the commitment to alternative finance are key in the event of a distortion of the digital transformation of money turnover. That component of which is the multifarious chain of changes in the many dimensions of social reality in the complex, which will ultimately result in a conflict of interest between generations as a result of the imbalance of the basic foundations of digital literacy in theory and practice.

Since the transformation of the monetary system is unavoidable, we should talk about the evident benefits of the digital ruble as a digital currency. According to O.T. Evtukh, “the genesis of money indicates that it is a socio-economic tool of information exchange” [6, p. 44]. The information function does not duplicate recognized monetary functions [7–12].

Of course, the digital currency as a driving force and promising weapon of transformational warfare is intended to trigger

“not only fundamental changes in the world order and the world economy, but also radical changes in social attitudes and beliefs that will eventually pave the way for radical new policies and social contract provisions” [13].

At the same time, describing a monetary innovation that does not include a complex of features of the digital environment, “digital currency” is irrational, as this interpretation permits mutual substitution of concepts “digital currencies”, “electronic money”, “non-cash money”. The conclusion about non-conformity of digital ruble category “digital currencies” is explained not only by categorical differences, but also attempts to deflect the unique benefits of innovation for users due to the possibility of local realization of existing traditional technological solutions, including coloring procedures and accessibility.

Digital information and communication environment provides an exclusive format of interaction of economic subjects, in which the importance of information function and role of money increases. At the same time, the “abstract” monetary value can both directly (in the role of a “universal product”) and indirectly provide the execution of optional financial support of legally significant actions (accounting in the transaction of utilitarian digital rights on the type of barter exchange). Skepticism about the innovation will gradually disappear after potential users realize and accept the unique utility and consumer value of the digital ruble as an integral element of the national digital ecosystem (metaverse), rather than an input-output monetary value from outside.

The attractiveness of the advance trusted digital reality technology rests not in the capacity to perform anonymous transactions and eliminate a centralized operator, but in a great unique potential. At the same time “currency — only one of the applications of technology, perhaps not even the most popular” [14; 15, p. 119] in an adapted digital environment, but mandatory and

indispensable. Functionality and inclusiveness of the national digital ruble circulation platform can become the basis of an eventual ecosystem (metaverse) capable of solving a number of problems of the shadow economy and the labor market. In particular, curb the expansion of informal employment and promote the social well-being of the Russian population.

CONCLUSION

The state and development of the financial system and the economy as a whole in the new reality reflect not so much a decline in the share of cash in the money supply, How much of the trusted digital environment is developed with technically inextricably linked flows of information [16–19], excluding developmental characteristics of the information (network) society (features of “transition” automation process of multiplicity, isolation, fragmentation, volatility, hidden and variability of electronic space formed by a set of autonomous information systems). Digital society as a new formation with extraordinary views and a new philosophy requires a fundamentally different information and communication environment of interaction, allowing to recreate “digital counterparts”

with full immersion in Noonomy [20]. The grand transformation must take place in an orderly manner, starting with monetary circulation, the priority of which is due to the primary role of the institution of money as a value in ensuring continuous renewal (reproduction) of economic activity and recognition of the payment system as a critically important segment “to create the customer path of the “full cycle” within the ecosystem” [21, p. 38].

The successful launch of CBDC as an alternative to DeFi depends solely on the readiness, initiative and will of economic actors to accept it as the apotheosis of the new economic paradigm. The results of the study pointed out the characteristics of Russian perception of the digital ruble at the current stage and pointed to the need of disclosure of information that provides mental accessibility. In the current circumstances, the significance of matching the digital ruble to the rapidly advancing innovation category “digital currencies” as a collective image of alternative finance and the inadmissibility of distorting the national digital system, having the potential to develop into a fully functional, comprehensive metaverse for the new economy.

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E.I. Dyudikova — literature review, statistical data collection, graphical representation of results, data analysis, results description, conclusions.

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