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New Technologies for Managing Industrial Innovation Funding

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ABSTRACT

The **subject** of the study is new technologies for managing industrial innovation funding. The **aim** of the article is to form an optimal mechanism for the application of technologies for managing industrial innovation funding based on the use of new financial instruments. The **relevance** of the research is due to the increasing role of innovation in ensuring competitive advantages and market stability of industrial enterprises, as well as the growing need to attract funding. The **scientific novelty** consists in grouping the existing financing technologies into three main groups: traditional, modern and new. The **research methods** are analysis, systematization, synthesis, induction, deduction, modeling. The authors built a model of the mutual influence of innovative industrial development and the subsequent development of financing technologies in the financial sector. In the course of the study, the author obtained the following **results**: a mechanism for applying new technologies to manage innovation funding was developed, a priority financial instrument was identified for use within the framework of the developed mechanism. The authors **conclude** that the role of digital technologies in the activities of an industrial enterprise and, accordingly, in innovation funding is increasing. At the same time, the activities of an enterprise in attracting resources by issuing digital securities (shares) to finance innovations are of the greatest practical interest.
Keywords: funding; industry; innovation; financing technologies; investments; securities; blockchain; digital securities

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INTRODUCTION

The role of innovation is growing in modern economy. In the postindustrial economy of the 21st century. The innovative nature of the development of business entities (as well as the economy as a whole) is not so much a competitive advantage as a prerequisite for maintaining the financial stability of the company, ensuring the growth of the market share [1, p. 235]. The rapid development of technology and the subsequent evolution of consumer preferences increasingly pose a challenge for companies to ensure the regularity of research and development work and the implementation of their results directly into the technology of production of goods and services. This statement is true for most sectors of the modern economy, especially the high-tech industrial sector.

The growing role of innovation contributes to a shift in the focus of the company's management towards optimization and improvement of financial performance. Scientific research, contributing to the qualitative development of the company's products, improving the technologies of their production, require significant financial resources. At the same time, funding sources must meet two key requirements: firstly, funds must be attracted for a long term (or indefinitely), and secondly, the investor or lender must agree to the high risk of these investments, since not all scientific research ends with the successful implementation of new technologies and products.

At the same time, the widespread introduction of innovations contributes to the expansion of the company's financial capabilities in terms of attracting resources. The development of new technologies in the financial sector of the economy (commercial banks, financial companies and insurance organizations) leads to new financing instruments becoming available to industrial enterprises, some of which are applicable to finance innovative development [2, 3].

The relationship between the development of financial instruments and the subsequent innovative development of the economy and industry is the subject of research by such scientists as Ya. M. Mirkin [4], B. B. Rubtsov [5]. S. Z. Moshenskii studied innovative processes in the financial sector and their impact on stimulating the high-tech component of the real sector of the economy: "... opposing financial-industrial capitalism is as senseless as opposing the post-industrial economy to the industrial one. Time goes by, the world is changing, the economy and financial markets are changing. Capitalism is also developing. Industrial production will never be the same as in the era of steam engines. And capitalism will no longer be the same as a hundred years ago. Currently, the financial side of capitalism is more manifested. To protest against this is like protesting against the existence of the stock market or the derivatives market" [6, p. 481–482].

M. V. Vlasov researched the issues of innovative activity of small and medium-sized enterprises in an industrially developed region. At the same time, as factors constraining the innovative activity of economic entities, he singled out problems with financing, namely: an insufficient amount of own financial resources and a low amount of loaned funds provided [7, p. 1432]. Also, the scientist attributed a high level of risks, high transaction costs and insufficient management experience to negative factors.

In the foreign scientific community, similar issues were studied by N. Roubini and X. Sala-i-Martin [8], D. S. Kidwell, D. W. Blackwell, D. A. Whidbee, R. W. Sias [9] and others. The general conclusion of the review of the achievements of Western science on the issue under consideration is the proven relationship between the development of the financial market and the investment (including innovation) activity of economic entities — private companies.

This paper aims to form an optimal mechanism for the application of technologies for managing innovative financing in the industry based on the use

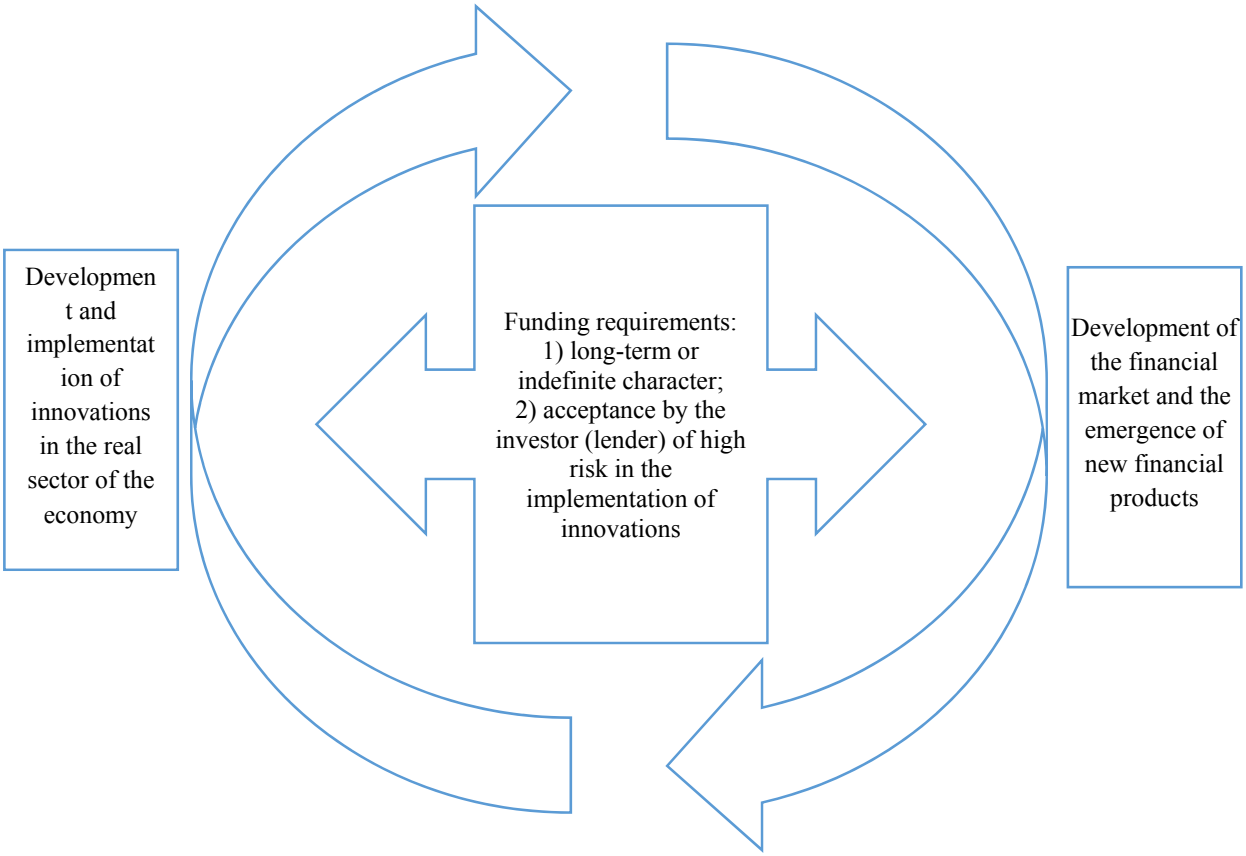

Fig. 1. **The relationship between innovation and funding sources**

Source: compiled by the author.

of new financial instruments. Achieving the aim involves solving the following tasks: researching available financing instruments and technologies, analyzing the applicability of the identified instruments and technologies for funding innovations in the industry, developing a mechanism for applying new technologies to manage innovation funding in the industry.

The scientific and practical significance of the paper lies in the systematization of currently available technologies for managing funds in the industry and the development of a mechanism for applying new financing technologies to most effectively provide innovative projects with financial resources.

MATERIALS AND METHODS

The nature of the scientific problem of this paper requires the use of both general scientific methods (analysis, systematization, synthesis, induction, deduction, comparison) and specific methods (mainly economic and mathematical modeling).

The analysis of the logical and systemic relationship between the development of financing technologies and the level of innovation should be presented in the form of a diagram (*Fig. 1*)

If we consider the relationship between the innovative way of economic development and the evolution of the financial market at the macro level, then the mutual influence is natural: after providing scientific research with a sufficient volume of financial resources, some innovations are successfully introduced into the industrial production process, as a result of which (with the development of information technologies) opportunities for the creation of new financial products are provided. In addition to the overall effect on the economy, industrial innovation and

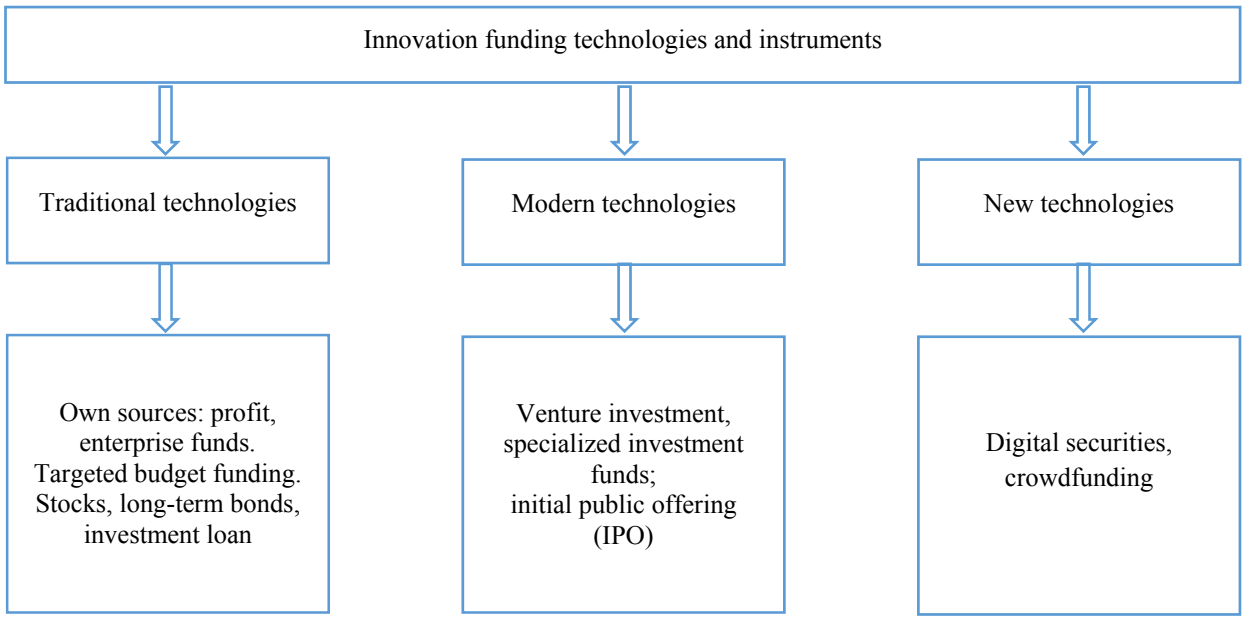

Fig. 2. **Innovation funding technologies and instruments**

Source: compiled by the author.

information technology also help to reduce the cost of financial infrastructure (through the production of cheaper and more efficient technical means) and increase the availability of financial instruments for a wide range of institutional and individual investors. This, in turn, provides innovation-oriented industrial enterprises with financially attractive and affordable sources of funding to increase investment in innovative areas.

It should also be borne in mind that financial management technologies are inextricably linked with financial instruments. The emergence of new organizational, legislative and technical capabilities (i.e., the development of technology) leads to the emergence of new tools. This process is also continuous and inextricably linked with the economic, scientific and technological development of the economy.

The increasingly popular blockchain technology should be mentioned as the indicated systemic breakthrough in both the innovation and financial sectors [10]. In addition to the direct creation of a new type of financial assets — cryptocurrencies, the technology itself provides enormous opportunities for the digitalization of financial relations while maintaining the strict accounting of rights to financial assets (or cash) and protection from hacking and other illegal actions of third parties. At the same time, the very emergence of blockchain technology would be impossible without high-performance computing power, which is the result of the successful implementation of industrial innovations [11]. In turn, the technology of a distributed ledger (blockchain), when used within the framework of financial relations, is capable of "reducing operational risks, shortening the period for document approval and facilitating transactions".[1] These advantages have led to the emergence of new financial technologies — the issuance of digital securities and digital currencies.

Returning to the issue of systematization of financial instruments and technologies, it should be noted that all currently available instruments should be divided into three groups: traditional, modern and new (*Fig. 2*).

The first and most accessible tool within the framework of traditional

[1] Trafigura and Sberbank signed their first deal through blockchain. URL: https://www.rbc.ru/crypto/news/ 5d721f369a794766d7fcc6da (accessed on 05.11.2021).

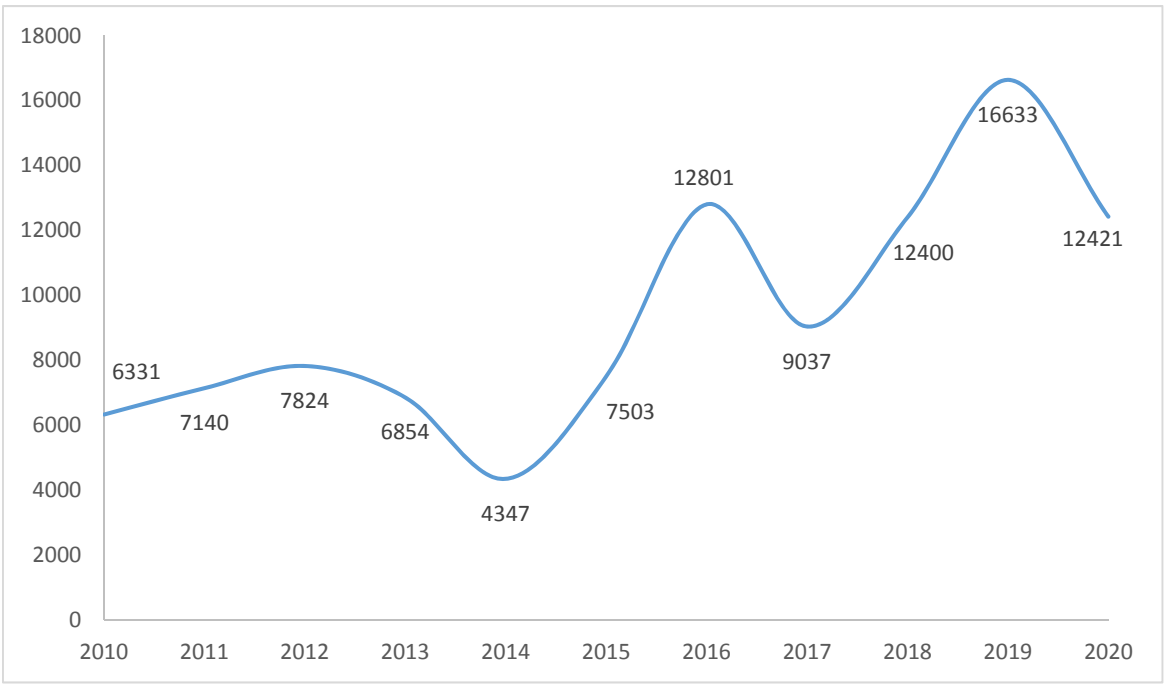

Fig. 3. **Dynamics of financial results of organizations (excluding small businesses) in the Russian Federation in 2010–2020, billion rubles**

Source: Federal State Statistics Service data. URL: https://rosstat.gov.ru/ (accessed on 05.11.2021).

financial management technologies is self-funding — the introduction of innovations independently and at the expense of its own funds: retained earnings and earmarked funds of the enterprise (primarily depreciation charges) [12]. This source is actively used in industry due to its availability. In fact, the company's own funds are long-term financial resources, they can be used for innovative development while profit and depreciation funds are formed, and do not require the participation of third parties (creditors, investors) in the investment innovation process. The disadvantage of self-funding is the limited volume of resources and the diversion of resources to renew the fixed capital of the current technological level, i.e. the company, in any case, must maintain at least the level of simple reproduction and make capital investments to maintain production; innovation ultimately is funded residually. It is also likely that the problem of a "financial funnel" will arise: an industrial enterprise cannot properly fund the necessary innovative projects due to a lack of its own funds (low level of net profit or unprofitable activities) and, accordingly, has no opportunity to increase its market share and profitability in the future through the successful implementation of innovations. At the same time, industrial innovation often requires significant investment; therefore, it is not always possible to finance innovation only from its own funds.

Analysis of macroeconomic statistics confirms the instability of this funding instrument (*Fig. 3*). Despite the fact that in the period from 2010 to 2020 the share of profitable organizations was relatively stable (fluctuated in the range of 68–72%), the dynamics of net profit in the Russian economy (excluding small business) indicates the instability of this indicator. Considering the fact that part of the profits received was withdrawn from companies in the form of dividends, as well as in connection with the aforementioned need for investments in fixed assets to maintain simple reproduction, the possibility of using own funds to finance innovations is very limited.

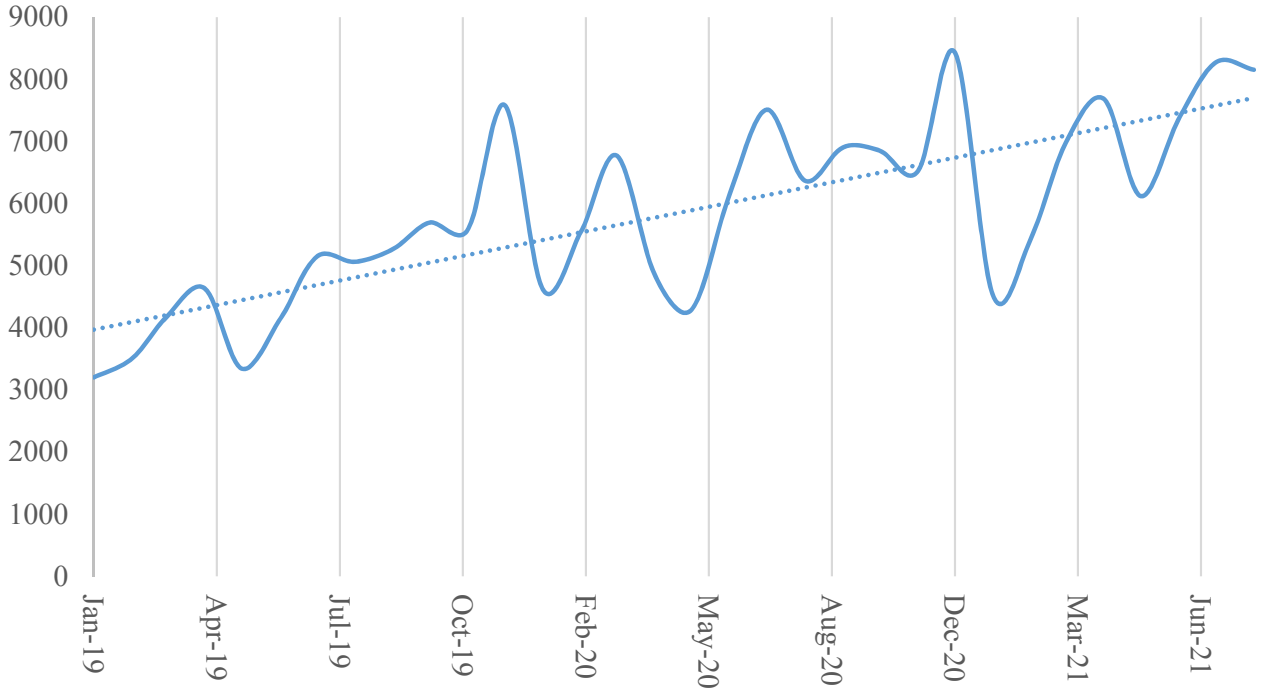

Fig. 4. **Dynamics of the volume of loans provided to legal entities — residents and individual entrepreneurs in the Russian Federation, billion rubles, January 2019 — August 2021**

Source: data of the Central Bank of Russia. URL: https://cbr.ru/statistics/bank_sector/ (accessed on 05.11.2021).

Traditional technologies for innovative financing also include capital market instruments: common and preferred shares, as well as long-term bank lending (the so-called investment loan [13, p. 1831]). These financial market instruments have been used in Russia for 30 years (much longer in Western financial practice). The regulatory framework is the Civil Code of the Russian Federation and the corresponding Federal Laws: "On the Securities Market", "On Joint Stock Companies", "On Banks and Banking Activities". A distinctive feature of this group is the relative availability for all companies (regardless of industry or size of the enterprise) and the versatility of the tools themselves. It should be borne in mind that long-term bonds and investment bank loans, despite their belonging to the capital market (and not the money market) instruments, are still less convenient for the purpose of innovation funding, since the urgent nature of borrowing is assumed (the need to pay interest and gradual repayment the amount of the principal debt in accordance with the terms specified in the contract). Accordingly, if the loan repayment date (or the redemption of the par value of the bonds) comes before the time of implementation and payback of the innovation results, the company may experience financial problems. However, this disadvantage is compensated for by the availability and relative efficiency in attracting resources (especially in terms of bank lending).

It should be noted that, despite potential macroeconomic risks, the total volume of lending to business entities increased from January 2019 to August 2021 (*Fig. 4*). Analysis of monthly dynamics reflects seasonality (growth in lending at the end of each year and a subsequent "failure" at the beginning of the next), but the trend line shows an increase in lending. Investment lending follows a similar trend. Thus, this instrument is increasingly available for funding industrial innovations, and the restrictions are rather of an organizational nature: the above restrictions on the

Table 1

The total value of issued and placed shares at par value, at the beginning of the year, billion rubles

Indicator	2003	2005	2008	2010	2012	2014	2017	2020
Total value of shares at par	877.9	4416.7	5653.3	5722.3	10560.8	12945.3	13343.6	12450.9
Total value of bonds at par	48.6	102.9	341.9	761.8	1419.1	2060.6	4756.8	6751.9

Source: Federal State Statistics Service data. URL: https://rosstat.gov.ru/ (accessed on 05.11.2021).

time frame for attracting funds, the need to comply with the bank's requirements when considering a loan application, etc. However, it should be considered that bank lending (both general and investment) is not available to all borrowers, but only to those that meet the parameters of the bank's credit policy. There is a contradiction at this point: an industrial enterprise needs funding for research and innovation, but commercial banks are more willing to provide funds for more conservative (i.e. less risky) projects. Consequently, investment lending is more applicable at the stage of introducing innovations (making capital investments as part of the introduction of new technology) than at the stage of direct research and development.

Based on the analysis carried out, common and preferred shares appear to be the most preferred method of innovation funding. These securities imply an indefinite nature of attracting investments, which is preferable from the point of view of the company's financial stability. At the same time, unlike debt relations when issuing bonds and bank lending, the company does not have an unconditional obligation to return funds to the investor: shares, like securities, do not imply a return of the par value (under normal operating conditions, the enterprise). The investor's financial interest lies in receiving dividends from the ownership of shares, as well as in the ability to sell shares to any other person at a higher price. At the same time, the problem of directly attracting investors for the successful placement of the securities issue remains.

The dynamics of the placement of securities testifies to the growing popularity of security market instruments (within the framework of traditional funding technologies) for the formation of permanent capital of organizations (*Table 1*). Over the period from 2003 to 2020, the total amount of funds raised through the issue of shares increased from 877.9 to 12450.9 billion rubles, i.e. more than 14 times. The sustainable growth trend was interrupted only in 2020, which can be explained by external factors, namely: the conditions of the pandemic and the corresponding risks in the global and national economy. At the same time, the issue of bonds at par value increased from 2003 to 2020 by more than 138 times: from 48.6 to 6751.9 billion rubles. Accordingly, despite the attribution of these instruments to traditional financial management technologies, the issue of securities does not lose its relevance.

An evolutionary continuation of the issue of shares as a way to attract investment is

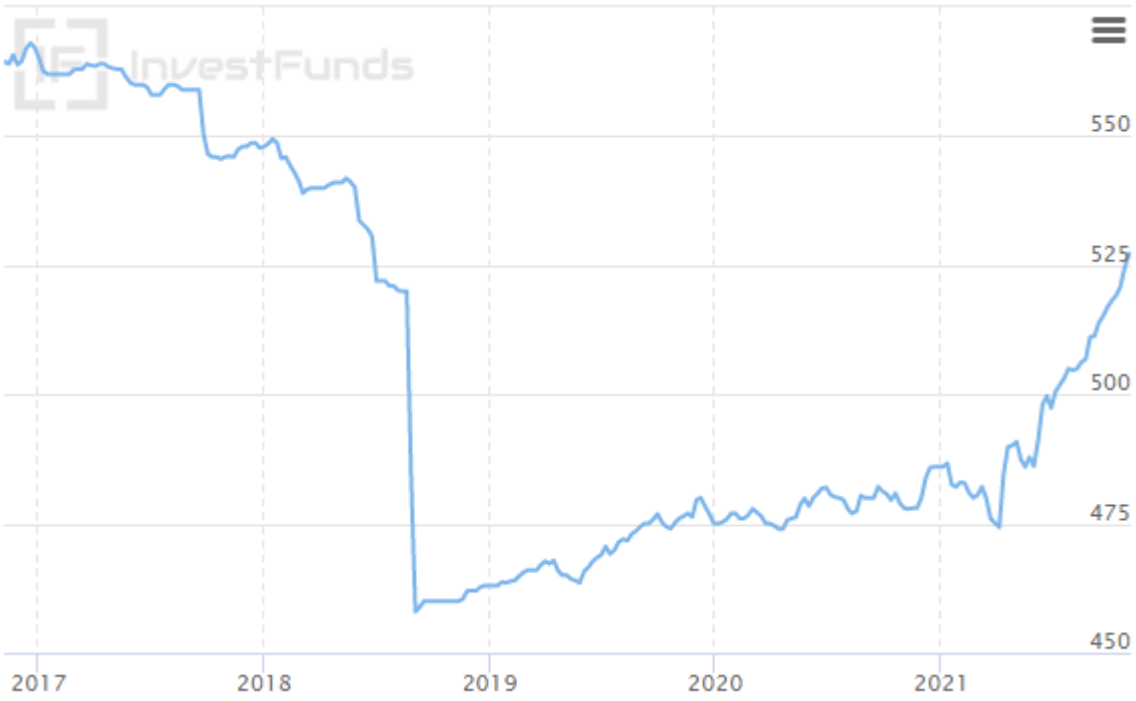

Fig. 5. **Dynamics of the number of investment funds in 2017–2021**

Source: Iinvestfuds.ru website. URL: https://investfunds.ru/funds-statistics/ (accessed on 05.11.2021).

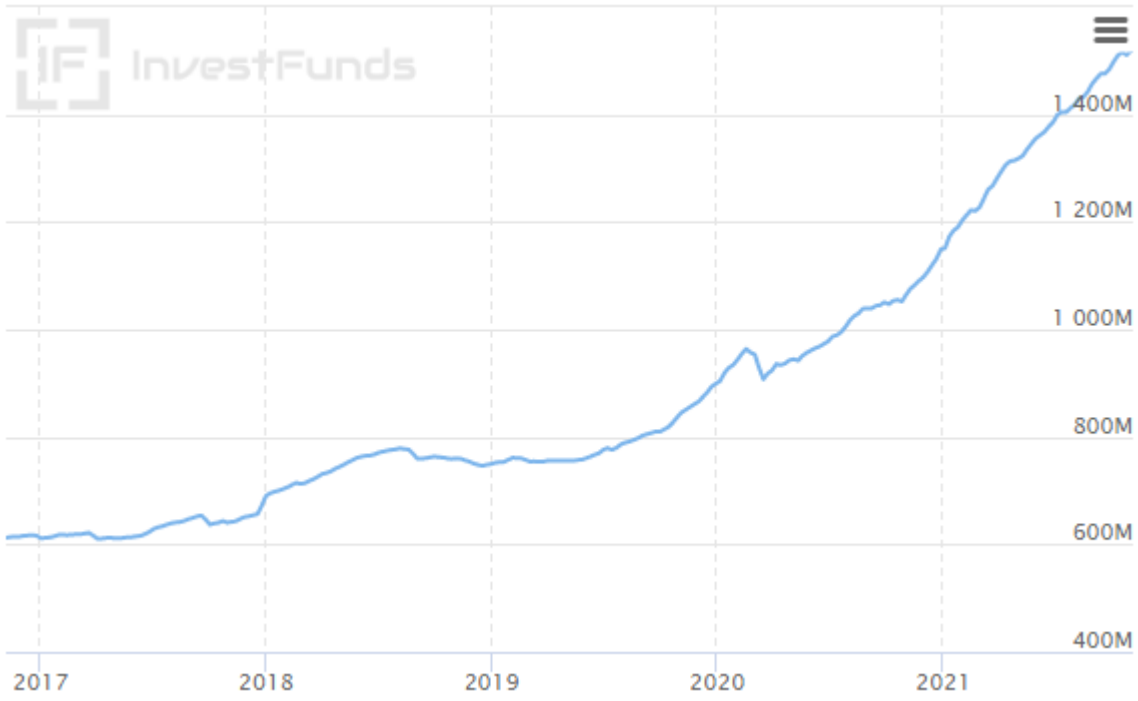

Fig. 6. **Dynamics of the net asset value of investment funds in 2017–2021, million rubles**

Source: Iinvestfuds.ru website. URL: https://investfunds.ru/funds-statistics/ (accessed on 05.11.2021).

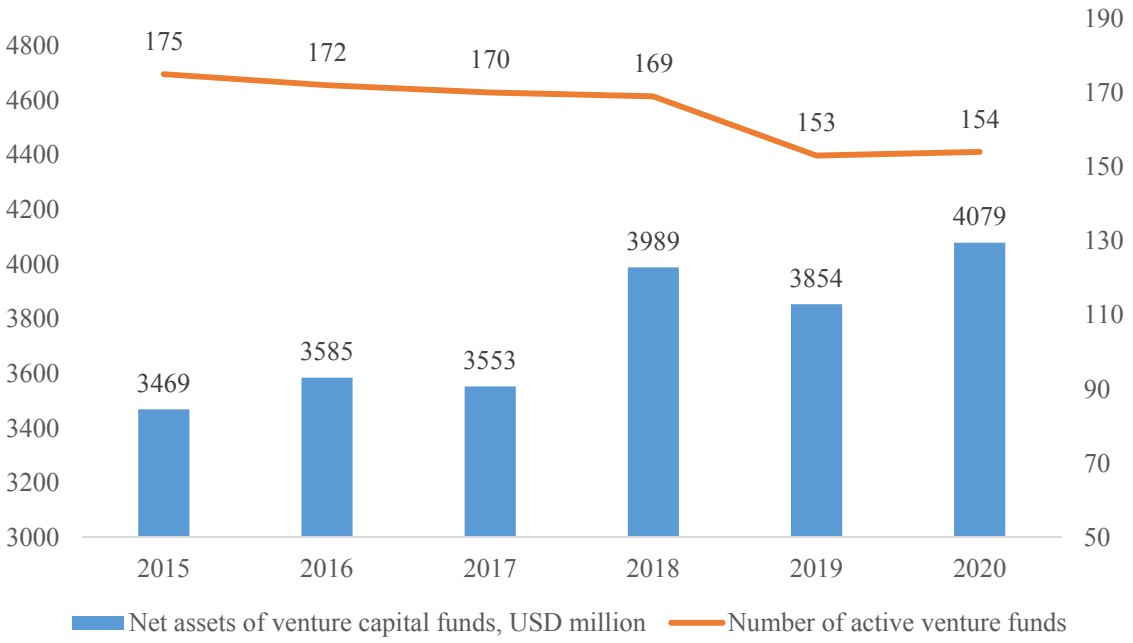

Fig. 7. **Number and volume of active venture funds, 2015–2020**

Source: Private equity and venture investment market review for 2020: RAVI analytics. URL: http://www.rvca.ru/upload/files/lib/RVCA-yearbook-2020-Russian-PE-and-VC-market-review-ru.pdf (accessed on 05.11.2021).

a venture investment and the activities of specialized investment funds, that is, institutional (collective) investors. For long-term attraction of investments in innovative projects, venture investment funds are created [14, p. 12; 15], science-intensive projects are of interest for private equity funds [16, p. 22–23]. The regulatory framework for collective investors is the Federal Law "On Investment Funds",[2] as well as the previously considered Federal Laws "On the Securities Market" and "On Joint Stock Companies". At the same time, the statistics of the last five years (from 2017 to 2021) indicate that after a sharp decrease in the number of investment funds in 2018 (which was caused by the tightening of regulation of the activities of mutual investment funds and joint-stock investment funds), since 2019 there has been an increase in the number of investment funds and the total value of their assets (*Fig. 5, 6*).

The activity of investment funds itself is more likely not a financial instrument, but the technology for managing financing, since an investment fund invests in securities (mainly in shares) of an enterprise (i.e., the company attracts an investment fund to place its securities). From the point of view of collective investment, the activities of regional venture funds at enterprises of the scientific and technical sphere are of particular interest, i.e. specialized venture funds created in the region on the basis of public-private partnerships [17, p. 96; 18, p. 1488]. An investment fund as an investor in industrial innovation funding is a suitable organization in accordance with the requirements indicated in *Fig. 1* (long-term nature of the investment, readiness for a high level of risk). At the same time, the investment fund, as a collective investor, shares the risks of its own shareholders, which allows diversifying the risks of investing in several innovative projects at once. Even considering the fact that the share of implemented (and commercially successful) innovations is usually below

[2] Federal Law of November 29, 2001, No. 156-FZ "On Investment Funds".

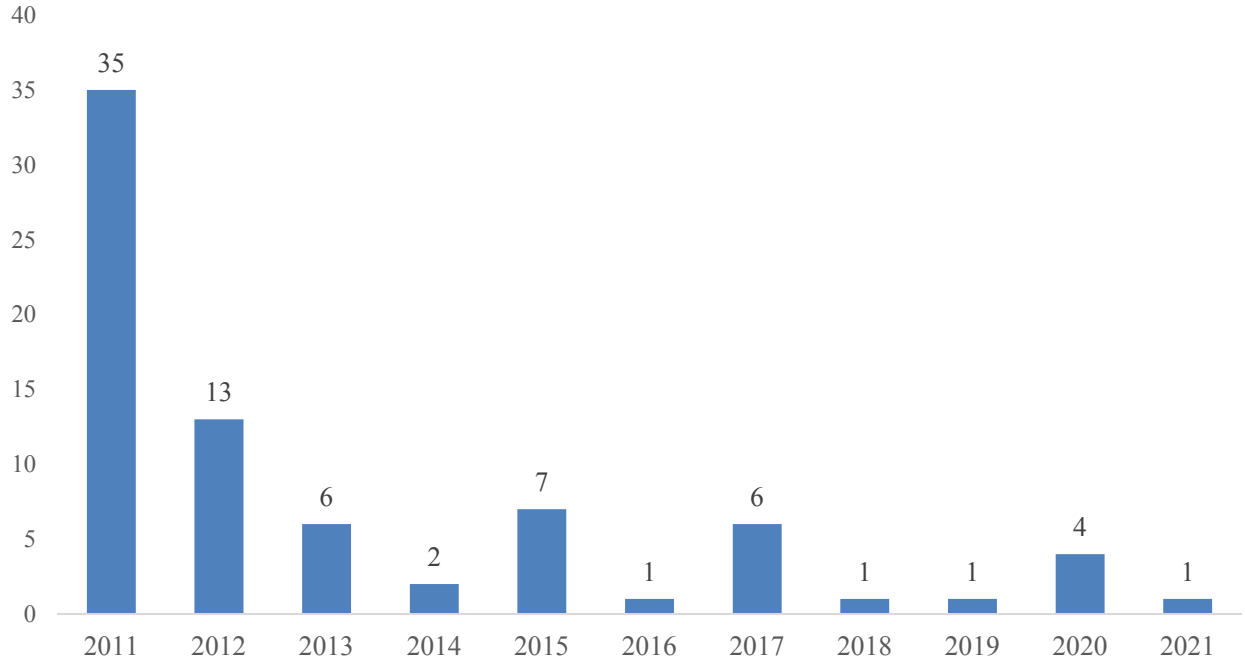

Fig. 8. **Number of initial public offerings (IPOs) on the Moscow Exchange, 2011–2021**

Source: "Conomy — Smart investment" website. URL: https://conomy.ru/analysis/articles/213 (accessed on 05.11.2021).

100%, on the whole, a positive result with a high level of internal profitability is observed for the portfolio of venture projects [19].

According to the methodology of the Russian Venture Capital Association (RVCA), venture funds include not only funds created in accordance with the legislation of the Russian Federation, but also foreign venture investment funds that finance innovations of Russian companies. According to RVCA estimates, the number of operating venture funds decreased from 175 to 154, while the total volume of the funds' net assets, on the contrary, increased by 17.6% — from $ 3469 to $ 4 079 million (*Fig. 7*). At the same time, the possibilities of attracting foreign capital to finance industrial innovations are significantly limited due to geopolitical risks. Thus, modern technologies and corresponding instruments for financing innovation have significant potential, but their use is also limited by the sources of formation of the resources of the funds.

Also, such technology of financial management as an Initial Public Offering (IPO) deserves special attention. While exchange transactions form the exchange segment of the secondary market, the IPO directly refers to the primary securities market, i.e. assumes direct funding of the issuer as a result of the placement of shares. In this case, the stock exchange is a platform that collects applications and funds in the interests of the issuer. Unfortunately, this technology is not widely used in Russia: only for 2019, 2020 and in the first half of 2021, there were only 6 successful IPOs (*Fig. 8*). For comparison, there were 190 IPOs in the US in 2018. Thus, given the legislative, technical and infrastructural capabilities, this method of financing does not have a significant impact on the innovation funding of industrial enterprises.

Based on the analysis of traditional and modern financial technologies, it should be concluded that these technologies and their corresponding instruments do not currently lose their relevance. At the same time, each of the considered instruments has a number of limitations. Self-funding is characterized by instability due to its dependence on the

Table 2

Comparative characteristics of digital and traditional securities

Criterion	Traditional securities	Digital securities
1. Legal regulation	Federal Law "On Securities" and other regulatory documents within the framework of securities legislation	Federal Law "On Securities" and other regulatory documents within the framework of securities legislation, as well as the Federal Law "On digital financial assets, digital currency and on amendments to certain legislative acts of the Russian Federation"
2. Form of issue	Non-documentary or documentary	Digital rights
3. The entity responsible for recording rights to securities	Kegistrar, central depository, depositories	Information system operator
4. The entity responsible for the registration of the securities issue	The regulatory body (Central Bank of the Russian Federation) or the stock exchange (in the case of the issue of exchange-traded or commercial securities)	Information system operator
5. The procedure for transferring funds when placing securities	The issuer can receive funds from the placement directly or through intermediaries (stock exchange, underwriters)	The operator of the information system opens a nominal account with a credit institution; upon completion of the placement, the funds are transferred to the issuer

Source: compiled by the authors.

dynamics of net (and retained) profits. Bank lending is available primarily to financially stable companies with sufficient experience, while it is preferable for banks to provide borrowed resources for the purpose of capital investment funding, rather than for direct scientific research. In this context, the issue of securities to attract additional financial resources is the most preferable, appropriate and corresponding to the purpose funding instrument. In particular, the indefinite nature of the shares makes it possible to finance research and development (industrial innovations) with a significant level of risk, sharing financial risks with the investor, subject to the latter's subsequent participation in profits as a result of the successful implementation of innovations in the company's operations. Moreover, stocks and long-term bonds are used at any stage in the development of financial management technologies: traditional technologies imply over-the-counter direct placement of securities, modern technologies complement the scope of securities used by the sector of collective investments (including venture capital and direct investment, i.e. institutional investors predisposed to accepting a high level of risk) and direct public offering of securities on the stock exchange. The disadvantage of corporatization (both directly, in accordance with traditional technologies, and through an IPO or attracting institutional investors) is a significant period of implementation of the funding process itself. According to the Russian legislation on securities, the totality of actions and measures for the issue and placement of securities is recognized as an issue, and this issue process must comply with the requirements specified in the

legislation. In this regard, the regulatory period of the issue (from the moment the decision is made to raise funds until the approval of the report on the results of the issue and the recognition of the placement of securities as valid) exceeds 18 months (although in fact, this process is shorter).

The development of industrial, information and financial technologies has led to the formation of new technologies for attracting funds, namely, the emergence of digital securities[3] and a legally functioning crowdfunding mechanism.[4] The emergence of these financial management technologies is a consequence of the development of blockchain technology and its application in the implementation of financial activities by companies.

In particular, digital financial assets are securities that are identical in their status and legal consequences to common, "traditional" securities, since both of these groups of securities are subject to issue, placement and subsequent circulation in accordance with the Russian legislation on securities (first of all — with the Federal Law "On the Securities Market"). However, digital securities have a number of differences that make them a promising technology for managing innovation funding (*Table 2*). Thus, one of the key differences between digital securities and traditional ones is the absence of additional subjects of the financial market (professional participants in the securities market) in the process of issuing, placing and circulating securities, as well as accounting for rights to them. In addition, registration of the issue of digital securities is also carried out by the operator of the information system. The centralization of all processes (issue, placement, circulation of securities and registration of rights to them) will reduce transaction costs and shorten the time it takes to attract funds by an enterprise.

The above technologies are new (statistics are not available at the moment) and the CBR is currently developing the appropriate infrastructure. However, considering the current trends in the digitalization of the economy, digital securities and crowdfunding technologies [20] have great prospects in terms of funding industrial innovations since they can reduce the time to attract investments, reduce transaction costs, as well as traditional and financial risks.

Based on the analysis and systematization of tools and technologies for managing innovative financing, it should be concluded that their grouping is conditional, and the use of new technologies and tools does not exclude the simultaneous use of traditional tools. On the contrary, for efficient and effective funding of industrial innovations, it is advisable to simultaneously and comprehensively use the above methods of attracting investment.

The research result of this paper is the construction of an effective and convenient mechanism for managing the technology of innovative financing.

RESULTS AND DISCUSSION

With a more detailed analysis of the qualitative characteristics of new financial management technologies, it is advisable to conclude that digital securities are the most preferable for financing industrial innovations.

Crowdfunding (attracting investments using investment platforms) has a number of financial constraints that are of great importance for companies in the industrial sector. In particular, individual entrepreneurs and legal entities can attract no more than 1 billion rubles a year through investment platforms.[5] Moreover, the

[3] Federal Law of July 31, 2020, No. 259-FZ "On digital financial assets, digital currency and on amendments to certain legislative acts of the Russian Federation".

[4] Federal Law dated 02.08.2019 No. 259-FZ "On attracting investments using investment platforms and on amending certain legislative acts of the Russian Federation".

[5] Федеральный закон от 02.08.2019 № 259-ФЗ «О привлечении инвестиций с использованием инвестиционных платформ и о внесении изменений в отдельные законодательные акты Российской Федерации».

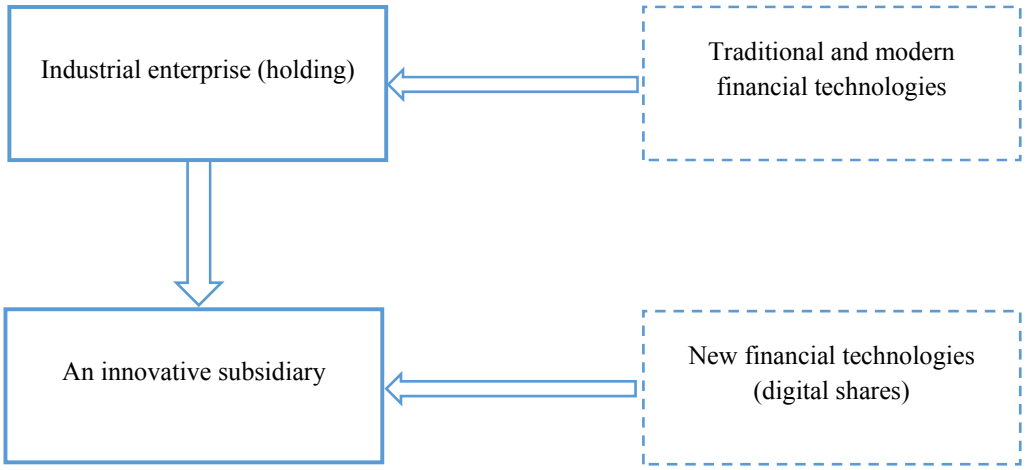

Fig. 9. **Mechanism for applying new technologies to manage industrial innovation funding**
Source: compiled by the author.

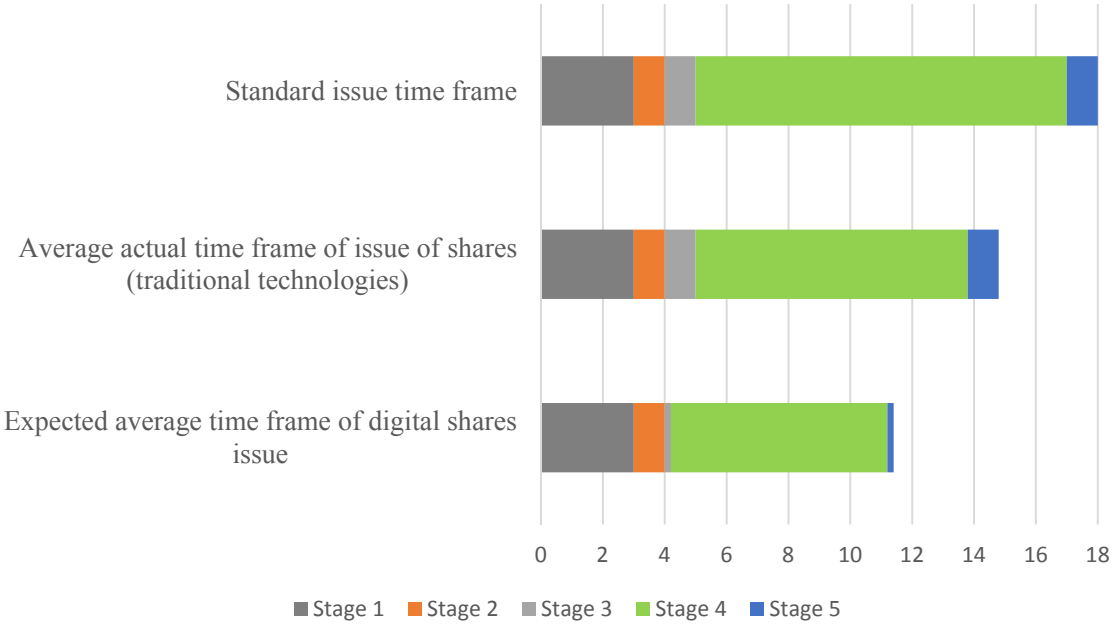

Fig. 10. **Comparative assessment of the timing of the issue of shares**
Source: compiled by the author.

practice of using such a financing technology in Western countries indicates that for investors on such platforms, the key role is played not by the economic justification of the investment attractiveness of the project, but by non-financial, personal preferences [21]. Accordingly, innovative projects of industrial companies with a strict economic justification for return on investment are likely to be less in demand on investment platforms.

In contrast, issuing digital financial assets provides industrial companies with ample opportunities to finance innovation. Article 13 of the Federal Law "On digital financial assets, digital currency and on amendments to certain legislative acts of the Russian Federation" contains requirements for the issue of digital shares. The key feature is the complete prohibition of converting stocks from digital to traditional and vice versa. That is, a joint stock company that

has already issued and placed shares using traditional technologies and within the framework of the Federal Laws "On Joint Stock Companies" and "On the Securities Market" is not entitled to issue digital shares to increase the authorized capital. This prohibition persists in the event of a reorganization of a legal entity.

Despite this limitation, industrial enterprises are showing interest in new technologies. The Transmashholding[6] announced the planned cooperation in the framework of the release of digital assets. Less than a year has passed since the legislation on digital financial assets came into force (January 1, 2021), and as the financial and technical infrastructure of this technology develops, interest from the industrial sector will only increase.

For the successful implementation of new technologies for financial management of industrial innovations, it is necessary to address the problem of developing a mechanism for the application of new technologies, considering the restrictions of the legislation (Article 13 of the Federal Law "On digital financial assets, digital currency and on amendments to certain legislative acts of the Russian Federation").

Fig. 9 shows the proposed mechanism.

Thus, the mechanism involves a combination of traditional and new technologies for financial activities. To access digital financial assets, it is advisable to create a new subsidiary, the authorized capital of which will be formed by issuing digital shares. In addition to the direct contribution of the parent company, the participation of third-party investors is also preferable at this stage.

Since the technology for issuing digital financial assets is new and has not yet been applied in Russia, statistics on digital financial assets are also lacking. It does not allow building an economic and mathematical model for attracting funds. In terms of financial parameters, the potential for raising funds through traditional and new technologies is identical, and the assessment of transaction costs is possible only with the accumulation of sufficient experience in the functioning of digital financial assets. However, the obvious advantage of new technologies is the reduced time frame of issue of securities. Despite the fact that the deadlines for the issue are specified in the Federal Law "On the Securities Market" and are the same regardless of the financial technologies, in practice it is expected that the time spent to issue and place digital shares will be shortened (*Fig. 10*).

Based on the assessment, the average expected time frame of the issue of shares (i.e. the period from the moment of a decision to finance until the completion of the procedures and registration of the report on the results of the issue of shares) would be 10.4 months for digital shares versus 14.8 months for traditionally issued shares. In modern conditions of a dynamic external environment, the reduction of the period for attracting funds for innovation by 4.4 months becomes an important competitive advantage.

CONCLUSIONS

In the context of modern trends in large-scale digitalization of the economy, the constant introduction of innovations is both a competitive advantage and a factor in the economic security of an industrial enterprise. The growing role of R&D leads to a constant increase in the need for financial resources. At the moment, traditional and modern financial technologies and corresponding instruments cope with this task: common and preferred shares, long-term bonds, long-term bank investment loans, investment funds finances (venture capital or direct investments).

At the same time, it is indisputable that the introduction of new technologies — crowdfunding and the issuance of digital securities — in the long term will have

[6] Business goes digital. Kommersant. URL: https://www.kommersant.ru/doc/4710180 (accessed on 05.11.2021).

a significant impact on the financing of enterprises and, in particular, on their innovative activities. The important advantages of new technologies are the reduction of operational risks and transaction costs, as well as the reduction in the time it takes to raise funds.

To address the problem of financing innovations by industrial enterprises, the most suitable solution is the issue and placement of digital financial assets, primarily shares. For this, within the framework of the proposed mechanism for applying new technologies in financial management, it is planned to create a new subsidiary within an industrial holding, the authorized capital of which will be formed at the expense of digital securities. This will make it possible to effectively use a combination of traditional, modern and new technologies to manage innovative financing, which in the long term can provide an industrial enterprise (or holding) with opportunities for sustainable growth.

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