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ASSESSMENT OF FACTORS OF SCIENTIFIC, TECHNOLOGICAL AND FINANCIAL RISKS OF TECHNOLOGICAL INTEGRATION

Abstract: The article deals with the study of the assessment of the factors of scientific, technological and financial risks of technological integration of manufacturing enterprises. The fundamental research methods applied include key positions of management theory, organization theory, and modern theories of technological development. The systematic, process, instrumental and matrix approaches form the methodological basis of the research. In the process of the research, a wide range of research methods were used including methods of description, generalization and abstraction, classification, argumentation, analytical and graphic methods.The theoretical results of the study reveal quantitative and qualitative instrumental methods of risk assessment, as well as provide the generalization and structuring of various approaches to the classification of risk factors, which makes it possible to assess the situation regarding the decisions made by all participants involved in technological integration in terms of goals and tasks. The paper reveals and theoretically substantiates the excessive detailing of the classification features of risk factors, and proves their independence from each other.The applied research results include analytical and graphical assessment of the factors of scientific, technological and financial risks of technological integration, based on a combination of a standardized approach and technological policy, taking into account consumed resources. The research confirms that the effective technological development of Russian manufacturing enterprises is connected with the formation of favorable conditions for the effective functioning of the technological infrastructure, as well as with the concentration of scientific research and technical and technological resources in priority vectors of global technological trends.
Keywords: scientific, technological and financial risks, technological integration, instrumental approach, factors, manufacturing industry, assessment

INTRODUCTION

The depth of research of the entire set of risks significantly influences the decision-making process. At the same time, the assessment of the factors of scientific, technological and financial risks of the participants involved in technological integration plays an essential role in it. Scientific and technological risks of technological integration are associated with some uncertainty of research and experimental technological result in the process of technological integration of entities. In turn, financial risks can change the original plans in financing of a project or activities on technological integration. Taking into account all scientific, technological and financial risks creates real preconditions for a dynamic, industrial and technological development of the economy. However, the current economic situation demonstrates the lack of sufficient elaboration of the appropriate tools with which the participants in technological integration could make well-considered and grounded decisions regarding their activities, as on the one hand, the present economic situation is characterized by a high level of uncertainty and low level predictability, and, on the other hand, it provides a large number of opportunities for the development.

In the market relations environment, the problem of assessing the factors of scientific, technological and financial risks of participants in technological integration acquires its independent theoretical and practical significance as an important component of the theory and practice concerning industrial enterprise management. The existing approaches to the assessment of such risks are poorly applicable, since most of them are based on the analysis of particular risk groups without taking into consideration the industry characteristics of enterprises involved in technological integration. Therefore, the relevance of the study is determined by the need to develop a scientifically based assessment methodology of factors of scientific, technological and financial risks of technological integration participants in order to obtain objective and reliable data concerning the expected risks and the possibility to prevent them. The relevance of the research is also concluded in the use of operational monitoring of decisions made in terms of profit and risk, the quantitative assessment of the level of risk and the assessment of the effectiveness of the decisions made while taking into account the level of risk.

1. METHODOLOGY

1.1. An instrumental approach to the assessment of the factors of scientific, technological and financial risks of technological integration

While carrying out their activities, participants in technological integration need tools to measure and calculate possible losses as a result of any risk (Lola & Bakeev, 2020; Schwab & Vanham, 2021). This requires the availability of appropriate data to apply a particular method, as well as the availability of tools to determine the degree of compliance of the selected assessment method with the type of risk. These aspects complicate the process to assess the risk of technological integration participants. Thus, all the methods for assessing a particular risk have a scope of their application (Rohman et al., 2020), and the choice of a particular method should depend on the accuracy of the information obtained concerning the production activities of technological integration participants.

Instrumental methods to assess the factors of scientific, technological and financial risks of technological integration are divided into qualitative and quantitative ones. Qualitative instrumental methods are based on the opinions of individual groups of people (experts) about a risk event that is likely to occur in the activities of participants in technological integration. The opinion of experts in this case is based on their work experience, as well as by comparing the situation of participants in technological integration with a similar one (Asheim, 2019; Kim & Beehr, 2020). Qualitative instrumental methods include rating methods, expert methods, and methods using analogs.

Quantitative instrumental methods to assess the factors of scientific, technological and financial risks of technological integration are based on the use of mathematical techniques and are divided into statistical and analytical ones, and their application depends on the amount of data obtained.

The analysis of qualitative instrumental methods showed that when applying the method of rating assessments, the ranking of the data of the participants in technological integration or paired comparison takes place. Ranking is understood as the assignment of ranks to the evaluated objects, which helps to arrange the evaluated objects in descending or ascending order. Paired comparison makes it possible to compare the factors of scientific, technological and financial risks of technological integration. Due to this, it is possible to obtain their quantitative estimates.

The idea of the instrumental method of qualitative assessment as an expert one implies the need to attract highly qualified experts to assess the risks, in order to be able to analyze their opinions regarding the risk and possible damage (profit). This method is closely related to quantitative ones, since the analysis of the estimates obtained is carried out with the help of mathematical tools. The advantage of expert judgment is that it allows assessing those areas of risk in which other methods do not work. Such areas require a lot of experience, deep knowledge, and different points of view for further analysis. The disadvantages of this method include difficulties in conducting a questionnaire or a survey, as well as the lack of guarantees that the estimates obtained will be valid or will not include the subjectivity of the expert.

To eliminate these disadvantages, it is necessary to have tools that can increase the reliability of expert opinions. Those include the availability of regulated procedures for the selection of experts on various aspects, as well as the availability of tools for the appropriate processing of expert opinions in order to determine the degree of consistency. The most common instrumental methods of expert assessments include ranking, sequential comparison, direct assessment, paired comparison (Corallo et al., 2020). When analyzing the opinions received from highly qualified specialists (experts), it is necessary to identify the consistency of their opinions on all factors, which can be assessed by the coefficients of concordance and which affects the quality of the final assessment (Lockwood, 2020).

The qualitative instrumental methods to assess the factors of scientific, technological and financial risks of technological integration also include the method of using analogs, which is based on the search for similar risk situations. The advantage of this method is that it is used when it is impossible to use other methods. Its disadvantages include the fact that this method depends on the subjective opinion of the risk manager who conducts the assessment.

The statistical method stands out from the quantitative instrumental methods to assess the factors of scientific, technological and financial risks of technological integration (Dafermos et al., 2021). By the number of estimated values statistical methods can be divided into single-factor methods and multifactorial methods. The key tools for single-factor statistical evaluation are the average expected value of a random variable and the variability of a possible result. The application of single-factor methods of statistical assessment limits the application of the results obtained,

since there are no tools to draw a conclusion about the set of variables, the assessment of which was obtained separately. To obtain general results and conclusions, it is necessary to use the methods of multivariate statistical analysis, which make it possible to analyze several variables simultaneously.
An instrumental method to assess the factors of scientific, technological and financial risks connected with the life cycle of enterprises, participants in technological integration, is of certain research interest, since it is focused on a systematic approach to the risk assessment process (Crespo, 2020; Shahi et al., 2020). The use of this method makes it possible to identify the relationship between the magnitude of scientific and technological or financial risks with a certain stage in the life cycle of a participant in technological integration, as well as to apply the entire necessary range of preventive measures.
Due to the fact that quantitatively measurable indicators form the basis to assess the factors of scientific, technological and financial risks, it is impossible to ignore various scales for measuring risk (Ghisellini & Ulgiati, 2020; Guillemot & Privat, 2019). At present, there is no scientifically substantiated possible magnitude of various types of risk, which in turn is an independent task of each participant in technological integration and depends on the industry in which each participant operates. There is also no unanimous opinion on the essence of risk, which manifests itself not only as the possibility of loss, but also as the probability of making a profit. Therefore, there is no single methodological approach to the compilation of risk scales.
It should be noted that there are risk scales, the application of which is based on such criteria as the average expected value and standard deviation to determine the characteristics of the level of risk. In this case the probability of a risk event can be defined as the coefficient of variation.
At the same time, one cannot but mention the risk scales, in which the possible amount of damage should be compared with the size of the assets of a participant in technological integration and correspond to the volume of production (Wang et al., 2020). These scales are recommended to be used to assess the acceptability of a management decision as an event that carries a risk. Then, a certain part of economic activity will be the risk area, within the framework of which the possible amount of losses does not exceed the maximum value of the established level of risk. According to this, in the market economy, there are four main areas of risk in the process of carrying out the activities of an enterprise, a participant in technological integration:
The area of acceptable risk, which is characterized by both a zero level of losses from the manifestation of a risk event and a negative level of losses, but not exceeding the size of the expected net profit of a participant in technological integration.
The area of acceptable risk, the level of losses from which exceeds the size of the estimated profit of the participant in technological integration. This area is acceptable for defining risk boundaries.
The area of critical risk, the level of losses from which exceeds the value of the projected profit and, under unfavorable circumstances, the amount of revenue. In other words, a participant in technological integration can lose not only profit, but also all the costs that were invested in the production.
The area of catastrophic risk, the level of losses from which ranges from total revenue to the size of the equity capital of the technological integration participant and his property. The consequences of such a risk can lead to the bankruptcy of a technological integration participant.
Generalization and structuring of various approaches to the classification of factors of scientific, technological and financial risks make it possible to come to the conclusion about the inconsistency of points of view in relation to the classification features. First of all, this is due to the fact that different classifications of factors of scientific, technological and financial risks have different goals and perform different tasks. Further, this is due to the authors' opinion concerning the independence of the classification features from each other. Another reason is that some classifications are too detailed. And, finally, the inconsistency of opinions is also associated with the area of activity of the participant in technological integration, to which one or another classification can be applied.
The study of the existing instrumental methods to assess scientific, technological and financial risks revealed the areas of application of each of them. The choice of a particular method depends on the breadth and quality of the information available for analysis.

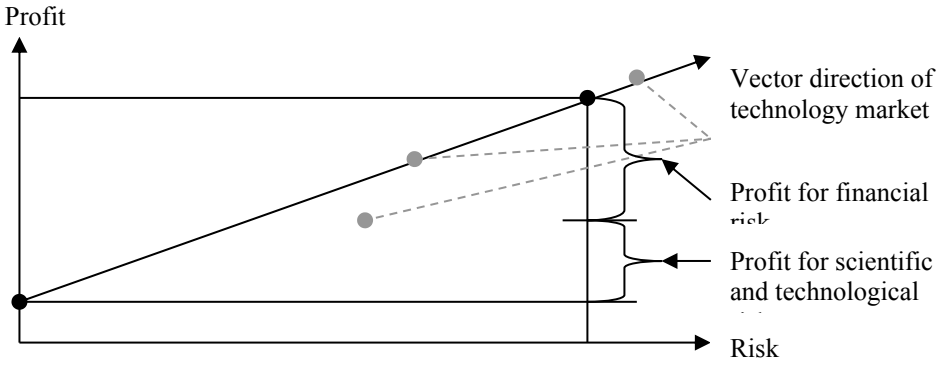
2. RESULTS OF THE STUDY

2.1. Features of risk situations of technological integration

Manufacturing enterprises take up a special place in the structure of the national economy. The specific nature of their activities is the development and production of science-intensive and high-tech products. Manufacturing enterprises are also one of the most important economic systems in Russia as they solve the tasks of the state in the field of innovative development of the country. It is they that are given a priority in carrying out work on the production of innovative products and technologies, conducting both applied and fundamental research, and integrating science and production (Polido et al., 2019).
Taking into account the specific features of manufacturing enterprises, it should be emphasized that participants in technological integration are influenced by a large number of multidirectional risk factors. Scientific, technological and financial risks occupy the central place among the most significant risk factors for the activities of participants in

technological integration. Additionally, it should be noted the organizational and production risk factors that have a decisive impact on both scientific and technological and financial risks.
While studying the essence and content of organizational and production risk factors of technological integration, it should be stated that due to the innovative and high-tech production they develop, enterprises of the manufacturing industry have a large number of technological, design and scientific departments, in the form of separate economic units as well as in the form of the production structure elements, which specialize in the development of working technological and design documentation for the product, as well as in the development of prototypes, which in the future can serve as the basis for the launch of small-scale and serial products.
Each order in these departments is unique, and its development includes all the necessary stages: technical assignment, technical proposal, draft design, technical design, working documentation. The quality of the products manufactured at the enterprise, and hence its competitiveness in the market, is largely determined by the quality of technological and design development. The quality of this development depends, in turn, on a large number of factors that comprise the basis of the risk in this area.
Considering risk factors as any predisposing factors that increase the probability of a risk event, it should be emphasized that in the area of a risk factor, an event carrying a risk appears to be more likely and can cause more damage than an event outside the area of a risk factor (Pic. 1).
In actual practice of the activity of participants in technological integration of manufacturing enterprises, this dependence shows the following:
1. The positive vector orientation of the technology market reflects the relationship between greater profitability and financial and scientific and technological risks.
2. The risk-free profitability zone is revealed by the intersection of the vector direction of the technology market with the risk line.
To determine the main risk factors in the technological and design departments of the participants in technological integration of manufacturing enterprises, it is necessary to define the features that distinguish them from other enterprises. These distinctive features include:

1. A high proportion of scientific personnel in the personnel structure.
2. Continuous modernization of the technological base.
3. Narrow specialization of the developments carried out.
4. Danger of violation of intellectual property rights.
5. Close cooperation with higher educational institutions.



Picture 1: Vector direction of the technology market in view of financial, scientific and technological risks
Source: The author

A high proportion of scientific personnel in the personnel structure is due to the specific features of the products manufactured, namely, scientific developments. Since a large scientific base is the basis to obtain a positive result in the course of R&D, the most part of the personnel of technological and design departments are represented by researchers.
Constant modernization of the technological base is associated with the need to conduct research and development work at a high technological level, which requires high investment costs.
The narrow focus of the ongoing developments is manifested due to the fact that technological and design departments of manufacturing enterprises are usually engaged in the development of prototypes of a certain component part of products, the technological basis of which is limited to a certain area of scientific knowledge. Moving to another area or expanding an existing one often leads to the necessity to retrain staff and invest in new technologies.
The danger of infringement of intellectual property rights manifests itself in enterprises that develop in similar fields, since all their own developments are subject to patenting.
Close cooperation with higher education institutions manifests itself in two ways. Firstly, higher education institutions are the main source of highly qualified personnel. Often, part of the teaching staff of a higher educational institution is represented by former employees, who now teach those who in the future will devote their activities to technological

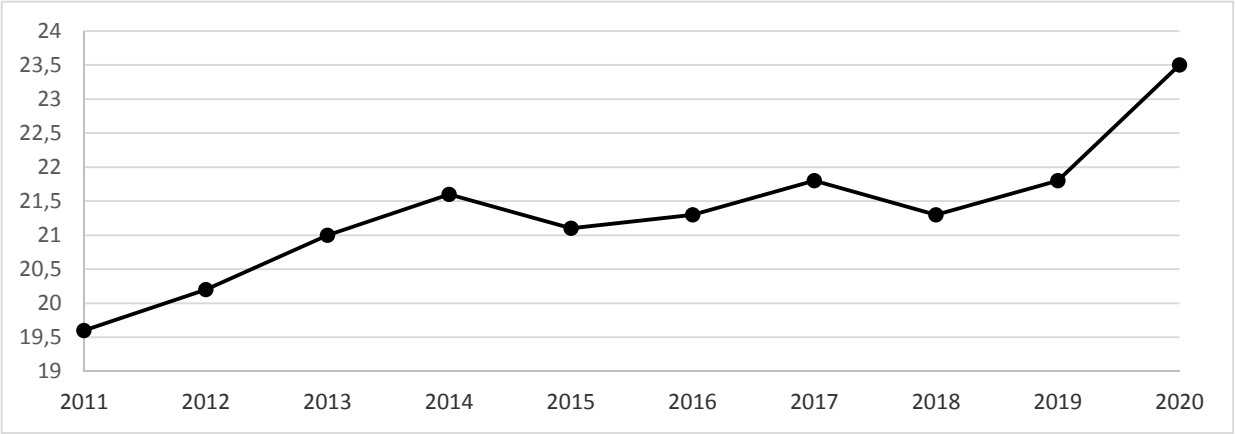
and design departments, which simplifies the further adaptation of employees. Secondly, research laboratories have been opened on the basis of higher educational institutions, to which technological and design departments can transfer part of the work within the framework of integration agreements.

Production risk factors are associated with the fact that in the changing market conditions, manufacturing enterprises are focused on the constant updating of the production nomenclature. The processes of promoting modern developments face a large number of factors that contribute to the formation of industrial risk, including cooperative risks; risks of non-compliance with contractual terms and conditions of production; risks associated with the use of production facilities (low percentage of utilization, inconsistency of the planned production volume with the level of production capacity); technological and design errors in the regulation of production processes; low percentage of renewal of production assets.

When assessing production risk factors, it is necessary to compare the share of products of high-tech and knowledge-intensive industries in the gross domestic product (Table 1, Pic. 2) with the renewal of fixed assets (Table 2, Table 3, Pic. 3, Pic. 4).

Table 1: Share of products of high-tech and science-intensive industries in gross domestic product, %

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
19,6	20,2	21,0	21,6	21,1	21,3	21,8	21,3	21,8	23,5



Picture 2: Share of products of high-tech and science-intensive industries in gross domestic product, %
Source: Federal State Statistic Service, 2021

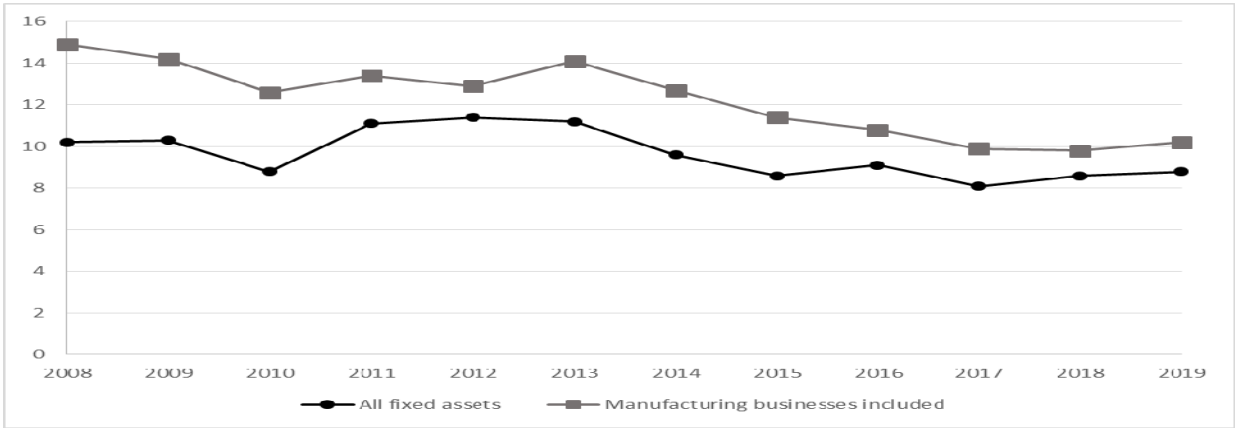
The share of the added value of high-tech and science-intensive activities in the gross domestic product of the Russian Federation should be considered as a quotient of the sum of the gross value added of high-tech, medium-tech high-level and science-intensive types of economic activities in basic current prices and the total gross value added of all types of economic activity in the main current prices. It follows from Table 1 that the share of products of high-tech and science-intensive industries in the gross domestic product demonstrated a steady growth from 2011 to 2020, and it comprised 20%.

In order to analyze the dynamics of the update rates, without taking into account the impact of price changes, when considering the renewal of fixed assets as the ratio of fixed assets put into operation during the year to their availability at the end of the year, as a percentage, which reflects the proportion of new (introduced during the year) fixed assets in their total volume, their macroeconomic recalculation into comparable prices is used.

Based on an analytical and graphical assessment of the rate of renewal of fixed assets by sectors of the economy, including those referring to high, medium and low degree of manufacturability (Table 2, Pic. 3), it can be concluded that this indicator has a pronounced negative trend. As a whole the renewal of fixed assets in the industry decreased over the period from 2008 to 2019 from 10.2% to 8.8%, or in 1.16 times. There is a rapid decline in the renewal of fixed assets by sectors of the economy, including those related to high, medium, and low degree of manufacturability in manufacturing businesses from 14.9% to 10.2%, i.e. almost in 1.5 times.

Table 2: The coefficient of renewal of fixed assets by economic industries, including related to high, medium, and low degree of manufacturability, %

Indicators	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
All fixed assets	10,2	10,3	8,8	11,1	11,4	11,2	9,6	8,6	9,1	8,1	8,6	8.8
Manufacturing businesses included	14,9	14,2	12,6	13,4	12,9	14,1	12,7	11,4	10,8	9,9	9,8	10.2

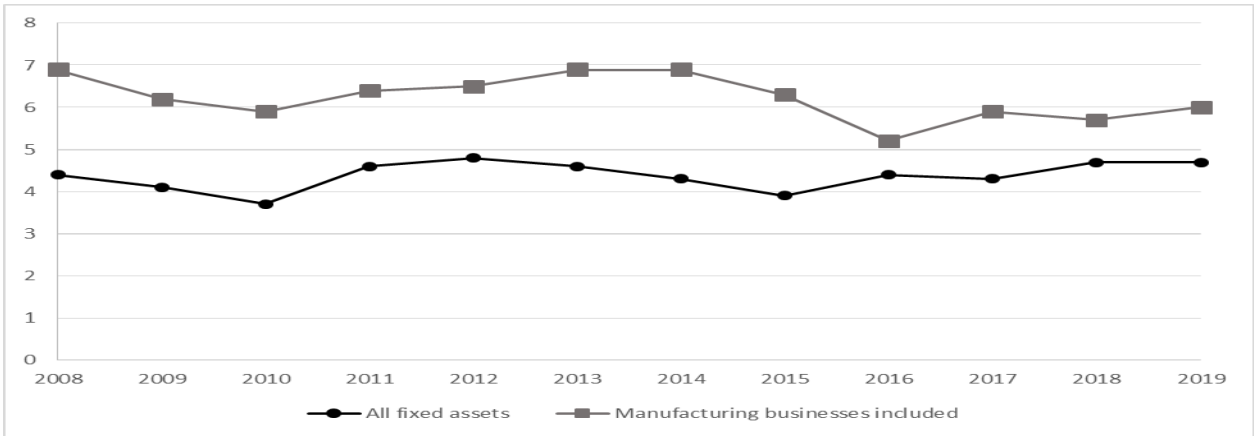


Picture 3: The coefficient of renewal of fixed assets by economic industries, including those related to high, medium, and low degree of manufacturability, %
Source: Federal State Statistic Service, 2021

For completeness of the study, let us consider the behavior of the coefficient of the renewal of fixed assets by economic industries, including those related to high, medium, and low degree of manufacturability. This coefficient is defined as the ratio of the value of fixed assets put into operation during the year to their availability at the end of the year at the full book value, that is, as the share of newly introduced fixed assets during the year in their total volume. The indicator makes it possible to assess the level of the development and renewal of the material and technical base of the industry. To calculate it we used the data concerning the cost of fixed assets of commercial organizations (excluding small businesses) at the end of the year, excluding revaluation.

Table 3: The coefficient of renewal of fixed assets in the Russian Federation by the kinds of economic activity, %

Indicators	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
All fixed assets	4,4	4,1	3,7	4,6	4,8	4,6	4,3	3,9	4,4	4,3	4,7	4,7
Manufacturing businesses included	6,9	6,2	5,9	6,4	6,5	6,9	6,9	6,3	5,2	5,9	5,7	6,0



Picture 4: The coefficient of renewal of fixed assets in the Russian Federation by the kinds of economic activity, (in comparable prices), %
Source: Federal State Statistic Service, 2021

Applying the same approach of analytical and graphical assessment of the rate of renewal of fixed assets in the Russian Federation by type of economic activity (Table 3, Pic. 4), we can conclude that this indicator demostrates a slightly different trend of change. Thus, the renewal of fixed assets in the industry as a whole has slightly changed over 12 years from 4.4% to 4.7%, or in 1.07 times. Regarding the renewal of fixed assets by sectors of the economy, including those related to high, medium, and low degree of manufacturability in manufacturing enterprises, there is a decrease: from 6.9% to 6.0%, i.e. in 1.15 times.

Summarizing the results obtained, it should be noted that the problems associated with the renewal of fixed assets lead to an increase in production risk factors. Finally, there is a slowdown in the growth of the share of products of high-tech and science-intensive industries, which negatively affects the rates of the development of both the economy as a whole and participants in technological integration of manufacturing enterprises.

Organizational and production risk factors reflect all economic changes that carry both potential opportunities and serious threats. First of all, changes in production volumes can lead to risks of loss of control (Chin et al., 2019).

Serious risks are associated with the shortcomings of the organizational structure of the participants in technological integration, errors and inaccuracies in making strategic and operational decisions, the choice of management methods. Imperfect manufacturing structures can also lead to real disruptions in the manufacturing process.

2.2. Assessment of scientific and technological risk factors

The factors of scientific and technological risk are, to a greater extent, connected with a decrease in the level of state support for the development of science; the appearance of alternative goods on the market as a result of the scientific and technological revolution; production of obsolete products; a significant increase in the level of scientific developments among competitors; a significant increase in customer requirements for the technical level of production; lack or insufficient targeted financing of research and development, launch of new products; deterioration of the situation with the element base; insufficient level of effectiveness of innovation activity (Ghisellini & Ulgiati, 2020; Tarkhanova et al., 2020).

Noting the insufficient level of effectiveness of innovation activities of participants in technological integration and its role and impact on scientific and technological risk, it is necessary to emphasize the connection between the financing of innovation activities and the launch of new products. Lack of adequate funding arises due to the fact that the financial plan is drawn up at the initial stage of the innovative product. Its further implementation is associated with a sufficiently long time interval during which changes occur, entailing an increase in the budget allocated for an innovative product, which ultimately affects the level of scientific and technological risk (Papageorgiou et al., 2020).

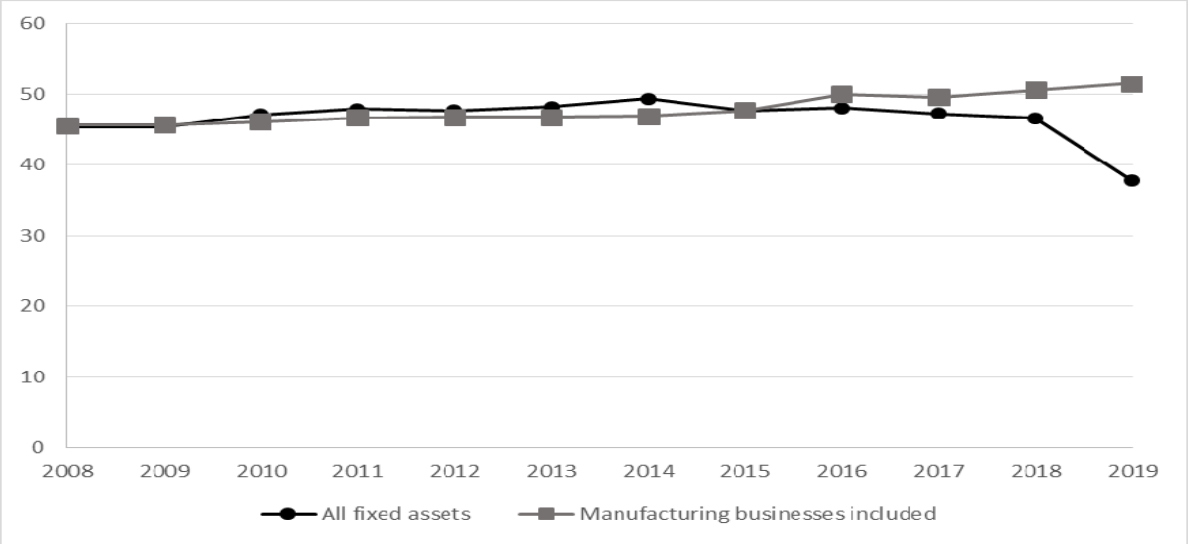
Scientific and technological risk factors quite often arise due to the high physical and moral wear of the equipment used, in connection with which many participants in technological integration pursue a purposeful policy of technical re-equipment. This process leads to high costs for the purchase of new equipment. Besides other things, it is necessary not only to purchase equipment, but also to integrate it into the production chains of participants in technological integration in the appropriate way.

The degree of wear of fixed assets by sectors of the economy, including those related to high, medium, and low degree of manufacturability is significant among the factors of technical and technological risk. This degree of wear should be understood as the ratio of the accumulated depreciation to a certain date of existing fixed assets (the difference between their full accounting and residual book value) to the full book value of fixed assets on the same date. The indicator makes it possible to assess the state of the material and technical base of industries.

Thus, the wear of fixed assets in industry (Table 4, Pic. 5) increased from 43.4% to 49.4%, i.e. in 1.14 times. The degree of wear of fixed assets in the manufacturing industry has a steady upward trend, with the growth of a higher rate: from 41.0% to 50.6%, more than in 1.2 times.

Table 4: Wear rate of fixed assets, by economic industries, including those related to high, medium, and low degree of manufacturability, %

Indicators	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
All fixed assets	43,4	44,3	45,7	46,3	46,0	46,5	47,3	48,2	48,8	49,5	49,4	49.7
Manufacturing businesses included	41,0	41,2	42,2	42,6	43,4	43,6	44,7	45,9	47,4	48,8	50,6	51.3



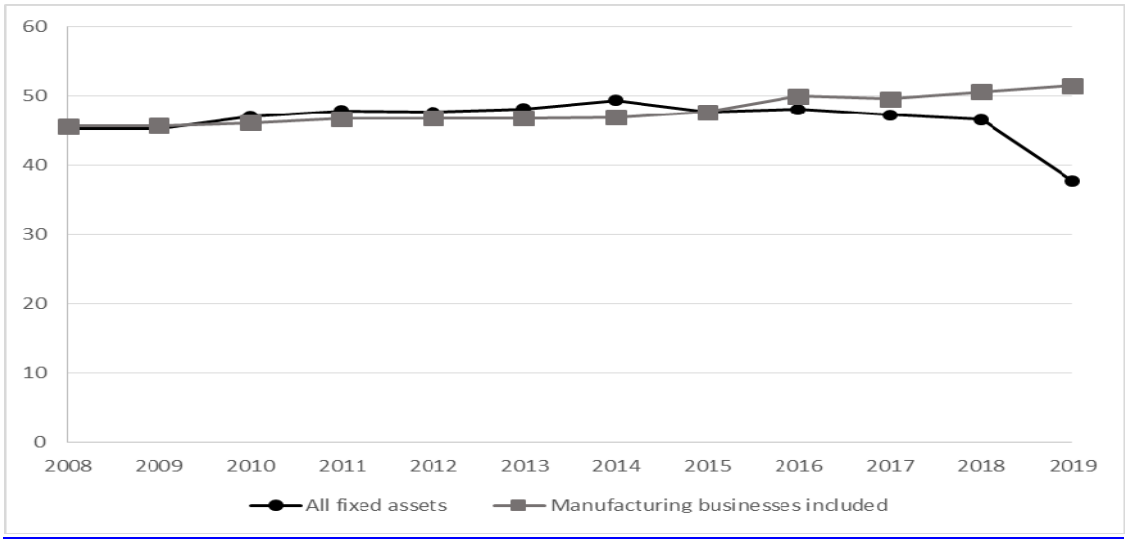
Picture 5: Wear rate of fixed assets, by economic industries, including those related to high, medium, and low degree of manufacturability, %

Source: Federal State Statistic Service, 2021

Additionally, it is necessary to study the indicator of the degree of wear of fixed assets by the type of an economic activity, which also shows the ratio of the wear of fixed assets accumulated at the end of the year to the full book value of fixed assets by the type of an economic activity (Table 5, Pic. 6).

Table 5: Wear rate of fixed assets in the Russian Federation at the end of the year by the kinds of an economic activity, %

Indicators	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
All fixed assets	45,3	45,3	47,1	47,9	47,7	48,2	49,4	47,7	48,1	47,3	46,6	37,8
Manufacturing businesses included	45,6	45,7	46,1	46,7	46,8	46,8	46,9	47,7	50,0	49,6	50,6	51,5



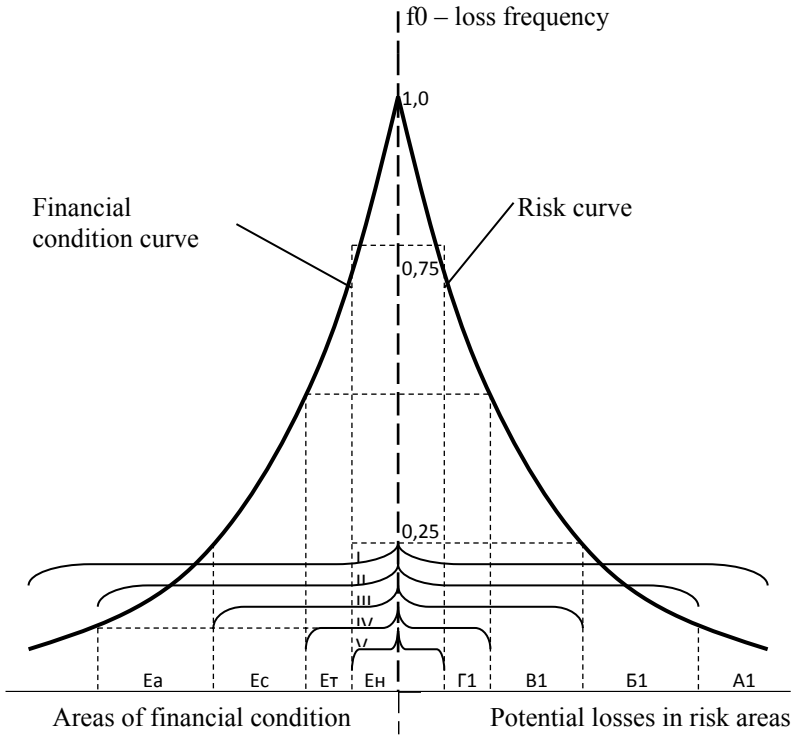
Picture 6: Wear rate of fixed assets in the Russian Federation at the end of the year by the kinds of an economic activity, %
Source: Federal State Statistic Service, 2021

Thus, the degree of wear of fixed assets in the Russian Federation at the end of the year by the type of an economic activity, taking into account its fluctuations over the years, decreased from 45.3% in 2008 to 37.8% in 2019. At the same time, in 2019, there was the most significant drop in the degree of wear of fixed assets compared to 2018 - by 8.8 points.
The degree of wear of fixed assets in the manufacturing industry has a steady upward trend, with the growth at a higher rate from 45.6% to 51.5%, more than in 1.13 times.
Hence, it is logical to conclude that the effective technological development of Russian manufacturing enterprises is associated, on the one hand, with the formation of favorable conditions for the effective functioning of the technological infrastructure, and, on the other hand, with the concentration of scientific research and technical and technological resources in priority areas of global technological trends.

2.3. The assessment of financial risk factors

The emergence of risks in the financial sector (Cai et al., 2020) of participants in technological integration of manufacturing enterprises is due to the following factors:
1. Increase in cost. This risk is associated with many factors, for example, an increase in prices for purchased equipment. Its growth entails the emergence of losses for the enterprise, since in this case the difference in the prevailing price and the agreed price will have to be compensated for at the expense of its own funds.
2. Decrease in the rate of profitability of production, increase in the payback period of capital investments. These risks are associated with a long production cycle for special-purpose products.
3. Delay in payment for manufactured products, which takes place when enterprises are co-executors of work, so they will be able to receive payment for the work performed only after receiving it by the head executor, which requires having their own funds to launch special-purpose products.
4. Risks of the fall in the financial stability indicator, which are associated with the receipt of advances for the implementation of growing production volumes, which must be supported by the availability of a sufficient level of working capital.
Picture 7 reveals the economic meaning of financial situations depending on the main areas of risk where Ea stands for own circulating assets; Ec means surplus (+) or shortage (-) of own funds; Er means surplus (+) or shortage (-) of own

and medium-term, long-term sources to form stocks and costs; En stands for surplus (+) or shortage (-) of the total value of the main sources to form stocks and costs.



Picture 7: Financial condition and risk curve based on potential losses and degree of financial stability
Source: The author

Taking into consideration the complexity of financial risks and their unpredictable character, it should be emphasized that ignoring or avoiding possible risks is not always justified. It is essential to find a reasonable degree of financial risk, especially when there is a high probability of a missed opportunity for competitors to take advantage of (Kahiya, 2020). The nature of financial risk is such that it should be managed, not avoided.

CONCLUSION

The process of assessing the factors of scientific, technological and financial risks of technological integration should include several procedures: the identification and classification of risks; their analysis and assessment; the choice of procedures and methods to regulate scientific, technological and financial risks; making management decisions, monitoring and controlling risks. The factors of scientific, technological and financial risks of technological integration reflect the current economic conditions of the manufacturing enterprises, as well as the state of instability under the influence of risks. The studied risk factors reflect the conditions of instability in the activities of participants in technological integration, both in their current activities and in the process of their development. Since scientific, technological and financial risks are objective in nature, it is not always possible to level them. This implies the necessity to develop management decisions aimed at creating a mechanism for the functioning of participants of technological integration in the context of all possible risks. Therefore, the conceptual sequence of management actions, according to the assessment of the factors of scientific, technological and financial risks seems the most effective.
In order to assess the factors of scientific, technological and financial risks, the following algorithm is provided. It includes the assessment of each of the risks; determining the strength of the impact of scientific, technological and financial risks on the results of the activities of all participants in technological integration; the development of management decisions to neutralize the risks. Definitely, the effectiveness is significantly increased due to the efficient organization of operational monitoring of the factors of scientific, technological and financial risks. For this purpose, the conditions associated with the availability of a mechanism that allows promptly taking measures to correct risk-forming factors must be met; carrying out specific internal analytical work, including work with documentation reflecting risk events, their gradation (constantly existing and newly emerging risks) and the nature of their impact on the functioning and development of participants in technological integration; building diagrams demonstrating cause-and-effect relationships between the factors of scientific, technological and financial risks and the results of the activities of participants in technological integration.

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