Vol. 12, No. 1, 2022 | DOI: 10.26794/2304-022X | ISSN 2304-022X (Print) ISSN 2618-9941 (Online)

MANAGEMENT SCIENCES

Scientific and Practical Journal
Published since 2011

The edition is reregistered
in the Federal Service for Supervision
of Communications,
Informational Technologies and Media Control:
PI No. ФС77–82266
of 23, November, 2021

Publication frequency — 4 issues per year

**Founder: Financial University,
Moscow, Russia**

The Journal is oriented towards scientific discussion of present-day topics in the sphere of Theory and Practice of Management.
The Journal is included in the list of academic periodicals recommended by the Higher Attestation Commission for publishing the main findings of PhD and ScD dissertations, included in the core of the Russian Science Citation Index (RSCI)

All articles of journal Managemant Sciences in Russia are published with a digital object identifier (DOI)

The Journal is distributed by subscription.
Subscription index: 44108 in the consolidated catalogue “The Press of Russia”

Management Sciences

Vol. 12, No. 1, 2022

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Editorial office address:
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Moscow,
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Tel.: 8 (499) 553-10-84 (internal 10-84).
E-mail: uprnauki@mail.ru

Subscription department:
tel.: **+7 (499) 553-10-71 (internal 10-80),**
e-mail: sfmihajlova@fa.ru
S.F. Mihaylova

Signed for press on
04.04.2022
Format 60 × 84 1/8
Length 12,25 p. s.
Order № 264

Printed in the Publishing House of the Financial University
(51, Leningradsky prospect, Moscow)

ORIGINAL PAPER

DOI: 10.26794/2304-022X-2022-12-1-6-16
UDC 338.242(045)
JEL G32

Algorithms for Making Managerial Decisions in the Digital Economy

V.A. Chernov
Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia

ABSTRACT

For solving the existing problems such as loss of sales and customer dissatisfaction, it is necessary to improve promptly the properties of manufactured products in accordance with the dynamically changing market demands. This requires the development of special methods and models for making managerial decisions in conditions of uncertainty and risk. Such decisions could become an algorithm for artificial intelligence of digital technologies, which determines the relevance of the study. The subject of the study is choosing the most significant decisions in conditions of uncertainty and risk. The goal is to find opportunities for making informed decisions for poorly structured, non-formalized processes when developing new product designs with characteristics that meet the rapidly changing needs of the business environment. The solution uses the method of prioritization with expert assessments, groupings, comparisons. The result of the research is the development of a priority setting model with the identification of existing shortcomings and the proposal of changes and additions that eliminate shortcomings in relation to the problem being solved. The author concluded: the developed model, when used in management decisions, allows us to determine the best functions of the product for their inclusion in the design of the innovative model; to make a rating of the significance of functional properties for the consumer and the manufacturer. The development of a methodology with the elimination of the shortcomings of previous studies is a scientific novelty. The obtained methodology contributes to maximizing the demand and competitiveness of the management model, operational innovative changes in the properties of the product corresponding to the rapidly changing demands of the competitive business environment and can be used in the formation of a knowledge base in neural networks of digital technologies. It solves the problem of responding to dynamic changes in consumer preferences, as well as introducing technological innovations in the production of goods, that entail changes in the company's business processes focused on improving the quality of the final product, which determines the success of strategic business development. The companies' management may apply the results of the research in the development of corporate governance strategies, researchers, university students, etc.

Keywords: custom solutions; innovative projects; strategic investment decision making; prioritization method; compensation for lack of information; uncertainty and risk; non-formalized process; expert method; business environment

For citation: **Chernov V.A. Algorithms for making managerial decisions in the digital economy. *Management Sciences*. 2022;12(1):6-16. DOI: 10.26794/2304-022X-2022-12-1-6-16**

INTRODUCTION

In a digital transformation environment, it is important that economic-mathematical management methods can be used as artificial intelligence algorithms. For this need that the models developed gave prepared management individual solutions, contributing to the success of the business in specific circumstances, taking into account the place, time and circumstances. Production organizations are increasingly faced with the challenge of transition from *equipment orientation* to *individual* solutions, and them starting to come up with these solutions. At the same time, organizations periodically face by serious problems, such as loss of sales and customer dissatisfaction. [1]

At the solution of problems, organizations in different sectors consider either the individual life cycle of the project or individual project management by sector. [1] Based on resilient to business cycles, A.V. Kolobov proposes to apply maturity assessment matrix in the context of stages of development of the company when analyzing the sustainability of the company. [2, p. 21–32] Our proposed priority setting methodology, in addition to maturity assessment, allows to adapt production to the dynamically changing requirements of business environment, so that the level of maturity passes into active growth.

In innovative projects, developers often faced by organizational inertia that hinders innovation processes. This phenomenon has been researched in the literature, which also considers the positive impact of innovation on productivity. [3]

As is known, innovation processes are impossible without strategic investment decision making (SIDM). В открытых источниках встречается четыре различных стиля (или акцента) SIDM: management authority, financial analysis, senior leadership and strategies are based on investment. Thus, the authors from Pakistan, after empirical research on the influence of contextual variables on the styles of strategic investment decisions, came to the conclusion, that high expected profitability is only related to the investment style based on financial analysis and the four styles of SIDM (or accents) listed above. [4]

As a supplement, we offer as key tools to achieve high expected profitability with an investment style, based on financial analysis and four focus areas, performance management. [5]

But it takes fundamental approaches to price management [6] and rational international cooperation on an equal basis of mutual benefit. [7] But in order to achieve high profitability in these conditions, need rapid innovation changes in the properties of the product, responding to the rapidly changing demands of a competitive business environment. [1] To do this, we propose to use a model base on method the assignment of priorities.

There are other important factors that determine the innovation of companies to varying degrees. [8, p. 24–35]. The assignment of priorities model has the advantage of not only identifying essential parameters but also determining their significance quantitatively. To form an initial set of data for the development of a standard management model of innovative development of a company allows practical approbation of proposals made on specific economic entities. In our case, we get an array in the form of an intellectual base that allows us to improve the quality of the products in accordance with the rapidly changing demands of the market.

It is important to take into account the views of stakeholders when determining the significance of parameters and factors. To this end, we propose that their representatives be included in the panel of experts and that the latter's assessments be used in establishing an assignment of priorities model, oriented

towards value creation for interested parties (model considered in [9, p. 2–16]).

MATERIALS AND METHODS

When forming artificial intelligence in digital control [10, p. 1–9; 11, p. 283–297] use deterministic and stochastic methods and models. Where unambiguous decisions are possible (with functional dependencies and full information), the algorithm of calculation and control "falls" in the program of artificial intelligence without any difficulties, forming a knowledge base based on deterministic methods of economic analysis, which is rarely observed in a market economy. In practice, business faces an environment where information is incomplete and management processes are poorly structured or not formalized. This creates uncertainty and associated risk, which is originally inherent for market relations. For these challenges are required methods, compensating for lack of information, and for digitalization management — algorithms using stochastic methods and models.

In the process of generating missing data, experts are engaged to apply heuristic methods (methods of expert evaluations), which forms the database necessary to create a knowledge base of artificial intelligence in digital neural networks. At the digital level, automated expert systems can be used as experts, provided that they have appropriate artificial intelligence algorithms. [10, p. 1–9; 11, p. 283–297] The subject of our research is the creation of such algorithms, and purpose — is to develop a method of forming the functions of the product model, which are in demand by the consumer, with the lowest possible production and then operating costs.

Thus, we solve the problem of functional-cost analysis (FCA) under conditions of uncertainty and risk. In order to reduce costs, the article research the degree of necessity and demand of the proposed functions of the model, their quantitative characteristics and identifies the most economical ways to achieve these functions. In this way we can have an economic effect, which could not be achieved by other methods in decision poorly structured, impossible to formalize tasks, and proposed developments can become an artificial intelligence algorithm for digital neural networks for the specified conditions.

The relevance of the functions can be better determined from statistical consumer surveys. When it is impossible or much difficult to spend time and money on the results of such interviews, and if sufficient information is available from specialists from the managers, practitioners from the economic sphere, directly working in this type of production, the task can be solved with the help of such experts.

Importance of each function is estimated at points. For this we will use the method of prioritization, in which to express expert judgments use the method of pair comparisons. [12] Pairwise comparisons release us from the requirement of transitivity, their logical relationships are not straightforward, but relative and more flexible. It is this fact that allows the method to be used in solving poorly structured tasks that cannot be formalized.

Nontransitive (non-conformity with formal logic in a comparison chain) in a pairwise comparison system arises for different reasons. For example, if the expert has varying degrees of knowledge of the objects being assessed, which means that some of them may be assumed to be inaccurate.

Experts who evaluate multiple objects on a single basis may disagree (especially if each assesses only part of the objects), and then some contradictions may arise.

One expert who evaluates all objects may have a different threshold variation to some

of them. If the assessment of the same objects by different experts on the basis of the established criteria achieved transitive results, then their grouping may not exclude violations of this principle. Therefore, pairwise comparisons are more consistent with the subjective nature of preferences: they are less limited and do not have rigid a priori transitive conditions.

In a transitive comparison system, when comparing a pair of objects with an erroneous result, it should be taken into account when comparing other pairs, which can lead to new errors. If pairwise comparisons are not limited by transitive requirements, the objects are compared independently of the results of other comparisons. Therefore, an error in one of the comparisons will not reduce the credibility of the others, which will reduce the impact of possible incorrect results on the accuracy needed and sufficient to make the right management decision.

Thus, the main advantage of the priority setting method is that it is applicable in all methods of examination results processing: both transitive and nontransitive. The mathematical content of this method is the so-called "leader problem". Usually, the identification of the leader (object with the highest rank) and the allocation of seats among the participating objects is done by summing the scored points; at the same time, the strength of objects participating in the competition, which have not become the leaders of the rating, is not fully taken into account. The method of prioritization takes into account the strength of all participants with the most accurate allocation of seats.

In order to construct a model of ranking of studied objects let's denote them through X_i, where i — sequential number of objects from 1 to n. Then draw up a matrix of paired comparisons $R = |r_{ij}|$, where j — object sequence number X_j, matched against to object X_i.

$$\begin{vmatrix} r_{11} & r_{12} \dots & r_{1j} & \dots & r_{1n} \\ r_{21} & r_{22} \dots & r_{2j} & \dots & r_{2n} \\ \dots & \dots & \dots & \dots & \dots \\ r_{i1} & r_{i2} & \dots & r_{ij} & \dots & r_{in} \\ \dots & \dots & \dots & \dots & \dots & \dots \\ r_{n1} & r_{n2} & \dots & r_{n3} \dots & r_{nn} \end{vmatrix},$$

$$\text{where } r_{ij} = \begin{cases} 1{,}5, & if \ X_i \succ X_j \\ 1, & if \ X_i = X_j \\ 0{,}5, & if \ X_i \prec X_j \end{cases},$$

where $X_i \succ X_j$ means that i-object is more preferable to the analyzed features than j-object, or satisfies the condition of the j- object, or removes the defect indicated by X_j.

$X_i = X_j$ indicates that i and j objects are equivalent on the basis of the reference, are in a critical ratio when object i does not contribute, but does not prevent the realization of condition j of the object X_j, or these conditions i and j are not related and independent of each other.

Condition $X_i \prec X_j$ indicates that object i is less preferable to object j. Or object i cannot fulfil the condition of object j. Either the i-object prevents the implementation of condition j, or eliminates the possibility of remedying the defect j.

The disadvantage of this method is that the comparison X_i and X_j reflects the preferences of the functional characteristics researched, but does not reflect their relevance to the preferences of other characteristics researched. Three numerical estimates from 0.5 to 1.5 answer the question: does or does not match the property characteristic j or is not related to it? But when choosing features it is also important to know how significant the feature. Otherwise, the meaningful and insignificant characteristics will receive the same estimates if both satisfy the condition of the corresponding property j.

Therefore, we recommend, depending on the property of the function under study, to use unclear multiple:

if $X_i \succ X_j$ select an evaluation from 1.5 to 2;

if $X_i \prec X_j$ select an evaluation from 0 to 0.5.

In the process of solution apply multiple calculations k for the object are applied X_i. In the integrated evaluation of the zero value of object X_i use the designation $S_i(0)$. And calculate by using the expression:

$$S_i(0) = \sum_{i=1}^{n} a_{ij}. \quad (1)$$

So, we got the primary iteration to the results evaluation. Move on to the next iteration using a formula called the main management of the priority setting method:

$$S_i^n(k+1) = \sum_{i=1}^{n} a_{ij} S_j^N(k), \quad (2)$$

where $S_j^N(k)$ — normalized integrated value k for object X_i, which expression defined:

$$S_j^N(k) = \frac{S_i(k)}{\sum_{j=1\to n}^{n} S_i(k)}. \quad (3)$$

The solution is terminated on the iteration of the value k, which yields an approximation accuracy value that satisfies a sufficiently small number ξ predefined. In this case, the inequality is satisfied:

$$S_i(k) - S_i(k-1) \le \xi;\ i = 1,2,2\ldots,n. \quad (4)$$

In normal cases it is customary to choose a value of ξ in the range 0.01÷0.001, at which the ranking is considered to be sufficiently accurate.

In the solution, we will arrange to use the following symbols:

$S(k) = \{S_i k\}$ — vector-column of integrated estimates of value k;

$S^N(k) = \{S_i^N k\}$ — vector-column of normalized integrated estimates of value k.

Then the ranking will be done using expressions:

$$P(k) = \begin{Bmatrix} S_1(k) \\ S_2(k) \\ \ldots \\ S_i(k) \\ S_n(k) \end{Bmatrix} \text{ and } S^N(k) = \begin{Bmatrix} S_1^N(k) \\ S_2^N(k) \\ \ldots \\ S_i^N(k) \\ S_n^N(k) \end{Bmatrix}. \quad (5)$$

In this regard get the basic equation of the method of ranking in matrix form:

$$S^N(k+1) = A \cdot S^N(k). \quad (6)$$

CALCULATIONS AND RESULTS

In the example considered by E. A. Prikhodko [12], to solve the problem create a matrix, were placed short-term financial policy objectives on horizontally and vertically. In the solution, a pairwise comparison of tasks of short-term policy is carried out.

This method gives significant results, but it has one major drawback: identical serial numbers vertically and horizontally correspond to the same problem, priority setting therefore does not take into account functionality, weaknesses and options for correcting them.

To eliminate this disadvantage and take these factors into account, we propose a model, where pairwise comparison columns contain objects to be evaluated, and rows contain disadvantages and advantages, which relate to the objects being evaluated for their possession of these advantages and possibilities of overcoming the disadvantages of each of the objects. So, we have two series of digital symbols. And in this method, unlike the

previous one, the number of functionalities in a vertical row may differ from the number of related disadvantages and advantages in a horizontal row.

It should be taken into account that when constructing the model as a key factor of creating market demand, and therefore, and impacts on production, consumers are considered [13, p. 91–101]. Spend rank the quality properties of the product to set their priorities in choosing the construction of models, the most satisfying consumer demand for maximizing the competitiveness of the model for which the functional qualities are selected.

To do this, it is necessary to first study the demand of consumers, which can be done most comprehensively with the methods revealed in the sources [14, p. 1–9; 15; 16, p. 41–53; 17, p. 54–67; 18, p. 43–52].

Example. Using the method of prioritization in the role of experts, to carry out ranking of researches functional characteristics of TV models: determine the "leader" and allocate the seats among the remaining. The following functional characteristics of the X_i TV-model are to be evaluated:

1. Supporting Smart TV.
2. Image transmission 4K (UHD).
3. Power front AC 2×20 Вт.
4. Technology PurColour.
5. Technology Quantum HDR 4x.
6. Android operating system.
7. Technology of displays based on quantum dots — QLED.
8. Technology double-lighting — Dual LED.
9. Active speech enhancer — AVA.
10. Interior regime Ambient+.
11. Mode viewing content from smartphone on TV — Mobile View.
12. Availability Blu-ray player.
13. DST audio format.

Inherent disadvantages and advantages X_j:

1. High price.
2. Dependence on the quality of the Internet.
3. Possibility to create a multimedia center, display on a large screen movies and games from PC, tablet and smartphone.
4 High power consumption.
5 Image fit to interior.
6. Availability of free smart-TV channels.
7. Improved clear lines of images.
8. Ability to install (use) the largest number of applications.
9. Ability to rewind the ether and use to TV archive.
10. Recognition of external noise sources and increase of voice volume on screen, reduction of noise interference.
11. High image update rate.
12. High quality of natural sound transmission.
13. Accurate color reproduction.

Using the matrix, fill out a table of pairwise functional characteristics with inherent disadvantages and advantages of the role of experts (*table 1*).

Use *table 2* to define an integrated zero-order estimate $S(0)$; then normalized integrated zero-order estimate $S^N(0)$; integrated first-order assessment $S(1)$ and first-order normalized integrated assessment $S^N(1)$ and etc. until ξ will reach a value not exceeding 0.0001.

Find integrated zero-order estimate $S_i(0)$ as the sum of results of pairwise comparison of functions and their properties by formula (1):

$$S(0) = 1 + 0.5 + 1 + 1 + 1 + 1 + 1 + 1 + 2 + 1 + 1 + + 1 + 1 = 13.5.$$

The integrated estimates of each subsequent pairwise comparison is found similarly.

Then define the normalized integrated assessment as the ratio of the integrated zero-

Table 1

Pairwise comparison results

Functions X_i	Inherent disadvantages and advantages X_j												
	1	2	3	4	5	6	7	8	9	10	11	12	13
1	1	0.5	1	1	1	1	1	1	2	1	1	1	1
2	1	1	1	1	1	1	1.8	1	1	1	1	1	1
3	1	1	1	0.5	1	1	1	1	1	1	1	1.5	1
4	1	1	1	1	1	1	1.5	1	1	1	1	1	1.5
5	0.5	1	1	1	1	1	1.7	1	1	1	1.5	1	1.5
6	1	0.5	1.5	1	1	1.5	1	1.9	1	1	1	1	1
7	0.5	1	1	0.5	1	1	1.8	1	1	1	1.5	1	1.5
8	0.5	1	1	1	1	1	1	1	1	1	1	1	1.6
9	0.5	1	1	0.5	1	1	1	1	1	1.5	1	1.5	1
10	0.5	1	1	1	1.5	1	1	1	1	1	1	1	1
11	1	0.5	1.5	1	1	1	1	1.5	1	1	1	1	1
12	1	1	1	1	1	1	1	1	1	1	1	1.5	1
13	0.5	1	1	1	1	1	1	1	1	1.5	1	1	1

Source: developed by the author.

order estimate to the sum of the integrated formula estimates (3):

$$S^N(0) = \frac{13.5}{175.8} = 0{,}0768.$$

The normalized estimates of each subsequent pairwise comparison are found similarly.

Define an integrated assessment of the first-order. To do this, we find the sum of the multiplications of pairwise comparison of functions with their properties on the corresponding string and normalized integrated estimation of zero-order on the formula (2):

$$S(1) = 1*0{,}0768 + 0.5*0.0785 + 1*0.0739 + 1*0.0796 + 1*0.808 + 1*0.0819 + 1*0.0785 + 1*0.0745 + 2*0.0739 + 1*0.0739 + 1*0.0768 + 1*0.0768 + 1*0.0739 = 1.0347.$$

The integrated first-order estimate for each subsequent pairwise comparison is found similarly, using all 13 indicators of the corresponding graph. Then we go to the second-order with similar calculations, and then to the third in the same order until then, when the difference between the next and the previous values of the orders k and $(k-1)$ of the integrated estimates is no more than $\xi = 0{,}00010$.

In our case (*table 2*), the difference between the total values of the third and second order of the integrated estimates is 0,0001, which satisfies the condition of the expression (4):

$$13.50723 - 13.50713 = 0{,}00010 \leqslant \xi.$$

Therefore, we will accept this iteration as final. By the size of S (3) we see that the first priority is the installation of item 6. Operating system "Android". And then we will build a rating of priorities on this graph:

Table 2

Calculation of the TV-set functional characteristics' significance

Functions *Xj*	0,00010Inherent disadvantages and advantages X_j													*P*(0)	$P^N(0)$	*P*(1)	$P^N(1)$	*P*(2)	$P^N(2)$	*P*(3)
1	1	0.5	1	1	1	1	1	1	2	1	1	1	1	13.5	0.0768	1.03470	0.0766	1.03448	0.0766	1.03450
2	1	1	1	1	1	1	1.8	1	1	1	1	1	1	13.8	0.0785	1.06280	0.0787	1.06278	0.0787	1.06278
3	1	1	1	0.5	1	1	1	1	1	1	1	1.5	1	13	0.0739	0.99858	0.0739	0.99860	0.0739	0.99860
4	1	1	1	1	1	1	1.5	1	1	1	1	1	1.5	14	0.0796	1.07622	0.0797	1.07620	0.0797	1.07621
5	0.5	1	1	1	1	1	1.7	1	1	1	1.5	1	1.5	14.2	0.0808	1.09192	0.0808	1.09191	0.0808	1.09192
6	1	0.5	1.5	1	1	1.5	1	1.9	1	1	1	1	1	14.4	0.0819	1.10575	0.0819	1.10559	0.0819	1.10559
7	0.5	1	1	0.5	1	1	1.8	1	1	1	1.5	1	1.5	13.8	0.0785	1.05995	0.0785	1.05992	0.0785	1.05993
8	0.5	1	1	1	1	1	1	1	1	1	1	1	1.6	13.1	0.0745	1.00597	0.0745	1.00606	0.0745	1.00607
9	0.5	1	1	0.5	1	1	1	1	1	1.5	1	1.5	1	13	0.0739	0.99716	0.0738	0.99739	0.0738	0.99740
10	0.5	1	1	1	1.5	1	1	1	1	1	1	1	1	13	0.0739	1.00199	0.0742	1.00212	0.0742	1.00213
11	1	0.5	1.5	1	1	1	1	1.5	1	1	1	1	1	13.5	0.0768	1.03498	0.0766	1.03486	0.0766	1.03487
12	1	1	1	1	1	1	1	1	1	1	1	1.5	1	13.5	0.0768	1.03840	0.0769	1.03844	0.0769	1.03844
13	0.5	1	1	1	1	1	1	1	1	1.5	1	1	1	13	0.0739	0.99858	0.0739	0.99879	0.0739	0.99880
Total	-	-	-	-	-	-	-	-	-	-	-	-	-	175.8	1	13.50700	1	13.50713	1	13.50723
Итого / Total	-	-	-	-	-	-	-	-	-	-	-	-	-	175,8	1	13,50700	1	13,50713	1	13,50723

Source: developed by the author.

6. Operating system "Android".
5. Technology Quantum HDR 4x.
4. Technology PurColour.
2. Image transmission 4K (UHD).
7. Technology of displays based on quantum dots QLED.
12. Availability Blu-ray player.
11. Mode viewing content from smartphone on TV — Mobile View.
1. Supporting Smart TV.
8. Technology double-lighting — Dual LED.
10. Interior regime Ambient+.
13. DST audio format.
3. Power front AC 2×20 Вт.
9. Active speech enhancer — AVA.

The resulting model serves the purpose as a methodological development, which can be built into the algorithm of neural network programs of intelligent digital technologies to manage an organization under conditions of uncertainty and risk.

CONCLUSION

During the research process, we developed a model to regulate the functional properties of the product, most relevant to the rapidly changing business environment based on prioritization. We identified the disadvantages of this method and suggested ways to address them:

1) determining the preference of the functional characteristics being studied does not reflect their importance relative to the preferences of other characteristics being studied. This disadvantage has been corrected by introducing in model range of estimates in the form of unclear sets;

2) priority-setting does not take into account functionalities, disadvantages and options for overcoming them, as the same vertical and horizontal sequence numbers correspond to the same problem.

Disadvantage eliminated by the introduction of a second series of numerals, so that the pairwise comparison columns contain the objects to be evaluated, and the rows contain the disadvantages and advantages.

As a result of using the management model, we have identified the best functional characteristics for selecting and incorporating them into the design of TVs, by rating assessment, assign their importance to the consumer and producer, taking into account the qualities that contribute to: increase in demand and competitiveness of the emerging model; operational innovation changes in product properties, corresponding to the rapidly changing requirements of a competitive business environment.

Using the proposed model, an enterprise can achieve an economic effect, which is unattainable by other methods in dealing with poorly structured, cannot be formalized objectives that under conditions of uncertainty and risk. The proposed developments can be built into the algorithm of artificial intelligence programs of digital neural networks for the specified conditions.

The resulting methodology involves its inclusion in digital technologies of automated information and analytical functions of compensation, missing information generation, transition from a database to a knowledge base that fills neural networks with artificial intelligence, providing design of management decisions, innovative sustainable development under conditions of uncertainty and risk.

Further direction of this research may be a more detailed selection and grouping of properties (their disadvantages and advantages) for more accurate characterization and development of innovative design components. And in the conditions of clustering science and production, research can be carried out taking into account the conditions of the network interaction of the market. [19]

Next stage — integration of models into the processes of managerial decision-making at the level of elements of information and analytical applications of the complex IS company/organization achievable in the technical field through computer software.

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ABOUT THE AUTHOR

Vladimir A. Chernov — Dr. Sci. (Econ.), Professor of the Department of Finance and Credit of the Institute of Economics and Entrepreneurship of the Lobachevsky State University of Nizhny Novgorod. Nizhni Novgorod, Russia
https://orcid.org/0000-0002-7703-1660
chernovva@rambler.ru

Conflicts of Interest Statement: The author has no conflicts of interest to declare.

The article was submitted on 16.08.2021; revised on 19.10.2021 and accepted for publication on 28.01.2022. The author read and approved the final version of the manuscript.

ORIGINAL PAPER

DOI: 10.26794/10.26794/2304-022X-2022-12-1-17-31
UDC 330.88:004.738.5:336.747.5(045)
JEL D02, G30, G32, G34, M14, M15, O33

Board of Directors and ICT Governance: A New Paradigm for Corporate Relations

A.S. Yukhno
Office of the Civic Chamber of Russia, Moscow, Russia

ABSTRACT

The following paper's **research subject** is to determine the role of the board of directors of an organization in the framework of information and communication technologies governance (hereinafter — ICT governance) at a company's digital transformation stage. The article **aims** to study and identify trends and features of ICT governance, taking Russian and foreign experience into account. **Methods** of generalization, synthesis, comparative analysis of up-to-date approaches are used in the paper to outline the role of the board of directors during a period of dynamic technological changes in the company and factors increasing its ICT governance effectiveness. The author summarizes and analyzes the ICT governance specifics, including the features of its application, the necessary organizational changes, as well as the main tasks of the board of directors in this domain, which determines the scientific **novelty** of the study. The effectiveness of ICT governance exercised by the board of directors is considered by the author as an assessment criterion of a company's readiness for digital transformation and a necessary tool to ensure that members of the boards of directors perform their duties. It is **concluded** that it depends on many factors and requires considering various organization specifics and its development strategy on a case-by-case basis. The research results may be relevant for the Russian corporate practice and further studies in this area.

Keywords: digital economy; corporate governance; ICT governance; board of directors; board of directors' meeting agenda

For citation: **Yukhno A.S. Board of directors and ict governance: a new paradigm for corporate relations.** ***Management Sciences.*** **2022;12(1):17-31. (In Russ.). DOI: 10.26794/2304-022X-2022-12-1-17-31**

INTRODUCTION

Corporate scandals (Enron, WorldCom, etc.) and the bursting of the dot-com bubble in the early 2000s have led to a tightening of corporate governance legislation [1] and a revision of approaches to company governance. The adoption of new control and management standards has also contributed to a subsequent price surge for information and communication technologies (hereinafter — ICT, IT).[1] In 2004, at the beginning of a new legislative requirements introduction to comply with the Sarbanes-Oxley Act, US corporations spent more than 5 billion dollars, including $ 1 billion spent on ICT-related issues [2, p. 717].

Currently, the ICT market (Internet of Things, Big Data, Artificial Intelligence [3], etc.) is one of the most developed sectors of the global economy. In 2021, according to forecasts by Gartner, Inc., global ICT spending will be $ 3.9 trillion (up 6.2% compared to 2020).[2] The active digital transformation of business and society following the beginning of the COVID-19 pandemic in 2020 has reduced the negative impact of the pandemic on the ICT-associated costs (3.2% decrease compared to 2019[3]), proving the key importance of digital initiatives for organizations' success in the digital era. There is noted in the publication "Indicators of the Digital Economy: 2021: Statistical Book" that in 2020 ICT sector in the Russian Federation reached a volume of 2,985 trillion rubles and a growth rate of 103% compared to 2019, with a decrease in the GDP growth rate to 97%. In 2020, the share of households with Internet access increased significantly — 80% (in 2019–76.9%), including broadband — 77% (in 2019–73.6%). Exports of ICT services reached $ 5.9 billion and increased over the previous year (108%). The share of employees in ICT-related industries also increased (12% in 2019) and reached 13% of the Russian total employed population (9.2 million people), with the total number of ICT specialists employed in Russia making up to 2.5% (in 2019–2.3%).[4]

With the ever-growing demand for improving the ICT investment efficiency, ICT governance[5][4] during an organization's digital transformation, being, as a rule, one of the most underdeveloped elements of the corporate governance system, attracts more and more attention from experts [5]. The subject of the analysis in this article is the study of the role of the board of directors in the implementation of ICT governance, the tasks it solves, and the ongoing changes in the organizational structure of organizations during their digital transformation.

BOARD OF DIRECTORS AND ICT GOVERNANCE

It is noted that the difficulties in the digital transformation of an organization include ample factors, e.g., insufficient understanding of what additional value it brings to the organization, the company's unwillingness to integrate ICT into its activities, the issues of adapting the organizational structure to new digital tasks, ensuring a continuous improvement in the quality of business processes, complication of operational activities, ineffective use of data, lack of understanding of the potential volumes of ICT financing, harmonization of business and ICT strategies, data and information confidentiality, human factor, negative user reactions in social networks, etc.[6] [6, 7].

[1] In this paper, the terms information and communication technology and information technology are used as synonyms.

[2] Gartner. 2021. Newsroom. Gartner Forecasts Worldwide IT Spending to Grow 6.2% in 2021. URL: https://www.gartner.com/en/newsroom/press-releases/2020–01–25-gartner-forecasts-worldwide-it-spending-to-grow-6-point-2-percent-in-2021 (accessed on 10.03.2021).

[3] Op. cit.

[4] Digital Economy Indicators in the Russian Federation. Data Book. Moscow: HSE University. 2021. URL: https://issek.hse.ru/news/484525255.html (accessed on 19.03.2021).

[5] Within the framework of this study, ICT governance is understood as an integral component of the corporate governance system, the functionality of which is to make decisions in the field of ICT and establish appropriate responsibilities in order to coordinate the business strategy and the ICT strategy of the organization.

[6] Forbes, One CEO Club. Digital transformation: The 5 most common challenges. URL: https://www.forbesindia.com/

ICT governance of emerging risks by the board of directors becomes an adequate response to ongoing technological changes [8] and necessitates taking into account many factors to form a balanced approach to tackle the issue. First of all, it is aimed at establishing responsibility for the implementation of the organization's business strategy, and its absence exposes the organization to significant risks [9] (operating costs, losses, etc.) [8]. In addition, it allows taking into account the interests of a wide range of stakeholders, including the company's employees, who are directly involved in implementing the digital transformation strategy.

Accenture's 2020 Global Digital Fluency study finds that only 14% of organizations have transitioned to digital maturity. By analogy with language skills, the authors propose using the term "digital fluency" concerning businesses, by which they mean an integrated model determined by the coefficient of technological intelligence of workers, use of digital technologies in business processes and operations, adoption of digital technologies and IT architecture, commitment to digital leadership and culture. Companies demonstrating "digital fluency" experienced a 20% increase in profits 2.7 times more often than other survey participants in the three-year study. That said, technologically advanced businesses are projected to be 5.4 times more likely to receive 20% profit growth over the next three years than their less technologically advanced competitors.[7] Given that digital transformation affects the entire enterprise and involves regular adjustments to the implementation plan, its planning should begin with assessing the organization's readiness for change and an analysis of the ICT benefits for its business model, sustainability, and efficiency. According to recent scholarship, readiness for digital transformation is proposed to be assessed based on the analysis of the operational and business models of the organization, as well as the model of interaction with customers [10]. In turn, the board of directors' governance over this process should ensure systematic implementation of the company's business strategy changes in compliance with approved standards and policies.

It appears that ICT governance exercised by the board of directors, along with innovation and data corporate governance, can be a starting point in assessing a company's digital transformation readiness [10]. However, effective ICT governance requires considering multiple factors. For example, the COBIT 5 methodology identifies seven factors contributing to the exercise of effective governance:

1. Principles, policies, and frameworks.
2. Processes.
3. Organizational structures.
4. Culture, ethics, and behavior.
5. Information.
6. Services, infrastructure, applications.
7. People, skills and competencies [11].

However, current corporate practice shows that boards of directors are not always able to pay due attention to these issues. Moreover, despite significant investments and associated risks, such issues are not a priority topic at board meetings and are most often addressed in the paradigm of traditional corporate governance with an emphasis on compliance and risk issues. The Information Systems Audit and Control Association (hereinafter — ISACA) explains this state of affairs for the following reasons:

- need for more technical knowledge of the subject compared to other items on the agenda;
- considering such issues as detached concerning the company's business;
- the complicacy of the subject.[8]

Statistics show that board members do not always have the necessary technological and pro-

article/one-ceo-club/digital-transformation-the-5-most-common-challenges/53167/1 (accessed on 03.02.2021).

[7] Accenture. 2020. Honing your digital edge. URL: https://www.accenture.com/_acnmedia/PDF-141/Accenture-Honing-your-Digital-Edge-POV.pdf#zoom=40 (accessed on 04.02.2021).

[8] IT Governance Institute. 2003. Board briefing on IT governance, 2-nd ed. p. 14. URL: https://eventosfehosp.com.br/2017/material/sao_paulo/ti/jose/ITGI–Instrucoes-de-Governanca-de-TI-para-a-Alta-Administracao.pdf (accessed on 05.08.2021).

fessional knowledge and competencies required for executing a company's digital transformation.[9] The 2019 National Corporate Governance Index study indicates that among board members of the 100 Russian largest public companies in terms of capitalization, whose shares are listed on the Moscow Stock Exchange, there are only 3% of experts in the field of ICT, innovation, and digital technologies, i.e., averagely one specialist per board of directors.[10]

PwC's 2018 survey of board members of Russian enterprises shows that only 7% of respondents are involved in ICT implementation. In other cases, they hold responsibility for the company's management. In addition, 57% of board members meet with the Chief Information Officer (CIO) no more than once or twice a year, which goes against the emerging global practice of holding such meetings regularly. As a recommendation, the survey authors asked board members to improve their ICT knowledge, identify priority technologies and integrate them into the strategic governance process.[11]

Deloitte's data analysis on more than 4,000 US public companies tells that from 2010 to 2016 number of board members with ICT experience was insignificant. Still, the percentage of corporations that have appointed board members specializing in ICT grew from 10% to 17% during this period. However, the figure almost doubles (32%) for the companies with the highest performance. The study concludes that while having an ICT specialist among the board members may not be the only reason beyond the company's improved performance, many scholars have already recognized the benefits of having those experts among the high-rank managers.[12] Thus, the lack of understanding of digital transformation and ICT governance may hinder the board of directors' duty performance [12].

Initially, the placement of ICT experts in the boards of directors has been driven by the need to respond to transformation processes in the economy. Companies have been interested in professionals with ICT leadership experience who could bring a technological mindset to the company. Systematically, they can be grouped into four categories of managers:

1. Digital thinker. A board member who does not have extensive digital experience but has a conceptual understanding of the digital environment; has been a board member or a digital business adviser.

2. Digital disruptor. A board member who is deeply embedded in digital issues and generally has less general management breadth.

3. Digital leader. A board member with significant experience in managing a traditional business, which to some extent mitigates limited experience in the ICT field.

4. Digital transformer. A board member who has participated and succeeded in the digital transformation of traditional businesses; has no digital leadership experience but is competent enough in this area.

As a trend, it is noted that companies prefer to hire digital transformers with expertise in implementing digital transformation strategies, reengineering business processes and data-driven decision-making algorithms, and changing the corporate culture of the organization [13].

It should be noted that a digital board member is not a full-fledged replacement for the rest of the board due to their lack of digital transformation expertise. "Digital" board members may not have the requisite board experience, thus preventing them from contributing

[9] Deloitte. 2017. Bringing the boardroom's technology gap. URL: https://www2.deloitte.com/insights/us/en/focus/cio-insider-business-insights/bridging-boardroom-technology-gap.html (accessed on 13.05.2021).

[10] Top Competence. 2019. National Corporate Governance Index. URL: https://corpshark.ru/wp-content/uploads/2019/12/National-CG-Index-2019-TopCompetence.pdf

[11] PwC (2018). Corporate digital governance. Results of a survey of board members of Russian companies. URL: www.pwc.ru/ru/services/corporate-governance/publications/russian-boards-survey-2018.html (accessed on 20.01.2019).

[12] Deloitte. 2017. Bringing the boardroom's technology gap. URL: https://www2.deloitte.com/insights/us/en/focus/cio-insider-business-insights/bridging-boardroom-technology-gap.html (accessed on 13.05.2021).

to the company's broader activities. It seems that all board members should be more or less knowledgeable about digital transformation and be collectively responsible for the bottom line. This position implies constant training of board members, attracting external experts for joint discussions, investing in tech startups, etc. Experience has shown that the most effective board members are those who are broad-minded, can educate other board members, and articulate how technological and digital change can impact an organization's business strategy [14].

BOARD OF DIRECTORS' MEETING AGENDA DURING THE DIGITAL TRANSFORMATION OF THE ORGANIZATION

As digital transformation becomes an increasingly important tool for maintaining the organizational resilience of enterprises, it becomes critical to ensure that the board agenda is aligned with ongoing technological changes in terms of business strategy and increase of company's competitiveness. Between 2010 and 2015, security-related issues (cybersecurity, data privacy, etc.) were the primary technology topics discussed by boards of directors. A more proactive approach to studying the results of ICT implementation as part of the board of directors' activities could significantly contribute to the discussion on technological business opportunities and digital transformation.[13]

To assist organizations in setting priorities in this area, we will highlight the most common topics in this context that can be included in the agenda of board meetings:

- Information Security;
- Data confidentiality;
- Artificial Intelligence;
- Internet of Things;
- Mobile devices;
- Digital platforms;
- Digital business models;
- Cloud services and software rental;
- Audit and compliance in the field of ICT;
- Amount of investment and operating expenses related to ICT;
- Optimization of business processes using ICT [15].

The specified list of topics is not conclusive and should be arranged depending on the company's needs and development strategy.

DETERMINING THE STRATEGIC DEVELOPMENT OF THE ORGANIZATION

Although digital transformation and ICT issues are being increasingly addressed at board meetings, the meeting agenda must not be overwhelmed by technical details. First of all, the board of directors should determine the extent of its influence on the company's strategic development and oversee its implementation.

Given that there is no one-size-fits-all approach to managing digital transformation, Nikolaus Obwegeser, Tomoko Yokoi, Michael Wade, and Tom Voskes highlight 7 key principles for successful digital transformation that businesses can rely on:

1. Inventory and centralization of information on digital initiatives instead of control over them.
2. Decentralization of digital initiatives governance as digital maturity grows.
3. Centralized idea evaluation and prioritization.
4. Making sure that KPIs measure the real impact of digital initiatives on organizational performance.
5. Ensuring data compatibility, technical consistency, and continuous integration of new digital initiatives with existing systems.
6. Categorizing digital initiatives according to the degree of potential value to the company and their feasibility.
7. Evaluation of various scenarios for implementing digital initiatives to achieve a full-scale impact on the company's activities [6].

[13] Deloitte. 2017. Bringing the boardroom's technology gap. URL: https://www2.deloitte.com/insights/us/en/focus/cio-insider-business-insights/bridging-boardroom-technology-gap.html (accessed on 13.05.2021).

Harvard Business Review (hereinafter — HBR) differentiates between board participation in ICT discussion and decision-making. The first set of board activities demonstrates how the company relies on the use of ICT to ensure the reliability of its performance. In this case, maintenance and operation of ICT systems become more important than winning the market competition. The board's ICT-related decision-making defines how the company uses ICT to produce new goods and services while quickly responding to customer requests, thus securing its competitive advantage. Both types of board activities usually involve changing the company's business strategy and deepening understanding of various ICT topics at all managerial levels.

Depending on the chosen approach, it is proposed to use the four modes outlining the company's stance on the ICT role in its strategic development: support mode, factory mode, turnaround mode, and strategic mode [8].

Enterprises operating in **support** mode are the least dependent on ICT, as their core function is to support the staff activities, while customers and suppliers do not have access to internal systems. Notably, the 2005 HBR study on the dynamics of the company's development cites Zara, presently one of the world leaders in digital retailing, as an example of shifting from support to strategic mode [16].

In the **factory** mode, businesses are considerably dependent on ICT, and most business systems are connected to the network; however, the company management is still reluctant to advance currently used ICT any further. Therefore, the board of directors and the company's management need to keep abreast of the brand-new technology practices and monitor the market in order to be ready to revitalize their ICT business.

In a **turnaround** mode, companies aim to improve business processes, quality of service delivery, reduce costs and increase their competitiveness in the market by extensive use of ICT [16] As a rule, turnaround mode is transitional for companies implementing comprehensive ICT projects, a junction between factory and strategic modes. The participation of the board of directors in this process is essential and desirable.

Under the **strategic** mode, businesses need reliable ICT systems and new technologies to maintain and advance their market position and increase the speed and quality of their operations. This endeavor requires much investment in ICT and at least a capable and professional board committee to oversee these activities [8].

Thus, depending on the chosen mode, companies have to independently determine their need for a depth of expertise in ICT and digital transformation in general.

ICT GOVERNANCE FRAMEWORK: A PRACTICAL OVERVIEW

To facilitate effective work of ICT decision-makers in the organization, PwC experts have developed the IT Oversight Framework, which consists of six steps:

1. Assessing the ICT role in the company's activities (state of ICT infrastructure, ICT budget, expected changes from ICT implementation, etc.);
2. Appointing a specialist or managerial body responsible for ICT oversight (board of directors, committee of the board of directors, digital director, etc.);
3. Setting company's ICT priorities;
4. Determining the role of ICT priorities in the company's business strategy;
5. Integrating ICT risks in the company's risk management oversight;
6. Implementing constant monitoring of the company's ICT development [15].

Once a company has identified and agreed on a vision for the steps outlined above, the board of directors can move on to formulating an ICT strategy [18, p. 5–7] and prioritize areas of ICT governance. The IT Governance Institute identifies five main areas of ICT governance within the framework of the activities of the board of directors:

Table 1

The main tasks of the board of directors in the framework of the ICT governance

Areas of ICT governance	Area of responsibility of the board of directors	
	Task	**Structure**
ICT strategic alignment	1. Ensuring compliance of the ICT strategy with the company's business strategy. 2. Ensuring that ICT solutions are aligned with the company's business goals. 3. Creation of the company's competitive advantages, ensuring compliance with legal and internal requirements. 4. Monitoring the strategic importance of ICT in the company	6. Creation of the ICT strategy committee of the board of directors (hereinafter — the ICT strategy committee) to oversee ICT (if necessary). 7. Appointment of independent directors to the ICT strategy committee including at least one ICT specialist. The committee chair does not need to be an ICT expert but must demonstrate experience in using ICT in another organization. 8. Observing the interaction of the ICT strategy committee with the audit committee (ensuring that both committees have at least one common member). 9. Ensuring cooperation between the ICT strategy committee and the strategy committee
ICT value delivery	1. Ensuring that the company management implements processes and practices that bring real benefits from introducing ICT for business. 2. Ensuring investment in ICT at the appropriate level. 3. Monitoring investments in ICT to generate profits at the appropriate level. 4. Control over the implementation of ICT plans in accordance with the approved schedule. 5. Ensuring the quality and safety of investments in ICT	6. Establish an ICT Strategy Committee to validate that ICT/Business Architecture delivers maximum benefits from ICT for Business. 7. Ensuring cooperation between the ICT strategy committee and the strategy committee
ICT risk management	1. Making a list of ICT risks. 2. Monitoring the effectiveness of internal control. 3. Control over ICT risk management. 4. Ensuring cooperation between the ICT strategy committee and the audit committee on the main ICT risks	
ICT resource management	1. Understanding the overall software architecture of the company, as well as its ICT asset management strategy. 2. Prioritization of activities and control over resource allocation to ensure effective ICT productivity. 3. A guide to finding resources. 4. Control over the use of the necessary management methods to prevent obsolescence of ICT equipment, software, and systems in operation	5. Establish an ICT Strategy Committee to track ICT investments, prioritize and allocate limited resources. 6. Ensuring cooperation of the ICT strategy committee with the audit committees on investment in core resources
Performance measurement	1. Observing the development of ICT key performance indicators and their monitoring	2. Ensuring cooperation between the ICT strategy committee and the remuneration committee on measuring the company's performance indicators

Source: compiled based on [20].

Table 2

The selected Russian practice of appointing leaders for digital transformation

Organization	Digital Transformation Leader
PJSC "Aeroflot"	Deputy Director General for Information Technology*
PJSC "Gazprom Neft"	Head of Directorate for Digital Transformation [24]
JSC "Russian Post"	Deputy Director General for Information Technology and Development of Digital Services**
JSC "Russian Railways"	Deputy Director General (issues of digital transformation and information technology)***

Note: * Aeroflot. Organisational structure of Aeroflot PJSC. URL: https://www.aeroflot.ru/media/aflfiles/media/about/structure/structure-ru.jpg (accessed on 07.08.2021).
** Russian Post. The board of JSC Russian Post. URL: https://www.pochta.ru/pravlenie (accessed on 07.08.2021).
*** Russian Railways. Russian Railways Management Board. URL: https://company.rzd.ru/ru/9349/page/105554?id=98&accessible=true (accessed on 07.08.2021).

1. ICT strategic alignment — the connection between the company's business and ICT strategy to achieve its strategic goals and objectives;

2. ICT value delivery — optimization of costs and benefits generated by ICT;

3. ICT risk management — solution of protection issues associated with ICT assets, understanding of emerging risks and their management;

4. ICT resource management — optimal investment, use, and distribution of ICT resources (employees, applications, technologies, data, etc.) while serving the company's needs;

5. Performance management — development and monitoring of the implementation of the ICT strategy implementation and provision of ICT services [19].

ICT strategic alignment, ICT resource management, and performance measurement are seen as drivers of these activities, while ICT value delivery and ICT risk management are deemed as their outcomes.[14] The main tasks of the board of directors in each of the aforementioned areas of governance concerning its activities and overall organizational changes are presented in *Table 1*.

A. Parisa, R. Lazar, and V. Dragos note that most organizational models for ICT governance address the areas examined above [21, p. 4]. Therefore, using this approach can help develop, approve, and implement the board of directors' work plan.

CHANGES IN THE ORGANIZATIONAL STRUCTURE OF ORGANIZATIONS: A NECESSITY OR A NEW FASHION?

It should be noted that in the period of digital transformation, all companies exercise ICT governance to a certain extent. The only difference between them is that the companies implementing it more effectively have developed a set of mechanisms (board committees, departments responsible for digital transformation, digital transformation councils, etc.) and created the necessary work conditions relevant to the company's changing business strategy, values, and culture [22, p. 3].

The digital transformation is driving changes in the organizational structure of corporations. As a result, digitally mature companies at the operational level tend to recruit digital transformation (Chief Digital Transformation Officer (CDTO) [23, p. 79] and ICT roles (Chief Information Officer, CIO)[15]) at the operational level (*Table 2*), while at the stra-

[14] ITGI. 2003. Board Briefing on IT Governance. Rolling Meadows, IL: IT Governance Institute. URL: https://eventosfehosp.com.br/2017/material/sao_paulo/ti/jose/ITGI–Instrucoes-de-Governanca-de-TI-para-a-Alta-Administracao.pdf (accessed on 18.05.2021).

[15] PWC, Strategy& 2017. The 2016 Chief Digital Officer (CDO) Study. Global findings. URL: https://preview.thenewsmarket.com/Previews/PWC/DocumentAssets/476557.pdf (accessed on 08.09.2021).

tegic level, they create specialized committees of the board of directors or entrust this topic to a committee operating under the board of directors.

In addition, advisory boards covering a wide range of digital transformation issues are being increasingly created by many companies [25]. This trend can be exemplified by the Advisory Council of Shareholders of VTB Bank (PJSC),[16] and the Advanced Technology External Advisory Council of Google [26]. Interestingly, partially for tax incentives for the IT industry in the Russian Federation, some individual Russian companies have begun to reorganize their IT departments as independent subsidiary business entities (Post Digital LLC, MTS Artificial Intelligence Center LLC, Sberbank-Service LLC, Rusatom — digital solutions LLC, etc.) [27].

The expertise in the field of digital transformation of the organization and ICT becomes a priority criterion when appointing candidates to these positions. Corporate and digital competencies and knowledge allow companies better understand and control technology initiatives and emerging opportunities. These factors also contribute to a change in the company's corporate culture and the way it thinks.[17] In this context, it is essential to note the widespread use of the competence-based approach in selecting candidates for filling positions in the field of digital transformation. It is strategically vital that in Russia the same approach is actively employed in public administration.[18] So, at the state level, the need for the formation of civil servants' competencies has been recognized that would allow them to effectively carry out the digital transformation of public administration and effectively resolve issues that arise on the ground. According to the instruction of Russia's Prime Minister,[19] the federal executive bodies have introduced the position of the deputy head of the federal executive authority responsible for digital transformation (or the indicated powers have been entrusted to the current deputy head of the federal executive authority), and professional requirements were established for the candidates applying for these positions.[20]

The role of committees under boards of directors is also changing. According to general practice, they are created to tackle topics that require special expertise and go beyond the scope of the board's usual activities. ICT issues are usually dealt with by an audit committee (less often by a risk committee), whose operations in the Russian Federation under the requirements of the MICEX Stock Exchange[21] for corporate governance of listed organizations[22] are mandatory. Considering the specifics of the audit committee's activities, some of the ICT issues,

[16] VTB Bank. Shareholders Consultative Council of VTB Bank PJSC. URL: https://www.vtb.ru/akcionery-i-investory/informaciya-dlya-akcionerov/konsultacionnyj-sovet-akcionerov/ (accessed on 07.08.2021).

[17] Deloitte. 2017. Bringing the boardroom's technology gap. URL: https://www2.deloitte.com/insights/us/en/focus/cio-insider-business-insights/bridging-boardroom-technology-gap.html (accessed on 13.05.2021).

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[19] Instruction of the Prime Minister of the Russian Federation Mishustin M.V. No. MM-П10–502, dated 01.02.2020. URL: https://d-russia.ru/premer-ministr-poruchil-v-techenie-nedeli-vvesti-v-foivah-dolzhnost-zamrukovoditelya-otvetstvennogo-za-tsifrovuyu-transformatsiyu.html

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[22] Center for Audit Quality (2018), An Oversight Tool for Audit Committees. The Center for Audit Quality (CAQ) has developed this tool to help audit committees execute their governance responsibilities for financial reporting impacted by emerging technologies. URL: https://www.thecaq.org/wp-content/uploads/2019/03/caq_emerging_technologies_oversight_tool_2018–12.pdf (accessed on 20.08.2021).

for example, cyber security, logically fit into its agenda. However, since digital solutions do not always allow to assess and minimize potential risks, the main focus of the audit committee's work may be extended to a broader range of emerging technology topics, including issues of innovation and the competitiveness of the organization. In the digital era, risks cannot always be predicted, which can impede the use of financial controls. In addition, the audit committee tends to view ICT as an operating expense rather than as a strategic opportunity-building tool. It can also lead to over-focusing on technology risks (e.g., cyber risks) and compliance issues [28].

The Bank of Russia recommends that the boards of directors consider the feasibility of creating an information technology committee. If such a decision is made, the chairman is recommended to appoint those members of the board of directors who possess relevant competencies and expertise. The main tasks of the committee shall include the development of recommendations for the board of directors regarding the approval of the ICT strategy and policy, control over the information technology management processes, monitoring and response to changes in the development of information technology.[23]

In practice, individual organizations (FedEx,[24] Proctor and Gamble,[25] Russian Post JSC,[26] Freight One PJSC,[27] M. Video PJSC,[28] etc.) have begun to form special information technology committees along with committees for audit, HR, remuneration, and risks (e.g., digital development, digital transformation, ICT governance, ICT strategies committees). For instance, Russian Post JSC has created a committee on digitalization and technologies under the board of directors,[29] whereas Russian Railways JSC created a committee for digital transformation and innovative development.[30]

Traditionally, when such committees are established, special attention is paid to their composition. The role of the committee chairman is of paramount importance. It is also strategically important to include independent directors in such a committee[31] [29]. At the same time, understanding not only the company's current business needs in the field of technological solutions but also a general understanding of the company's tasks and the dynamics of change in the relevant industry becomes a key factor in the committee's work effectiveness. To form and implement a consolidated development strategy for the company, it seems rational and logical to bolster the interaction between the information technology committee and other committees under the board of directors. Moreover, the admission of at least one member of the information technology committee into other committees sounds reasonable for the company's interests [8].

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[24] FedEx. Board of directors. URL: https://investors.fedex.com/esg/board-of-directors/default.aspx (accessed on 20.08.2021).

[25] P&G. Board Committees & Charters. URL: https://us.pg.com/structure-and-governance/board-committees-and-charters/ (accessed on 20.08.2021).

[26] Russian Post. Digitalization and Technology Committee. URL: https://www.pochta.ru/komitet-po-cifrovizacii-i-tehnologiam (accessed on 20.08.2021).

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[28] M. Video-Eldorado Group. Board of Directors, Digital Transformation Committee. URL: https://www.mvideoeldorado.ru/ru/corporate-governance/sovet-direktorov#cid2 (accessed on 20.08.2021).

[29] Russian Post. Digitalization and Technology Committee. URL: https://www.pochta.ru/komitet-po-cifrovizacii-i-tehnologiam. (accessed on 20.08.2021).

[30] Russian Railways. Board of directors. URL: https://company.rzd.ru/ru/9349/page/105554?id=998#6059 (accessed on 20.08.2021).

[31] Some research shows that a greater number of independent directors reduces information asymmetry in shareholder-management relations.

It seems appropriate to ensure that the company's corporate structure is consistent with the changing agenda of the board of directors' meetings [30, p. 59]. However, the creation of a committee at the level of the board of directors is not always the best solution and can be a waste of time and resources, yet it depends on the company's specifics (industry, degree of digital transformation, level of the company's ICT development, etc.) [8]. In practice, ad hoc committees that help the board of directors delve into the subject matters are seldom created [30, p. 65]. According to the US 2019 Technology Spencer Stuart Board Index, the science and technology committees under the board of directors are created by only 8% of 200 surveyed leading US technology companies.[32] Thus, the issue of creating a separate committee on information technology requires further careful study.

DIGITAL TRANSFORMATION AS A FACTOR OF THE STRATEGIC DEVELOPMENT OF ORGANIZATIONS IN THE RUSSIAN FEDERATION

According to current scholarship, the Russian Federation's development resources are depleted; therefore, searching for new ICT-related growth sources is crucial [31]. The priority of developing the digital economy in the Russian Federation is designated at the highest state level.[33] Its impact on implementing a companies' business strategies nationwide contributes to forming a new technological market agenda. The strategy of the information society development in 2017–2030, in particular, fixes the following ICT priorities for the Russian Federation:

- formation of the information space, taking into account the needs of citizens and society in obtaining high-quality and reliable information;
- development of the information and communication infrastructure in the Russian Federation;
- creation and application of Russian ICT, ensuring their competitiveness at the international level;
- formation of a new technological basis for the development of the economy and social sphere;
- safeguarding Russian national interests in the sphere of the digital economy.[34]

As part of the implementation of the national program "Digital Economy of the Russian Federation" in order to provide methodological support for the development and updating strategies for the digital transformation of Russian businesses, Methodological Recommendations for the digital transformation of state corporations and enterprises with state participation have been developed (hereinafter — Methodological Recommendations).[35] This document is primarily

[32] SpencerStuart (2019). U.S. Technology. SpencerStuart Board Index. p. 12. URL: https://www.spencerstuart.com/-/media/2019/techbi-2019/us-tech-board-index-2019.pdf (accessed on 30.08.2021).

[33] Decree of the President of the Russian Federation No. 474, dated 21 July 2020 "On the national development goals of the Russian Federation until 2030. Collection of the Legislative Acts of the Russian Federation". No. 30. Art. 4884. URL: http://www.kremlin.ru/acts/bank/45726. Decree of the President of the Russian Federation No. 203, dated 9 May 2017 "Strategy of the Information Society Development in the Russian Federation for 2017–2030". Collection of the Legislative Acts of the Russian Federation. 2017. No. 20. Art. 2901. URL: http://government.ru/docs/all/111459/ Passport of the national project National Programme 'Digital Economy of the Russian Federation'. Approved by the minutes of the meeting of the Presidium of the Presidential Council for Strategic Development and National Projects of 4 June 2019, No. 7. URL: http://www.consultant.ru/document/cons_doc_LAW_328854/. Decree of the Government of the Russian Federation No. 313, dated 15 April 2014 On Approval of the State Programme of the Russian Federation "Information Society". Collection of the Legislative Acts of the Russian Federation. 2014. No. 18. Art. 2159. URL: http://government.ru/docs/all/91296/

[34] Decree of the President of the Russian Federation No. 203, dated 9 May 2017 "Strategy of the Information Society Development in the Russian Federation for 2017–2030". Collection of the Legislative Acts of the Russian Federation. No. 20. Art. 2901. URL: http://government.ru/docs/all/111459/

[35] Methodological recommendations on the digital transformation of state corporations and state-owned companies. Approved at the meeting of the bureau of the government commission on digital development, use of information technologies to improve the quality of life and environment of business on 6 November 2020. URL: https://digital.gov.ru/ru/documents/7342/ (accessed on 04.09.2021).

aimed at ensuring the synchronization of the efforts of the state and business for the digital transformation of the economy and assessing the level of businesses' digital maturity. Sending regular reports on digital transformation progress to the Ministry of Digital Development, Communications, and Mass Media of the Russian Federation will allow accumulating the experience in this area to exchange best practices and promptly adjust ICT strategies. In addition, the achievement of these goals will be facilitated by the directives on the digital transformation of state-owned companies approved by the Government of the Russian Federation, according to which representatives of the Russian Federation on the boards of directors of state corporations and enterprises with state participation are obliged to initiate boards of directors' meetings to discuss the progress of digital transformation strategies until 2024.[36]

In this context, it is strategically essential to synchronize the efforts of state corporations and enterprises with state participation and state authorities in terms of the overall task of digital transformation of the Russian economy. According to ABBYY and PwC's Digital IQ 2020 study, which was attended by more than 100 executives and specialists from large businesses, Russian organizations rate their level of digital maturity at 2.8 points out of 5. Such an assessment can be explained by Russian companies' relatively recent start of implementing digital transformation strategies. 77% of respondents indicated that digital technology is a hallmark of companies with high digital maturity to make decisions and improve business processes. Among the critical areas in the digitalization of companies' business strategies, the respondents named the increase in investments in solutions for automation and robotization of processes, transition to cloud services, and modernization of infrastructure to ensure cybersecurity. More than half of them see digital transformation as a continuous process of improving business efficiency, which, among other things, led to the absence of budget cuts for innovative projects and digital initiatives for 94% of respondents during the pandemic in 2020.[37]

Presently, the strategic goal of digital transformation has been set and approved by the boards of directors of leading Russian corporations (JSC "Russian Post",[38] PJSC "Gazprom Neft",[39] PJSC "Rosseti",[40] etc.). JSC "Russian Railways" has become one of the first companies to introduce Methodological Recommendations into its activities. In order to implement a long-term development program until 2025[41] and fulfill the Decree of the President of the Russian Federation dated May 7, 2018 No. 204,[42] the strategy for the company's digital transformation until 2025, approved by the board of

[36] ConsultantPlus. 2021. Ministry of digital development, communications and mass communications of the Russian Federation (19.04.2021). The government approved the directives on the digital transformation of state companies. URL: http://www.consultant.ru/law/hotdocs/68694.html/ (accessed on 04.09.2021).

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[38] Russian Post. Mission and development strategy. URL: https://www.pochta.ru/mission-and-strategy (accessed on 04.09.2021).

[39] Gazprom Neft. 2019. The Gazprom Neft Board of Directors confirms the company's digital transformation strategy to 2030. URL: https://www.gazprom-neft.ru/press-center/news/sovet-direktorov-gazprom-nefti-utverdil-strategiyu-tsifrovoy-transformatsii-kompanii-do-2030-goda/ (accessed on 10.09.2021).

[40] Rosseti. 2018. Rosseti's Board of Directors Approved the Concept of Digital Transformation of the Power Grid Complex until 2030. URL: http://www.rosseti.ru/press/news/?ELEMENT_ID=34455 (accessed on 10.09.2021).

[41] Order of the Government of the Russian Federation No. 466-r, dated 19 March 2019 On the Long-Term Development Programme of JSC Russian Railways until 2025. Collection of the Legislative Acts of the Russian Federation. 2019. No. 12. Art. 1354. (with The Long-Term Development Programme of JSC Russian Railways until 2025). URL: https://rulaws.ru/goverment/Rasporyazhenie-Pravitelstva-RF-ot-19.03.2019-N-466-r/

[42] Decree of the President of the Russian Federation No. 204, dated 7 May 2018 On the national goals and strategic objectives for the development of the Russian Federation until 2024. Collection of the Legislative Acts of the Russian Federation. 2018. No. 20. Art. 2817. URL: http://publication.pravo.gov.ru/Document/View/0001201805070038

directors, provides for the formation of 8 digital platforms (multimodal passenger transportation, multimodal freight transportation, transport and logistics hubs, linear infrastructure operator, e-commerce logistics operator, transportation process management, traction rolling stock, non-production processes). The platforms will become the basic elements of the company's ICT infrastructure and allow creating new services and integrating end-to-end information technologies into its work. In addition, it will increase the efficiency of business processes, increase the number of services offered to the market and begin the process of changing the corporate culture.[43] The projected economic effect of digital transformation for Russian Railways will be approximately 153 billion rubles and for the national economy approximately 400 billion rubles.[44]

Thus, the emerging practice in Russia is aimed at creating a technological ecosystem and conditions in which the board of directors acts as the enterprise's key body to discuss digital transformation and the feasibility of introducing ICT into its activities while also overseeing emerging ICT risks within the overall company's risk management system.

* * *

The ongoing digital transformation of organizations poses new challenges for businesses. Previously boards of directors and company management could delegate or neglect decision-making regarding digital transformation and ICT governance. However, nowadays, such behavior seems counterproductive for the strategic development of companies in multiple industries since ICT has already become a major means for development and economic growth. At the same time, governance of ICT-related activities in corporations is becoming an increasingly important tool for ensuring strategic goals achievement. In the context of the development of ICT governance, the boards of directors are recommended to:

- define the role of ICT in the organization's activities;
- approve the priorities of the organization in the field of ICT governance;
- transform the work of the board of directors in accordance with the chosen vector of strategic development;
- update a board meetings agenda due to technological changes and challenges;
- ensure that the organizational structure of the organization is in line with the changing board meetings agenda and the corporate objectives to be solved.

Nevertheless, ICT governance methods' effectiveness in one case does not guarantee similar outcomes in another, as it depends on numerous factors that need to be taken into account while choosing and implementing a suitable development strategy. Thus, digital transformation and ICT governance, being one of the main tasks of the board of directors, require undertaking a systematic and holistic approach, considering the specifics of a particular business and its development strategy.

[43] Gudok (2019), online edition. Russian Railways board of directors approves digital transformation strategy until 2025. URL: https://gudok.ru/news/? ID=1482450 (accessed on 20.09.2021).

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ABOUT THE AUTHOR

Alexander S. Yukhno — Cand. Sci. (Law), Associate Professor, Deputy Head, Office of the Civic Chamber of Russia, Moscow, Russia
https://orcid.org/0000-0003-2999-2982
alexander_yukhno@mail.ru

Conflicts of Interest Statement: The author has no conflicts of interest to declare.

The article was submitted on 29.12.2021; revised on 02.02.2022 and accepted for publication on 14.02.2022. The author read and approved the final version of the manuscript.

ORIGINAL PAPER

DOI: 10.26794/10.26794/2304-022X-2022-12-1-32-41
UDC 336.66(045)
JEL M41

Improvement of Methodological Tools for Business Analysis of the Effective Company's Performance

N.S. Plaskova
Plekhanov Russian University of Economics, Moscow, Russia

ABSTRACT

The subject of the paper is the improvement of methodological approaches to the formation of an objective assessment of the system of financial indicators that comprehensively reflect the achieved and projected level of development of economic entities. In these conditions, the issues of substantiating the perimeter and content of the information and analytical support system for the functions of operational and strategic business management are being updated. The purpose of the study is to develop methods of analysis and algorithms for calculating the most important characteristics of assessing the performance of economic entities for internal management and external stakeholders based on a complementary approach to the use of classical methods of forming a piece of information and analytical base by clarifying the values of the indicators used in financial and management reporting and supplementing the list of analytical indicators. To achieve the goal, the author has identified several tasks related to the critical analysis of the existing methodological apparatus for evaluating the performance of commercial organizations. Also, the author updated the content, and clarified the algorithms for calculating indicators to form reliable information and analytical base necessary for making managerial decisions by various subjects of business relations. The author analyzed the supplementing the system of analytical indicators for assessing and forecasting business performance in accordance with the doctrine of sustainable development; expansion of the model range of factor analysis to get a holistic view of the impact of external and internal drivers on the level of financial stability and profitability of business entities. To substantiate the scientific hypothesis, form methodological provisions within the scope of the research, generalize the empirical base and develop practical proposals, the research clarified and supplemented the algorithms for calculating several performance indicators traditionally used in analytical practice, as well as initial indicators of financial and management reporting, have been involved. The practical application of the proposed adjusted procedures for calculating indicators contributes to getting a reliable and aimed assessment of the quality of the management system of organizations in the real sector of the economy. Also, it promotes a reliable measurement of the influence of factors of the external and internal business environment on its effectiveness, the development of an optimal resource potential management policy in order to increase competitiveness, strengthen financial stability and increase investment attractiveness.

Keywords: information and analytical base; methodological support; analytical modeling; system of indicators; efficiency; resource efficiency

For citation: **Plaskova N.S. Improvement of methodological tools for business analysis of the effective company's performance.** ***Management Sciences.*** **2022;12(1):32-41. DOI: 10.26794/2304-022X-2022-12-1-32-41**

INTRODUCTION

Qualitative information on an organization's financial position and financial performance is necessary for the successful management of the organization, the analytical part of which consists of indicators of business activity, profitability, financial stability, liquidity and capacity to pay. Each company discloses some variable information content list of financial and non-financial indicators for interested users as part of the corporate and financial reporting explanatory notes. In certain circumstances, for example, within the framework of drawing up a credit application necessary for the investor (credit organization, etc.) to make a decision on the provision (or refusal to grant) of a financial resource, the results of such analytical part can also be developed in the form of local analytical reviews.

RESULTS OF RESEARCH

Among the most demanded financial characteristics of business is profitability, described by a whole set of relative percentages (return on capital, assets, sales, production, etc.), focused on the interests of owners (shareholders, participants), leaders and managers of the organization, creditors, investors, etc. Business activity of an enterprise reflects also indicators of resource productivity, i.e., a set of coefficients formed as the ratio of total income or income from ordinary activities (sales revenue) to the value of the resource (material, labour, financial, etc.) or the cost of using the resource (material, labour, managerial, commercial, financial, etc.). [1, 2]

Each enterprise is characterized by defined, conditioned by belonging to a particular industry, business specifics, the life cycle stage, etc. resource productivity levels. At the same time, their growth has a direct positive impact on the profitability of the enterprise, since this process directly affects the increase in profit under the condition of a certain containment of the growth of costs, and more specifically, — while avoiding a faster growth rate of expenditure than the growth rate of income.

Various subjects in business relations need specific targeted information on profitability and business activity. Thus, creditors are primarily interested in the solvency of the borrower-enterprise, head of the enterprise — profitability and turnover of assets, sales managers — speed (turnover) of sales of goods (produced products), financial managers — timely and complete repayment of client accounts receivable. The main subjects of business relations — owners of enterprises not directly involved in the management of operational activities, the most important information about the dividend yield of the stock (participate in a share of the returns), as well as the level and dynamics of the measure of return on equity. The values of these estimates vary depending on the financial results obtained during the reporting period (net profit), which, in turn, are affected by sectoral and market trends, macroeconomic, political and social environmental factors.

Methodological systematic approach to the consideration of aggregates in the financial analysis of companies' activities was presented in foreign publications in the first half of the last century, through multi-factor modeling methodology, which has become quite well known among economists, the basis of which was laid by the proposed specialists of the company "DuPont" (*The DuPont-System of Analysis*), as tree structure of detailing profitability of equity capital ROE[1] and decomposition into three factors — op-

[1] Rate of return on equity (ROE) reflects the net profit ratio of the company to its equity, expressed as a percentage, and allows investors to assess how efficiently the company uses its capital.

erating profitability, turnover of total assets and financial leverage. [3–6]

Considered the structure ROE, it should be noted, that traditional algorithm of its calculation (ratio of net profit to capital) [3, p. 496; 4, p. 199; 7, p. 178; 8; 9] is not adequate to understand the real level of efficiency of the assets of owners (shareholders), providing finance a certain proportion of the organization's assets. If you compare this algorithm with the simplest calculation of the level of profitability of any investment, there is no doubt, that the ROE is defined as the percentage of the planned (or already received) return on the initial investment, which includes deposit, investment in investment project, etc. At the same time, the amount of profit in calculating the profitability of any investment does not add to the value of the investment itself.

During the analyse according to financial statements, measurement value of equity capital (as an investment in business, holders of the company) the calculation of its profitability is somewhat different. Traditional profitability of equity capital — is the ratio of net profit for the reporting period to the value of equity during this period. Most often for this purpose used annual carrying value of equity (the value of total of the 3rd section of the accounting balance "Capital and reserves", increased by the sum of "Deferred income", which reflect in section 5 "Short-term liabilities" of the balance sheet), calculated as an arithmetic average of the balance sheet on two consistent reporting dates, or as the average chronological value of equity, there is also a possibility to use shorter reporting periods (quarters, months).[2]

At the same time the amount of net profit (or loss) of the reporting year, on which return on equity is calculated, already included in retained earnings, which reflected in section 3 "Capital and reserves" for a row "Retained earnings" at accounting dates, as this is due to the rules of the so-called "reform of the balance sheet" in accordance with the final accounting record of the reporting period, when the account balance is 99 "Profits and losses" transferred to account 84 "Undistributed profit (uncovered loss)".

Thus, level of return on equity during the reporting year distorted downward: in obtaining both net profit and net loss. Quite a paradoxical situation is developing, when the balance sheet of the reporting year is loss and the balance sheet value of equity is also negative, which is almost always the result of accumulated uncovered losses, exceeding the sum of all other positive elements of equity, including the registered. In this case, profitability turns out to be with the plus sign.

Confirmation of the unique value of the profitability ratio to assess the effectiveness of capital, but also the serious risk of distortion of its meaning, is the opinion of foreign classic of financial analysis L. A. Bernstein: "Coefficients should be interpreted with great care, since factors influencing the numerator can correlate with factors influencing the denominator". [3, p. 68]

In our view, such an algorithm of calculation of profitability of equity capital is appropriate, in which the denominator (carrying value of equity capital) excludes the net profit received during the reporting period (for which are calculated). The argument for this clarification is also the fact that the net profit, received during the reporting year,

[2] Order of the Ministry of Finance of the Russian Federation from 02 July 2010 No. 66n "On the forms of accounting of organizations". URL: http://www.consultant.ru/document/cons_doc_LAW_103394/ (accessed on 03 January 2022). Order of the Ministry of Finance of the Russian Federation from 28 August 2014 No. 84n "On approval of net asset value" URL: http://www.consultant.ru/document/cons_doc_LAW_169895/ (accessed on 03 January 2022).

was not an equity item during the reporting year, but was only added on 31 December as a result of the balance sheet reform. The proposed clarification of the algorithm for calculating the profitability of equity capital will allow obtaining the real value of its level, what stakeholders need to adequately understand the benefits of investment into the activities of one or another an economic enterprise, to compare its value with the alternative return on investment in other objects, and also with risk-free investment returns (government short-term securities, deposit etc.).

The value of a level of profitability on equity often requires an objective assessment of the factors that have affected it and the reasoned argument behind the situation.

One of the most common techniques that can provide this solution — is factor analysis.

In order to directly calculate the impact of the factors, it is necessary to describe the estimated profitability indicator by the model, the simplest of which, but from this is no less informative, is the system "DuPont".

The proposed use of several elementary arithmetic actions and the creation of a three-factor model of profitability can also be used for forecasting purposes using budget values of elements of the model, for assess the retrospective impact of multiple drivers on level change. It should be noted, that development of the methodological approach, which is the basis of modeling on the system "DuPont", submitted by many authors and in works in the field of financial analysis. They suggested the use of similar modelling techniques to measure the profitability of operations ROS[3] [10; 11, p. 104; 12, p. 458; 13, p. 611].

[3] ROS (Return on Sales) reflects the net profit ratio of the company to its revenue, expressed as a percentage and allows investors to estimate what share of profit the company receives for each ruble earned.

From the point of view of practical use of the model of return on capital, an example can be given of transformation *ROE* to obtain a three-factor mixed-type model using prolongation, reduction and extension techniques of the original two-factor model.

$$ROE = \frac{NP}{\overline{E}} = \frac{NP \times NS \times \overline{TA}}{\overline{E} \times NS \times \overline{TA}} = \frac{\overline{TA}}{\overline{E}} \times \frac{NS}{\overline{TA}} \times \frac{NP}{NS} =$$

$$= \frac{\overline{E} + \overline{TL}}{\overline{E}} \times \frac{NS}{\overline{TA}} \times \frac{NP}{NS} = \left(1 + \frac{\overline{TL}}{\overline{E}}\right) \times \frac{NS}{\overline{TA}} \times \frac{NP}{NS} =$$

$$= \left(1 + K_{FL}\right) \times \lambda_{TA} \times ROS \qquad (1)$$

or

$$y = \left(1 + x_1\right) \times x_2 \times x_3,$$

where *ROE* (Return on Equity, *y*) — return on equity;

NP (net profit) — net profit;

$\overline{E}$ (equity) — average value of equity;

NS (net sales) — net sales;

$\overline{TA}$ (total assets) — average value of total assets (is equal to the average annual value of the currency of the balance sheet and therefore the average annual value of liabilities);

$\overline{TL}$ (total liabilities) — average value of total liabilities (long- and short-term);

K_{FL} (financial leverage, x_1) — financial leverage (rate);

K_{TTA} (turnover of total assets, x_2) — turnover of total assets (rate);

ROS (Return on sales, x_3) — return on sales (on a net profit), %.

As can be seen from model (1), three major factors have a direct impact on the return on capital — financial leverage, asset turnover and return on sales, which is confirmed by simple mathematical logic and financial and economic relations between the factors (x_3, x_2, x_3) and the effective indicator (*y*).

It is worth noting, however, that the sales return used in the classical transformation

can significantly distort the results of the calculation of the impact on the return on equity of the factors of turnover of total assets and profitability of sales. Since the return on equity is initially calculated on the basis of net profit, it is more appropriate to use aggregate income rather than sales revenue to model it, including financial results from other income and expenses, including expenditure on the profits tax. This is also more appropriate for calculating the sales return (in this case it should be called the return on total income), and to calculate the turnover of total assets, as the latter generate not only sales revenue, but also other income. Then the refined three-factor model of profitability of equity will take the following form:

$$ROE = \frac{NP}{\overline{E}} = \frac{NP \times TI \times \overline{TA}}{\overline{E} \times TI \times \overline{TA}} = \frac{\overline{TA}}{\overline{E}} \times \frac{TI}{\overline{TA}} \times \frac{NP}{TI} =$$

$$= \frac{\overline{E} + \overline{TL}}{\overline{E}} \times \frac{TI}{\overline{TA}} \times \frac{NP}{TI} = \left(1 + \frac{\overline{TL}}{\overline{E}}\right) \times \frac{TI}{\overline{TA}} \times \frac{NP}{TI} =$$

$$= \left(1 + K_{FL}\right) \times \lambda_{TA} \times ROTI \quad (2)$$

$$or$$

$$y = \left(1 + x_1\right) \times x_2 \times x_3,$$

where *ROE* (Return on Equity, *y*) — return on equity, %;

NP (net profit) — net profit;

$\overline{E}$ (equity) — average value of equity;

TI (total income) — total income;

$\overline{TA}$ (total assets) — average value of total assets (is equal to the average annual value of the currency of the balance sheet and therefore the average annual value of liabilities);

$\overline{TL}$ (total liabilities) — average value of total liabilities (long- and short-term);

K_{FL} (financial leverage, x_1) — financial leverage (rate);

K_{TTA} (turnover of total assets, x_2) — turnover of total assets (rate);

ROTI (profitability of total income, x_3) — profitability of total income (on a net profit), %.

Considering factors, included in the above models (1), (2), should note, that they are derived indicators, impact of indicators-drivers of the next, deeper indicators. Need to detail their management purposes, required review in the study of the impact of specific factors: the turnover of each asset element, the profitability of each cost element, etc. We offer a methodical approach to the formation of an in-depth multi-factor model (3), which by adaptation to specific management purposes can provide as a practical algorithm not only for calculating and evaluating the impact on the profitability of the already accomplished facts of economic activity, when the relevant information base is available, but also to forecast the impact of factors in the upcoming budget period.

$$ROE = \frac{NP}{\overline{E}} = \frac{NP \times TI \times \overline{TA}}{\overline{E} \times TI \times \overline{TA}} = \frac{\overline{TA}}{\overline{E}} \times \frac{TI}{\overline{TA}} \times \frac{NP}{TI} =$$

$$= \frac{\overline{E} + \overline{TL}}{\overline{E}} \times \frac{TI}{\overline{TA}} \times \frac{NP}{TI} = \left(1 + \frac{\overline{TL}}{\overline{E}}\right) \times \frac{TI}{\overline{TA}} \times \frac{NP}{TI} =$$

$$= \left(1 + \frac{\overline{TL}}{\overline{E}}\right) \times \frac{TI}{\overline{TA}} \times \left(\frac{TI - C_1 - C_2 - \ldots - C_n}{TI} \times 100\right) = \quad (3)$$

$$= \left(1 + \frac{\overline{TL}}{\overline{E}}\right) \times \frac{TI}{\overline{TA}} \times \left[1 - \left(\frac{C_1}{TI} + \frac{C_2}{TI} + \ldots + \frac{C_n}{TI}\right)\right] \times 100 =$$

$$= \left(1 + K_{FL}\right) \times K_{TTA} \times \left[1 - \left(K_{C_1} + K_{C_2} + \ldots + K_{C_n}\right)\right] \times 100$$

$$or$$

$$y = \left(1 + x_1\right) \times x_2 \times [1 - (x_3 + x_4 + \ldots + x_n)] \times 100,$$

where *ROE* (Return on Equity, *y*) — return on equity, %;

NP — net profit;

$\overline{E}$ — average value of equity;

TI (total income) — total income;

$\overline{TA}$ — average value of total assets (is equal to the average annual value of the currency of the balance sheet and therefore the average annual value of liabilities);

$\overline{TL}$ — average value of total liabilities (loan capital);

$\frac{NP}{TI}$ (ROTI, profitability of total income, y) — profitability of total income, %;

C_1 — 1st element of cost;

C_2 — 2st element of cost;

C_n — n-st element of cost;

K_{FL} (financial leverage, x_1) — financial leverage (rate);

K_{TTA} (turnover of total assets, x_2) — turnover of total assets (rate);

K_{C_1} (x_3) — 1st rate of expenditure;

K_{C_2} (x_4) — 2st rate of expenditure;

K_{C_n} (x_n) — n-st rate of expenditure.

Based on a common approach to the creation of multi-factor models can be modified to solve almost any analytical multi-factor problem the use of which is necessary to obtain measurable information on the impact of the various indicators on the performance indicators being assessed. So, one of the most important indicators of the company's business activity is the duration of the operating cycle, reduction of which depends on the time of finding funds in each specific type (element) of raw materials, finished products, goods, debts of a particular debtor, etc. For a timely and adequate response to the slowdown of turnover, the management of the company needs to vision the specific reasons for "stagnation" of funds.

To determine the influence of elements of current assets on the dynamics of the operational period, can also apply the basic approach of transformation of this result indicator, used in the model "DuPont":

$$L_{CA} = \frac{\overline{CA}_{total}}{N} \times 365 = \frac{\overline{CA}_1 + \overline{CA}_2 + \ldots + \overline{CA}_n}{N} \times 365 = \left(\frac{\overline{CA}_1}{N} + \frac{\overline{CA}_2}{N} + \ldots + \frac{\overline{CA}_n}{N} \right) \times 365, \quad (4)$$

where L_{CA} — average duration of one turnover (operating cycle) of the average carrying amount of total current assets in the period under review (in days);

$\overline{CA}_{total}$ — average carrying amount of total current assets in the period under review;

N — net sales (revenues related to usual business operations);

365 — number days in the period under review (year);

$\overline{CA}_1 + \overline{CA}_2 + \ldots + \overline{CA}_n$ — average carrying amount of each type (element) of current assets in the period under review;

n — number of types (elements) of current assets;

$\frac{\overline{CA}_1}{N} + \frac{\overline{CA}_2}{N} + \ldots + \frac{\overline{CA}_n}{N}$ — rates for each type (element) of current assets.

As is obvious from the above model, average duration of one turnover (operating cycle) of total current assets is in a direct additive form dependent on each rate of retention of current assets. Consequently, the impact of each rate of retention of current assets on the average duration of the operating cycle calculated as deviation reporting value from the reference, and the increase would extend the average duration of the operational cycle by a certain number of days.

For a more detailed analysis of turnover dynamics for individual elements of working assets, analytical models and baselines of indicators used should be refined for selected elements of current assets. For example, for management purposes often requires a detailed and realistic picture of material

flows in the warehouse of raw materials, finished products, goods. The general formula for calculating the average turnover period for the analysed period doesn't fit for this situation; consequently, the calculation of the average duration of material stocks as a whole and the assortment should be refined. Thus, the following formula should be used to determine the average duration of the total of material stocks:

$$L_{MS} = \frac{\overline{MS}_{total}}{PC} \times 365, \quad (5)$$

where L_{MS} — average duration of one turnover of the average carrying amount the total material stocks in the period under review (in days);

MS_{total} — average carrying amount the total material stocks in the period under review (year);

PC — production cost for analyzed year;

365 — number days in the period under review (year).

To calculate average duration storage of i-st material stocks type in assortment context (raw materials, goods, finished products, etc.) in the period under review (year) should be used the formula:

$$L_{MS_i} = \frac{\overline{MS}_i}{PC_i} \times 365, \quad (6)$$

where L_{MS_i} — average duration of one turnover of the average carrying amount of i-st material stocks type for analyzed year (in days);

MS_i — average carrying amount of i-го вида материальных запасов за анализируемый период (год);

PC_i — production cost of i-st material stocks type in the period under review (year);

365 — number days in the period under review (year).

Another highly common set of indicators of business activity are return on fixed assets, which many authors have traditionally classify to fixed assets turnover ratio, fixed assets turnover ratio, profitability of the fixed assets, ROA etc. Usually, these indicators are calculated as sales revenue ratio (rarely — cost of final product) or profit from sales (operating profit) to the average carrying amount of fixed assets. [2, p. 75; 7, p. 148]

Firstly, it should be noted that the term "funds" is not correct for resource productivity analysis, since funds — these are financial reserves (liabilities) normally generated by redistribution of net profits, from which assets are generated, and in this case refers to sources of fixed assets formation. As is known, it is not possible to determine with certainty which liabilities in the life of the company are being financed specific objects of assets. The exception is situation when the balance sheet No. 84 ("Retained earnings") are opened sub accounts, which can be intended to form different funds on the basis of the shareholder decision on the distribution of the net profit of the reporting year, including the financing of the acquisition, construction and reconstruction of fixed assets, and to account for the use of these funds. As a result of which, as funds are invested in a fixed asset, initially generated fund is reset if it is fully used, usually. At the conclusion of this process, fixed assets are recognized as financed from the fund, then it begins to operation and depreciation. Until then, the company does not receive any income from such investments, their generation begins after putting into operation, therefore, in the absence of a fund, there can be no return. It follows that name ratio of sales revenue (or value of output) as fixed assets turnover ratio it's not correct.

Secondly, the above-mentioned indicators return on assets and profitability of fixed assets have virtually no meaning.

Is explained as follows. If as a numerator when calculating fixed assets turnover ratio used revenue for the reporting period, and denominator — residual value of investment (balance sheet average), which has not yet been recovered from the economic benefits contained therein, this calculation algorithm is a mechanical connection of the retrospective result (income already received during the reporting period and, consequently, partial recovery of investment costs incurred through amortization) and future economic benefits. The rate does not reflect the return achieved during the period under review. Similar reasoning can be applied to profitability of fixed assets, which uses profit for the reporting period as the numerator instead of sales revenue.

Thirdly, allow comparisons of the ratios return on assets and profitability of fixed assets it is extremely difficult, as their levels vary significantly depending on the nature of the business activity, for which, in one case, should be equipped a significant amount of fixed assets (with appropriate carrying value and amortization costs), and other case — the nature of production activities may not require significant investment in fixed assets, or fixed assets may not belong to the organization (not listed on its balance sheet), but operate under a lease agreement.

Alternative to ratios return on assets and profitability of fixed assets is either a ratio amortization of returns (ratio of sales to amortization of fixed assets, accrued during the reporting period), or its inverse ratio — amortization of capacity. The positive trend of the first ratio will indicate an increase in cost recovery for amortization of fixed assets, and the negative trend of the second ratio will reflect the increased profitability of sales during the reporting period.

Instead of profitability of fixed assets, it is advisable to use profitability of expenses to amortization, based on the financial results report as sales profit ratio (the most appropriate for this purpose is to choose this measure of profit, since amortization costs for the period under review may not only be part of the cost of sales, but also commercial and management costs) to the total cost of amortization of fixed assets for the period. If there is a need to detail this indicator, you can use the management data regarding the financial results and costs of amortization of fixed assets of a specific responsibility center, division, management segment, type of activity, etc.

CONCLUSION

Proposed clarifications and adjustments of a number of relative indicators of business activity and profitability of economic entities, necessary to obtain an objective picture of business development, will improve the quality of the analytical information required for external stakeholders. They will contribute to improving comprehensive internal evaluation of governance, realistic formation of budget and forecast indicators, as well as the development of justified resource management policies that strengthen the competitiveness and investment attractiveness of business entities.

Presented methodical approaches to the formation of a realistic assessment of the effectiveness of business activity of the organization are contribute to the creation of reliable information and analytical support, addressing the needs of different actors in economic relations, substantiating their managerial solutions aimed at solving business-tasks in the process of operational and strategic management. The practical significance of the research consists in the development of methods of retrospective and prospective analysis of performance, business activity and financial sustainability of enterprise.

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ABOUT THE AUTHOR

Nataliya S. Plaskova — Dr. Sci. (Econ.), Professor of the Department of Financial Control, Analysis and Audit of the Main Control Department of Moscow, Plekhanov Russian University of Economics, Moscow, Russia
https://orcid.org/0000-0002-5520-1016
plaskova@rambler.ru

Conflicts of Interest Statement: The author has no conflicts of interest to declare.

The article was submitted on 04.01.2022; revised on 17.01.2022 and accepted for publication on 31.01.2022.
The author read and approved the final version of the manuscript.

ORIGINAL PAPER

DOI: 10.26794/10.26794/2304-022X-2022-12-1-42-55
UDC 336.71(045)
JEL G21, G22, O16

Implementation of Environmental, Social and Governance Principles in the Banking Business

O. Yu. Donetskova
Orenburg State University, Orenburg, Russia

ABSTRACT

At the present stage of the development of the global business community, we pay more and more attention to the principles of environmental, social and governance (ESG) responsibility. Financial intermediaries in their activities considered the influence of natural and climatic factors. Their risks sometimes turn out to be more tangible than, for example, the financial condition of customers. The subject of the study is the development of measures to implement ESG principles in banking products, and its purpose is to study implementing the above principles in Russia at the present stage of business models and setting tasks aimed at overcoming the difficulties of software in sustainable development. The research used the methods of comparative, statistical and factor analysis, identification of trends, graphical comparison, etc. The existing studies on this topic allowed us to determine the need to use ESG principles in banking business models and to identify the motives for their implementation. In the author's conclusion, Russian banks are guides and an example of making business in line with the principles of environmental, social and governance. The speed, depth and sustainability of their application by other financial intermediaries will depend on economic incentives, government support, and the development of regulatory requirements. The transformation of the business community (according to the new rules of conduct) will bring the entire economy of the country to sustainable development. The author considers a promising topic for further study as the introduction by the mega-regulator of mandatory standards for the activities of financial intermediaries for assessing climate and environmental risks, as well as the development of a supplier audit directive on the criteria for implementing ESG principles. This determines the scientific and practical significance of the study.

Keywords: banks; natural and climate risks; ESG principles; banking products; sustainable development

For citation: **Donetskova O. Yu. Implementation of environmental, social and governance principles in the banking business. *Management Sciences.* 2022;12(1):42-55. DOI: 10.26794/10.26794/2304-022X-2022-12-1-42-55**

INTRODUCTION

The principles of environmental, social and managerial responsibility have become increasingly important. Note that they were formed not so long ago — sustainable development as an ongoing activity, aimed at addressing the needs of society and without causing tangible harm to nature and future generations, was first mentioned in the UN report "Our Common Future" in 1987.[1]

In "Agenda 21" 1992, the program of implementation of the concept of global sustainable development was described.[2] In Russia this idea was reflected for the first time in the Decree of the President of the Russian Federation from 04 February 1994 No. 236 "State strategy of the Russian Federation for environmental protection and sustainable development".[3]

The insufficient level of implementation of ESG principles in the Russian banking sphere determined the purpose of the study and allowed to formulate the following tasks:

- study of theoretical aspects of application of ESG principles in banking business;
- identification of factors that constraining the development of ESG principles in this field;
- development of measures, activating banks in order to expand of use of ESG principles;
- determination of the potential of ESG principles implementation in Russia in modern conditions.

Based on the general scientific methods of research (comparison, statistical and factor analysis), determine the current trends in the development of ESG principles in Russia.

INTERPRETATION OF ESG PRINCIPLES

ESG principles, relating to environmental, social and management responsibilities are considered by foreign authors as strategic directions of enterprise development, based on respect for the environment, integrity in dealing with colleagues and customers, and rational corporate governance. [1, 2]

Most international financial institutions and national development banks, for example, the Green Climate Fund,[4] European Investment Bank, European Bank for Reconstruction and Development, French Development Agency, German Development Bank, World Bank, Asian Development Bank, Asian Infrastructure Investment Bank, have made a significant contribution to the implementation of climate protection projects and realize combined financing instruments. [3]

Achieving sustainable development requires new partnerships with intermediaries such as financial companies, banks, insurance companies, both public and private. Private enterprise innovates more readily and is willing to take risks with new forms of financing. [4]

The United Nations Environment Association programme is implemented on this principle.[5] This international project as-

[1] Development and international economic cooperation: environmental issues. UN General Assembly, 1987. URL: https://www.un.org/ru/ga/pdf/brundtland.pdf (accessed on 06 September 2021).

[2] Agenda 21. Adopted by the United Nations Conference on Environment and Development, Rio de Janeiro, 3–14 July 1992. URL: https://www.un.org/ru/documents/decl_conv/conventions/agenda21.shtml (accessed on 10 September 2021).

[3] Decree of the President of the Russian Federation from 04 February 1994 No. 236 "State strategy of the Russian Federation for environmental protection and sustainable development". URL: https://legalacts.ru/doc/ukaz-prezidenta-rf-ot-04021994-n-236/ (accessed on 12 February 2022).

[4] Green Climate Fund — is a global fund established to support developing countries' efforts to respond to climate change. The Fund helps developing countries limit or reduce their greenhouse gas emissions and adapt to climate change. It was established by country parties to the United Nations Framework Convention on Climate Change.

[5] United Nations Environment Programme (UNEO) established in 1972. Its purpose is to provide leadership and promote partnerships for environmental respectfully by enabling the improvement of the quality of life of States and peoples without detriment to future generations.

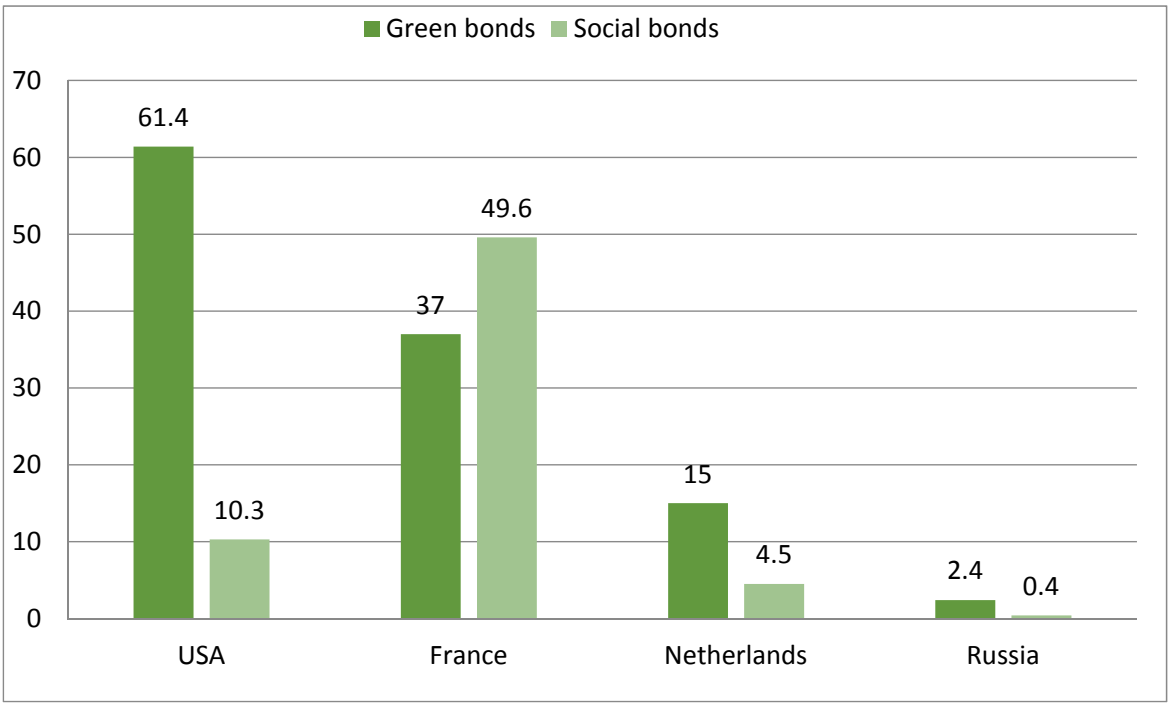

Fig. 1. **Comparison of the volume of ESG issue instruments for 2020, bln USD**

Source: developed by the author based on [9].

sumes following to common ESG-principles (in banking, insurance, investment, etc.) which are recommendatory, but most of the financial institutions implement them. [5]

Sustainable development principles clearly expressed T. Van Holt, T. Whelan: "As a minimum, do not harm people or the planet, create value for interested parties, focus on improving sustainability there, where the company has significant environmental or social impact". [6]

IMPLEMENTATION OF ESG PRINCIPLES IN RUSSIA

Paris Climate Agreement ratified by many countries in 2015, which is a framework agreement on the subject, according to which by 2030 European countries are obliged to reduce greenhouse gas emissions by ½ of the 1990 level. [7] Russia joined this agreement in 2019. Since then, the attention to the issue of ESG from investors, financial and insurance companies, regulators, mass media, and activists of applied sciences has significantly increased.

As a result, there have been significant changes. From August 2019 on the Moscow Stock Exchange, there was a sector of sustainable development, i.e. the place where social and green bonds can be placed. To enter this sector, the issuer is obliged to report on the accumulated resources, as well as assessment of sustainable financing instruments, which include both the above-mentioned bonds and loans, aimed at social and environmental development. To expand the use of these tools, the Moscow Stock Exchange has developed and issued recommendations for issuers of green bonds that meet world standards.

Need for apply the channel of accumulation of resources through the issue of social bonds, in particular for purpose of financing programmes for the development of mass sports, is justified in economic researches. For example, I.V. Solntsev created a set of

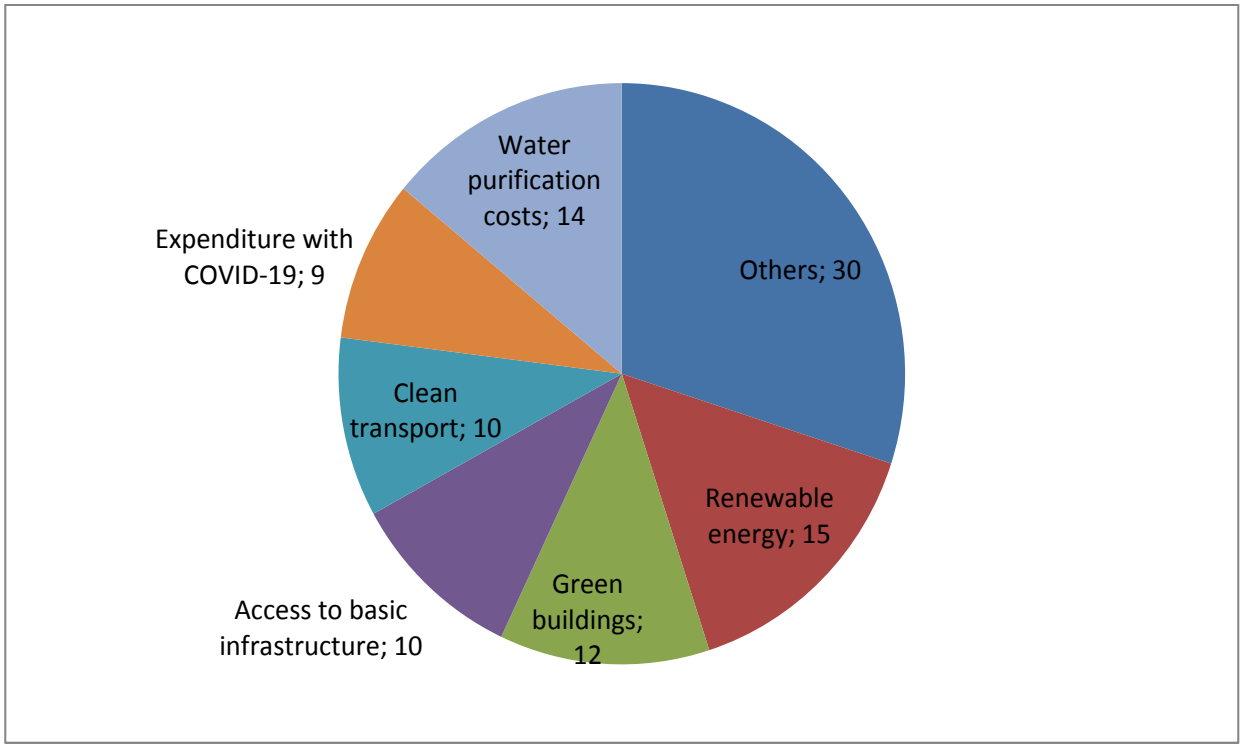

Fig. 2. **Purpose of ESG instruments in foreign countries, %**

Source: developed by the author.

targets including social return on investment (SROI). [8]

However, by the end of 2020, Russia is significantly inferior to world leaders by volumes of ESG-instruments emissions (*fig. 1*), despite the fact that their use is gradually gaining momentum. [9]

As for the special purpose of ESG-tools, in the Russian sustainable market can be identified only 2 directions: clean transport (76%) and socio-economic empowerment (15%). While the foreign structure in 2020 is extremely diverse (*fig. 2*).

In Russia, the use of ESG-tools is only gaining momentum, and the methodology of their circulation is under development. However, as the relevance and need for sustainable development there is no doubt, it is likely that global levels in terms of the volume and targeted use of green and social bonds will be reached over time.

It is important to underline, that the Central Bank of the Russian Federation in 2019 joined the international regulators on greening the financial sector and in 2020 introduced regulatory requirements to take into account the impact of climate risks on the activities of financial intermediaries. State Development Corporation "VEB.RF" from March 2020 to May 2021 developed methodological recommendations on taxonomy and development of the national system of financing green projects.[6]

It should be noted that this market in the monetary dimension is insignificant, but has huge prospects for development. Large companies have emerged in Russia issuing green bonds and prioritizing development that implement sustainable growth strategies.

[6] VEB.RF. URL: https://veb.ru/ustojchivoe-razvitie/zeljonoe-finansirovanie/zelenye-finansy-i-rol-veb-rf/ (accessed on 10 February 2022).

The issuers of the bonds, verified according to the "VEB.RF" methodology, have already become SC "Atomenergoprom", JSC RZD, the Government of Moscow and SC "Sinara Transport Machines".

SC "Atomenergoprom" all funds from the bond issue is directed to refinancing the green project "Construction of 660 MW wind farms",[7] which is characterized by the absence of emissions of pollutants into the atmosphere or the generation of waste. RZD is working on the implementation of up to 2030 environmental strategy, providing for use electric train to reduce the negative impact on the environment.[8] The Government of Moscow implements environmental program from 2020 to 2030,[9] aimed at qualitative transformation of the transport system, clean air, noise reduction and significant reduction of anthropogenic emissions. "Sinara Transport Machines" in the framework of the strategy to 2025, through the issuance of green bonds, produces environmental machinery (electric locomotives, electric trains).[10]

An important event in 2021 was the formation of the legal basis for the application of ESG principles in Russia. Thus, signed the Federal Act of 02 July 2021 No. 296 "Limitation of greenhouse gas emissions",[11] that banks can offer their services (information, consulting and project finance) and financial products (such as green loans), directed at the sustainable development.

Measures to increase the number of green loans:

- attracting quality investors, including foreign companies;
- national economic support;
- improving the environmental situation, reducing the negative impact on the environment;
- following the principles of ESG;
- increased green instruments: bonds and loans;
- preferences from the state, subsidies for the implementation of investment projects to introduce the best available technologies, etc.

SUBSIDIZATION AS A MEASURE OF STATE SUPPORT FOR THE INTRODUCTION OF THE BEST AVAILABLE TECHNOLOGIES

A promising instrument for expanding green lending, according to the author, is subsidized by the state, which can expect on companies whose projects meet the following requirements:

- promote the adoption of best available technologies on objects of 1 category negative impact on the environment,[12] i.e. the largest

[7] RA "Expert". Report on the expression of an independent opinion on the conformity of the bonds of the series 001R-01 JSC "Atomic Energy Industrial Complex" principles of green bonds and on the compliance of projects financed by them with internationally recognized principles and standards in the sphere of ecology and "green" financing. 2021. URL: https://veb.ru/upload/iblock/3fc/3fcedf34791327a39c74060fe19cc0af.pdf (accessed on 13 January 2022).

[8] RA "Expert". Report on the expression of an independent opinion on compliance of the perpetual bonds of JSC "RZD" series 001B-03 with the principles of "green" bonds. 2020. URL: https://raexpert.ru/docbank//ff8/5ca/d62/227992a54ea8cfaa4d3753d.pdf (accessed on 13 January 2022).

[9] RA "Expert". RA expert expressed independent opinion on compliance of bonds of the Moscow Government with the principles of green bonds and on compliance of projects financed by them with internationally recognized principles and standards in the sphere of ecology and "green" financing. 2021. URL: https://veb.ru/files/?file=f4c8bfb58285f88907d661a9a39557d1.pdf (accessed on 13 January 2022).

[10] ACRA. ACRA confirmed compliance of the projects financed within the issue of bonds of JSC "STM" with internationally recognized principles and standards in the sphere of ecology and/or "green" financing (ICMA's "green" bond principles). URL: https://veb.ru/files/?file=db48d392b577e1f3877c2ac75c62ea81.pdf (accessed on 13 January 2022).

[11] Federal Act from 02 July 2021 No. 296 "Limitation of greenhouse gas emissions". URL: http://www.kremlin.ru/ acts/news/66061 (accessed on 01 February 2022).

[12] In accordance with the order of the Ministry of Natural Resources and Ecology of the Russian Federation from 18 April 2018 No. 154 has approved the list 300 objects, related to 1 category and having an adverse impact on the environment,

industrial enterprises of the Russian Federation, which are more threatening to the environment;

• are implemented for the purpose of obtaining or prolongation a comprehensive environmental permit. In the 2022–2024 period, large companies and objects of 1 category are obliged to pass to the new technological norms of production, approved by the order of the Ministry of Natural Resources of the Russian Federation[13];

• are aimed at achieving the best technology standards for allowable discharges and emissions; i.e. improve eco-efficiency by modernizing production;

• provide for equipment, construction and installation, commissioning and other works for the purpose of modernization of the existing enterprise (but not new production).

However, the procedure for obtaining subsidies is complicated by the fact that it is registration in stages, which discourages companies that are the target audience, i.e. doing economic activities in the areas of best available technologies: ferrous and non-ferrous metallurgy, chemical and oil and gas industries, ceramics production, etc.

Passport of investment project (in the set of documents) these companies provide the Ministry of Industry and Trade of the Russian Federation (MIT RF) — the organizer of this funding.[14]

MIT RF announces the acceptance of subsidies applications, which are selected within 1 month: initially on a formal basis, and then on the resulting from a feasibility estimate (FE) of the projects. 80 experts from different industries using the best available technologies carry out the FE points system. The expert estimate is informative, identifies the conformity of the investment project with the technological processes and determines its cost-effectiveness in general. Based on FE an inter-Ministerial Commission, approved by the Government of the Russian Federation, decisions to subsidies or reject. Within the framework of the concluded agreement, the enterprise has the right to apply for a subsidy twice a year.

The advantage of this financial support is the availability of a platform — State Industrial Information System (with electronic documents turning), generally optimize the entire project appraisal process and shorten the subsidies period. Difficulties encountered by enterprises in its registration, related to the incomplete submission of documents, insufficient information for FE, as well as incorrect completed bank documents and lack of purpose of funding.

PARTICIPATION OF BANKS IN THE IMPLEMENTATION OF INVESTMENT PROJECTS TO IMPLEMENT THE BEST AVAILABLE TECHNOLOGIES IN RUSSIA

Banks have been able to integrate sufficiently well into the system by providing services such as: informing clients of the possibility of receiving a subsidy from the State; assistance in processing the necessary package of documents and development of the investment project; implementation of credit product. These investment projects have large enough financing and contribute to the development of syndicated lending and expansion of the loan portfolio. At the same time, banks have increased guarantees of repayment as part of the money will be reimbursed by the State, and the borrower has a high level of creditworthiness.

which contribute at least 60% to total emissions of pollutants in the Russian Federation. URL: https://docs.cntd.ru/document/542623710?marker=6500IL (accessed on 03 February2022).

[13] New working conditions with the waste I and II hazard classes from 1 March 2022. URL: https://www.profiz.ru/eco/blog/post_7917/ (accessed on 11 February 2022).

[14] Ministry of Industry and Trade of the Russian Federation. URL: https://minpromtorg.gov.ru/ (accessed on 11 February 2022).

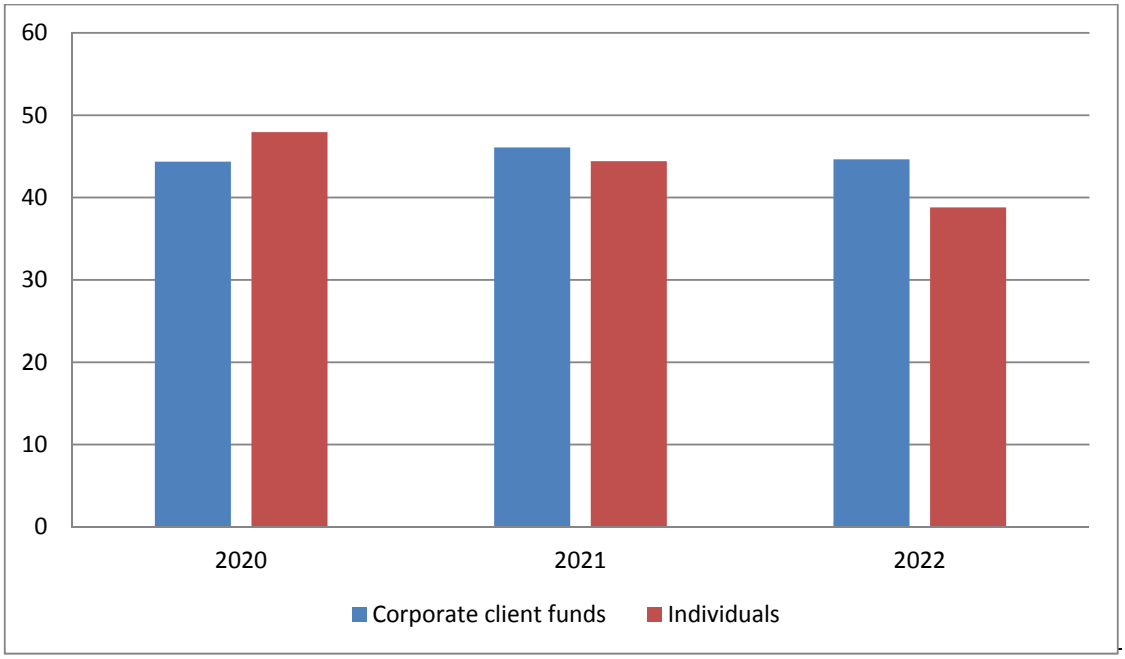

Fig. 3. **Structure of banks' liabilities, %**

Source: developed by the author based on the statistic indicators of the bank's sector of Russian economic. URL: https://cbr.ru/statistics/bank_sector/review/
Note: * – 2022 data are predictive.

Sustainable growth is possible through capitalization, interaction of the real sector, creation of new value, increase of the role of the Central Bank in economic growth. Economic development forecast for 2024[15] the State are responsible for pointing the way on stimulating technological development and modern technologies; growth of non-energy export operations, medical and transport development; developing an investment cycle with more private financing. Public investment will be directed towards expanding private accumulation infrastructure and maintaining macro-stability as a condition for long-term growth.

An illustration of the above is *fig. 3*, which means that in 2021, the share of corporate clients in bank accounts is higher than individuals.

In 2020, the share of funds of individuals amounted to 47.94% of total bank liabilities, and 2021 has already seen a slight decrease, due to the increase in the structure of liabilities of the banking sector in the growth of public funds (from 5 to 10% for the period under analysis). This trend is projected to continue in 2022.

It should be noted, that government programmes are now in fact budget appropriation planning documents in implicitly linked to the main activities of the authorities. K.N Samkov claims, that it is necessary to allow the regions of the country to independently implement not only federal, but also regional projects according to socio-economic policies and specific characteristics of the country's region,[16] and should be developed in the

[15] Forecast of socio-economic development of the Russian Federation for 2022 and for the planned period 2023–2024. URL: https://www.economy.gov.ru/material/directions/makroec/prognozy_socialno_ekonomicheskogo_razvitiya/prognoz_socialno_ekonomicheskogo_razvitiya_rf_na_2022_god_i_na_planovyy_period_2023_i_2024_godov.html (accessed on 10 February 2022).

[16] Open Working Group proposal for Sustainable Development Goals. Sustainable Development Knowledge Platform. United Nations.

form of financial institutions, to this should be changed budget legislation to allow for expenditure planning in the formulation of these projects. [11]

Individual subjects of the Russian Federation, as well as the country as a whole, are interested in achieving the goals of sustainable development up to 2030. However, there are a number of problems in financing and implementing regional projects:

1) a small part of activities within the framework of national projects, which can independently implement subjects of the Russian Federation;

2) insufficient funding of regional projects due to inconsistencies in agreements between federal authorities and constituent subjects of the Russian Federation;

3) inaccurate calculation of federal project indicators by region: without taking into account regional specifics, the possibility of increasing the target values of the constituent subjects of the Russian Federation within the framework of regional projects;

4) lack of co-financing by the Federal Centre in some directions.[17] In turn, the regions should provide co-financing under the state programs in the amount of from 5 to 30%.[18]

FINANCING OF ESG-PROJECTS IN RUSSIA

The implementation of all sustainable development goals[19] (SDG) is influenced by multilateral factors, such as:

- global trends — *fig. 4*. Statistics show an increase in green bond issuance in both developed and transition economies. Europe and Asia — Pacific region became major issuers, more than doubling their overall output [12];
- international capital markets and investors;
- development of companies according to ESG principles;
- composition and rating of assets of companies and financial intermediaries (*fig. 5*) [13];
- level of development of commodity markets, their merger, pressure on export-import operations;
- composition and impact of financial and non-financial factors for the actual and sustainable growth of the company [14];
- product quality and consumer demand. While the latter is focused only on price-quality ratio and does not take into account other properties of products:
- bank lending. Previously, banks were focused on assessing customer reliability from the point of view of financial risks, and now, when entering into agreements with potential users of their services, they consider climate and environmental concerns since the latter have a negative impact comparable to the damage caused by financial risks, for example, COVID. [15]

This position is important for banks, as ESG factors had a negative impact on ratings of corporations and infrastructure companies (cumulatively reduced by 15%) and reduced banks' credit performance. According data by RA "Expert" (*fig. 6*), financial intermediaries either already testing borrowers for commitment to ESG-principles and KPI,[20] existence of appropriate internal procedures, or plan to integrate

[17] United Nations. Consensus Reached on New Sustainable Development Agenda to be adopted by World Leaders in September. URL: https://www.un.org/sustainabledevelopment/blog/2015/08/transforming-our-world-document-adoption/ (accessed on 13 February 2022).

[18] Sustainable Debt Market Summary H1 2021. URL: https://www.climatebonds.net/files/reports/ cbi_susdebtsum_h12021_02b.pdf (accessed on 13 February 2022).

[19] Analytical Center under the Government of the Russian Federation. Sustainable Development Goals of the UN and Russia. URL: https://ac.gov.ru/files/publication/a/11068.pdf (accessed on 13 February 2022).

[20] What are the six Principles for Responsible Investment? URL: https://www.unpri.org/pri/about-the-pri (accessed on 10 February 2022).

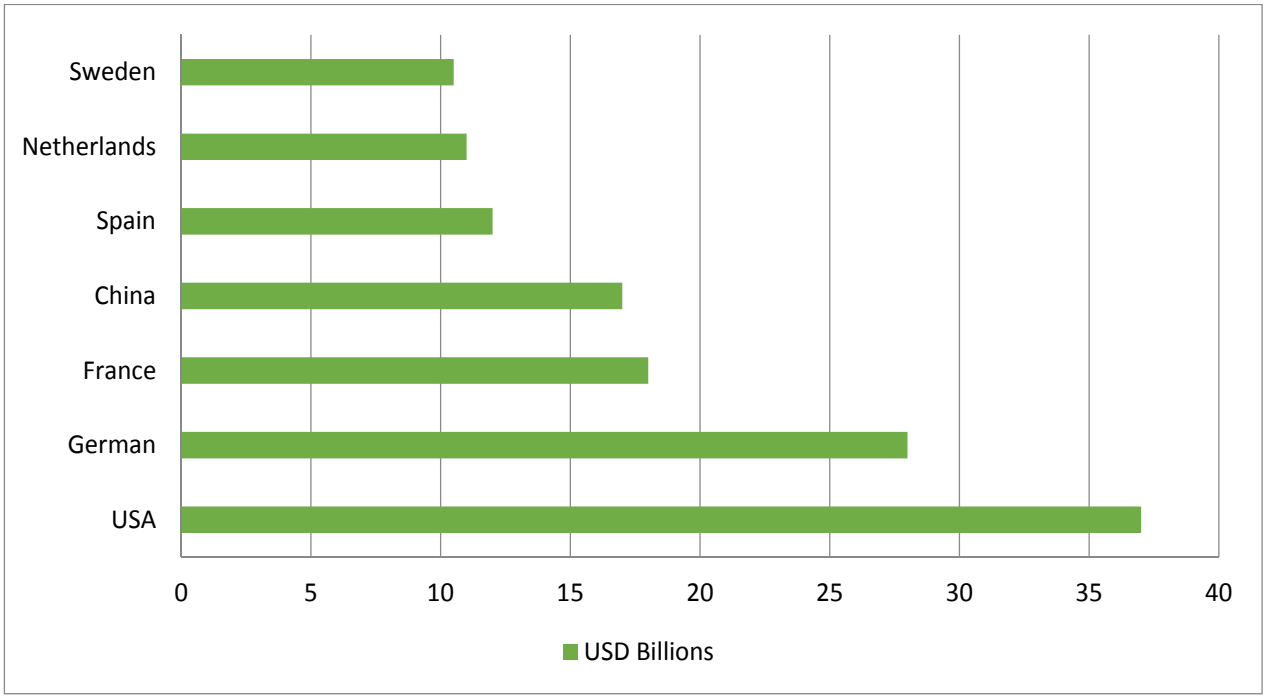

Fig. 4. **The volume of green bond issues in foreign countries**

Source: developed by the author.

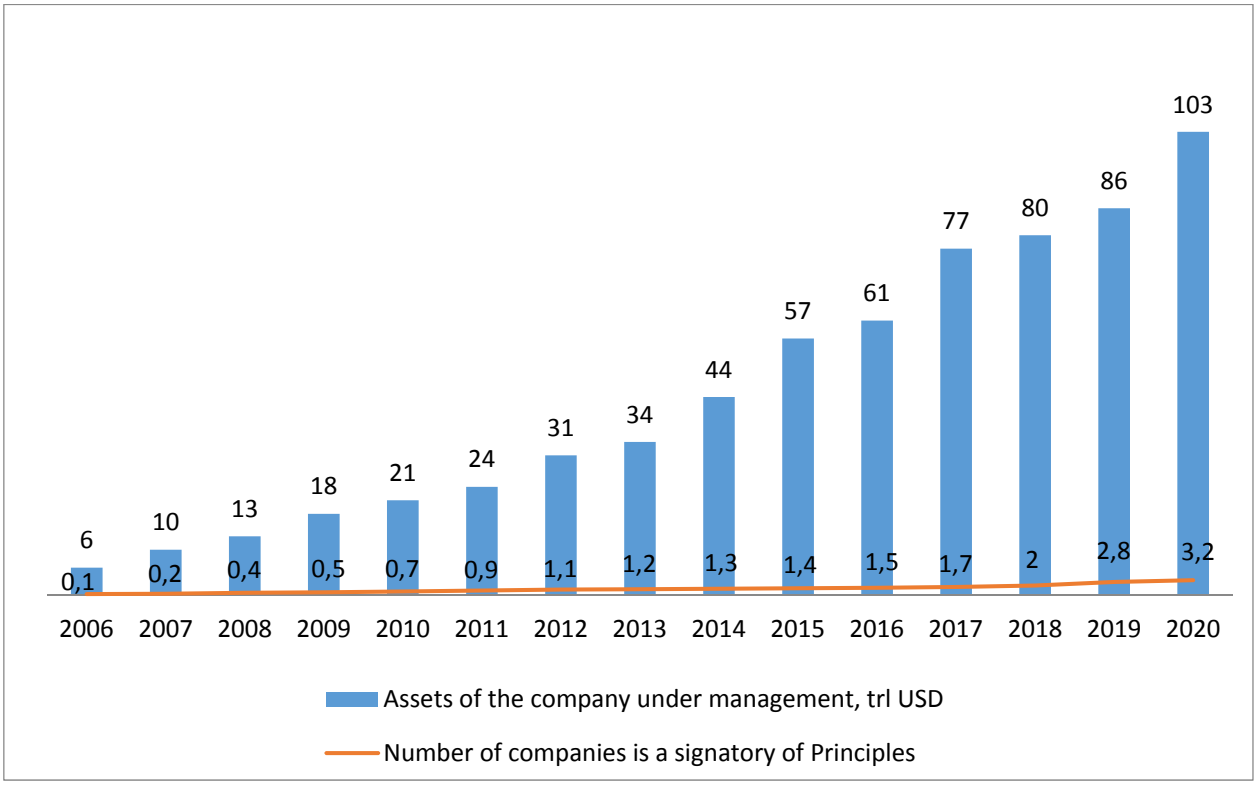

Fig. 5. **Dynamics and volume of assets of companies joined the ESG principles**

Source: developed by the author based on [16].

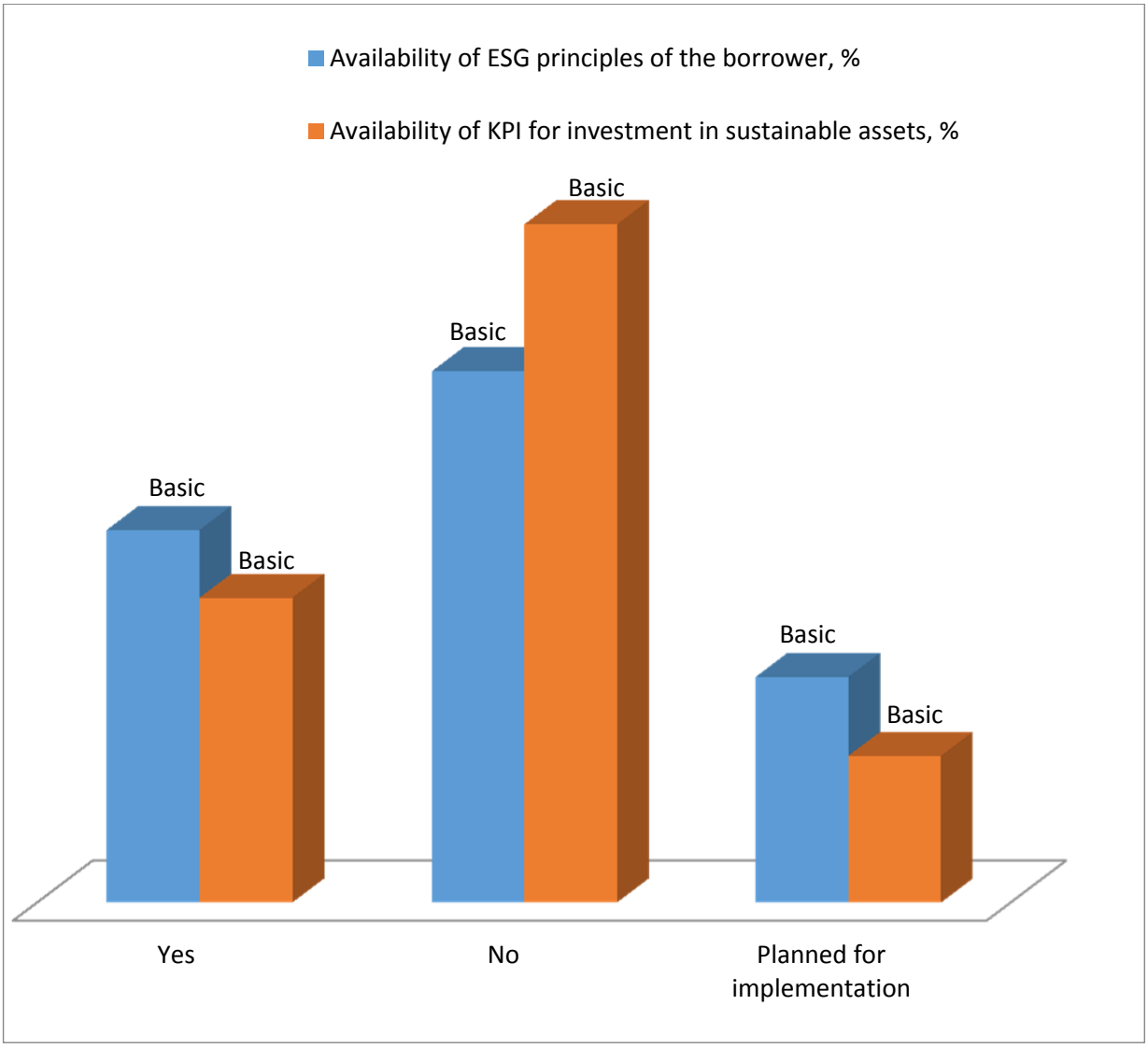

Fig. 6. **The level of implementation in the credit process of obligors' ESG-assessment, %**

Source: RA Expert [9].

this audit into their investment process. As a result, the demand for green and social bonds in the financial market is expected to increase significantly.

Recently, many companies have focused on the commercial value of ESG-factors. Strategic managers strive to strive to include them,[21] because they see the connection between the company's activities in this field and its long-term success. In addition, correlation of factors of sustainable development with non-financial risks has been determined, which are not included in the market valuation of companies. ESG-investing creates asymmetric advantages and provides "insurance effect", i.e. protection from negative effects, especially during a social or economic crisis. [17]

Implementation by major banks with significant financial resources, ESG-evaluation of the borrower will lead to the inevitable

[21] ESG oversight issues: guidance for directors. URL: https://www.pwc.ru/ru/publications/collection/esg-guidebook-russian.pdf (accessed on 10 February 2022).

formation and introduction of principles of sustainable development in companies from the real sector. And the introduction of KPI on responsible investments will serve as an incentive for future issuers.

Banks in their development strategy should consider all climate change and other ESG-factors not only as risks, determining the dependence of the financial result on its impact on ongoing projects (changes in prices of services, real estate, assets, etc.), but also as incentives for green ecology. An important advantage for banks in this direction is access to cheaper funding: despite the lack of ESG-lending experience, they are ready to reduce the cost of resources. At the same time, in order to increase the incentive of sustainable development of clients, applied financial instruments can be structured so that the cost of funding the borrower decreases depending on the results of sustainable development. Retail customers also actively support ESG-principles and are interested in cooperation with companies, offering them relevant products and advising them on their implementation. In this way, banks that are able to implement ESG-practices expand their customer base not only in the domestic market, but also provide opportunities for interaction with foreign investors.

Many banks in their organizational structures create departments of strategy, innovation and marketing, whose function is to develop and implement "sustainable" projects, which underline their commitment to sustainable development and economic growth in general.

Because the mega-regulator also considers environmental and natural risks (along with liquidity and capitalization of assets, financial sustainability) as the most important for the financial results of banks, that it is possible to introduce mandatory norms to assess the impact of these factors on their activities (lending, mainly). As well as the implementation of the directive, concerning the auditing of suppliers for compliance with ESG-principles. Also, the Bank of Russia plans to develop green mortgage, which will allow the population to take preferential housing loans for the purchase of apartments in energy-efficient and environmentally houses.[22]

In general, Russia is making progress in the sphere of regulatory regulation of sustainable development, including in terms of sustainable financing. However, this forward-looking direction requires a clear designed strategy, informed decisions and effective interaction of government, financial sector and economic sectors. Russia studies world experience and implements it, considering national specifics. However, according to the author, it is necessary to be proactive, to develop and gradually implement the long-term sustainable development strategies needed in our country.

Despite the fact that banks have recently started to apply ESG-principles in their activities, there is already a successful experience of implementing appropriate social and environmental projects. Large-scale construction campaigns implemented in Russia, including construction of transport and medical infrastructure, creation of enterprises in the sphere of culture and sports, energy, socially significant facilities, etc. Close cooperation between the real and banking sectors that can bring the country's economy to a new level of development.

Having examined the materials of such researches, may be noted that it is advisable

[22] IA Banki.ru. Banks introduce environmental risk assessment of borrowers. URL: https://www.banki.ru/news/lenta/?id=10949195 (accessed on 12 February 2022).

to classify the model portfolios of ESG-principles and neutral companies belonging to them. [18] The portfolio of ESG-oriented enterprises, taking into account the degree of risk and non-financial value drivers shows high profitability in comparison with the portfolio of ESG-neutral companies. It is important to assess the investment attractiveness of enterprises (and regions), based on the use of cost-oriented indicators and the index method. [19] Based on researches of calendar regression of equity portfolio yield and panel regression at the level of firms revealed, that wins those with good sustainability ratings.

CONCLUSION

The global community strives to minimize the negative impact on nature, and at the present stage, the environmental, social, governance principles (ESG) are relevant for it. Foreign countries began to develop ESG-tools rapidly since the late 1980s, however, in Russia their implementation began relatively recently, the volume of their use in our country is still low, and the areas of use are few. A significant gap between Russian practice and global practice in this direction can be reduced by strengthening relations with financial institutions, public and private sectors, megaregulator. Since 2020, the Central Bank of the Russian Federation has been actively implementing regulatory requirements to consider the impact of climate risks on the activities of financial intermediaries. Apparently, those banks are interested in introducing ESG-principles into their business (as they help to develop a new niche in the market and attract significant long-term resources). And to jointly achieve the goals of sustainable development, they are modernize their organizational structure, develop strategies for innovation and marketing; seek to reduce the cost of resources by using low-cost funding sources; expand their product line, etc. They have also begun to pay considerable attention to the impact of climate and environmental factors, among other risks typical in the industry.

The above underlines the theoretical significance of the research, namely identifying the motivations that encourage banks to implement their business on the principles of environmental, social and governance responsibility. Its practical importance consists in the development of a mechanism to ensure sustainable growth through capitalization, close interaction with the real sector of the economy, the formation of new value, strengthening the role of the State.

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ABOUT THE AUTHOR

Olga Yu. Donetskova — Cand. Sci. (Econ.), Associate Professor of the Department of Banking and Insurance, Orenburg State University, Orenburg, Russia
https://orcid.org/0000-0002-7849-4034
olja-ja-77@mail.ru

Conflicts of Interest Statement: The author has no conflicts of interest to declare.

The article was submitted on 12.01.2022; revised on 03.02.2022 and accepted for publication on 17.02.2022.
The author read and approved the final version of the manuscript.

ORIGINAL PAPER

DOI: 10.26794/2304-022X-2022-12-1-56-65
UDC 338.242.42(045);347.2/.3(045)
JEL O20, L50

Ways and Methods of Managing Reduction of Unfinished Construction Projects in Industry

E.V. Gavrilin[a], A.E. Gavrilin[b]
[a] Federal State Unitary Enterprise "Directorate for Investment Activities", Moscow, Russia
[b] Kutafin Moscow State Law University (MSAL), Moscow, Russia

ABSTRACT

The paper depicts ways and means of solving one of the key problems that the Government of the Russian Federation has identified as a priority in 2020 and for subsequent years. This includes the reduction of unfinished construction projects (UCP), the financing of the construction of which was carried out at the expense of the federal budget, in particular, industrial facilities without attracting additional budget allocations. The purpose of the work is to create a management mechanism that allows in a short time to involve in the economic turnover of UCP, the construction of which was carried out at the expense of the federal budget. Within the framework of existing regulatory and legislative rules and restrictions, the mechanism comprises methods that allow organizing the transfer of property to another level of ownership, privatization, completion of construction at the expense of extra-budgetary sources, as well as write-off and disposal for UCP. The proposed ways and methods of management make it possible to involve the maximum number of UCP in the economic turnover in the shortest possible time. Federally owned objects that have not aroused interest in the regions and that lack investment attractiveness for private investors should be completed at the expense of the federal budget, or written-off and disposed of. The authors used the described methods in fulfilling the instructions of the Government of the Russian Federation to reduce the UCP and allowed to increase several times the number of involved projects compared to previous periods.

Keywords: unfinished construction projects (UCP); inventory of UCP; federal budget funds; state treasury of the Russian Federation; transfer to another level of ownership; privatization; write-off; disposal; involvement in economic turnover

For citation: **Gavrilin E.V., Gavrili A.E. Ways and methods of managing reduction of unfinished construction projects in industry. *Management Sciences*. 2022;12(1):56-65. DOI: 10.26794/2304-022X-2022-12-1-56-65**

INTRODUCTION

Reduction in the volume and number of unfinished construction projects (UCP) is an important national task, requiring the adoption systemic decision-making at all levels of government and management.

Problems associated with UCP, in particular the concept [1], their legal regime [2–17], registration in Unified State Register of Real Estate [15, 18–20], taxation [21], registration of sites under them [22–24] etc., is widely shared in the international scientific literature. However, the problem of establishing a management mechanism is not addressed at all, to attract in involvement in economic turnover of unfinished construction project in a short time, the construction of which was carried out at the expense of the federal budget.

Instructions from the President of the Russian Federation and the Government of the Russian Federation was defined tasks to ensure the inventory unfinished construction projects, not included in the targeted investment program, and development of information resource, containing complete data on specified objects, and the inventory of those of them whose cost exceeds 10 mln rub., in the construction of which budget funds were used at all levels.

Information about unfinished construction projects is formed in the State automated information system "Management"[1] based on data from mandatory financial statements, which is represented in of the Federal Treasury from the main federal budget holders.

According to these data, as at 1 January 2019, the total number of UCP, as reflected in the balance sheet of the general managers of the federal budget, was about 13000.[2] Of them (*fig. 1*):

- 26% sites were at the design stage or approval of design and estimate documentation, on which construction hasn't even started;
- 21% were under construction;
- 22% was registration of putting into operation;
- 15% construction was suspended;
- 13% were at another stage;
- 3% abandoned.

For 2019, the total number of sites increased by 5.6%.

The problem of unfinished construction Accounts Chamber of the Russian Federation gives the utmost attention. As a result of the verification activities carried out in 2019, it was noted, that the assignments of President and Government of the Russian Federation, providing systematic measures to reduce the volume and quantity of UCP, have not been fully implemented and the situation in this area has not changed radically: the number of "abandoned" objects and "long-term construction" is not systematically reduced, it was also not possible to prevent the appearance of new problem objects.

According to the auditor of Accounts Chamber S. Yu. Orlova, the number of contractions UCP at the expense of regional budgets in 2019 was equal to 3.4 thous. — this is more than in 2018, and the number of "abandoned" was 4.3 thous., which is also higher than the previous year.[3]

Along with the financial accounting forms unfinished construction, consolidated by the Federal Treasury for the Russian Federation, UCP accounting is carried out separately by the Federal State Statistics Service, the Federal Agency for State Property Management, the Federal Registration Service and is reflected in departmental information systems.

[1] State automated information system "Management". URL: https://gasu.gov.ru/

[2] Bulletin of the Accounting Chamber of the Russian Federation, 2020. No. 11(276). Unfinished construction.URL: https://ach.gov.ru/statements/byulleten-schetnoy-palaty-11–276–2020-g

[3] Bulletin of the Accounting Chamber of the Russian Federation, 2020. No. 11(276). Unfinished construction. URL: https://ach.gov.ru/statements/byulleten-schetnoy-palaty-11–276–2020-g

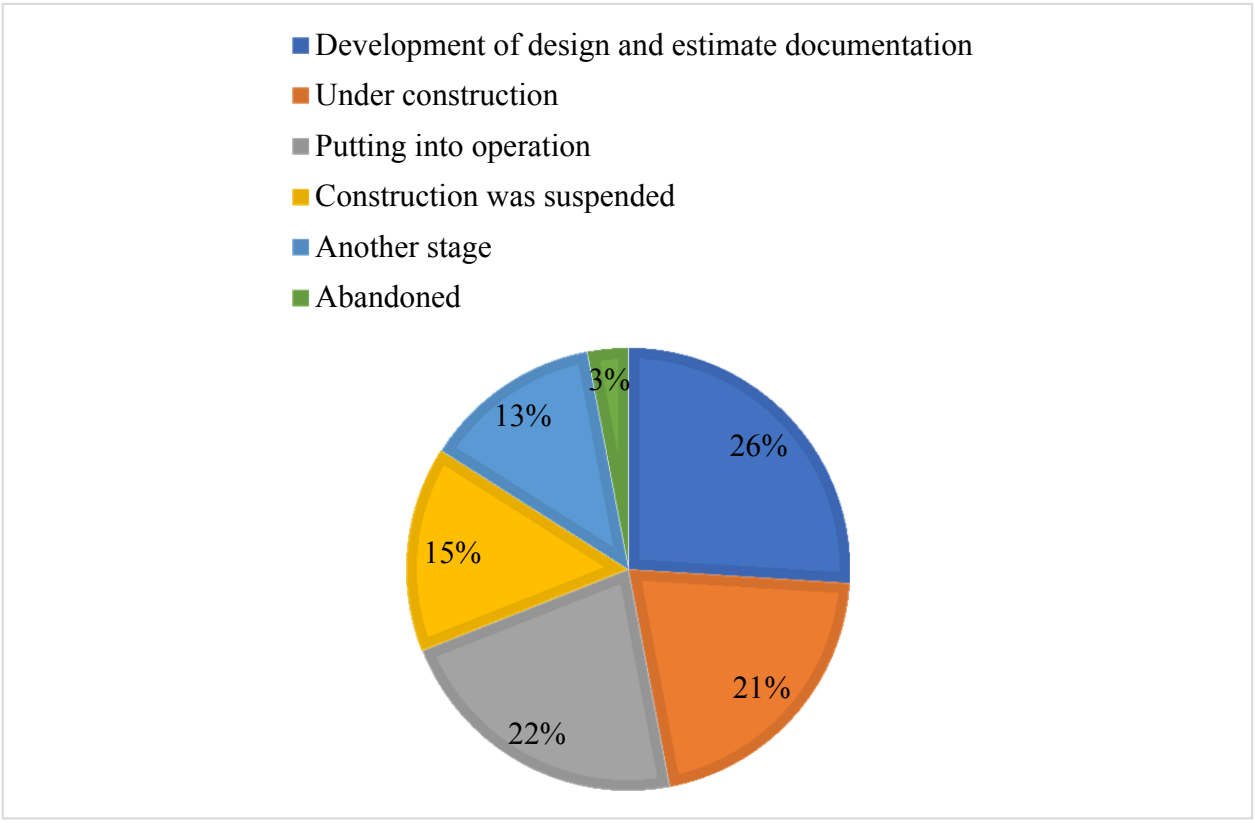

Fig. 1. **UCP as of January 1, 2019**

Source: developed by the authors.

CHARACTERISTIC OF UNFINISHED CONSTRUCTION PROJECTS IN INDUSTRY

UCP can be divided into several groups. First group — projects that are at various stages of construction continue to be funded and high degree of probability will be built on time. Second group — projects on which funds were spent, design and costing documentation developed, design and survey work carried out, but they were not built and there are no sites as such. There is a problem, either write-off costs incurred or start construction. Third group — these are projects that have been started but frozen, which are not financed from the federal budget. They were listed in Register of Federal Property, conducted within the framework of Order of the Government of the Russian Federation from 16 July 2007 No. 447 "On improving accounting of Federal Property".[4] The distinctive feature of the third group of objects is that they are accounted for in the Register of Federal Property provided that they are recognized by UCP and have been registered in Unified State Register of Real Estate. Until that time they are capital investments and shall not be recorded in the above-mentioned Register. It should be noted, however, that the criteria that would clearly define which objects could be registered as real estate in terms of readiness, availability of funding, etc., are not defined by law.

In accordance with the instructions of the President of the Russian Federation and the

[4] Order of the Government of the Russian Federation from 16 July 2007 No. 447 "On improving accounting of Federal Property". URL: http://www.consultant.ru/document/cons_doc_LAW_70561/

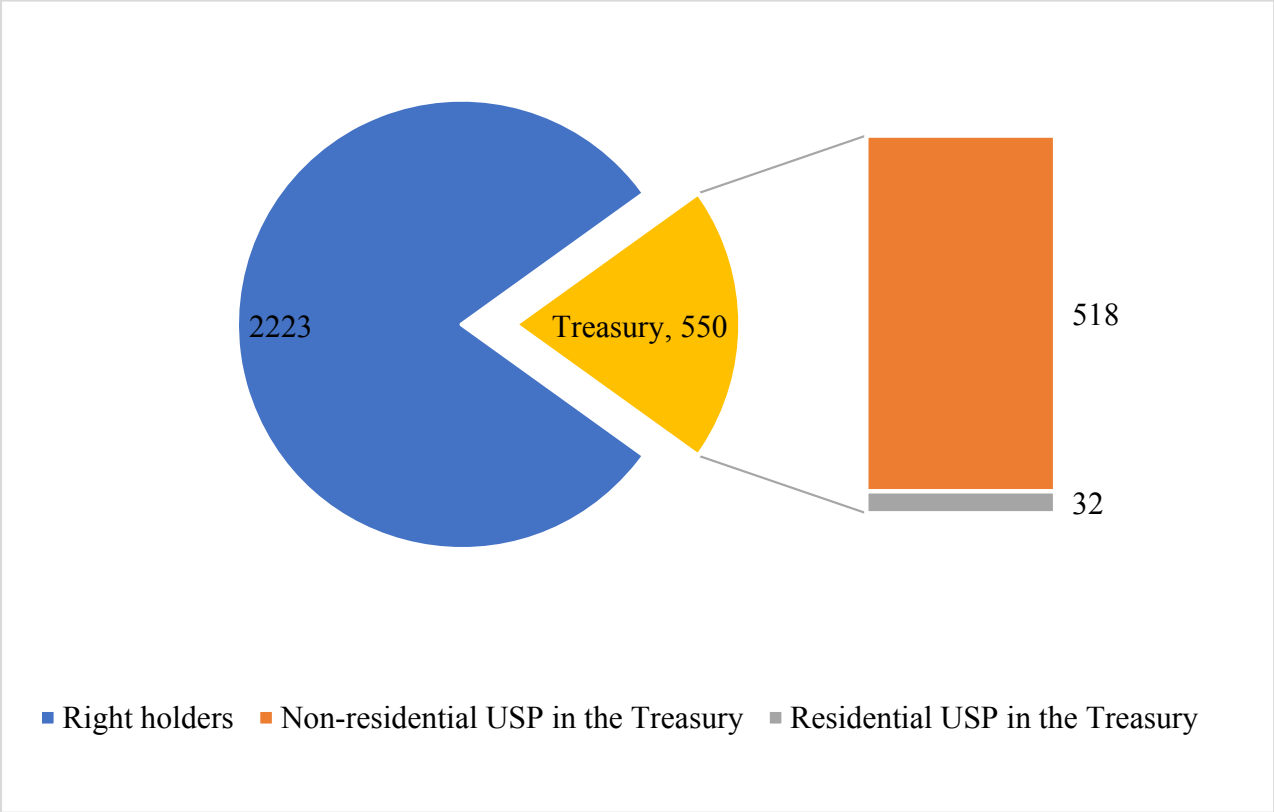

Fig. 2. **UCP, contained in the open part of the Register of Federal Property, as of the beginning of 2020**

Source: developed by the authors.

Government of the Russian Federation, 139 projects were involved in the economic turnover of Register of Federal Property in the period from 2015 to 2019. Of which: 45% were put into operation, 34% were written-off, 18% transferred to another level of ownership, 2% is deposited into the authorized capital of joint-stock companies holding a State share, 0.7% is privatized.

As of the beginning of 2020, the public part of the Registry was taken into account about 2773 UCP, of which:

2223 — reserved of one or any other right for right holders;

550 — as part of State Treasure of the Russian Federation (in 193 of them construction was stopped until 2000); the majority of these objects, namely 518, belong to non-residential type, 32 — residential.

WAYS AND METHODS TO REDUCE THE NUMBER OF UNFINISHED CONSTRUCTION PROJECTS IN INDUSTRY

One of the key challenges, which the Government of the Russian Federation has identified as priorities in 2020 and beyond, was reducing the amount of UCP, whose construction was financed from the federal budget, in particular industrial facilities, without the involvement additional budgetary allocations.

This can be achieved by completing the construction from domestic sources of federal state unitary enterprises, state-owned enterprises and federal public service, or the respective budgets (constituent entities of the Russian Federation and municipalities) with transfer to another level of ownership, write-off, disposal and further use of the vacated site

for regional needs, as well as privatization of UCP.

According to Methodic recommendation for formation of target-function about unfinished construction projects, its preparation, approval of departmental plans to reduce their volume and quantity.[5] In addition to such targeted functions, as the completion of construction (reconstruction, technical re-equipment), conservation of objects, privatization, and transfer of ownership to the constituent entities of the Russian Federation or to municipal ownership, transfer to concession, write-off and demolition, provided for the acceptance of the UCP in the state treasury.

This, in our view, cannot be accepted, as the transfer of objects to the treasury does not solve, but exacerbates the problem of reducing the number of UCP. Since, if the ministries and departments had some target setting for their construction, the transfer to the treasury would conceal the true state of affairs, and the Federal Agency for State Property Management, which manages the Treasury facilities, there is no financing for completion of the construction and view the target function of the target object.

On the other hand, UCP transfer, under the treasury of the Russian Federation, to federal agencies and organizations that had previously construction, will have a positive impact on accountability for past decisions and prevent unwarranted future investments.

In order to solve the task of reducing the UCP, in the first stage was necessary to simultaneously obtain information about expressions of interest from heads of entities and municipalities that ownership of objects federally owned, and intention of the Federal executive authorities to either complete the UCP with funds from domestic sources or transfer it to another level of ownership.

As a result of the research done at this stage, we get four UCP arrays. The first includes facilities that the federal executive authorities are prepared to transfer to another level of ownership, and subjects — accept. Second — those that have not aroused interest and are subject to or sold through inclusion in the Forecast Plan (Program) of privatization, or implementation with the involvement of the State Corporation "DOM.RF". Third — is the UCP, which the federal authorities plan to complete from their own sources. And the fourth — is facilities that can only be written-off and disposed of.

OPERATION ALGORITHM TO REDUCE THE NUMBER OF UCP

Based on the information received, operation algorithm to reduce the number of UCP was created, which is a sequence of actions aimed at achieving on their objectives.

In accordance with existing legislation, transfer of unfinished construction projects on a different level of ownership possible in two ways: first — through harmonizing with the federal executive authorities concerned (right holders of UCP) and edition of an Order of the Government of the Russian Federation; second — through the transmission mechanism, envisaged by Federal Law from 24 July 2008 No. 161 "On facilitation of housing construction".[6]

In this Federal Law, the Russian Federation response to the request of the head of one of the subjects and the agreement of the Federal executive authority (right holders of UCP), based on the decision of the Government Commission for housing development and land use efficiency assessments, which owned

[5] Letter from the Ministry of Economic Development of the Russian Federation from 06 March 2017 No. 5575-EE/Д17и. URL: https://nkrfkod.ru/zakonodatelstvo/pismo-minekonomrazvitija-rossii-ot-06032017-n-5575-eed17i/

[6] Federal Law from 24 July 2008 No. 161 "On facilitation of housing construction". URL: http://www.consultant.ru/document/cons_doc_LAW_78700/

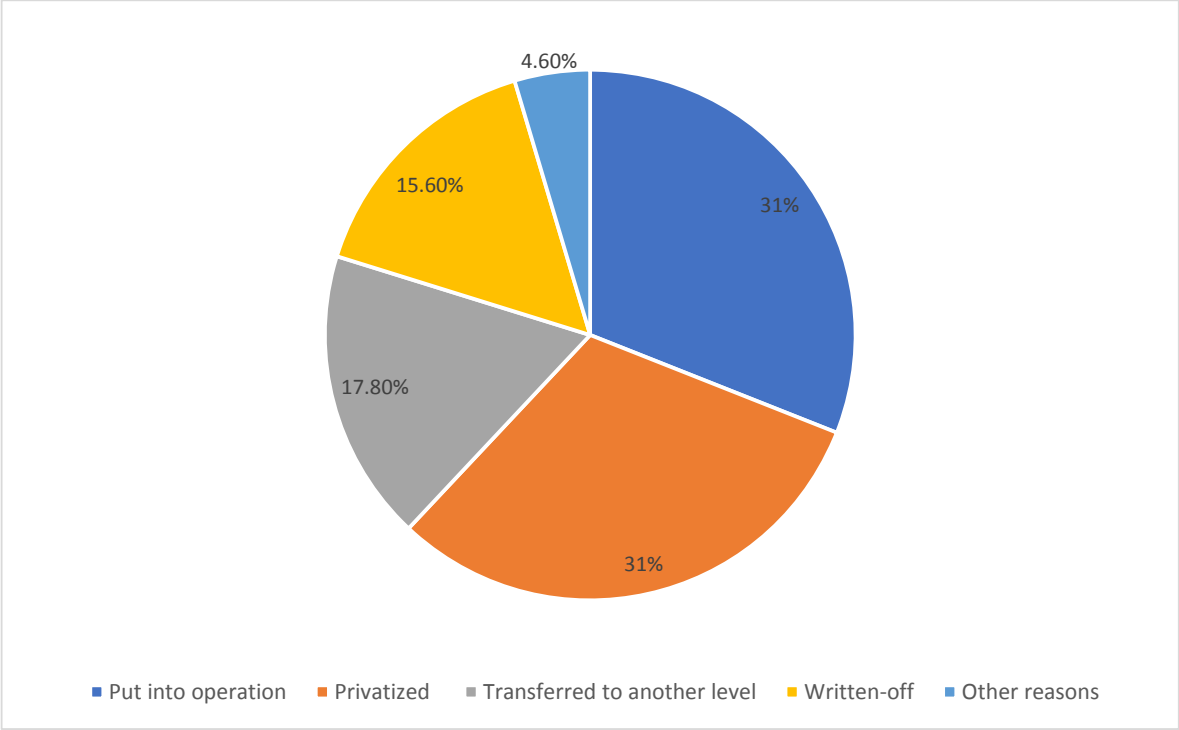

Fig. 3. **Results on reducinb the number of UCP contained in the open part of the Register of Federal Property in 2020**

Source: developed by the authors.

by the Russian Federation, with JSC "DOM.RF" as a united development institution; they are transfer for three years to the state authorities of the constituent entities of the Russian Federation the exercise of authority to manage and order the UCP, including demolition and reconstruction of real estate objects.

UCP, which has not aroused the interest of the constituent entities of the Russian Federation and which the federal authorities do not plan to operate, are subject to either privatization, write-off or disposal.

Privatization of UCP is possible in two ways.

1. Introduction of privatization under the existing procedure into the Forecast Plan (Programme) with subsequent sale at auction. In the absence of investment demand, the facility is implemented first by the method of public offer, which provides a step-by-step reduction of the price to half of its original value, and then, in the absence of interest, without announcing the price: it is appointed by the applicants themselves, and the winner is the investor who has offered the highest price.

2. Implementation with State Corporation "DOM.RF". In this case, the Government Commission for housing development and land use efficiency assessments transfers UCP to JSC "DOM.RF", as a united development institution, for the subsequent sale and use of the funds received for housing development.

And, for writing off and disposing of unfinished construction projects rights holders without additional budget financing need, firstly, they should be on cadastral records (otherwise funds are needed for cadastral registration); secondly, that the cost of their disposal be covered by the possible return of steel structures and other materials for secondary use. It is clear that this is only possible if the facilities are either in the initial

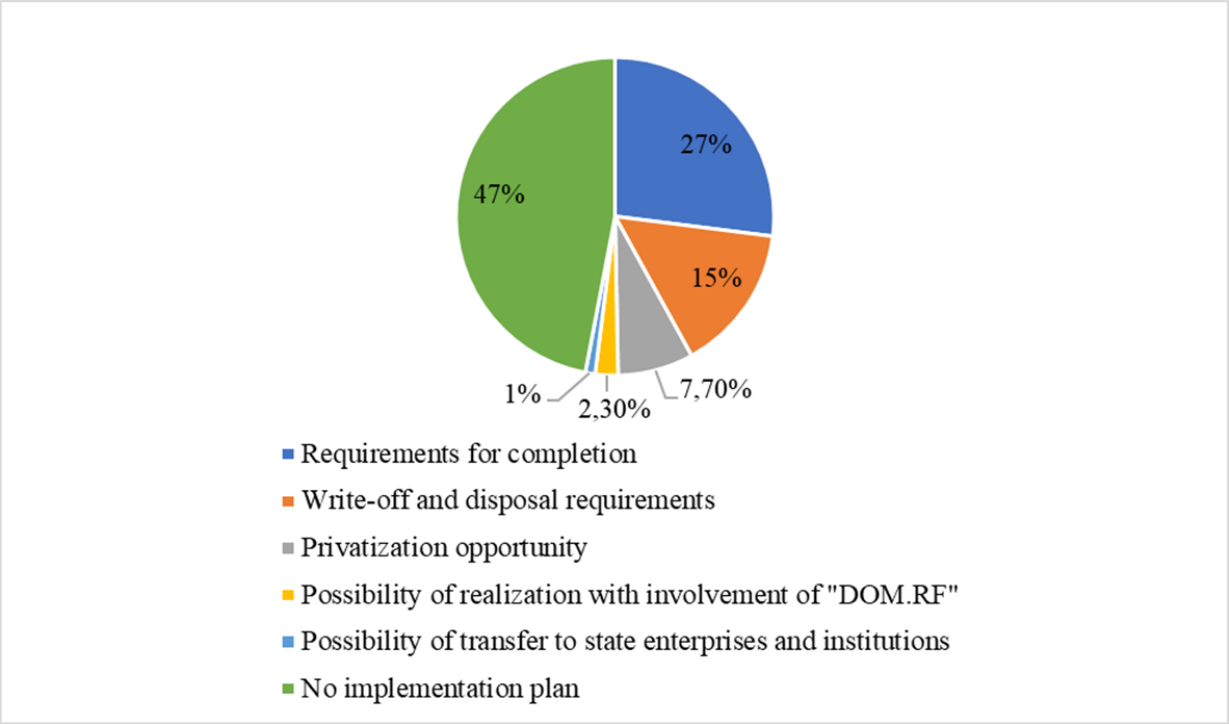

Fig. 4. **Directions for further work on reducing the number of UCP**

Source: developed by the authors.

stages of construction or in the preparatory stages.

As a result of the work carried out in 2020, 614 UCP (including 186 Treasury objects) were removed from the original list and subject to removal from or change of status in the Federal Property Register (from the "unfinished construction projects" to the "capital construction projects"). Of these, 31% of the UCP put into operation, 31% privatized, 17.8% transferred to another level of ownership, including by orders of the Government of the Russian Federation, 15.6% written-off, abandoned for other reasons — 4.6% (*fig. 3*).

Directions for further work to reduce the number of UCP remaining in the Registry are displayed on *Fig.4*. In relation to these objects, a survey of right holders showed that only 27% of them still need to be completed and put into operation, since their functioning will serve to solve urgent socio-economic and infrastructural state tasks.

In case of lack of budget financing the construction must be completed either economically or with the assistance of the Bank of Russia using accounts of repurchase agreement (REPO) secured by UCP at their market value. [17] It must be clearly understood that if construction is not completed, the facilities will inevitably collapse over time and there will be a need for their disposal, which can be much more costly, not to mention the loss of the facility itself. 15% of them — are subject to write-off and disposal. Can be implemented: 7.7% (having investment attractiveness) by entering into the Forecast Plan (Program) of privatization with subsequent sale at auction or in other ways provided for by the legislation; 2.3% — with JSC "DOM.RF". Other state-owned enterprises and institutions ready to accept about 1% of UCP. For the remaining 47%, there is no indication of further action to reduce them and project should continue.

Regions of the Russian Federation have shown interest in taking ownership (subjects or municipal) of 9.2% of objects of construction in progress. Unfortunately, the process of their transfer is rather lengthy, as it requires a large number of documents and agreements. In the scientific literature, it is proposed to extend to UCP the legal regime of real estate turnover, which have been registered in Unified State Register of the Real Estate (USRRE). [12, 14, 25–27] In theory, unscrupulous investors have the possibility of abuse, for example, in the registration of rights to land under real estate, but that there is a need for such a change in the UCP, in federal ownership, and the authorities of the constituent entities of the Russian Federation and municipalities showed interest in completing, there is no doubt. This would allow the transfer of some 200 additional sites in 2020, which federal institutions and organizations are prepared to transfer to another level of ownership, and regions — to accept and complete on the basis of orders of the Federal Agency for State Property Management and its territorial bodies, not government documents. As UCP are destroyed over time, speeding up the transfer procedure will have an undeniable economic effect.

CONCLUSION

The practical use of the proposed mechanism to reduce the number of UCP allows us to draw a number of important conclusions. Theoretically, all UCP, which are not interested in completing the construction of public authorities and organizations, can be implemented through the Forecast Plan (Program) of privatization at tenders, by public offering and without announcement of price. However, there is a concern that if acquired by private investors for relatively little money, they will remain the same when the ownership changes, i.e. they will not be completed or disposed of.

Separately there were several UCP, which are illiquid, and their write-off and disposal will still require considerable budgetary resources. These include, for example, those built on border sections, so that their further use is strictly limited. Or industrial facilities on a high state of readiness, but built on sites far from urban and village infrastructure. For private investors, their use is unprofitable. Finally, also almost unfinished construction projects, some of which, if completed, can only be federally owned, and disposal is costly, so their commercial use is excluded.

In order to prevent an increase in the number of abandoned UCP of the Ministry of Construction of the Russian Federation in the future is carried out:

- reorientation to a single state customer for construction;
- consideration of transition to a system of management of the life cycle of capital construction objects, providing for their unified cross-cutting codification in the territory of the Russian Federation;
- creation of a regulatory and technical basis for managing the life cycle of capital construction objects.

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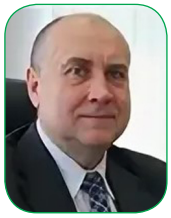
ABOUT THE AUTHORS



Evgeny V. Gavrilin — Dr. Sci. (Econ.), Director for Development of the Federal State Unitary Enterprise "Directorate for Investment Activities", Moscow, Russia
https://orcid.org/0000-0002-7621-2785
evgavrilin@mail.ru

Alexander E. Gavrilin — master student, Institute of Private Law of Kutafin Moscow State Law University (MSAL), Moscow, Russia
https://orcid.org/0000-0002-7534-1681
gavrilin.msal@gmail.com

Conflicts of Interest Statement: The authors have no conflicts of interest to declare.

The article was submitted on 20.12.2021; revised on 08.02.2022 and accepted for publication on 25.02.2022. The authors read and approved the final version of the manuscript.

ORIGINAL PAPER

DOI: 10.26794/2304-022X-2022-12-1-66-78
UDC 338.45:642.5(045)
JEL L83

Improvement of the Restaurant Business Management System in the Republic of Belarus

S.L. Witowski[a], I.I. Hutarava[b]
[a] EF Education First, Moscow, Russia;
[b] Institute of Business of the Belarusian State University, Minsk, Republic of Belarus

ABSTRACT

The research subject is the state of the restaurant business in the Republic of Belarus (RB) as an important part of the country's hospitality industry. The purpose of the work is to form proposals in the prospects and current trends in the development of this industry, including considering the improvement of the restaurant business management system in the RB. The authors examined the specifics of its interaction with several industry complexes (detailed with tourism). Also, the paper identified the prospects and directions for its development, studied the features of management in this area, determined areas for improving the restaurant business management system in the country. The authors used statistical and comparative types of analysis, a systematic approach, and the use of a categorical apparatus in the food industry as a methodological basis of the study. The practical significance of the work spreads in the development of proposals that contribute to the effective development of this industry in the future and to overcome certain difficulties that currently exist in this market. As follows, the formation of professional management, the application of modern methods of work in this market beginning from implementing marketing concepts to the use of Internet marketing tools, as well as gastronomic tourism development and intensive interaction with the tourist infrastructure.

Keywords: restaurant business; hospitality industry; restaurant business management; effective management; manager of the future

For citation: **Witowski S.L., Hutarava I.I. Improvement of the restaurant business management system in the Republic of Belarus.** ***Management Sciences.*** **2022;12(1):66-78. (In Russ.). DOI: 10.26794/2304-022X-2022-12-1-66-78**

INTRODUCTION

The National Strategy for sustainable socio-economic development of the Republic of Belarus for the period up to 2030 defines the objectives, stages and directions of the country's transition to post-industrial society and innovative development of the economy.[1] This also applies to the service sector, including the hospitality industry, including restaurant and hotel business, organization of events, etc. and one of the main in the complex of tourist services. [1]

In its content restaurant business represents the area of business activity, which aims to manage and organize both restaurant and other catering facilities, and focuses primarily to the needs in a varied, healthy and nutritious food, and to make a profit. [2] Foreign authors made a significant contribution to the development of the restaurant business, such as Ph. Kotler, J. Bowen, J. Makens [3], J.R. Walker [4], J. Sala [5], R.C. Mill [6].

It is on the effective management in this field depends on its competitiveness, and also the opportunity to develop in new macroeconomic realities.

INTERACTION OF RESTAURANT BUSINESS WITH INDUSTRY COMPLEXES

Modern restaurant business facilities can work closely with various industry complexes (*table 1*). This service sector plays a crucial role in decision many socio-economic challenges not only of the country but also of the regions of the country. [7, 8]

Close interaction of the restaurant business with the tourist infrastructure positively affects the image of the country. The last point will be solved in more detail.

According to data from the Ministry of Statistics and Analysis, in the Republic of Belarus in 2020 was functioning 1 348 organizations, which conduct their activities in the sphere of tourism, while in 2019 the number was the maximum and was 1 544 units.

2020 was a turning point for the hospitality industry, as the tourism industry functioned under the global tourism crisis caused by the coronavirus pandemic COVID-19 and subsequent restrictive measures. In the first half of 2020, tourist traffic fell by 65% compared to the previous year, the number of foreign tourists and excursionists who visited the Republic of Belarus in 2020, amounted to 27 290 people (on 9 351 less than in 2010). According to forecasts UNWTO,[2] will take 2.5 to 4 years to return to pre-crisis levels. [9, 10]

For the development of the hospitality industry, an innovative strategy was adopted for the formation of Minsk's own style and its international visibility to promote the city among foreign tourists until 2035.[3] According to data [11–13], has been the development of rural, ethnographic, inclusive and other types of tourism.

INBOUND TOURISM IN THE REPUBLIC OF BELARUS: AMERICAN TOURISTS

Inbound tourism in the Republic of Belarus is currently developing. [14]

According to the results of the state program "Belarus hospitable", published in 2018,[4] due to the plan to develop this sector

[1] National Strategy for sustainable socio-economic development of the Republic of Belarus for the period up to 2030. **URL**: https://pervadmin.gov.by/page-4830 (accessed on 30 September 2021).

[2] UNWTO — World Tourism Organization, specialized intergovernmental agency of the United Nations system, comprising 158 member countries, 6 associated territories, 2 observer territories and more than 500 affiliated organizations. URL: https://www.unwto.org/

[3] Innovative strategy of formation of own style of Minsk and its recognizable international image for popularization of the city among foreign tourists until 2035. URL: https://minsk.gov.by/ru/normdoc/4476/pril_276 _04022021_strategiya.shtml (accessed on 30 September 2021).

[4] Information on the implementation in 2018 of the state program "Belarus Hospitable" for 2016–2020. Ministry of Sport

Table 1

Interaction specifics of the restaurant business with other industry complexes and activity areas

Interaction of the restaurant business with several industry complexes and activity areas	Description
1. Cultural and entertainment complex	Restaurant business facilities may include cultural and entertainment programmes
2. Therapeutic recreation complex	Implementation into practice the idea of a healthy lifestyle (HL) assumes the organization of diet and vegetarian food, which contributes to the increase in the number of restaurants specializing of a healthy lifestyle
3. Food and trade-distribution complex, complex of social protection of population	Creating new jobs in the industry, the restaurant business thus solves both economic and social problems
4. Tourist infrastructure	Restaurant business directly interacts with tourist and excursion complex, at the same time being a significant factor in the formation of tours that promotes the development of priority types of tourism in a region (country), stimulates the business activity of the region and its investment attractiveness
5. Non-commercial activities	Restaurant business facilities can be the organizers of non-profit, charitable and sponsorship events, and provide nutritional services and services for the production of culinary products and confectionary on a free basis or on payment terms for these services at a low level of social

Source: compiled by the authors based on [7].

between 2016 and 2020, the number of foreign tourists exceeded expectations.

With regard to the composition of visitors to the Republic for the last fifteen years (from 2005 to 2019) guests, must pay attention to the fact that in 2005, among others, there were 3% more Americans; in subsequent years, the rate did not exceed 0.9% and averaged was equal to 0.6% (from 2008 to 2018). As a rule, most foreigners come to the Republic from the CIS countries, so it should be considered the number of tourists from other countries separately. In this category, the percentage of Americans, although small, is slightly higher — an average of 3.4% in all years of this research.

In 2019, the number of American tourists in the hotel industry in Belarus were also positive, and the USA was in the top ten in terms of the number of visitors staying in hotels. [15] This was contributed to facilitated by the repeal visa regime by the Decree of the President of Belarus No. 8 "On the es-

and Tourism of the Republic of Belarus. URL: http://www.mst.by/uploads/files_news/Tourism/Info-Progr-Tour.docx (accessed on 08 June 2020).

Table 2

Main indicators of public catering development

Indicators	2010	2015	2016	2017	2018	2020	Deviation
Number of catering facilities	11 965	12 545	12 779	12 978	13 371	14 165	2200
Number of places in public catering facilities, thous.	738.9	768.5	769.7	773.0	775.0	773.8	+34.9
Number of places in public catering facilities per 10 000 people	780	812	813	818	822	828	+48

Source: compiled by the authors according to the National Statistical Committee of the Republic of Belarus Domestic trade and public catering of the Republic of Belarus. 2021; URL: https://www.belstat.gov.by/ofitsialnaya-statistika/realny-sector-ekonomiki/vnytrennia-torgovlya/roznichnaya-torgovlya/publikatsii_6/index_39703/ (accessed on 05.12.2021).

tablishment of a visa-free procedure for the entry and departure of foreign citizens"[5] in February 2017, and in July of the following year the period of stay without a tourist visa was increased from 5 to 30 days (provided that entry into the country and subsequent departure will pass through the state border at the Minsk National Airport). Simplification of the entry process along with investments in the tourism sector, joint projects with EU tourism organizations have already brought benefits and led to an increase in the number of foreign (particularly American) visitors to the Republic.

The Republic does not stop work in this direction, despite the difficult conditions caused by the epidemiological situation, which began at the end of 2019 and continues to this moment. Positive trend, which can be considered as a positive impact on the tourism industry, can be considered increased level of digitalization and dissemination Internet in the country. As noted in the research by E. Stryzhak and others, published in May 2021, the overall impact of digitization on the tourism industry is positive, as it has the potential to offer an entirely new way of collecting statistical information and data, and providing new opportunities for developing countries to present and promote destinations, which could potentially lead to increased sales and revenues. [16] This is due to the ability to advertise tours and tourist events, and available destinations, book hotels, work directly with customers and track tourist trends to correct policies and offers. N. Yunevich notes that, compared to 2020, Belarus has achieved a high level of digitalization largely due to comprehensive state

[5] Visa-free regime for foreigners in Belarus. URL: https://www.belta.by/all-rubric-news/viewSuzet/bezvizovyj-rezhim-dlja-inostrantsev-v-belarusi-363/ (accessed on 03 June 2020).

Table 3

The main types of public catering facilities in the Republic of Belarus

	2010	2015	2016	2017	2018	2020
Total public catering facilities	11 965	12 545	12 779	12 978	13 371	14 165
Inter alia						
Restaurants	437	539	516	516	513	504
Fast food restaurants	30	85	112	143	175	241
Cafe	1582	1936	1915	1954	2057	2315
Mini-cafe	741	1020	1154	1241	1425	1725
Canteens	5009	4668	4627	4592	4508	4393
Bars	1168	1205	1189	1172	1241	1359
Diners	861	539	533	558	548	484
Cafeteria	695	958	975	969	981	916
Buffet andcoffee shop	1442	1595	1758	1833	1923	2138
Summer (seasonal cafes)	271	369	397	408	409	366
Cookery store	414	239	269	253	281	243

Source: compiled by the authors according to the National Statistical Committee of the Republic of Belarus. Domestic trade and public catering of the Republic of Belarus. 2021. URL: https://www.belstat.gov.by/ofitsialnaya-statistika/realny-sector-ekonomiki/vnytrennia-torgovlya/roznichnaya-torgovlya/publikatsii_6/index_39703/ (accessed on 05.12.2021).

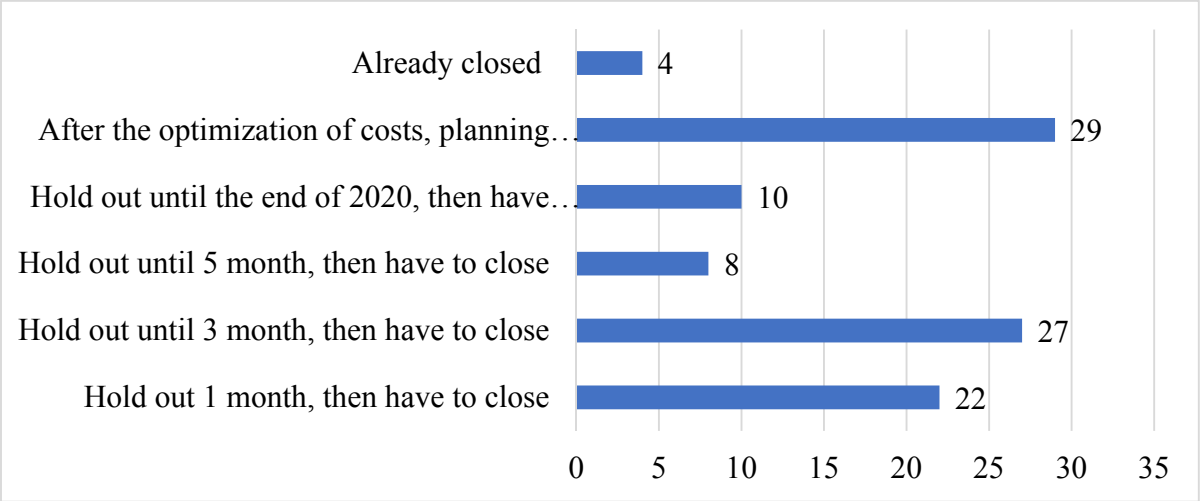


Fig. 1. **How many resources and reserves will be enough if the situation on the market and working conditions remain unchanged**

Source: compiled by the authors.

programs to increase informatization of the country. [17]

STATUS AND DEVELOPMENT OF THE RESTAURANT BUSINESS IN THE REPUBLIC OF BELARUS

While researching the development of the restaurant business in the Republic of Belarus for the period 2010–2020, it is necessary to note positive trends, which are reflected in the data on *table 2* and *3*.

According to *table 2* the total number of catering facilities increased by 2 200 units in 2020 compared to 2010 and reached in 2020–14 165 units; seating capacity in 2020 was equal to 773.8 thous., that 34.9 thous. more than in 2010 (per 10 000 people this indicator increased by 48 units and amount 828 places).

On 12 April 2021, the Order of the Ministry of Antimonopoly Regulation of Trade of the Republic of Belarus was adopted No. 26 "Classification of public catering facilities by type".[6] Development of different types of public catering facilities in RB presented in *table 3*.

According to the *table 3* the number of restaurants from 2010 to 2020 increased by 67 units and amounted to 504 facilities; in terms of fast-food restaurants, their number in 2020 increased by 211 to 241 in comparison with 2010.

The restaurant business in the Republic of Belarus is currently being reformed to the needs of the target audience, restaurateurs are trying to form maximally unique offers of their services. In the center of the city there are facilities with street food; some sellers offer gastronomic sets at a one price. There is a demand for dishes prepared according to ancient recipes and from domestic ingredients, as well as those that can be attributed to the "national cuisine". Network objects of this culinary direction are created (for example, "Vasilki"). Popular house of the brand "Litvina", as well as gastronomic festivals "Gastrofest". Leaders among the famous cafes and restaurants related to eco-brands are "Monkey Food" and "Happiness is". Almost all catering companies have catering services and off-premise sales.

[6] Classification of public catering facilities by type. URL: https://pravo.by (accessed on 08 June 2021).

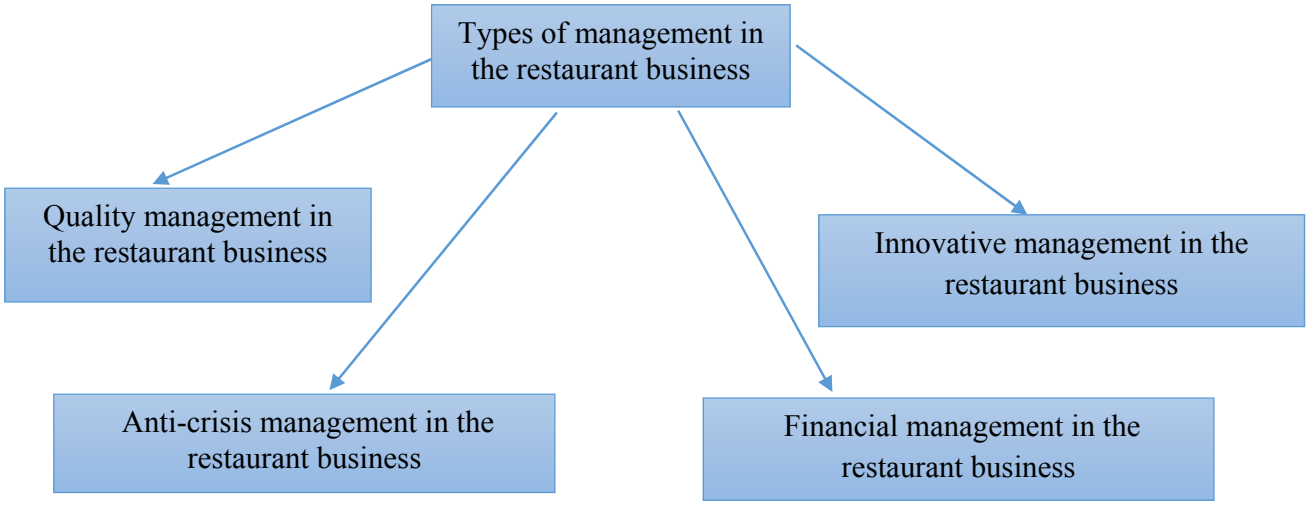


Fig. 2. **Restaurant business management**

Source: compiled by the authors based on [18].

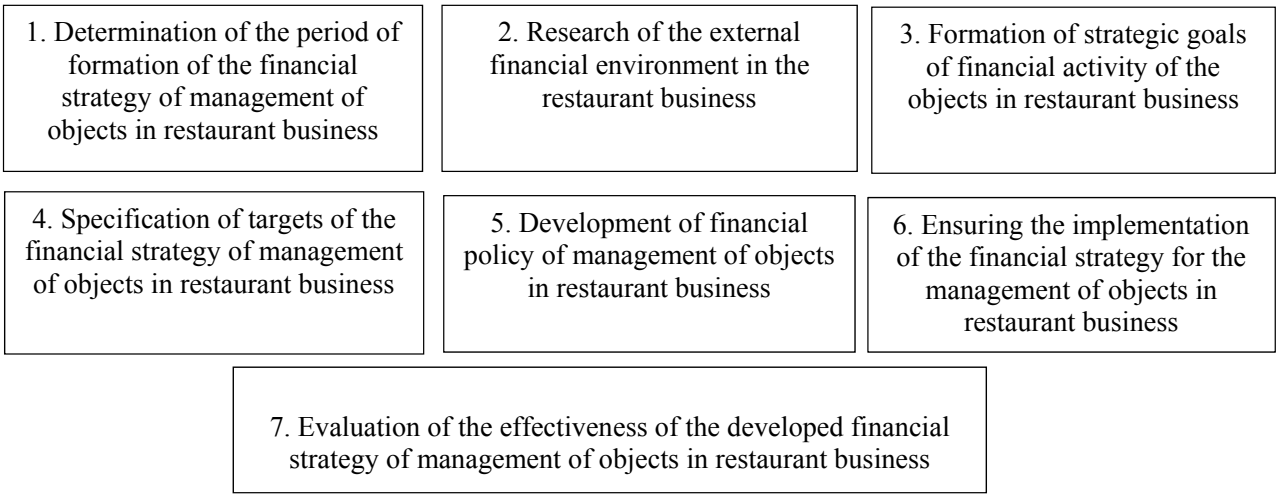


Fig. 3. **Stages of developing a financial strategy in the restaurant business**

Source: compiled by the authors based on [18].

However, in 2020, the industry faced with some of serious problems caused by world corona-crisis, which was the impetus for the establishment of the Association of Restaurateurs of Belarus in April this year, the main mission of which is to support the restaurant business in the new business environment, and popularization of its positive impact on both the national economy and the cultural life of the country. The Association conducted research among 400 respondents related to this field, which was devoted to the study of the development of the restaurant business in the light of corona- crisis. *Fig. 1* presents data, received on responses to question (received in the context of this study): How long will resources and reserves last, if the market situation and working conditions do not change?

Based on *fig. 1*, it can be concluded that a number of serious measures must be taken to radically improve the situation in the restaurant business.

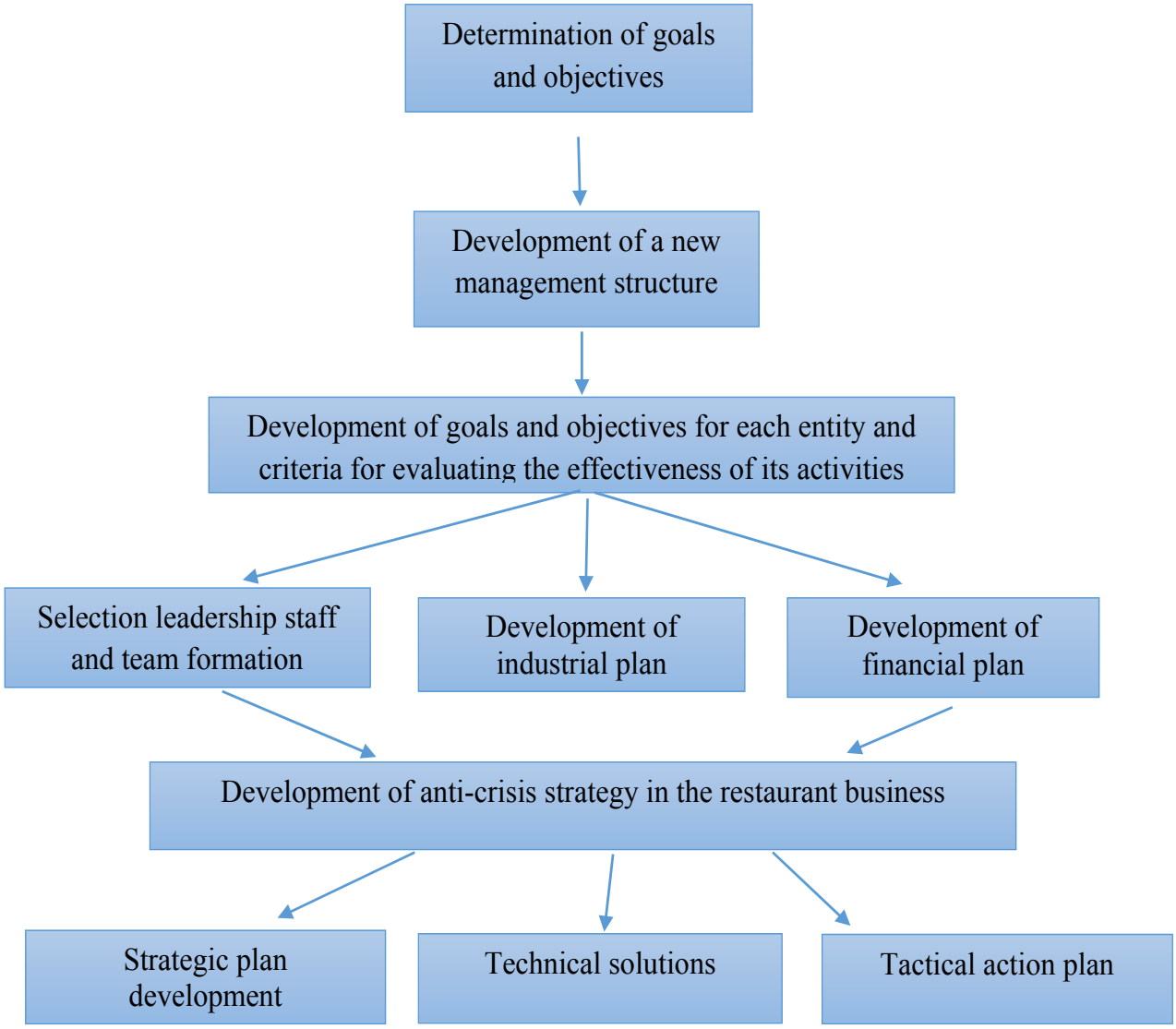


Fig. 4. **Stages of an anti-crisis strategy**

Source: compiled by the authors based on [18].

SPECIFICS OF MANAGEMENT IN THE FIELD OF RESTAURANT BUSINESS

In accordance with the National tourism development Strategy until 2035,[7] one of the main problems in the hospitality industry recognized the lack of an effective management vertical in this area.

According to [18] data, management in the restaurant business can be presented as a number of components (*fig. 2*).

Consider in more detail each of them.

Quality management in the restaurant business has a distinctive feature, which is due to the characteristics of the product itself: for each of them, it is advisable to develop, manage and continuously improve quality policies. Having created a unified concept, it should be applied to each specific public catering facility, having previously adapted.

[7] National strategy for the development of tourism in the Republic of Belarus until 2035 approved. URL: https: www.belarustourism.by/news/utverzhdena-natsionalnaya — strategiya — razvitiya — turizma — v—respublike — Belarus — do2035—goda/ (accessed on 14 September 2021).

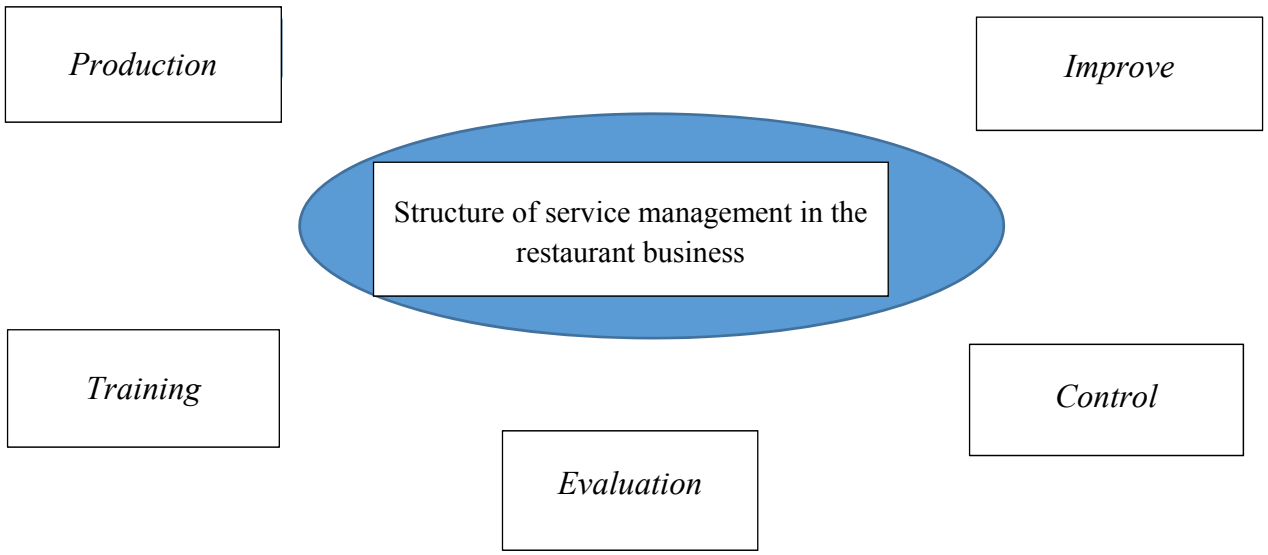


Fig. 5. **Service management structure in the restaurant business**

Source: compiled by the authors based on [19].

Innovative management in this area is understood to be the process of management based on the application of innovative and creative principles and functions in this area. It is part of the development strategy of the restaurant business and should be foundation of it.

Financial management is the management of financial resources for the implementation of both strategic and tactical tasks. Financial strategy is formed on the basis of a system of long-term goals of the restaurant business and the most effective ways to achieve them. The stages of its development are presented on *fig. 3*.

In turn, *anti-crisis management* in this field *is* to: ме crisis prevention; activity in the context of crisis and developing measures to the crisis. The main stages of development of the anti-crisis strategy are presented on *fig. 4*.

In the current economic conditions for the effective management of objects in the restaurant business it is advisable to implement service management. By "service management in the restaurant business" accepted to understand the techniques of management of all systems of service in this field. First of all, it is the technology of service design, its implementation, training of staff, monitoring, evaluation and development. [19] Knowledge management is also relevant. According to [19] it is an ongoing process of developing, acquiring, preserving and using work in order to improve of total value of objects of the restaurant business. Deeper involvement of managers in learning and training processes, development of their communication skills for more effective interaction with their employees — it is rational.

Ph. Kotler identified characteristics of this service industry: "intangibility, inseparability, continuity of service production and consumption, quality variability, changes, and the fragility and inability of these services to store". [3]

Structure of "service management in the restaurant business" are presented on *fig. 5*.

The approaches to management are the aspect that should be a key in the develop-

ment of modern service objects in the restaurant business.

According to the National restaurateur's association (NRA)[8] it is considered that most of the changes that the restaurant business will face it be exclusively technological factors. The dissemination of modern technologies improves efficiency both by increasing the efficiency of services and by transforming the service. In the future, change will most affect such processes, as carrying out daily income and expenditure analysis, ensuring a balance "hith-tesh" and "high-touch"[9] — restaurant parameters, increase number of computer programs for cost and effectiveness evaluation of managers, integration of the system of settlement terminals with the system of receiving orders, increase of accuracy and speed of information removal from settlement terminals. [19]

Application of modern technology in restaurant operations will require, on the one hand, effective and efficient programmes that can improve performance, and on the other — the exact choice of the restaurant manager of those software products that are most suitable to the specifics of its object. Restaurants will need IT-systems, the functions of which are not limited to the collection and accumulation of information obtained from sales outlets. Programs will be needed to reflect power safety, service speed, energy savings. Following IT-trends and complex improvement of technologies will contribute to higher level of power facility and attract new customers. It is also important to consider innovative trends in the tourism industry, closely linked to the restaurant industry, from the perspective of digital transformation. [20]

[8] NRA — National restaurateur's association. URL: https://restaurant.org/ (accessed on 20 August 2021).

[9] Hith-tesh– high technology; high-touch — is concerned with personal attention and service.

PROSPECTS OF RESTAURANT BUSINESS DEVELOPMENT IN THE REPUBLIC OF BELARUS

In the National Strategy for the Development of Tourism in the Republic of Belarus until 2035[10] are presented the main directions of tourism development as a component of the hospitality industry. The focus is on improving the vertical of hospitality management, marketing and promotion of the product, development of priority types of tourism (including gastronomic), innovative technologies in this field, tourism infrastructure, and objects of restaurant business.

In turn, the target indicators of the Innovation Strategy of the formation of its own style of Minsk and its recognizable international image for the promotion of the city among foreign tourists until 2035[11] are the presence of the capital of the Republic of Belarus among 100 leading cities — destinations of the world, also receipt revenue from international tourism by 2035 in the amount of 1.5 billion USD.

From our point of view, it is advisable to make a number of proposals that will contribute to a higher quality development of the restaurant business as a component of the hospitality industry in the Republic of Belarus:

1. Development of gastronomic tourism. At the same time, it is advisable to provide representatives of the tourism industry and restaurant business opportunities for cooperation in order to create a competitive gastronomic tourist product.

[10] National strategy for the development of tourism in the Republic of Belarus until 2035 are approved. URL: https: www.belarustourism.by/news/utverzhdena-natsionalnaya — strategiya — razvitiya — turizma — v—respublike — Belarus — do2035—goda / (accessed on 14 September 2021).

[11] Innovative strategy of formation of own style of Minsk and its recognizable international appearance for popularization of the city among foreign tourists until 2035. URL: https://minsk.gov.by/ru/normdoc/4476/pril_276_04022021 _strategiya.shtml (accessed on 30 November 2021).

2. Positioning of Belarusian cuisine as an object of special attention, Promotion of gastronomic activities, including oriented towards promotion.

Consequently, it is important to promote a new product in Minsk — purposefully formed clusters, including both tourist objects and objects of restaurant business. At the same time, active cooperation between the participants of each cluster is important in order to produce a decent tourism product, promotion and encouragement of the establishment of small businesses in the restaurant industry, investment activity and infrastructure development in this area, given the principles of sustainable development of territories and high efficiency of the use of these objects.

3. Improvement of forms and methods of marketing in promotion of the national restaurant business of the Republic of Belarus, and as a marketing strategy to choose diversification, which will promote the development of a variety of concepts in the restaurant business, able to meet the needs of a variety of target segments.

4. Using of online- services food delivery from restaurants is widely presented on the Internet now (delivio.by, dailyminsk.by, justarrived.by, globo, tokiny etc.).

5. Integrated implementation of modern approaches to management: innovation, anti-crisis, financial management, and also quality management, implementation of service management, knowledge management in this area.

CONCLUSION

The following conclusions can be made from the research. It is argued that the restaurant business can function and develop effectively only in a market economy. In the Republic of Belarus, the regulation and direction of development of the hospitality industry are defined in the State programme "Belarus Hospitable from 2021to 2025", National Strategy for Sustainable Socio-Economic Development of the Republic of Belarus until 2030, National Strategy for the Development of Tourism in the Republic of Belarus until 2035, Innovative strategy of formation of own style of Minsk and its recognizable international appearance for popularization of the city among foreign tourists until 2035[12] and other.

The article reflects the condition of the restaurant business in the Republic, the specifics of its management, as well as its relationship with a number of industry complexes (emphasis is placed on the tourist infrastructure).

The proposals contained in the above-mentioned State documents, which will contribute to a higher quality development of this industry as a component of the hospitality industry in the Republic of Belarus, have been considered in detail.

[12] State programme "Belarus Hospitable from 2021to 2025" are approved. URL: https://www.belarustourism.by/news/utverzhdena-gosudarstvennaya-programma-belarus-gostepriimnaya-na-2021–2025-gody/ (accessed on 14 November 2021).

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ABOUT THE AUTHORS

Sarah L. Witowski — EF Education First, Moscow, Russia
https://orcid.org/0000-0002-2883-9604
Sarah.witowski1@gmail.com

Iryna I. Hutarava — Senior Lecturer, Department of Marketing, School of Business of Belarusian State University, Minsk, Republic of Belarus
http://orcid.org/ 0000-0003-2015-7008
gutorova.irina05.07@gmail.com

Conflicts of Interest Statement: The authors have no conflicts of interest to declare.

The article was submitted on 25.12.2021; revised on 27.01.2022 and accepted for publication on 03.03.2020.
The authors read and approved the final version of the manuscript.

ORIGINAL PAPER

DOI: 10.26794/2304-022X-2022-12-1-79-95
UDC 330.15(045)
JEL D25, O13, Q28

Evolution of Views on the Managers' Competence in Russia: Past and Present

V.I. Marshev[a], **S.I. Neizvestny**[b]
[a] Moscow State University, Moscow, Russia; [b] Financial University, Moscow Russia

ABSTRACT

The paper compares the state and solutions to the problems of forming and assessing the competencies of graduates of the educational system in the field of management in Russia in 19th century with the conditions of the digital society of modern post-reform country. The study emphasizes the similarities and differences in ways to this topic both on the part of the educational community and from the business sphere. Why do similar problems arise again? What are the reasons for the divergence of ideas about the competencies of managers in the education system and in business? What government programs, as well as methods and technologies of teaching and learning, have tried in the past and are trying now to minimize the discrepancy between the needs of business for competent managers and training programs? The paper confirms the hypothesis that the Russian education system, both in the past and in the present, does not fully meet the expectations and business assessments in training management specialists. And this, in turn, confirms the spiral cyclical nature of the evolution of managerial thought.

Keywords: management history; history of managerial thought; educational system; managers-graduates competencies of educational institutions; metrics for assessing managers competencies; IQ; EQ

For citation: **Marshev V.I., Neizvestny S.I. Evolution of views on the managers' competence in Russia: Past and present. *Management Sciences.* 2022;12(1):79-95. DOI: 10.26794/2304-022X-2022-12-1-79-95**

INTRODUCTION

The problems of coherence between the education systems goals and certain expectations in the field of public and/or private economic management have been topical throughout the existence of economies and their management. In any approach to possible solutions of these problems, it is necessary to coordinate all the components of *competences*: their list (knowledge, skills, and abilities), contents, metrics and assessment criteria and, as a result, the competence indicators (*the existence of competence*) of managers from the viewpoint of both the educational system and the business community ("business") as the "consumer" of graduates.

The quality of a management graduate is herein understood as "the degree of consumer satisfaction", which in this case means satisfaction of business with competent specialist in the management field. Today, the competence approach in education is incorporated into many professional industry standards, as well as the so-called "Work programs in academic disciplines" listing the above-mentioned competence components. For example, on July 20, 2020, the Ministry of Labour and Social Affairs of the Russian Federation established a new professional standard "Specialist in the field of management of public-private partnership projects".[1] The present article also deals with professional qualities of project management specialists.

Characteristics and possible solutions of the problems of forming and assessing management competences are herein approached on the basis

[1] Order of the Ministry of Labour and Social Affairs of the Russian Federation of 20.07.2020 № 431 « On establishment of the professional standard 'Specialist in the field of management of public-private partnership projects'". URL: http://fgosvo.ru/uploadfiles/profstandart/08.041.pdf (accessed 14.08.2021).

of historical management research conducted earlier by one of the authors of the present article [1, 2], as well as the materials of the XXI International Conference on the History of Management Thought and Business, where another author made his own presentation.[2]

One of the organizers of this event uniting more than 50 representatives of Russian and foreign organizations, besides the Faculty of Economics of the Moscow State University, was the journal "Management Sciences", which also published an informational article on the conference.[3] This article, among other things, raises the issue of training managers in the context of their contribution to company management performance: "What is the role of management training, coaching, and management consulting in solving the problems of measurability of management relations and management in general?"

In the present article, the historical comparative method of scientific cognition, once effectively applied and taught by V. Goltsev in his course "Management science" at the Moscow Imperial University in 1880–1881 [3], is used. Goltsev's idea is still topical nowadays: "Observation of the past and present life of humankind — as far as the present day can be impartially and correctly assessed — lights the way for the future, empowers us with knowledge and ideas which help us to direct the course of history rather than remain powerless witnesses and involuntary victims of this course". The choice and use of the above-mentioned research methods, according to Goltsev, enable identification of stable management principles, necessary for real action: "The task of the applied section of the management science consists in... developing principles in the limitless field of relations between the managers and the managed" [4].

HISTORICAL APPROACH TO THE PROBLEM IN THE 19TH CENTURY

Since the history of this issue has been already dealt with in other publications, only certain key aspects related to the topic of this article and presented in historical management research [1, p. 372–462] and some legal documents will be examined herein.

Being aware of the need for competent businessmen, the liberal Emperor Alexander I, by his Decree of June 22, 1804, established the Moscow School of Commerce (MSC), which existed until 1917. It was a social class-based, closed educational establishment accepting 10-year-old boys in the following two categories: envoys of the Moscow Merchant Society, supported by donations from businessmen, and boarders, supported by their parents. The students formed four age groups (classes), spending 2 years in each of them — thus, the full study course lasted 8 years. As can be deducted from the very first study programs, the students were taught merchant calculations, basic accounting, geography, physical, commercial (economic), and natural history, manufacturing technology, business correspondence (in Russian, French, German, and, later, English), composition, and style.

MSC trained highly professional young managers for all business spheres: trade, manufacture, banking, and other. According to its founders' plan, the School was intended to intellectually empower the forming trading and manufacturing class in Russia. It was not easy to study at MSC, with its extremely strict discipline and high performance requirements, considered nowadays as *competencies* and *competence*. Only the most talented and diligent students were able to finish the course. The rest were dismissed

[2] Materials of the XXI International Conference on the History of Management Thought and Business. Moscow: Faculty of Economics of MSU; 2021:152–159.

[3] XXI International Conference on the History of Management Thought and Business "Assessment problems in social project management: yesterday, today, tomorrow" Management Science. 2021;11(1):106–108.

from MSC regardless of their age. The following figures are therefore hardly accidental: out of 895 students accepted into MSC between 1804 and 1854, more than half (462) were dismissed before finishing the course, while 433 completed the course. Even though MSC did not have the status of a higher education institution, its graduates were granted the degree of *Candidate of Commerce*. With their brilliant professional training, fluent in 2–3 foreign languages, raised in the spirit of Christian morality, MSC graduates were highly sought after in all entrepreneurial firms [1, p. 375].

In November 1828, by decree of Emperor Nicholas I, another education institution was established — the St. Petersburg Practical Technological Institute of Emperor Nicholas I (SPPTI). Its goal was to "train people possessing relevant theoretical and practical knowledge for managing factories or factory parts".[4]

These historical examples prove the ongoing relevancy of the following two problems: on the one hand, the society becomes aware of its need for managers of public and/or state economy, and on the other hand, the education system responds (though not always effectively) to these needs. Unfortunately, there has always been a discrepancy between the first and second subjects of this objective process.

Professionals with experience in both education and business have always been the most responsive to the problem of manager competence levels in the education system and economy (or business). One of the most outstanding examples of such a professional was I.A. Vyshnegradsky (1893–1895), director of SPPTI (1875–1880), the founder of the automatic regulation theory (1877), Minister of Finance of the Russian Empire (1887–1892).

An important feedback tool between any business activity and the education system consisted in the commerce and industry congresses in Russia, where fundamental managing issues, including the manager training quality issues, were discussed. For example, in 1870, I.A. Vyshnegradsky opened the sessions of the 6th sector of the First Commerce and Industry Congress in St. Petersburg with a presentation "On improving the higher technical education in Russia". He pointed out that a specialized higher education institution cannot provide ready practitioners: it can prepare a specialist who will soon become a great practitioner; it can give a specialist lots of knowledge, lots of practical information, but it "cannot provide him, without doubt, with managing skills he will need in practice or with any other numerous qualities which are necessary and which can only be acquired through being constantly engaged in business, constantly giving all one's attention to it and thus learning it step by step". Then, while suggesting measures for solving the problem of forming *"managing skills"* in a graduate, Vyshnegradsky said: "It is highly desirable that a graduate do not immediately occupy a very responsible position in a factory or plant but rather first acquire the skills which, besides theoretical education and practical work knowledge, are absolutely necessary for being responsible and managing business. These skills include: knowing local resources, knowing the market, knowing the workers, knowing how to deal with them, and many other skills and competences, without which even the most educated technician will be a bad manager".[5]

Another member of that congress, D.N. Kaygorodov (1846–1924), the founder of the "Russian Society of World Science", the father of Russian phenology, professor of the St. Petersburg Forestry Institute, suggested

[4] The supreme approved order of establishing the St. Petersburg Practical Technological Institute. The complete laws of the Russian Empire, 2nd part. St. Petersburg: Printing House of the II department of His Majesty's office; 1830. V. III, 1828. № 2463. P. 1034–1038.

[5] Protocols and stenographic reports of the first All-Russian Commerce and Industry Congress, 1870. St. Petersburg; 1872. P. 9.

another solution for the problem of "attaining practical results and eliminating the lack of practice" among students of technical institutions: the institutions must make an agreement with factory and plant owners, according to which the latter would "allow the students to perform practical work in order to acquire practical knowledge, while the amount of practical training must be increased; the current practice of 5–6 days spent in a plant is very inadequate; when practicing, the students are usually acquainted with the descriptive part only while having very little chance to familiarize themselves with practical methods. It is therefore necessary to acquaint the students with the factories where they will work in future, provided with a small fee in the beginning".[6]

The manager and specialist training problems of more than 150 years ago still sound very relevant, and the solutions suggested still seem rational.

At the Second Commerce and Industry Congress in July 1882 in Moscow, among many managing issues, personnel issues were also raised and specially discussed in the VII sector "Statistics and technical education":

"2) Does the knowledge obtained in the technical and commercial schools correspond to the demands of our industry?

3) How can a closer connection between factory and plant owners and technical school graduates be established?"[7]

A month after the II Russian Commerce and Industry Congress, the I Russian Technical Society Congress took place in Moscow (August 1882), where 13 personnel issues were discussed in the special X sector. Two of the issues are cited below as an example:

"1) On the level of necessity of compulsory school attendance by all juvenile and minor workers and the definition of the compulsory school attendance age…

8) Since one of the reasons for slow development of our industry is the inadequate training of masters and managers of different manufactures, which, in its turn, results from the inaccessibility of our model factories to people wishing to acquaint themselves with the improvements and methods used in these factories — a way must be found to reach a general agreement between factory and plant owners in order to make these factories accessible to technicians, and a course of action must be chosen in case such an agreement cannot be reached".[8]

At the III Commerce and Industry Congress (St. Petersburg, 1896), the competence flaws of industry managers, engineers, and technicians were comprehensively described in the presentation by the engineer S. Shishkov: "A vast amount of superficial knowledge and absence of deep knowledge in a favourite field. Ignorance of commercial geography, life and customs of their own country, Russian laws, principles and importance of commercial accounting. Their perception of their own profession is often incorrect and non-commercial.

Lack of criticism in respect of their trade, choice of assistants, etc.— in other words, excessive business innocence, complete absence of even the basic economic and life experience.

Passivity and lack of initiative resulting in the desire for a public office post and readiness to abandon their field to work as teachers and government officials. Lack of character. They are not used to do their work quickly and efficiently from the beginning".[9]

The measures for eliminating the flaws in training practitioners, managers, engineers,

[6] Ibid. P. 11.

[7] Works of the Commerce and Industry Congress organized by the Russian Industry and Commerce Assistance Society in Moscow, July 1882. S. Petersburg; 1883. V. I. P. X.

[8] Works of the Russian Technical Society Congress in Moscow, 1882. St. Petersburg; 1883. V. I. P. XII–XIII.

[9] Works of the All-Russian Commerce and Industry Congress of 1896 in Nizhny Novgorod, 6 vol.. St. Petersburg; 1897. V. IV. P. 68.

technicians, whose work is always connected to other people, as suggested throughout those years by practitioners and researchers, seem to be very useful and correct. All the presenters, responding to the first question of the Congress — "What kind of technicians — with higher, secondary, or basic technical education — are currently most needed in the Russian industry?" — criticized the then existing organization of practicums in education institutions and suggested expanding and completing it with a new form of acquaintance with the manufacturing process and acquisition of managing skills — "to live and work in a factory" until graduation.[10]

The following critical words about work practice are extracted from the presentation by the technician A.F. Zimmermann: "Every trainee sought to get acquainted with the production technics and paid no attention to anything else… This lack of attention to anything non-technical, in the future technician's opinion, affects him later to a considerable degree. Sooner or later, the practicing technician becomes a factory manager himself and starts coming across a number of failures and difficulties". Having encountered a number of practical problems, an academically trained engineer cannot solve them or does so with great difficulty. As a result, the factory owner "finds out about the organizing and economic skills of his managing… engineer and, asking him 'What have they been training you for?' — dismisses him to search for a different position".[11]

A possible solution to this problem was suggested in the presentation of the engineer S.A. Nazarov on inviting practitioners to deliver lectures and special courses. On this suggestion, the following resolution was made by the Congress: "It is considered useful for practitioners to deliver some additional information in specialized higher education institutions, in addition to the regular lectures by professors".[12]

Along with the all-Russian industry-wide congresses, regional and industry-specific congresses were also held, almost always discussing topical issues of training managers and specialists for the regions and industries. Some of these issues, cited below, still sound quite up-to-date:

- activity of the Russian education institutions aimed at the innovational economy branches stemming from the cardinal changes which were taking place in the country in the end of the 19th century (when "the age of steam, coal, and iron" was giving way to "the epoch of electricity, steel, and oil");
- the current material situation of the education institutions;
- contents and balance of the compulsory and specialized study subjects;
- actuality and effectiveness of the study programs;
- availability of teachers and the level of their professional training.

The changes in the industrial economy structure prompted Russian society to revise their education choices: prominent merchant families started sending their children to higher technical education institutions and schools — the St. Petersburg, Kiev, and Warsaw polytechnic institutes, the Moscow Imperial Technical School, and other. Engineer graduates of technical institutions were demonstrating their managing competence in factories much sooner, starting from the positions of chief engineers of production and later becoming mid-level and top managers, or even directors of different company boards. Many of them, having gained economic management experience in private companies and in the public sector, were invited

[10] Ibid. V. VI. P. 15.

[11] Works of the All-Russian Commerce and Industry Congress of 1896 in Nizhny Novgorod, 6 vol. St. Petersburg; 1897. V. VI. P. 92–93.

[12] Ibid. V. I. P. 57.

by education institutions to occupy positions of lecturers and professors.[13]

On the whole, having examined the discussion of personnel issues at Russian congresses only, the following conclusions can be drawn:

Firstly, academic researchers and practitioners were aware of the quality problem of training production managers and specialists throughout the 19th century.

Secondly, the main reasons behind this constantly resurging issue was the lack of educated managers and specialists and insufficient specialization of their training in managing skills.

Thirdly, the necessity of specialized training of future managers, required by their profession, i.e. their ability to solve a number of production, technical, and social problems, was constantly (as its acuteness was growing) pointed out.

The "Draft of the general normal plan of industrial education"[14] can be named as the peak (or top) of development of the views on the competences of Russian managers. A brief history of the Draft was as follows: after long discussions and waiting period, Russian pedagogues and academics brought about the establishment of a special Department of academic committee on technical and professional education under the Ministry of Public Education. On January 13, 1884, this department was assigned the task to prepare a draft reform of technical and professional education. This was not the first attempt, considering the fact that as early as February 21, 1878, preparation of such a reform had been assigned by the Emperor's decree to the Ministry of Finance, which supervised most technical education institutions before 1881. Yet since 1881, "all the tasks of industrial education organization" were assigned to the Ministry of Public Education. In autumn 1884, the draft reform was ready and submitted to the Ministries and departments, and then, after making the recommended amendments, referred to the State Council in 1886.

Though the author of the Draft was never mentioned, many historians studying Russian education considered as such the above-mentioned I. A. Vyshnegradsky. "The main and exclusive credit for developing the current education system… which made an epoch in the history of public education in Russia, must go to… Ivan Alexeevich Vyshnegradsky as the author of the "Draft of the general normal plan of industrial education" [5, p. 15].

Some features of the Draft are cited below. In the beginning, the requirements for the plan developed are formulated:

- The plan must be adequately coordinated with the industrial needs. "The industrial education must prepare for industrial activities people who are indeed suitable for this task, equipped with the necessary knowledge and skills to such a degree as to become, without any particular difficulties, after a not excessively long practical post-graduate training, useful workers in the relevant areas and on the relevant positions of the industrial field".[15]
- The plan must be unique in each of its five parts, in accordance with the five hierarchical levels of the managing and producing personnel system as discussed below. As a specialized education plan, it must be coordinated with "the system of relevant levels of general education", thereby continuing and completing the relevant general education.

[13] See the following: 1. List of graduates of the Moscow Imperial Technical School and former industrial school, with indication of their professions in 1845–1889. Moscow; 1889. 2. The Board of Directors in 1897. St. Petersburg; 1897. 3. Commercial and industrial Russia. Reference book for merchants and factory owners, ed. Blau. St. Petersburg; 1899. 4. Personnel of all boards and agents in charge in 1901–1902. St. Petersburg; 1901.

[14] Draft of the general normal plan of industrial education in Russia. St. Petersburg; 1886. 93 p.

[15] Draft of the general normal plan of industrial education in Russia. St. Petersburg; 1886. P. 2.

• The plan must prepare specialists for practical activity of a particular level only and must not be considered at any of the five stages as a transfer step "to a school intended for preparing high-profile workers. Previous experience demonstrates that schools pursuing both these goals never reach any of them".

• "The plan of industrial education must, if possible, include or at least not exclude the rather numerous technical and artisan education institutions already in existence",[16] eliminating the flaws discovered in them.

Further, the plan describes the five categories ("levels") of managing and industrial personnel needed by industry and targeted by this plan:

1. Engineers with experience and "academic and technical education, able to improve production on the basis of the latest Russian and foreign scientific research, ready to engage in a successful competition with other industrial institutions for both improving the quality of their products and reducing the costs of production". Vyshnegradsky argued that if there is no such engineers in Russia, "the country will be doomed to either stagnation and gradual decline of its industry or constant dependence on foreigners…"[17]

2. "Industry managers educated in commerce, who understand the technical nature of industry and would be able to independently manage the trading sector of even the largest industrial enterprise, and who possess sufficient technical knowledge" to discuss technical improvements with engineers.[18]

3. Technicians, the closest assistants of engineers, who must be equipped with the knowledge "necessary for both thorough and correct production" and performing research and development works.

4. Masters with perfect knowledge of the technical side of the industry branch, able to manage workers and "possessing the necessary skills for effectively guiding the activities of their workshops towards the best industrial results".

5. Workers performing the tasks assigned to them "with sufficient thoroughness and accuracy" under the guidance of their masters. Very important characteristics of the workers include "their overall development, moral level, conscious attitude towards their work".[19]

The plan further elaborates on the requirements for each personnel group, evaluates the existing training system and flaws of each of the five groups, describes in detail the training contents, study plans and programs, forms and time periods, provides estimates of the costs of study organization for each personnel group, and draws a list of the new institutes, real and industrial schools, workshop schools to be established, as well as suggest their territorial distribution in Russia.[20]

This is a brief history of discussions and decisions on competent manager formation in 19th century Russia.

CONTEMPORARIES' VIEWS ON "THE MANAGER LIFECYCLE"

Management, guidance, and leadership can be taught and even learned. "Skills, methods, and ways of communication can be learned easily and quickly. Theories, strategies, and tactics of leadership — everything taught in short-term courses and weeks-long seminars — can be mastered. Yet on the other hand, it is evident that feelings, intuition, emotions, insight, ambition, thoughtfulness, compassion, euphoria — that is, all the passions inherent to leaders and the leadership passion itself, which alone creates leaders — cannot be easily acquired or developed. The

[16] Ibid. P. 3.

[17] Draft of the general normal plan of industrial education in Russia. St. Petersburg; 1886. P. 4.

[18] Ibid.

[19] Ibid. P. 4–5.

[20] Draft of the general normal plan of industrial education in Russia. St. Petersburg; 1886.

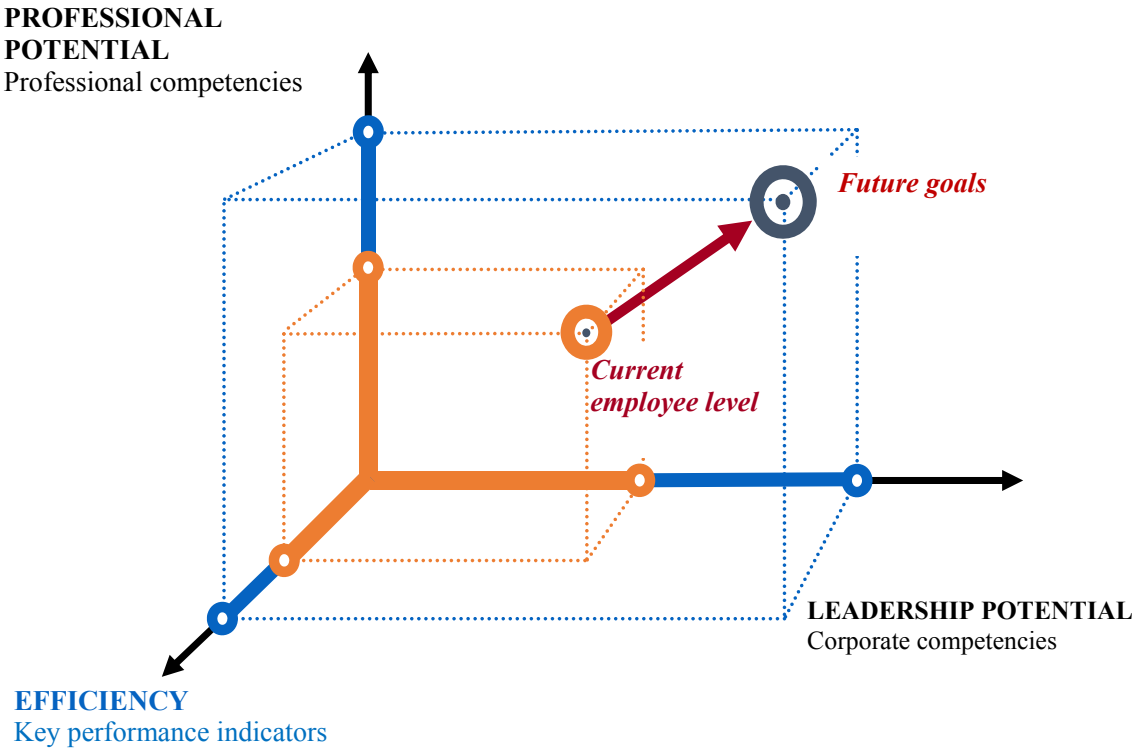

Fig. 1. **The "increment cube" of a manager's competencies**

Source: developed by the authors.

wisdoms taught in short-term leadership courses can help the student become more effective as a leader but won't make them into a leader if they are not one already" [1, p. 843].

An important role in formation of professional managing competence is played by one's natural predisposition to it. It must be noted that Sergey Yulievich Witte (1849–1915), who in 1892 took over the post of the Minister of Finance from I.A. Vyshnegradsky due to the latter's illness, also mentioned natural human predisposition to management: "Those who do not know how to choose people, do not have an instinct about people, those who cannot assess people's abilities and flaws — cannot, in my opinion, be good administrators and manage a big business" [6].

Present-day cognitive scientists also note that professional abilities are largely (by 60–70%) dependent on one's innate predisposition [7].

Thus, the capabilities of the education system for specialist competence formation are quite limited and make about 30–40%. Metrics of evaluation of professional qualities must therefore include evaluation of one's innate predisposition, while the evaluating "filters" of the education system must be adjusted according to these metrics not only for graduates but even more so for evaluating applicants, including those of the primary and secondary education system.

One of the present-day internationally recognized authorities in the management field, Richard Farson, argues: "Learning makes people look alike, since everyone studies the same things. Education, on the other hand, makes one reconsider their own life experience in the light of great ideas. Thanks to this re-evaluation people begin to differ from one another. That is why the main value of education is that the manager becomes a unique, independent and sincere person" [8].

The age-old problem of forming specialist competences in the management field in

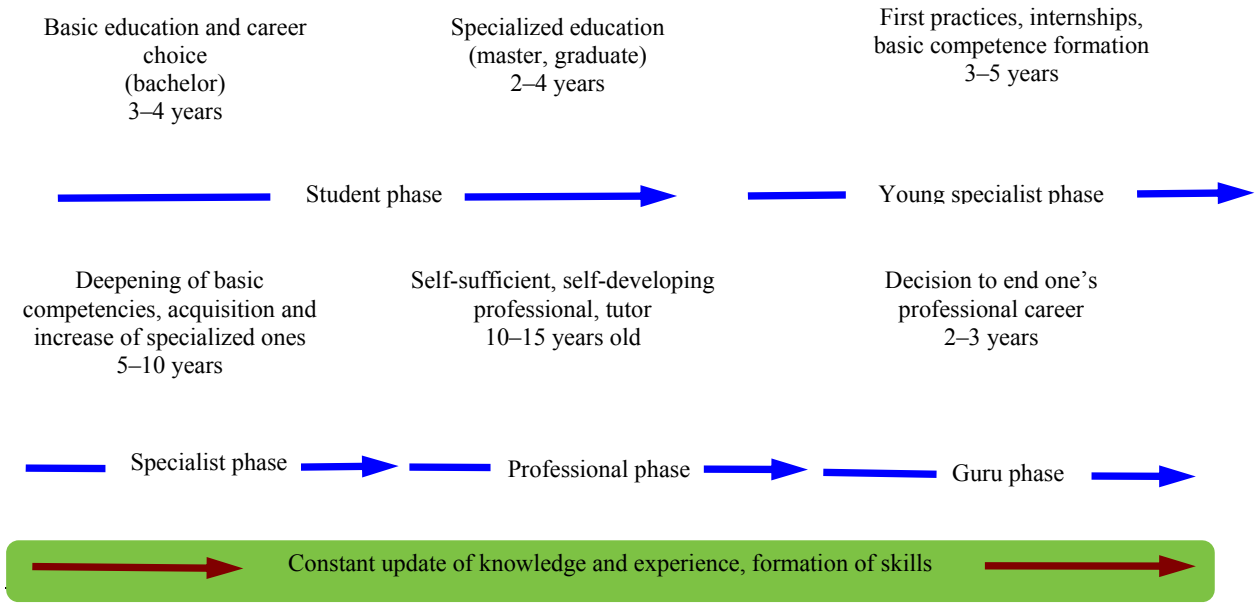

Fig. 2. **Project manager life cycle**

Source: developed by the authors.

practical business often takes the form of questions:

- Why is it difficult to find a professional manager?
- How does one become a manager?
- How are professional managing competences and professional competency formed?
- How can one's natural predisposition to management be discovered and developed?
- What does the time of return on investment (ROI)[21] into the formation of a professional manager depend on?
- How can the effective, productive phase of the manager lifecycle be prolonged?

The process of competence accumulation can be visually represented as an "increment cube" (*Fig. 1*).

Despite considerable differences between the stages of professional manager formation in different countries, many details of the manager lifecycle are similar everywhere. According to the data of the International Project Management Association (IPMA), manager is fully formed as a professional by the 37th year of their life only.[22] Only after this age a manager can be trusted with managing an important project in European business.

If manager competence evaluation is viewed objectively, it will be evident that a Russian project manager "comes of age" around the same time as a European one — the "Professional" phase of their lifecycle starts at 30–40 (*Fig. 2*).

There are several gaps in the professional manager lifecycle:

- Gap between the higher education and secondary education systems;
- Gap between the requirements of higher education institutions for graduate managers and the employers' requirements;
- Gap between the coherent gained experience of past professionals and its use by present-day managers.

[21] ROI (return on investment) is a financial metric illustrating the level of profitability or unprofitability of a business in accordance with the amount of investments made into this business.

[22] Veikko Valila et al. "How to find the Project Managers for big projects?" Proceedings of the 22-th IPMA World Congress, Roma, 8–11 November, 2008.

GAP BETWEEN THE HIGHER EDUCATION AND SECONDARY EDUCATION SYSTEMS

Why does not the basic secondary education in present-day Russia include the subject of "management" (though 19th century Russia introduced it as early as at the primary education level)?

In some Western countries, the general secondary education systems include management basics, yet this knowledge is hardly effective for starting the formation of a manager as a specialist. The same can be said about the Soviet school system, where management basics were taught as a part of the Sociology subject.

In the Western countries, the manager lifecycle starts in specialized colleges, which have the status of specialized secondary education institutions. The present-day process of education system integration is actively affecting Russia, which leads to some positive changes.

Yet on the whole, the current integration and standardization process is still not free from outdated or, at best, only present-day knowledge and technologies taught by study centres — while the goal of the education system nowadays must be to form knowledge and skills to be needed tomorrow.

M. Gasparov describes the tasks of specialist training as follows: "Family teaches what society achieved 20 years ago. Street life teaches what is current, and school teaches what is to come in 20 years' time" [9].

Yet the above-mentioned attempts at reforming the study process still resemble teaching the achievements of the western society and the existing rules of "street life". Russia is being adopted into the "family" of standard-forming countries, but rather as a "dowerless girl". The Bologna process can illustrate this one-sided "standard infusion" into Russia.[23]

[23] The European higher education area in 2020. Bologna process implementation report. URL: https://eacea.ec.europa.eu/national-policies/eurydice/content/european-higher-education-area-2018-bologna-process-implementation-report_en

Gap between the requirements of higher education institutions for graduate managers and the employers' requirements

The Russian (Soviet) education system was once regarded as one of the most effective in the world. Many Western countries used and still use its achievements and give it the credit. For example, the Russian system effectively minimized the basic methodological contradiction: standardization of the study process was combined with democratic approaches. The Russian education system took the most active part in forming the world education.

This is what recognized Western experts in education wrote in the beginning of the previous century: "In terms of the social composition of pupils and students, by 1915 in Russia education was one of the most democratic in the world. Only those children whose parents did not wish them to go to school did so. Never before had education developed as rapidly as during this period" [10].

The process of management education in Russia is difficult to be unified (standardized): at the *entrance,* the student pool is usually unimaginable as a homogenously trained environment. The current education *system* has no effective entrance filters to solve this problem. Some students are not fluent in the minimal entrance vocabulary, others, possessing considerable experience, aim at learning to solve specific situational problems in management; some have problems with basic literacy, etc. As regards the filter of result quality at the *exit* of the education process, the problems here are currently as numerous as at the *entrance*.

Thus, if integration and standardization are approached systematically (using the process approach), it will be natural to perform integration with the use of the European and world standards of the education process, as follows:

1) start with standardization of the process *entrance*;

2) then, standardize the process itself, the transformation technologies of the *entrance* objects and subjects;

3) apply the performance quality standards of the education system to the process *exit*.

The global standardization processes, infiltrating the current Russian education system, lead to an excessive focus on the narrow, "blinkered" professional training to the detriment of the general spiritual and cultural personality development. The averaged approach to individuals is gaining ground, the high school of management starts resembling the gross specialist training system "of the Western type". Neglecting intellect, talent, and morality leads to degradation of moral values, a drop in prestige of highly educated people. On the other hand, integration and standardization allow highly educated lecturers, gifted students and postgraduates to choose Western education institutions for studies and career. Integration and standardization do not solve the problem of "brain drain".

GAP BETWEEN THE EXPERIENCE OF PAST PROFESSIONALS AND ITS USE BY PRESENT-DAY MANAGERS

One of the significant problems of present-day management is incorrect understanding and use of the knowledge systems created by predecessors. Present-day specialists use patterns which can be effective in a specific environment, under specific circumstances. A metaphorical comparison between present-day management and art can be made as follows: present-day Postmodernism claims credit for taking, for example, the alarm clock devised half a century ago, examining it by taking it apart, and then creating "compositions" on installation scenes by means of arranging these parts in a certain "order". Yet unlike those who designed the alarm clock, the present-day managing "Postmodernism" does not include the assembling function. The consumer of the products of the present-day "arthouse" management has to "enjoy the unique installations of alarm clock parts". Practicing specialists overlook such "installations" and regard the experiments of "arthouse methodologists" as purely metaphysical.

POSSIBLE REASONS FOR THE GAPS

The problems of gaps in the education system have been pointed out by many specialists. For example, one of the founders of the Soviet educational system, P.L. Kapitsa, said: "When attending postgraduate entrance exams, I used to notice that professors highly valued not the students who understood the most but rather those who knew the most. Yet science needs people who understand. This is why it is so difficult to choose students for postgraduate studies on the basis of their exam results. In order to choose the most promising students, they must be observed for a certain period of time, when they are engaged in activities that allow them to demonstrate their creative instinct, their ability to think independently. In my opinion, it is the gap between education and research institutions that has led to the pool of young scientists being much weaker nowadays than it used to be in my time, when most scientific research was done in education institutions" [11].

In a human-centred education system, the study process focuses on forming respect towards other people and oneself. "Without self-respect, there is no moral purity and spiritual wealth in a person. Self-respect, honour, pride, dignity — all these form the stone, on which the fine feelings are sharpened... Yet in order to instill self-respect in a forming person, the educators themselves must deeply respect the human personality in their students" — said one of the main pillars of the Russian (Soviet) education system, V.A. Sukhomlinsky [12]. Pedagogues must treat their students as equals to the study system is the basis of professional specialist training. Only creative work of teachers and tutors contributes to development of creative abilities in their students. Yet only a few outstanding education workers are trying to abandon

"the mass production of specialists"[24] and open to people the possible ways of self-education, self-development, personality formation, and professional skills acquisition.

SOME SPECIFICITIES OF PROJECT MANAGER TRAINING IN THE CONTEXT OF DIGITALIZATION

In production/operating activities in the context of digitalization, in cases demanding fast procession of big data and high reaction, humans can poorly cope with such cognitive pressure and fall far short of artificial intelligence (AI). On the other hand, digital environment soon leads workers to a drop in creative productivity and emotional burnout. Information technologies and digitalization of life diminish one's creative abilities, especially the heuristic one (ability to accumulate fundamentally new knowledge) [13]. Big data flows,[25] fast changes in forms and contents of information, its diversity and irrelevance (noises, sounds, unnecessary visualization) fundamentally interfere with human creative abilities. Under extreme conditions, a quick and effective decision is usually made by the manager in an altered state of consciousness (ASC) [14, 15]. Under this state, the decision-making process utilizes to the maximum (usually at the unconscious level) all one's accumulated experience and natural predispositions (genetically transmitted information) [7], "error correction" barriers are lifted [16], and professional intuition manifests itself to the utmost. As a general rule, highly professional and experienced managers substantiate their quick and important decisions by referring to their intuition, experience, and instinct. Unfortunately, even the "strongest" AI currently lacks these unique resources intrinsic to the human mind [17, 18].

In project management, when new and unique products or services are created and nonstandard problems need to be solved, which no one has ever solved yet, it is practically impossible to fully replace a human with artificial intelligence. However extensive databases, encyclopedias, and libraries AI might use, whatever performance and processing capacity it might have — AI is hardly able to make fundamentally new heuristic discoveries and create fundamentally new knowledge.

Even the latest AI versions based on effective hybrid technologies of the "semiotic"[26] and "bionic"[27] approaches cannot enable AI to become essentially equal to a human in emotional intellect (EQ). As regards the prospects of replacing humans with AI in the IQ field, it is quite possible, and in the nearest future AI might successfully compete with humans in these parameters. Yet AI cannot be compared to humans in EQ.

Generally speaking, in the present article EQ is understood as the ability to recognize emotions, understand one's own and other people's intentions, motivations, and wishes, as well as the ability to manage one's own and other people's emotions in order to solve certain problems. All these abilities can be conditionally assessed in an integrated way by means of, for example, special tests developed by professionals. This EQ assessment is regarded as a separate managing competence, along with other relevant competences, such as the following:

- empathy;
- mediation;
- psychosomatic health management;
- personal time management;
- self-development management;
- rhetoric.

[24] A typical problem in present-day Russia is the oversupply of "specialists" with management diplomas and certificates accompanied by the lack of professional managers.

[25] Big data are a vast amount of information, often unstructured, stored on a digital medium. This term is also used for the technologies of searching for, processing, and using vast amounts of unstructured information.

[26] The semiotic approach is based on the notion of communication as interaction through signs, sign systems, languages, codes, i.e. as a process of emergence of understanding and creation of new meanings.

[27] Bionics studies biological systems and processes for the purpose of using the knowledge thus acquired for solving technical problems.

The ability to plan one's time and form time resources determine the style and performance of management. Managers must naturally demonstrate their abilities to effectively manage one of their main resources — health (both physical and psychical) before claiming the responsibility of managing a team (including people's health). Managers' professional level depends, among other things, on their experience and intuition. Theoretical knowledge without experience cannot guarantee quality management. Experience combined with theoretical knowledge, skills, and innate abilities forms intuitive assessment, which often play a crucial role in choosing the way of proceeding in management, just like in art.

As demonstrated by specialized research in the management field, managers spend 75% of their time on communication, specifying various details of their projects and processes, explanation, establishing mutual understanding between team members, meetings, consultations, correspondence, etc. Therefore rhetoric is the main managing tool — in this case, it is the art of adequately conveying their ideas to the addressee. Diplomacy is one of the effective managing tools. A diplomat is a person who thinks seven times before saying nothing. Diplomacy is the skill of being cunning in a good sense of the word. Cunning is the ability to purposely withhold some information at the right time and in the right place. Diplomacy is compatible with conscience. Diplomacy contributes to forming respect towards other people and can guarantee respect to a person who has this competence. Without respect, there can be no trust. Trust is one of the fundamental principles of effective managing process.

AN EXAMPLE OF COMPETENCE ASSESSMENT OF A HIGHER EDUCATION GRADUATE

The difference in managing competence assessment by education institution graduates and business representatives in present-day Russia largely resembles that of 19th-century Russia.

As an example, a comparison between self-assessment of competence by a higher education graduate and assessment of this graduate by their employer in IT business is presented below.

The metric list had been approved by the employer and the graduate not only at the notion level (glossary), but also at the indicator level of each metric.

The metrics listed in the previous section were chosen as the main ones, with some addition — 12 metrics were used in total:

- General knowledge (IQ).
- Emotional intellect (EQ).
- Development management.
- Innate abilities assessment.
- IT knowledge.
- Empathy.
- Mediation.
- Diplomacy.
- Rhetoric.
- Health management.
- Time management.
- Memory management.

The graduate had been provided with examples of each metric scale and the boundary values of the indicators where the 100% position was given to the competences of hypothetical gurus (for example, E.V. Kaspersky was chosen as the fundamental example in IT, E.M. Primakov in diplomacy, H.K. Kasparov in IQ, etc.).

For assessment, the employer gave the graduate professional tests in each metric, compiled by well-known and recognized specialists in the relevant fields (for example these tests, also available online: the Eysenck test for IQ, the Hall test for EQ, the Szondi test for self-development, the Cattell test for empathy, etc.). The employer, familiar with the strengths and weaknesses of the tests from both their own experience and professional reviews made by specialists in the relevant fields, summarized his final assessment of the graduate's competence, while the latter

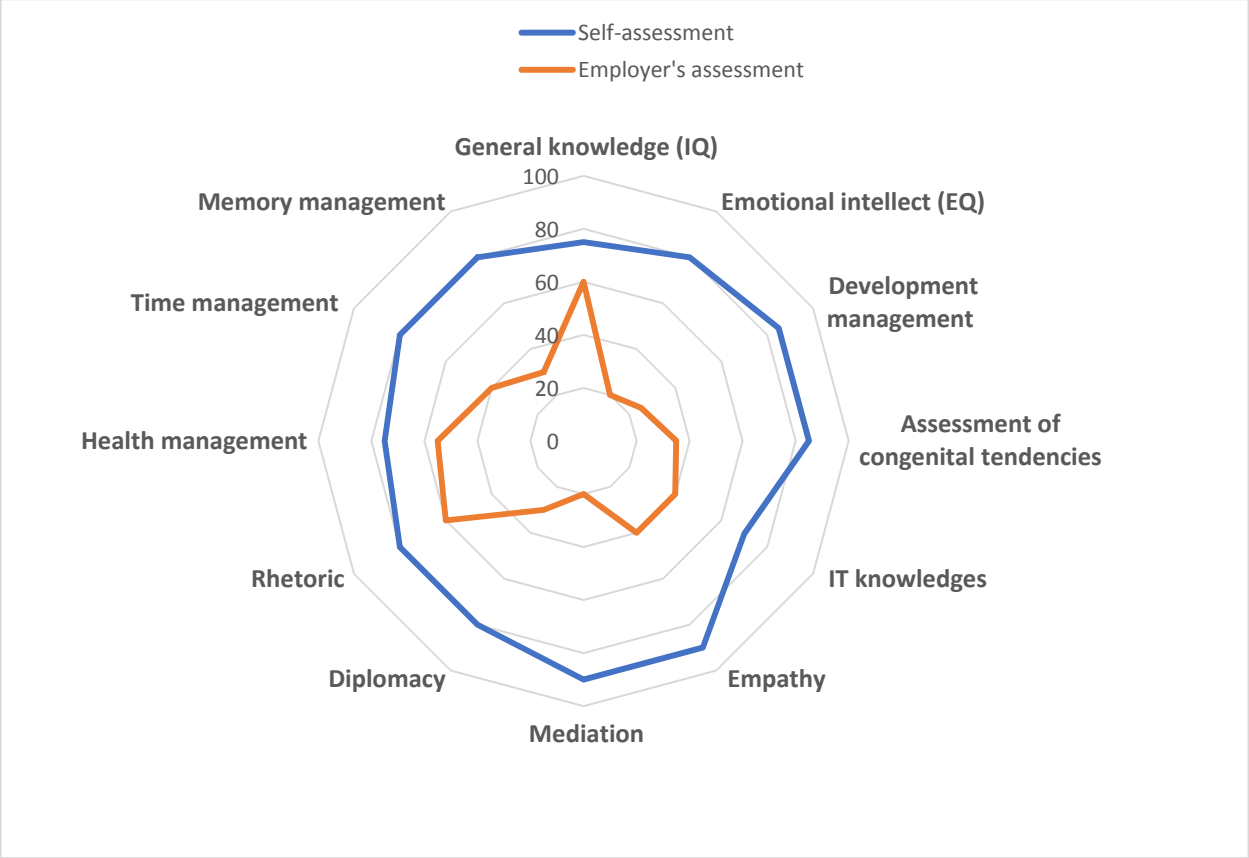

Fig. 3. **The example of comparing the assessments of competencies in the management of a university graduate**

Source: developed by the authors.

did not know the employer's final assessment until the completion of the self-assessment procedure.

Such procedures were conducted for four graduates of Business Informatics. In the course of studying towards this qualification at university, the student had learned a number of subjects, directly and in applied way related to management. This example cannot of course be considered systematic or representative, yet it can serve as a trigger for further research in this direction. Even being fragmental, it partly reflects a fair view of the current state of affairs within the problem studied.

Some results of similar tests of IT graduates (about 20 people) employed in their fields, which were conducted in 2018–2019, were published earlier.[28] These results belong to different metrics of competence quality assessment, but they essentially resemble the data presented in *Fig. 3*.

On the whole, the examples above demonstrate that graduates acquire sufficient professional knowledge in their education institutions but completely lack managing competences needed in practical business. This partly explains the dissatisfaction of the business environment with the quality of managing specialist training, which in its turn results in great demand for specialized training centres, corporate universities, advanced training courses, etc.

[28] Materials of the XX International Conference on the History of Management Thought and Business. Moscow: The Faculty of Economics of MSU; 2019:89–96.

IMPACT OF THE PANDEMIC AND POST-PANDEMIC ON THE SOCIETY NEEDS IN RESPECT OF EDUCATION GOAL TRANSFORMATION

The pandemic has made new demands for the personnel training system. For example, according to McKinsey, 25% of the working-age population of developed countries will have to change their professions.[29] This requires a fast response from the state education system and corporate study centres. While the latter respond to business needs during the pandemic within 2–3 weeks, the former take much longer to transform their education process. The education system is demanding flexible processes with fast responses to the changing business needs. Under the pandemic, a considerably more important role will be played by corporate culture, organizing potential, corporate knowledge bases, knowledge management systems, and competence forming systems.

The pandemic has accelerated the digital transformation in public management. Firstly, the accelerated digitalization has increased the number of task of improving public activities in the fields of data openness, collection, use, and protection. Secondly, many public services have motivated citizens to "go online" by means of increasing the number of services available online from home. Thirdly, the digital transformation has made it possible to develop and improve management models. Yet there are still some barriers for further digitalization in all economy sectors — for example, the lack of relevant regulating documents and the insufficient level of public awareness.[30]

In Russia, investments into technologic start-ups related to telemedicine, distance treatment, and monitoring, online pharmacies, artificial intelligence and data analysis, and technologic education projects have increased [19].

The pandemic has changed the priority of and demand for intellectual resources and disclosed new tendencies in digitalization and automatization of the production process. Production robots are becoming more intellectual and are provided with artificial intelligence [20]. On the whole, there appears to be a tendency towards development of the abilities of the "weaker" AI by means of providing it with large dictionaries, encyclopedias, high-speed big data processors. The latest AI developments are focusing on increasing their IQ indicator [21]. This tendency demonstrates that in the nearest future AI will reach the human IQ level and probably surpass it. Thus, humans will not be able to compete with AI in IQ level; yet AI will not be able to come close to the human level of emotional intellect any time soon. The education system must therefore re-orient its goals from providing students with *knowledge* towards the priority of developing their *emotional intellect,* i.e. to focus its main efforts on the pedagogic and training field.

CONCLUSIONS

The problem of forming a body of professionals in the management field has been topical in Russia since the 19th century.

One of the main reasons behind the slow development of managers as professionals consists in the fact that the Russian system of general secondary education lack a subject dealing with disciplines of project management, though the basics of these disciplines could start being taught even in primary school, as it used to be in Russia in the beginning of the 19th century. Professional education institutions underestimate the importance of innate

[29] McKinsey & Company. How COVID-19 has pushed companies over the technology tipping point — and transformed business forever. 05.10.2020. URL: https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/how-covid-19-has-pushed-companies-over-the-technology-tipping-point-and-transformed-business-forever (accessed: 23.07.2021).

[30] Kharitonov, G. Pandemic stimulates digital transformation of public management. 20.01.2021. URL: https://ac.gov.ru/en/comments/comment/26576 (accessed: 26.07.2021).

qualities of people with a propensity to effective management. The existing mechanisms of competence assessment should include analysis and assessment of these qualities along with assessment of the intuitive, empathic, and holistic abilities in project management. The education system does not fully coordinate its managing specialist competence assessments with the expectations and assessments of the business environment.

Why do the problems of coordinating requirements towards manager competence in education institutions and in business continue in Russia for so many years? One of the reasons might be the fact that the spiritual development of people fall significantly behind the technical and technological one. While higher education graduates have rather high professional level of technic knowledge (in our case, in the IT field), their development of competences needed directly in managing processes and their formation of emotional intellect, knowledge and skills of social organization management still experience the same problems today as they did in the 19th century.

In the 1880's, Victor Goltsev as a representative of Lorenz von Stein's school argued that the essence of the executive (managing) branch of power consists in "improving individuals" or, using the terms of the present-day management glossary, "forming specialist competence". The almost half-century development cycle of project management standards since the 1960's until present demonstrates a stable trend of moving from requirements for the quality of the final product to the quality the management process and, finally, to the quality of the specialist competence. The requirements for the quality of the manager competence are becoming topical today, as they used to be in the 19th century.

The present article, though only fragmentally reflecting the changes in views on management competence in Russia, provides an illustration of the cyclic nature of management though development.

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ABOUT THE AUTHORS

Vadim I. Marshev — Dr. Sci. (Econ.), Honored Professor, Moscow University, Professor of the Organization Management Department of the faculty of economics, the Moscow State University, Director of the Center for Sports Management of the Faculty of Economics, Moscow State University, Moscow, Russia
https://orcid.org/0000-0002-1808-2054
vmarshev@mail.ru

Sergey I. Neizvestny — Dr. Sci. (Techn.), Professor of the Department of Business Informatics, Financial University, Moscow, Russia
https://orcid.org/0000-0002-5047-8251
sergey@neizvestny.com

Conflicts of Interest Statement: The authors have no conflicts of interest to declare.

The article was submitted on 24.08.2021; revised on 16.09.2021 and accepted for publication on 03.11.2021. The authors read and approved the final version of the manuscript.

XXII International Conference on the History of Management Thought and Business "Development of views on regional economic management in the countries of the world: history and modernity"

Dear colleagues!

For Russian and foreign specialists in the field of management has already become a tradition to meet of the Lomonosov Moscow State University (MSU) for the discussion of relevant management on International Conferences on the History of Management Thought and Business (HMT&B).

Since 1996, we have had 21 events on the following topics:

- "Development of management concepts" (1996).
- "Restructuring of enterprises in transition economies: theory and practice" (1998).
- "Government and business" (2000).
- "Development of personnel management" (2001).
- "Measurement problems in the management of organizations" (2002–2003).
- "Scientific concepts and actual management" (2004–2005).
- "Russian management model" (2008).
- "National management model" (2009).
- "Business-model: yesterday, today, tomorrow" (2010).
- "Social responsibility of business and ethics management" (2011).
- "Business and management ethics: comparative analysis of national models" (2012).
- "From stratagem to strategies, from strategic planning to strategic thinking and enlightenment" (2013).
- "Problem of training manager: yesterday, today, tomorrow" (2014).
- "National models of training manager" (2015).
- "Scenario management and leadership" (2016).
- "Scenario management: sources, problems, solutions" (2017).
- "Administrative labour and management roles: past, present, future" (2018).
- "Management and management roles: yesterday, today, tomorrow" (2019).
- "Problems in the management of social objects: yesterday, today, tomorrow" (2021).

In the summer of 2022, the Faculty of Economics of Moscow State University plans to hold the 22nd international conference on the History of Management Thought and Business. We have never discussed the subject: "Evolution of attitudes on economic management of regions in the countries of the world: history, modernity". Economic management problems did exist do exist and will exist of regions (territories) in the countries of the world, **if there are two or more regions in the country** (villages, territories, lands, communities, regions, municipalities, states, etc.). It's require consideration their interests, substantiated and fair formation and distribution of resources (human, financial, scientific and technical, information, etc.) to achieve the goals set for the country and its regions.

As it noted in our book, "The history of management thought" (Moscow, "Prospect" Publishing, 2021), «the administrative origin of this problem was very acute during the epoch of ancient Greek *polis*, many wars and territorial changes, when the "model *police* department" appeared, used by managers for over 2 500 years".

But these problems exist today in the USA, Australia, Germany, Spain, Italy, the former USSR, the former and present Russia and other countries of the world.

That is why, for the first time in the history of our conferences, we chose to discuss regional topics.

At the conference HMT&B-2022, we would like to know:

- on the history of the problems of management of the economies of the regions in the world;
- on the factors and reasons of their occurrence;
- on views, concepts and scientific views on identifying, analysing and resolving these problems.

Obviously, that **objects** of Historical and scientific research (HSR) and the History of Management Thought (HMT) in particular — is a **variety of materials and/or documents**: monographs, articles, legislative acts, letters, memoirs, diaries of different authors, archival materials — in short, data sources on the topic. For our future conference — are materials that reflect ideas, views, thought, points of view, concepts, scientific schools, which characterize of the management of the economies of regions and territories around the world in different specific historical periods.

Subject areas HMT&B-2022 — these are **ideas** (as well as thoughts, concepts, scientific schools) of management of the economies of the regions at the **four so-called "stages of the life cycle of these ideas"**: origin, development, fight and "disappearances". The ideas themselves may relate to the management of the economies of regions as whole, as well as individual elements **of their lives** — economy, politics, demography, legislation, socio-cultural relations, ecology, science, technology, international relations, etc.

Note that these elements can be both **objects** of management of the economies of regions and **reasons** or **aspects** of successes and crises of this management.

It is also obvious that the **subjects of management** of the economies of regions in different countries of the world in different specific historical periods were the state and its institutions of all forms of authorities, social organizations, private sector and the church.

Hence — a few questions, on which we will expect to receiving answer during the forthcoming conference HMT&B-2022 in context of "management of the economies of regions in different countries of the world in different specific historical periods":

1. How and why ideas and concepts of system (element) and integrated (aspect) approaches in the management of the economies of the regions was emerged and developed?
2. How aspects of management were manifested and considered (economic, political, legal, demographic, environmental, etc.) at different stages of the life cycle of ideas and views on management of the economies of regions?
3. How and why are views changinging on relationships of participants (actors) of processes of management of the economies of regions?
4. What are the factors, reasons and features of the concepts of anti-crisis management of the economies of regions?
5. How and why changing views on providing management processes of the economies of regions with different resources?
6. How the specificity of sectoral and inter-sectoral approaches was reflected in the concepts of management of the economies of regions?
7. How and why the reasons for the separation of management objects and authorites between the federal (national) and regional levels of management of the economies of regions have changed?
8. How and in what specific "languages" (economic, political, demographic, socio-cultural, ethical, etc.) was the management of conflict and/or crisis situations in the management of the economies of regions measured and evaluated?
9. How and why changing views on staffing processes of management of the economies of regions changed?
10. What roles regional managers of different industries and business scales around the world in different specific historical periods have played? How did the views on these roles change? Why?
11. What were the ideas of formation of competencies of regional managers? Who has trained and/or taught regional managers in the past? How ideas have been tested and how have training programmes changed?

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E-mail: dvoluchansky@gmail.com; kirill855@gmail.com; vmarshev@mail.ru

We invite you to participate in XXII Conference on HMT&B,
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Reports and abstracts deadline (in Russian and English) — 10 May 2022
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All registered to participate in HMT&B-2022 will include in the list for entry into the Faculty of Economics of MSU.

Requirements to registration of an article: Front size — 12. Front — Times New Roman.
Alignment — width. Line interval — one-and-a-half. Surname, name, patronymic, title of the article, abstract and keywords should be written in Russian and English.

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Sincerely,
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Vadim Ivanovich Marshev