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Localization of Production: International Experience and Imperatives of Russia in the Conditions of Sanctions Regime

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ABSTRACT

This article is dedicated to the study of production localization problem which became especially topical in conditions of new challenges characterized by the unprecedented strengthening of sanctions regime towards Russian economy and predetermining the necessity to create national manufacturing chains of full cycle, reconfiguration of the sectoral policies, transformation of business models in context of strategic goals of the import substitution. The purpose of the article is to generalize and evaluate international experience of localization of production, as well as to analyze the state of this process in the branches of the Russian manufacturing sector, which since 2014 has been under the action of the blocking and sectoral sanctions of the collective West. In the research process, a complex of general scientific methods was used, including: analytical, logical, monographic, interpretation, synthesis, as well as a method of graphical visualization. Methodological base of the study includes the set of classical and neo-classical concepts of the spatial organization of the economy, theory of innovative growth and cluster development. Fragmentary overview of production localization international experience is given. We have carried out analysis of mechanisms of the state industrial policy, contributing to the problems solution of the localization and import substitution, taking into account strategic priorities of Russia. The advantages of localization in practice of special investment contract (SPIC) conclusion were systematized. Its sectorial features in automotive industry, power engineering industry and aircraft building were stated. We have made a conclusion about the necessity of forming of effective localization strategy, overcoming of declarative character of import substitution in the key spheres of real sector of Russian economy which will help to solve the problems of national security provision and technological independence. Practical significance of the results of the study consists in the possibility of its use in the sphere of program and project management and development of strategies of national and regional levels development.
Keywords: production localization; industrial policy; import substitution; clustering; special investment contract; efficiency

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INTRODUCTION

Turning to the etymology and semantic content of the term "localization", originating from Latin "locus" (place) and used in several contextual meanings of different scientific disciplines, it should be noted that, in a broad sense, its essence is to concentrate the object under study in space or to construction restrictions and limits. From an economic point of view, localization implies a hierarchy based on a given level of object:

- micro-level (individual enterprises or their groups);
- meso-level (urban agglomerations, regions, industries);
- macro-level (countries, cross-national associations).

In this reasearch, localization is considered for production systems, mainly meso-level, as an object of managerial influence in line with the spatial approach aimed at improving the location of productive forces and solving the state tasks of territorial development.

The process of localization of production as an application area of the control system mediates the logic of changes correlating with the basic aspects of typologization of innovations by J. Schumpeter: creation of new types goods or their new qualities, organization of production and introduction of new technologies, development of new markets and sources of raw materials, organizational transformation [1].

Scientific interest in the problem of localization of production dates back to classical and neoclassical foreign theories of spatial placement, described in the works of J.H. von Thünen [2], A. Weber [3], W. Christaller [4], A. Lösch [5] etc. The search for the optimal structure of the economic space continued in the works W. Isard [6], A. Pred [7], P. Pottier [8], F. Perroux [9] etc. Among the modern authors developing the theory and modeling of the location of economic activities, it should be noted P. Krugman [10], P. Romer [11], M. Porter [12] etc. Informative characteristics of localization of production are contained in the works of domestic researchers: N. N. Kolosovskii [13], A. G. Granberg [14], A. I. Tatarkin [15], V. I. Suslov [16], Yu. G. Lavrikova [17] etc.

INTERNATIONAL EXPERIENCE OF PRODUCTION LOCALIZATION PROGRAMS

In international practice, various aspects of localization have been on the agenda of governments since the 1970s XX century. Norway was one of the first countries to implement a comprehensive localization programme as part of industrial policy. This was due to a national strategy focused on supporting the productive sector, research development, technology transfer, development of regulatory requirements for localization and regulatory methods for their implementation.

Despite a favorable macroeconomic environment and a developed industrial complex, the Government of Norway recognized the lack of innovative and technological competence in the developing oil and gas sector, as a result, he was directly affected by State regulation. In particular, foreign oil and gas companies have been actively encouraged to integrate with Norwegian producers and R&D research institutes. Technology transfer and investment became an essential element of the licensing process. Thus, one of the main conditions for the issuance of a subsoil license was the implementation by companies of at least 50% of all required R&D on the territory of the country. Protectionist policies was accompanied by support of economic clustering, including

through special programs "NCE", "Arena", as well as the creation of a network of industrial parks and incubators [18]. Knowledge-based business developed in collaborative partnerships with the science and education sector and conversion enterprises. Furthermore, contrary to claims that there was a need for preferential tax treatment for investors in mining, the incentive mechanism was not applied. Nevertheless, a number of other advantages have played a role, in particular: political and legal stability of the country, effective administration, support of geological study of the shelf, proximity to European markets [19].

Norwegian multi-sector oil and gas cluster with more than 1300 companies and 120 thous. employees, developed through the consistent implementation of protectionist measures consistent with the objectives of the national strategy. Its member enterprises are located along the entire value chain of the oil and gas industry, including at the highest level. As a result, the country secured world leadership in the production of stationary oil production platforms. Sales volume of the cluster exceeds 20 bln dollars for domestic and 30 bln dollars for external market. Realization of oil and gas equipment and its service became the leading export items of the country, second only to the sale of hydrocarbons. While in the formative stage of the industry, mining was held back to avoid overheating of the economy, since the 2000s there has been a reversal to strengthen the competitive mechanism to maximize sources of industry growth [20].

Thus, the selection of an innovative vector through an integrated production localization programme contributed to Norway's achievement of global leadership in offshore technologies, growth of the economy and strengthening of competitive positions in the world economic space.

Example of stimulating localization in the wind turbine sector of Canada was of interest. The wind power industry doubles in the world every 3–4 years, its share of electricity production has exceeded 4%, the growth rate reaches 20% annually [21]. In the 2000s this market was controlled by five countries: USA, China, Spain, Germany, India. But by the middle of the 2010's Canada joined the group of the largest market players. The growth of the industry was driven by targeted state measures to support localization. Wind power now ranks second in the country after hydropower at present. According to experts, by 2025 more than 20 thous. wind turbines will be installed, and the industry will receive 20% of the world energy market as a result. Regulatory mechanisms for electricity generation are entrusted to regional state authorities, Federal Center controls mainly nuclear power sector. This determines both significant differences in tariff policy of regions and specificity of regional and municipal project regulation, also features of licensing of wind energy. Regional administrations apply the so-called "feed-in-tariff". For example, in Ontario, this economic and policy framework is being actively used to attract investors in renewable energy technologies [22]. Producers of "green energy" receive a long-term contract for its production, a guarantee of connection to the network and a certain premium to the cost. The set of measures contributes to the profitability of production given the high capital intensity of the industry. In addition, the state policy of stimulating localization is aimed at attracting investments in the manufacturing sector of "green" energy. The localization standard for equipment suppliers is 25% of production in wind energy projects, in solar energy projects it reaches the level of

60%. More than 30 bln dollars of investment accumulated in the sector thanks to the stimulus mechanism, which allowed the creation of a developed wind and solar cluster complex in Ontario.

Next, would like to highlight the experience of Brazil, which took the path of differentiating localization targets for individual product groups in the search for a balance between efficiency and realism of industrial policy methods [23]. In the automotive industry, the State, with almost no assets, has set quite clear strategic priorities for its development. Since the mid-1990s XX century production has been carried out in peripheral regions of the country, and its structure has undergone significant changes in terms of increasing the share of small and low-cost models. The public interest was to attract new companies not previously operating in Brazil to overcome the conservatism of industry leaders — subsidiaries General Motors, Ford etc., based in high-demand regions and focused on high-yield market segment. The main regulatory instrument of policy was the industrial products tax. The authorities interested in localization of the regions have zeroed the corresponding tax for producers (rate of 25%), provided them with subsidies and land plots free of charge. The result of the measures used was positive, since by 2010 the share of cars in the affordable price segment in the total output exceeded 75% [24]. By stimulating the development of the automotive industry, the Government responded in a timely manner to both the market needs of consumers and the desire of manufacturers to develop new territories with more affordable (cheap compared to the central regions) labour and land resources, often providing them with well-developed infrastructure in these places, which was certainly attractive in terms of reducing the cost of capital construction. Since 2012, a new phase has been underway to shift the focus of industrial policy towards supporting the localization of R&D in the automotive sector. Among other things, this is due to a loss of competitiveness, as despite high customs duties, 25% of all cars sold in the country were imported. The Government has developed a programme "Inovar Auto", recording all stages of the production cycle, according to which each producer had to increase the R&D budget to 5 per cent of annual revenue over a three-year period and to produce at least half of the "Mercosur" (South American economic agreement) [25]. Not only tax differentiation measures, but also the size of the country's domestic market and significant investment in the automotive industry contributed to the success of the programme.

In the microelectronics and IT-sector of Brazil, the industry incentive model is implemented, which since 1991 has been periodically modified by highly specialized programmes [26]. Separately created nomenclature of elements (stages) of production processes is the basis of the method of estimation of the degree of localization of production. Increasing localization rate entitles to fiscal benefits (reduction of taxes on industrial products and value added) on average for a period of up to 5 years for each producer's product position. The stated requirements provided that in order to obtain preferences, it is necessary to allocate 5% of the income from production to R&D with the participation of the State Fund for Scientific and Technological Development. Since the beginning of the 2000s, vector support of software development localization is realized. This sector has grown significantly in recent years due to the adoption of the law on cooperation between business and universities, according to which tax credits

are granted not only to large players, but also to small and medium-sized companies involved in joint software development projects. Brazil's largest technology park "Porto Dogital" demonstrates high level of performance, localizing export-oriented manufacturers of innovation, including in the field of IT-technologies. In 2020, strategic goals were achieved — creation of employment for 20 thous. specialists and generation of 400 innovative companies on the basis of the technology park. As a result, it can be argued that at present the technology park is the anchor of sustainable development not only of the economy of the Pernambuco region, but of the entire national [27].

Summarizing the fragmented coverage of international localization experiences, it is worth noting the long-term nature of situational protectionism, regional orientation and consistent innovation focus of relevant programmes in the productive sectors of the foreign economies in question, as well as the gradual shift in the focus of public policy from direct linkages (development of the national processing sector) to backward linkages (technology transfer, value addition in resource supply sector, growth of equity ownership of companies).

LOCALIZATION OF PRODUCTION IN RUSSIA: IMPLEMENTATION MECHANISMS

Before proceeding to the analysis of localization experience in modern Russia, it should be noted that the national economy for the last 8 years is under the influence of blocking and sectoral sanctions of the USA and the European Union, which apply to enterprises in its various industries. At the moment, we can state that sanctions pressure has multiplied. At the same time, localization of production remains one of the trunk directions of industrial policy of Russia.

Since 2012, a mechanism for clustering the economic space through the integration of production systems is being implemented, which, through the synergy of innovation and investment interaction, ensure the dynamics of the economic processes of the cluster accommodation [28]. Localization in this context has enhanced the economic self-sufficiency and competitiveness of regions. Currently, there are 115 clusters in the country, including 50 industrial and 27 innovative territorials: in aircraft, automotive, instrument-making, petrochemistry, photonics, pharmaceutical and medical industries, in other industries.[1] The volume of production annually produced by their participants exceeds 1.3 trillion rub. [29].

In 2021, the Government of the Russian Federation, declaring the "reboot of cluster policy", renewed their support. In particular, a new competitive selection process was approved, and targeted subsidies for strategic components were established, included in the sectoral import substitution plans of the Ministry of Industry and Trade of the Russian Federation. The focus shifted significantly to support localization of component base.

In addition to cluster systems, localization is carried out in territories with preferential regimes, such as: special economic zones (SEZ), advanced development territory (ADT), industrial parks and technoparks, innovative scientific and technological centers (ISTC) [30–32], which contributes to solving not only the related tasks, but also import substitution in accordance with the priority objectives of the State to achieve sustainable economic growth and technological independence [33]. The main economic

[1] According to the Russian cluster observatory. URL: https://cluster.hse.ru/ (accessed on 05.04.2022).

Table 1

Main results of economic activity of industrial clusters and territories with preferential regimes in the Russian Federation (as of 01 January 2021)

Territory development tools	Quantity, un.	New jobs, thous.	The volume of investments by residents (project initiators), billion rub.	Revenue, billion rubles	Taxes and fees, billion rub.
Industrial clusters	50	10.2	15.9	–	12.0
Technical and implementation SEZ	7	23.4	232.2	438.0	67.1
Industrial SEZ	15	20.8	304.6	812.0	80.0
Port SEZ	1	785	4.8	4.1	0.55
Industrial parks	258	9.3	181.0	–	–

Source: composed on the basic research of Ministry of Industry and Trade of the Russian Federation. URL: https://minpromtorg.gov.ru/ (accessed on 20.03.2022).

results of industrial clusters and territories with preferential treatment are presented in *table 1*.

Under conditions of increasing economic turbulence, the state is focused on the consistent formation of a favorable investment environment for companies, creating new and modernizing existing production facilities [34]. Ministry of Industry and Trade of the Russian Federation, based on the Federal Act of 31 December 2014 No. 488[2] "On Industrial Policy in the Russian Federation", developed a range of financial and non-financial support measures that give effect to preferences for domestic and foreign companies investing in localization projects.

So, sectoral project funding implemented through the Industrial Development Fund (IDF), providing soft loans under a range of programmes, among which "Priority projects",[3] "Development projects",[4] "Development projects with regional IDF",[5] "Conversion"[6] etc. IDF loans at 1–3% per annum are intended for companies implementing advanced technologies,

[2] Federal Act of 31 December 2014 No. 488 "On Industrial Policy in the Russian Federation" (latest version). URL: http://www.consultant.ru/document/cons_doc_LAW_173119/ (accessed on 02.04.2022).

[3] IDF website. Priority projects. URL: https://frprf.ru/zaymy/prioritetnye-proekty/? (accessed on 04.04.2022).

[4] IDF website. Development projects. URL: https://frprf.ru/zaymy/proekty-razvitiya/? (accessed on 04.04.2022).

[5] IDF website. Development projects with regioanl funds. URL: https://frprf.ru/zaymy-regfondy/proekty-razvitiya-s-rfrp/? (accessed on 05.04.2022).

[6] IDF website. Conversion.URL: https://frprf.ru/zaymy/konversiya/? (accessed on 05.04.2022).

Table 2

Advantages of localizing production in the Russian Federation in the context of implementing the special investment contracts mechanism

Direction	Advantages
Market potential	– the spatial aspect of Russia's geographical and geopolitical status between Europe and Asia; – access to the Russian and Eurasian Economic Union markets (EEU); – GDP of EEU countries – 1425 bln dollars, trade turnover – 64 bln dollars.
Tax preferences	– ability to reset the rate of income tax in the federal part; – possibility to reduce the rates of regional and municipal taxes (property, transport, land); – guarantees of non-payment of the aggregate tax burden from the conclusion of the contract to the expiry date of the SPIC (Special investment contract) or the expiry date of the preferences
Access to public and municipal procurement	– easy access to government order; – possible status of "single supplier" within SPIC; – non-competitive procurement; – possibility to conclude contracts for the lease of land parcels in state and municipal ownership without tender
Support of industrial complex	– loans and consultancy of IDF (industrial development fund); – state subsidies; – the optimal contract model for the conclusion of SPIC (federal, regional, municipal); – possibility of conclusion of the SPIC for projects of modernization of production on the existing areas (without reconstruction, construction of new facilities)
State industrial information system	– digital interaction of industry entities; – navigator of state support measures; – "single window" for reporting; – catalogue of industrial products, technologies and services; – navigator of investors, customers, suppliers of industrial products

Source: compiled by the author.

creating new products and organizing import substitution production.[7]

SPECIAL INVESTMENT CONTRACT MECHANISM (SPIC)

In this research, elaborate on the special investment contract mechanism (SPIC) — agreements between the State and the investor to attract large investments in new production systems, разработку и внедрение технологий производства industrial products that are competitive on the world market. SPIC fits into the logical contours of import substitution policy, being an example of practical implementation of state strategy in the national industrial complex [35]. Parties to SPIC, along with the Russian Federation, may be its subjects and (or) municipalities. The operator is the Industrial Development Fund.

In 2015, in the context of stimulating localization at the level of SPIC, the Government of the Russian Federation developed special requirements, determining the "Russian status" of industrial products.

[7] IDF website. Federal loans. URL: https://frprf.ru/zaymy/ (accessed on 05.04.2022).

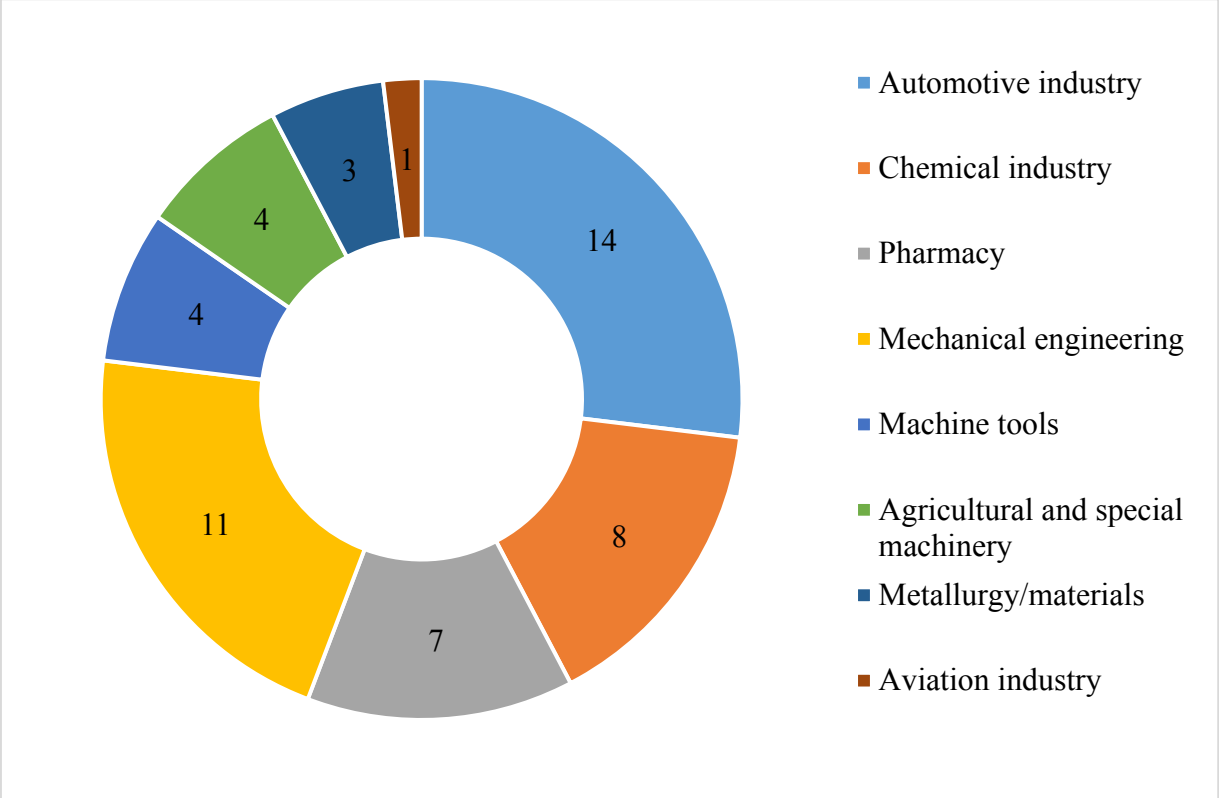

Fig. **The number of special investment contracts concluded in the Russian Federation by industry in 2016–2022, pcs.**

Source: compiled by the author according to the public register SPIC GISP. URL: https://gisp.gov.ru/spic2/pub/spic/search/ (accessed on 29.03.2022).

The original SPIC 1.0 format was upgraded in 2019 to an updated version of SPIC 2.0. The focus of the contractual mechanism shifted from solving purely investment development tasks to the innovation component — development and transfer of technologies in industry, as well as creation of new competencies for the Russian economy as a whole. In addition, in the interests of the corporate sector, the minimum investment threshold (750 mln rub.) was cancelled, the duration of contracts increased to 15–20 years.

List of modern technologies approved directly for the implementation of special investment contracts, which is periodically updated and correlated with the objectives of import substitution in order to focus primarily on the production of critical products under the sanction's regime. Of course, a forward-looking technology agenda is also relevant when selecting.

The SPIC mechanism commits investors to increase production levels and localization. At the same time, producers receive a number of advantages, such as: tax preferences, the status of the sole supplier of products for government procurement (if the amount of investments exceeds 3 bln rub.), compensation for export costs, bank lending and R&D, etc. Systematization of advantages of localization of production in the context of implementation of SPIC is presented in *table 2*. The most important factors of investment stimulus are the stated immutability of business conditions for

the entire term of implementation of the contract and state guarantees of fixing (not exceeding) the aggregate tax burden.

The total volume of investment in industry under the SPIK in the current year exceeded 977 bln rub., including declared investments in signed contracts of SPIK 2.0 format amount to 169.9 bln rub.[8] Total number of federal SPICs in industry (see *figure*).

Another important aspect to note: the enhanced SPIC 2.0 mechanism does not allocate investment as the main criterion in the competitive selection of project applications. In the first, the project implementation time, the level of localization of production and revenue are estimated, as the result of a new market product is at the top of the current government agenda.

In order to facilitate the real sector of the national economy, at short notice the Federal Act of 14 March 2022 No. 57 "On amendment of article 2 of the Federal Act "On the amendment of the Federal Act "On Industrial Policy in the Russian Federation" in terms of regulation of special investment contracts"[9] was adopted, which allows for the extension of existing SPIC 1.0 contracts to a maximum of (12 years) as well as the conclusion of new ones. The tactical decision to renew the SPIC 1.0 mechanism in the current difficult situation for the Russian economy contributes to the support of companies, the implementation of investment projects negatively affected by restrictive measures by foreign partners.

LOCALIZATION OF PRODUCTION IN THE AUTOMOTIVE INDUSTRY, POWER ENGINEERING AND AIRCRAFT INDUSTRY: PROBLEMS AND SOLUTIONS

Since the beginning of the implementation of the SPIC mechanism, localization projects have been carried out most actively in the automotive industry, the total amount of investment under contracts in the industry exceeded 176 bln rub.[10] A point system was developed by the Ministry of Industry and Trade of the Russian Federation to assess localization level, characterizing the level of technological operations and equipment of the model range of cars with Russian components .[11]

Despite the fact that the problem of creating a national auto component industry was raised in 2014 when the first anti-Russian sanctions packages were introduced, there has been no significant movement in this direction. This significantly has exacerbated condition of the Russian car industry at the present stage. So, in 2020, with a maximum localization scale of 8 800 points, the most profitable Russian model "Lada Vest" it did not exceed 3 300 points (37.5%), corresponding to the industry average. In fact, localization was only formally declared, in fact there was a departure from its goals, and the accumulated competencies were increasingly lost. Foreign producers' output was localized to a minimum of 1 400 points (16%), allowing them access to public procurement and demand-side programmes. At the same time, industrial deepening of

[8] GISP. SPIC Register (public). URL: https://gisp.gov.ru/spic2/pub/spic/search/ (accessed on 02.04.2022).

[9] Federal Act of 14 March 2022 No. 57 "On amendment of article 2 of the Federal Act "On the amendment of the Federal Act "On Industrial Policy in the Russian Federation" in terms of regulation of special investment contracts". URL: http://www.kremlin.ru/acts/bank/47643 (accessed on 02.04.2022).

[10] GISP. SPIC Register (public). URL: https://gisp.gov.ru/spic2/pub/spic/search/ (accessed on 29.03.2022).

[11] Website of the Government of the Russian Federation. A point system for evaluating the localization of the automotive industry on the territory. URL: http://government.ru/docs/36855/ (accessed on 02.04.2022).

automobile production by foreign investors was not generally expected due to the fact that the Russian market is not able to provide a high level of demand for the products of automobiles.

Persistent recession caused by the coronavirus pandemic COVID-19, sanctions pressure, currency market volatility and increased geopolitical escalation contributed to the disruption of established production chains in most sectors of the national economy. Only 55% of production capacity was able to continue work in the motorway, many existing enterprises are forced to switch to part-time employment. Irregularity due to logistical failures and lack of components, which is why the management of companies is forced to make operational decisions on organizational reconfiguration. So, the management "AVTOVAZ" agreed to create a single auto-assembly production, integrated from 3 sites, this allows for a certain maneuverability of resources and does not interrupt the production cycle. On the suspension of activities on the territory of Russia stated the companies BMW, Mercedes, Volkswagen, Renault, Skoda, Volvo Group, Ford.[12]

Chinese companies remain promising partners for Russia — more than 50 car manufacturers, some of which are focused on the Russian market in the long term. Despite the negative trends of the Russian automobile market in recent years, the share of the Chinese automobile industry demonstrated stable growth. Thus,,116 thousand Chinese cars were sold in Russia, and this is a double increase from the previous year Thus, in 2021,116 thous. Chinese cars were sold in Russia, and this is a double increase from the previous year.[13] Expanding the model range for the Russian market and actively redoubling the dealer network, Chinese developers today have every chance to fill the niches of Western manufacturers in the event of their final exit from the market, because the quality of the Chinese assembly corresponds to the European level, and the price of products is much lower.

It should also be noted that until now in Russia, foreign investors have not implemented programs of localization of engines of innovative types, while the world's automobile companies have started to actively transition to environmental powertrain types. In the context of the announced tightening of control of hydrocarbon emissions, industry priorities should be redirected in the medium term to the development of transport using electricity and hydrogen fuel.

A positive example is the activity of Russian companies in the energy engineering and engine industries: with active cooperation with foreign partners, almost complete localization of processes in production, exploitation and service was achieved. Successes in this direction are noted in the activity of PJSC UEC "Saturn". The enterprise in the structure of the state corporation "Rostech" implements the full cycle on creation of new products: from design to serial production and service of turbine engines for aviation, power generating plants, ships, marine industrial facilities. R&D series conducted in 2014–2017, contributed to the development of a line of domestic engines for seagoing vessels, which made it possible to completely

[12] Kommersant.ru website. What foreign business interrupted work in Russia. List of companies and organizations. URL: https://www.kommersant.ru/doc/5240137?tg (accessed on 01.04.2022).

[13] Avtostat.ru. Sales of "Chinese" doubled in 2021. Their share — also doubled. URL: https://www.autostat.ru/news/50416/ (accessed on 01.04.2022).

abandon these devices of foreign production and to close the needs of the fleet in the short and medium term. "Saturn" is a part of the innovative territorial cluster "Gas turbocharging and power engineering" of the Yaroslavl region, whose key players of the technological cycle actively interact with the leading organizations of the scientific and educational sector in the profile areas of production, and with small and medium-sized innovative companies.

The situation with the implementation of projects for the Russian aircraft industry is not so clear. At present, with the tightening of sanctions on operation of civilian aircraft manufactured abroad the Russian aviation industry faces large-scale tasks to expand the production of already existing models of aircraft in a short time. And in 2017 Joint Russian-French enterprisee PowerJet (Saran Aircraft Engines and UEC "Saturn") outlined plans to localize the production of SaM 146 engines in Russia for short-haul aircraft "Sukhoi Superjet 100" up to 55% in the first stage and up to 80% in the second. At the beginning of this year, the French side announced the withdrawal of support for the project. In these conditions, the Ministry of Industry and Trade of the Russian Federation announced the order for the preparation and testing of 97% of the import-substituted version "Sukhoi Superjet New", developed with 2018. It is planned to certify the model in 2023, and to start deliveries to Russian airlines in 2024.

Also, from 2024 in the serial production will be launched Russian medium-haul aircraft "MS-21", created by the corporation "Irkut" together with JSC "EDB named after A.S. Yakovlev". Like all major developments in the aviation industry, this project was heavily dependent on imported engines and avionics. The imported substituted version of the liner is already equipped with the domestic engine of the Perm plant PD-14, at present the question of using the domestic component base in it is being considered.

In addition, the Government of the Russian Federation announced the restoration of serial production of a medium-range aircraft "Tu-214", which is produced on single special orders at the Kazan aviation plant (PJSC "Tupolev" branch). In terms of public expenditure — this is the most budgeted aircraft construction project at present, as the production of the already completed model is to be increased. "Tu-214" consists mostly of Russian components, import substitution of avionics is expected to be implemented within a year. It was decided to resume work on the project suspended in the 2010s to create an updated version of "Tu-214 SM", which is close to the analogues of Boeing and Airbus.

ONGOING INITIATIVES OF THE GOVERNMENT OF THE RUSSIAN FEDERATION WITHIN THE FRAMEWORK OF THE STATE INDUSTRIAL POLICY

Due to a significant increase in demand for Russian industrial products, associated with supply restriction due to strengthening increase of sanctions pressure, In March 2022, the Ministry of Industry and Trade of the Russian Federation organized the work of the digital service "Import substitution exchange" on the basis of GISP resources.[14] This site allows without additional costs and intermediaries to link requests for products and components with suppliers' price offers. In the functionality of the catalogue "sanction goods" it is possible to carry out a search for potential domestic producers. The catalogue "import-substituting products", in turn, allows going to analogues, the production of which in the country is already taking place.

[14] ETP GPB. Import substitution service. URL: https://etpgpb.ru/portal/import-substitution/ (accessed on 04.04.2022).

Launch of comprehensive science and technology program (CSTP) to create innovative integrated chains of full cycle was announced, the purpose of which is to build a vertical of domestic developments from basic science to experimental batches of innovative products. Its implementation is carried out in the integration cooperation of the Russian Academy of Sciences, the Ministry of Industry and Trade of the Russian Federation and the Agency for Technological Development. Emphasis is placed on maximum acceleration getting the import substitution projects to the production stage as quickly as possible. The CSTP working groups are focused on 6 key areas: machine tools, laser and optical technologies, microelectronics, medical engineering, low-tonnage chemistry and pharmaceuticals.

In total, 20 bln rub. were allocated to support investment projects in the field of advanced technologies through import substitution in the national industrial complex, which will be made available to producers as soft loans through mechanisms IDF.[15]

Thus, initiatives currently being implemented by the Government of the Russian Federation within the framework of the State industrial policy are aimed mainly at maintaining the sustainability of the economy, development of innovative solutions capable in the medium term to increase the technological level of Russian production based on domestic developments. The acknowledgement of the inevitability of the structural transformation of the Russian economy under the impact of the sanctions economic shocks and its strategic reorientation towards cooperation with partners from the Asian region makes it necessary to search for new points of economic growth. According to forecasts of representatives of technological entrepreneurship and venture market, at the exit from the current crisis, Russia has every chance to form an economy, not only integrated into new market niches, but also provided with real innovative domestic demand, through localization of production and import substitution [36].

CONCLUSION

The research allowed formulation to the following conclusions:

1. International experience of introduction of complex development programs of localization in general indicates positive structural transformations of the productive sector of economy in terms of increase of innovation component and export-oriented potential. The effectiveness of the projects implemented abroad was mainly determined by the market situation, the level of development of technologies, the investment climate, timeliness and focus of protectionist measures to support promising industries, and opportunities to integrate into global production chains.

2. In connection with the changing geopolitical situation and the strengthening of the sanctions regime for the Russian economy, localization of national production chains of the full cycle, formation of key competencies for achieving technological independence, high level of competitiveness of final products and reorientation to new markets is becoming a priority. The most important condition is the transition from declarative to real import substitution in the branches of the real economy.

3. At the present stage, Russia needs an effective strategy for the localization of production, corresponding to new challenges and goals of national security. At the same

[15] Order of the Government of the Russian Federation from 01 April 2022 No. 711. URL: http://government.ru/docs/all/140201/ (accessed on 04.04.2022).

time, measures to support industries and systemically important enterprises in the framework of the state industrial policy should be clearly related to plans for import substitution targets, scaling up innovative technological solutions and opportunities for rapid adjustment of regulatory and financial components.

4. Successfully overcome the crisis it is necessary to significantly strengthen the interaction of Russian science and production, especially in innovation. And ensuring coherence of priorities, tools to support science and technology development at all levels of the management system; increasing regional involvement in the implementation of scientific and technical programmes, projects; activating the role of interregional cooperation, including the use of the existing infrastructure of the territories with preferential regimes for the launch of new industries, as well as the promotion of technology transfer between the defense and civil sectors in the context of the development of dual-use technologies.

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Strategic Management of Russian Metallurgy in the Context of Challenges and Risks

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ABSTRACT

The subject of the study is Russian metallurgical companies, which in the context of the transformation of the economy, taking into account the difficult geopolitical situation, need to move from a recovery strategy to a strategy of progressive growth. The latter, taking into account the factors that ensure the success of Russian companies in the metal market, should become a tool for effective management, as well as for predicting business risks. The article presents the risk-dominating elements and macroeconomic indicators for building an effective strategy for the development of enterprises in the metallurgical industry, which will allow for a comprehensive assessment of the situation and making rational and effective management decisions to increase the competitiveness of companies, their adaptability to modern factors of the external environment, the growth of economic potential and capitalization. The peculiarity of the study is to identify the dominant factors of entrepreneurial risk and improve ways to increase the investment attractiveness of the company.
Keywords: ferrous metallurgy; geopolitics; capital; efficiency; environmental, social and management factors; progressive growth; strategy

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INTRODUCTION

Geopolitical situation, sanctions and anti-sanctions, disruption of logistics supply chains of finished products, raw materials and energy, environmental constraints are affect the performance of industrial enterprises, causing enormous damage to the global economic market. This results in high volatility of metal prices that reflected in its entire technological and production chain. Since 2017, the ferrous metallurgy has entered the current renaissance period. The main reason was the global increase in demand for metal products, which significantly increased both its prices and production volumes [1]. At the same time, under the conditions of the pandemic in 2019, the metallurgy managed to maintain a high growth rate, which was primarily due to the development of the Chinese economy.

According to World Steel Association (WSA),[1] world steel production for 2020 amounted to 1 878 mln tons, which is almost in line with the level of 2019 (1 874 mln tons). The maintenance of steel production during the pandemic was primarily due to an increase in steel smelting in China (on 69.4 mln tons).

As seen from the *table 1*, steel smelting change was uneven: in different countries, it was heavily influenced by the constraints imposed by the pandemic.

The largest reduction in output occurred in the USA (–17.2%), Japan (–16.2%), India (–10%), Germany (–9.8%). In the Russia, it remained practically unchanged. At the same time, significant growth occurred in China (+7%), Turkey (+6.2%), Iran (+13.3%). From the changes in positions in the rating can be provide India, who took the 2nd place instead of the 3rd, South Korea, ranked 5th and ahead of Russia, as well as Iran, which is in the top-10 manufacturers, in the world ahead of Italy and Vietnam, in 17th place, ahead of Poland and Canada and approaching to Spain.

Statistics for metal exporting and importing countries are given in *table 2 and 3*.

As seen from the *table 2*, China has become a major producer, importer and exporter of ferrous metals; Russia became the second country in the world to export, taking advantage in 2020 of the opportunities that appeared during the pandemic; India is gradually improving its trade balance in this area through development of metallurgy (*табл. 3*).

Analysis of the data presented in the *table 2 and 3* shows that the feature of the Russian metallurgy is its high export orientation. If the Russian Federation is ranked 6th place in the world for steel smelting, how the net-exporter is consistently in the top three: Russia took the 1st place in terms of exports of metal products in 2020, which indicates a high degree of involvement of this industry in the world economy.

ESSENCE OF THE PROBLEM

The Russian steel market has traditionally followed world trends. Over the last ten years and to date, metallurgical enterprises have taken leading positions in the rating of 400 largest companies in the country: according to the data of analytical center "Expert", in 2020 PJSC "Nornikel" was at the 11th position, group "EurAZ" — on the 18th, Novolipetsk Metallurgical Combine (PJSC "NLMK") — on the 20th, Incorporated Company "RUSAL" — on the 21th, PJSC "Severstal" — on the 26th, LLC "Metalloinvest" — on the 30th, PJSC "Magnitogorsky Metallurgical Plant" — on the 31th and Pipe Metallurgical Company (PMC) — on the 31th place.[2]

[1] World Steel Association (WSA). URL: https://worldsteel.org/steel-by-topic/statistics/annual-production-steel-data/P1_crude_steel_total_pub/CHN/IND/WORLD_ALL

[2] Analytical Center "Expert". Steel Technology Platform. URL: https://expert.ru/expert/2021/43/spetsdoklad/41/ (accessed on 08.03.2022).

Table 1

Crude steel volume became the world's largest producers, mln tons

Rank	Country	2018	2019	2020	Growth rate 2019/2018	Growth rate 2020/2019
1	China	928.3	995.4	1064.8	+7.2%	+7.0%
2	India	106.5	111.4	100.3	+4.6%	–10.0%
3	Japan	104.3	99.3	83.2	–4.8%	–16.2%
4	USA	86.7	87.8	72.7	+1.3%	–17.2%
5	South Korea	72.5	71.4	67.1	–1.5%	–6.0%
6	Russia	71.7	71.7	71.6	0%	–0.1%
7	Germany	42.4	39.6	35.7	–6.6%	–9.8%
8	Turkey	37.3	33.7	35.8	–9.7%	+6.2%
9	Brazil	34.7	32.6	31.0	–6.1%	–4.9%
10	Iran	25.0	25.6	29.0	+2.4%	+13.3%

Source: compiled by the author based on [1].

Table 2

Countries, the largest net-exporters and net-importers of steel products, mln tons / place in the rating

Exporting countries			Importing countries		
Country	2020	2015	Country	2020	2015
China	51.4/1	111.6/1	China	37.9/1	13.2/10
Russia	31.5/2	28.8/4	USA	19.9/2	36.5/1
Japan	29.8/3	40.8/2	Germany	18.2/3	24.8/2
Republic of Korea	27.6/4	31.2/3	Italy	15.5/4	19.9/4
Germany	21.2/5	25.1/5	Vietnam	13.7/5	16.3/6
Turkey	18.5/6	15.0/9	Thailand	13.1/6	14.6/7
India	17.1/7	No data	Turkey	12.5/7	18.6/5
France	18.2/8	14.0/10	France	11.8/8	13.7/8
Ukraine	15.2/9	17.7/6	Republic of Korea	11.5/9	21.7/3
Italy	14.9/10	16.5/7	Poland	10.8/10	No data
Belgium	12.9/11	15.2/8	Belgium	10.4/11	12.1/12
Brazil	10.6/12	13.7/11	Mexico	6.8/13	12.7/11
Taiwan (China)	10.0/14	11.2/12	Indonesia	5.7/23	11.4/13
Netherlands	8.3/16	10.6/13	India	No data	13.3/9

Source: compiled by the author based on World steel in Figures. URL: https://aceroplatea.es/docs/StainlessSteelFigures2021.pdf (accessed on 08.03.2022).

Table 3

Countries — the largest exporters and importers of steel products, mln tons / place in the rating

Exporting countries			Importing countries		
Country	**2020**	**201**	**Country**	**2020**	**2015**
Russia	26.4/1	24.5/3	USA	13.6/1	26.5/1
Japan	24.8/2	34.9/2	Thailand	11.9/2	13.4/3
Republic of Korea	16.1/3	9.5/6	Philippines	6.6/3	No data
Ukraine	13.9/4	16.9/4	Vietnam	6.0/4	14.9/2
China	13.5/5	98.4/1	Saudi Arabia	5.7/6	6.4/7
India	12.1/6	importer	Poland	5.6/7	4.1/11
Brazil	8.7/7	10.5/5	Mexico	4.5/8	8.6/5
Turkey	6.0/8	3.8/7	Indonesia	4.2/9	9.4/4
Taiwan (China)	2.7/11	3.7/8	Israel	3.3/10	No data
Austria	2.6/12	3.2/9	Bangladesh	2.5/11	4.0/12
Belgium	2.5/14	3.1/10	India	exporter	5.7/10

Source: compiled by the author based on World steel in Figures. URL: https://aceroplatea.es/docs/StainlessSteelFigures2021.pdf (accessed on 08.03.2022).

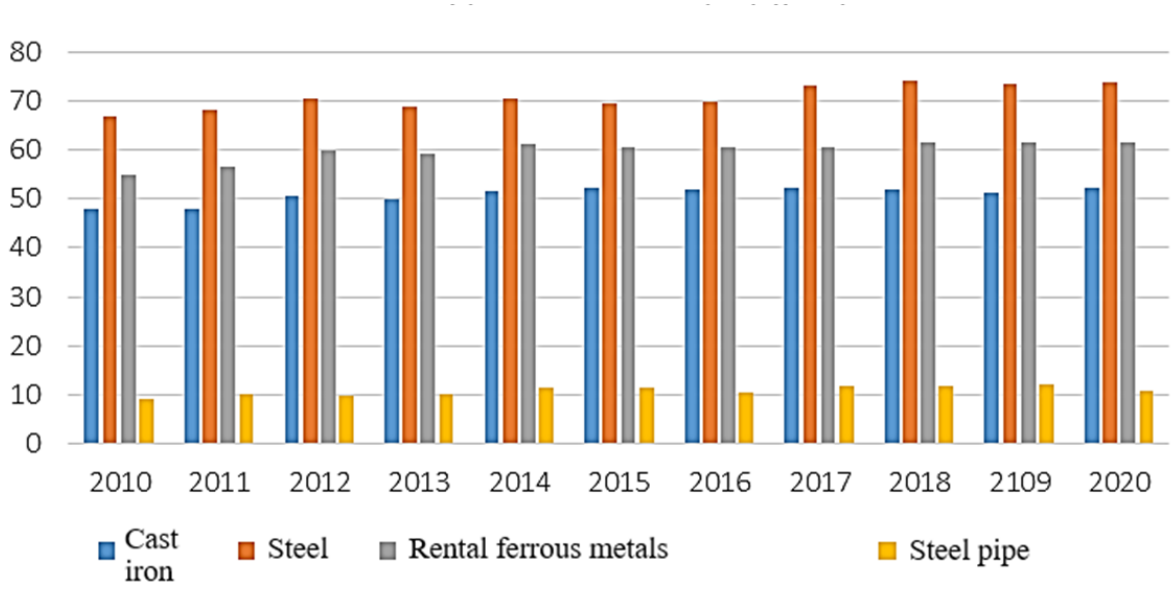

Fig. 1. **Production of finished metal products for 2010–2020 years**

Source: compiled by the author based on Federal State Statistics Service. URL: https://rosstat.gov.ru/storage/mediabank/god17.htm (accessed on 03.03.2022).

Table 4

Performance measures of the largest steel enterprises in Russia for 2019

Organization	Growth potential to fair price			Multiplicators				
	Current price, rub.	Target price, rub.	Growth potential, %	P/E	E/P, %	P/S	EV/ EBITDA	P/ CF
JSC "MMP"	46.11	73.7	60.00	6.32	15.8	0.99	3.36	4.23
JSC "Severstal"	1094	1739.4	59.00	7.01	14.27	1.71	4.84	5.49
JSC "NLMK"	173.08	235.4	36.00	7.57	13.20	1.32	5.0	5.54
PJSC "Pipe Metallurgical Company"	63.10	44.8	–29.00	13.74	7.28	0.20	5.03	2.19
PJSC "Mechel"	69.4	69.4	0.00	2.14	46.74	0.15	6.17	0.67
PJSC "Ashinskiy Metallurgical Plant"	4.05	12.1	201	3.47	28.84	0.08	4.52	1.29
PJSC "Nornikel"	14176	10206.7	–28	11.96	13.20	3.08	7.00	7.09

Source: compiled by the author based on World steel in Figures. URL: https://aceroplatea.es/docs/StainlessSteelFigures2021.pdf (accessed on 08.03.2022); Federal State Statistics Service. URL: https://rosstat.gov.ru/storage/mediabank/god17.htm (accessed on 03.03.2022; Analytical review. URL: https://blackterminal.com/companies?hl=ru; [2–4] (accessed on 03.03.2022.)

Through information and analytical inputs, and development strategy analysis these enterprises have developed and substantiated the basic provisions on increasing the efficiency of management of metallurgical companies during the transformation of economic processes.

The change of production volumes in physical terms in metallurgy in the period 2010–2020 years is given in *fig. 1*.

Russian metallurgical companies need to move from the strategy of recovery after the crises of 2008–2014 years to the strategy of finding new directions of development; taking into account the complex geopolitical situation, adjust their investment policy in the new realities. In five years, the steel industry has overcome the low phase of the cycle, characterized by overproduction and low available capacity.

The multiplier EV/EBITDA[3] value is important at the level 3.3–7.0: there are free financial flows, and profitability indicators are unstable.

[3] The EV/EBITDA multiplier represents the enterprise value (EV) ratio to its profit before interest, income tax and depreciation on assets EBITDA (Earnings before interest, taxes, depreciation and amortization).

CURRENT CHALLENGES AND RISKS AFFECTING ON RUSSIAN METALLURGY

Six major challenge groups can be identified:

1. Through geopolitics, COVID-19 pandemic, change layout of political forces, flurry of sanctions and anti-sanctions (including export controls and industrial policy, aimed at increasing the "self-sufficiency" of critical and vital products and the introduction of a global minimum tax for the world's largest companies), logistics chain disruption are created barriers to globalization and exacerbate tensions in a global order, based on US rules. This will require the search for new markets, the support of the domestic market for metal products, the stimulation of significant construction projects. In 2022, there are likely to be more geopolitical problems, including changing governments and resource nationalism, leading to increased royalties and taxes. Varieties of techniques are needed to reduce these factors, including engagement with Governments and enhancing the sustainability of the supply chain.

2. Access to capital remains a complex task for steel companies as investors keep risks, related to geopolitics, community issues and metal price volatility [6, 7]. Some enterprises with high carbon assets are exploring alternative sources of financing, such as direct investment. Competition for capital at a reasonable price requires companies to better demonstrate their performance for both financial and non-financial reasons. In a resource-constrained environment, they should also change portfolios and investments to those that are consistent with their strategies and that benefit from changing demand, including for minerals.

3. As environmental, social and governance factors (ESG) become an increasingly high priority for investors, shareholders and a broader group of stakeholders, steel companies are increasingly integrating ESG into corporate strategies, decision-making process and accountability for stakeholders. Pressures from the latter on issues such as biodiversity and water management are likely to increase, which will require enterprise management to plan for the gradual closure of mines and better water-energy management, to meet expectations by taking greater responsibility for their impact on the environment and social communities and going beyond their normative obligations [8–10]. Metallurgists who help to ensure long-term, sustainable economic and social growth in their regions of presence can leave a positive legacy beyond the life of the plant.

4. Decarbonization of industry. As investors and governments refuse to investment in thermal coal, while carbon prices will rise, businesses should treat decarbonization as any other strategic risk. Building a flexible pathway to decarbonization, which includes scenario modeling and analysis of finance, technology and assets, can help companies achieve clean zero and differentiate. Those that manage emissions can create real value and long-term sustainability.

5. License to operate (LTO) is developing rapidly as expectations of the contribution of the metallurgical industry to communities, economies, protection of heritage sites and interaction with the State and social groups. As LTO becomes increasingly tied to the organization's ability to access resources, capital and debt, a proactive approach to these issues is crucial.

6. Uncertainty of demand. Energy transition increases demand for minerals needed for renewable energy, electric vehicles and energy storage systems. To meet this demand, enterprises will need to overcome major supply-side constraints, including access to

capital, ensuring LTO and geopolitical risks associated with mining concentrated in just a few markets. The threat of replacement is also real in a sector with long project lead times. Advances in technology and the evolution of the energy transition can change the demand for different products [11–14].

METHODS

The strategy of steady growth of steel companies due to economic transformation needs to change, and these changes need to be seen as key elements of the industry specific [15–19]:

1. Labour protection and industrial safety: reducing the level of harm to the environment (green technologies), reduce (eliminate) employee injuries.

2. Customer focus: increasing customer loyalty, maintaining supply discipline.

3. Leadership of efficiency: improving the end product rather than scale, increasing income per ton of output to increase value added.

4. Balanced approach: efficient investment management.

5. Sustainable development: reduced environmental impact, reduced electricity consumption, responsible use of natural resources, maintenance of a positive social climate in the regions of presence and regular support of city infrastructure, educational, cultural and sports institutions [20–24].

Consider the elements of the growth strategy and the methods currently used in metallurgical enterprises, which are major players in the market and provide growth of the industry as a whole.

MMP focused on expanding the range of products, investing in the modernization of production lines and launching new ones.[4]

The main directions of development of PJSC "Severstal" — are modernization of production and expansion of product line.[5]

PJSC "Mechel" develops new profiles on railroad mill, and also continues to implement a strategy to increase the share of higher margin products in the metallurgical division: in particular, the company is interested in the modernization of stainless-steel production, which in the future may give a significant increase in the revenue of the metallurgical division.[6]

EurAz objective — strengthen leadership in key market segments by developing the investment portfolio and modernizing production .[7]

Novolipetsk Metallurgical Combine (PJSC "NLMK") proved to be a high-performance and profitable enterprise in 2020, compared to the previous five years. Its growth strategy is aimed at improving the efficiency of its functioning, it has a modular structure, includes a number of projects aimed at improving the operational efficiency of the company and existing business processes, self-sufficiency in critical resources, as well as achieving leadership in key markets.

Key elements of the strategy:

1. Increasing efficiency through the development of the production system.

2. Creating a world-class resource base. Increased self-sufficiency in key commodities and reduced consumption of expensive resources.

3. Leadership in strategic markets. Increase sales share and presence in attractive segments.

[4] Company website PJSC "NLMK". URL: https://nlmk.com/ru/ (accessed on 07.03.2022).

[5] Company website PJSC "Severstal". URL: https://www.severstal.com/rus /about/ (accessed on 07.03.2022).

[6] Company website PJSC "Mechel". URL: https://www.mechel.ru/ (accessed on 07.03.2022).

[7] Company website PJSC "EurAz". URL: https://www.evraz.com/ru/company/ (accessed on 07.03.2022).

4. Primacy in the field of sustainable development and security. Continuous minimization of environmental impact; improvement of industrial safety system; leading in industry productivity.

Result implementation of development plans PJSC "NLMK" — this is an additional economic impact of about 160 mln dollars in 2018 due to recently completed investment projects.

As the analysis shows, all major Russian manufacturers are aimed at expanding the range of products, developing the investment portfolio and modernizing production. The elements proposed above will complement the enterprise strategy and turn it into an incremental and more effective tool.

RESULTS

Domestic steel companies need to move from a recovery strategy to a sustained growth strategy to increase operational efficiency of production and move towards the best technological practices, global steel cost leadership, allowing them to increase their share of sales in the highly competitive Asian markets.

Correcting development plans to new realities and complex geopolitical environment, domestic enterprises need to rely on the formation of a sales portfolio of world-class, which will allow to increase the production and sale of high value-added products (HVA). Sustainable development leadership will minimize environmental impact and increase production safety.

Consider the elements of a sustained growth strategy and the expected impact of their implementation.

1. According to the main indicators of enterprise activity it is assumed:

- cost reduction from savings in resources consumed;
- gross and net profit growth;
- increase in paid dividends (estimated dividend yield of 6%);
- increase in the cost of fixed assets, which will affect the growth of business value (projected growth of 20–22%).

2. Strengthening the position in priority markets:

- meeting current and future customer needs through development of support systems, identification of individual needs, feedback;
- strengthening positions in the most profitable geographical, industry markets;
- increasing sales margins by mastering innovative products;
- increase in the share of metal products in the structure of sales to the domestic market and near-abroad countries;
- introduction of digital tools to improve the quality of rolled metal products;
- fast introduction of best practices and best available technologies by a low-cost manufacturer;
- functional development improvement.

3. By capitalization and increase in value of the company's assets:

- financial recovery of the company, reduction of debt burden;
- development of "corporate governance practices" on the scale of the National Corporate Governance Rating (NCGR).[8]

4. To safe production:

- ensuring healthy and safe working conditions, industrial safety;
- intolerance on infringements of safety requirements at all levels.

5. Staff development:

- 100% involvement in the production process;

[8] National Corporate Governance Rating (NCGR) — corporate governance quality indicator, which allows to compare the level of development of corporate governance and related risks in different companies. Since 2004 it has been assigned to companies by the Russian Institute of Directors — the exclusive right holder of the NCGR.

- personal responsibility of managers;
- competency development;
- increasing motivation to achieve goals through professional development, job satisfaction;
- high productivity;
- provision of social guarantees;
- health promotion.

Business Transformation, aimed at leading the steel industry of the future, incorporates all elements of a strategy for sustained growth and covers all areas. The elements of the strategy proposed above will provide a platform for new business models and a tool for effective management decision-making [25–28].

CONCLUSION

Strategic positioning and expansion of the ore base are priorities for most companies (besides PJSC "MMP"). However, there are also specific indicators. In addition, the development plans of each enterprise should include specific benchmarks related to the type and segment of activity and target markets.

Sanctions restrictions will cause significant harm to domestic metallurgists.[9] Russia as world leader of ferrous metal exports (total exports amounted to 43.9% of production in 2020). So, PJSC "Severstal" exported more than 45% of production,[10] PJSC "NLMK" — 59%, including in the EU-17%, the USA — 15%. In the best situation is PJSC "MMP" which focused on Russian (81% of sales) and Asian markets. Its exports to the EU and the Americas account for several per cent.

The imposition of sanctions will require greater concentration on the domestic steel market, as well as State support aimed at its development, and any projects to reduce the negative impact on the environment by:

- providing of tax benefits in accordance with the procedure established by the legislation of the Russian Federation on taxes and fees;
- providing incentives for payments for adverse environmental impacts in due course;[11]
- allocation of funds from the federal budget and the budgets of the constituent entities of the Russian Federation in accordance with the budgetary legislation of the Russian Federation.

The practical significance of the work is that analysis of the main challenges will allow metallurgical industry enterprises to assess the situation in a timely and comprehensive manner and make rational and effective management decisions to build a strategy for the company's progressive growth, increasing competitiveness, adaptability to environmental factors and economic potential.

[9] Refusal of the EU and USA products of metallurgical companies. What are the risks and what are the consequences? Finpotok. 2022. URL: https://smart-lab.ru/blog/780742.php (accessed on 14.03.2022).

[10] Share of export of "Severstal" in the second quarter of 2020 exceeded the historical maximum. Prime. 2020. URL: https://finance.rambler.ru/realty/44360974/?utm_content=finance_media&utm_medium=read_more&utm_source=copylink (accessed on 14.03.2022).

[11] Federal Act of 10 January 2002 No. 7 (ed. of 26 March 2022) "Environmental protection". URL: http://www.consultant.ru/document/cons_doc_LAW_34823/

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ORIGINAL PAPER

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Stochastic Analysis of Dynamics the Strategic Compliance of Company Aeroflot

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ABSTRACT

The use of traditional SWOT-analysis in a dynamic and uncertain external environment does not allow to reasonably form the company's strategy based on assessments of the state of strengths, weaknesses, opportunities and threats. The reason is that the static assessments of the current state of internal and external factors, obtained from experts, are used to develop a long-term strategy, the implementation of which requires the implementation of organizational changes. The article proposes a new approach to strategic analysis, which consists in evaluating the dynamics of the strategic compliance of factors, taking into account the dispersion of expert opinions (SSMD-analysis). The basis of the algorithm for calculating the final evaluations is the method for determining the optimal intensity of strategic changes. Using the SSMD-analysis methodology based on public data for 2015–2020, an examination of the strategic compliance of factors of the external and internal environment of Aeroflot as of 2020 was conducted. It is concluded that the most relevant direction of the company's development in 2020 was the accelerated replacement of leased aircraft with its own aircraft. The proposed method makes it possible to assess the dynamic portrait of the company's interaction with its external environment in conditions of information uncertainty.

Keywords: SWOT-analysis; Aeroflot; SSMD-analysis; dynamics; stochastic; strategic matching; strategy

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INTRODUCTION

Strategic planning and SWOT-analysis have common roots in Harvard Business School research since the 1960s. Today, companies actively use classic SWOT-analysis as a strategic planning tool, but it often boils down to a simple listing of strengths and weaknesses, opportunities and threats [1]. At the same time, many organizations cannot correctly prioritize, because they compile too long lists of SWOT factors, giving insufficient content and relevant descriptions. Therefore, they have not been able to fully apply the analysis to the next stages of strategic management [2]. In addition, a number of companies are unclear about their strengths, weaknesses, opportunities and threats [3].

Despite these weaknesses and limitations, the methodology has been widely adopted because of its simplicity: it continues to penetrate the scientific literature and remains a tool for strategic analysis [4]. However, further research leading to new methods of SWOT analysis is well justified [5].

SCIENTIFIC DEVELOPMENT OF THESE ISSUES

To overcome the shortcomings of the classic SWOT-analysis to date, a variety of approaches and models are proposed. Hybrid method integrated with hierarchy analysis allows analytically determine priorities for SWOT-factors, making them commensurable. The method encourages the decision maker to reflect on the significance of the factors and to analyse the situation more clearly [6]. The method of "double perspective" SWOT-analysis can be used to integrate marketing and analytical views and eliminate logical inconsistencies encountered by specialists [7]. In the planning and strategy development phases, the method of identifying opportunities and threats developed within the framework of the cognitive approach to social and economic systems analysis shows acceptable results [8]. A quantitative model of analysis based on unclear mathematics enables the results of SWOT-analysis to be transformed into a strategic plan using heuristic rule of selection of the most influential factors [9].

Voting and multi-criteria decision support methods can be used to identify and systematically assess SWOT-factors' priorities [1]. Consistency between internal and external factors, as well as the decision-maker's goals, can be achieved through integrated SWOT analysis based on a model of multi-criteria decision analysis (MCDA) [10]. An integrated approach is also used to define the quantitative and qualitative elements of the strategic analysis by weighing and ranking them with comparison matrices [11]. The disadvantage of SWOT-analysis is that opportunities and threats are seen as factors, having the same impact on all economic agents, can be overcome by applying their correlation interpretation, which involves considering the strategic ability of a company to exploit its strengths and weaknesses [12]. Imperfection of SWOT-analysis, due to its subjective and non-qualitative nature, allows to partially eliminate the alternative instrument — Meta-SWOT, based on a resource-oriented view of the company, whose main idea is — the need to achieve strategic alignment in the strategic process [13].

As the analysis of the literature shows, the main drawback of classical SWOT-analysis is the difficulty of identifying and correctly comparing external (opportunities and threats) and internal (strengths and weaknesses) factors given their uncertainty and dynamics. As early as 1982, H. Weirich proposed to use the TOWS-matrix to compare opportunities and threats with strengths and weaknesses — strategy development tool through pairwise comparison. In his opinion, the most rational strategy is that which ensures the best harmony between the capabilities of the environment and the company's strengths. A priori, it is assumed that internal and external factors

can be identified objectively and for a reason [14]. These circumstances play a key role in the modern concept of SWOT-analysis. From the 1960s to the late 1980s, the external environment (market, industry, political, etc. factors) was consistent with these assumptions, but nowadays it is volatile and uncertain.

The study [15] presents the results of an extensive literature review on SWOT-analysis: the authors think that it will receive increasing attention in the future, given that its main shortcomings have been overcome.

What are the main causes of SWOT-analysis errors in modern conditions? Its application implies that experts or decision makers are prepared to give some estimates of the values of each of the internal and external factors. Moreover, experts are forced to think statically, assessing the current state of the company and its external environment. And on the basis of these assessments, it is necessary to develop a company strategy for several years. However, the current external environment, as well as the internal factors of the organizations, are very dynamic and uncertain, so it is not surprising that such strategies are not being implemented in the current economic environment.

METHODOLOGY

Basic terms and definitions

Based on the results of the literature on this topic, there is reason to believe that the traditional SWOT-analysis should be replaced by a stochastic analysis of strategic matching dynamics (Stochastic Analysis of Strategic Matching Dynamics — SSMD-analysis).

The term "strategic matching" means here that some internal strategic factor of the company X_i best match to some of its external environment Y_j to achieve a strong strategic position and maximize economic impact C_{ij} for company:

$$C_{ij} = F(X_i, Y_j). \quad (1)$$

For example, the combination of the digital transformation of the economy (externality) and the company's high digital maturity (internal factor) points to a strategic correspondence that is, however, not static but dynamic. Studying modern companies, can observe as positive dynamics — increasing strategic matching ($+dC_i / dt$), as well as negative — growing mismatch ($-dC_i / dt$) factors. Moreover, such match(mismatch) may have high or low growth rates.

High evidence that the company has a strong strategic position and significant potential when using these factors — for example, if the growth rate of its digital maturity matches or exceeds the growth rate of the digital transformation of the industry. The low growth rate of strategic compliance indicates that the company has an acceptable position and potential for strategic development when using these factors: for example, the rate of growth of its digital maturity is lower than the rate of growth of the digital transformation in the industry.

The low growth rate of the strategic mismatch indicates that the company has a weak strategic position and low development potential when using these factors. For example, the company's digital maturity has reached a certain level and is not increasing further, while the growth rate of digital transformation in the industry is very high. High growth rate of strategic mismatch indicates that the company has a critically weak strategic position and no development potential when using these factors. For example, the company loses its digital competencies, dismisses IT-professionals and sells equipment, while the growth rate of digital transformation in the industry is very high (see *figure*).

According to this approach, using the terminology of SWOT-analysis, the same internal factor can be defined as "strong" and as "weak" side of the company. Therefore, there is no need to pre-divide internal factors into strengths and weaknesses, but it is still

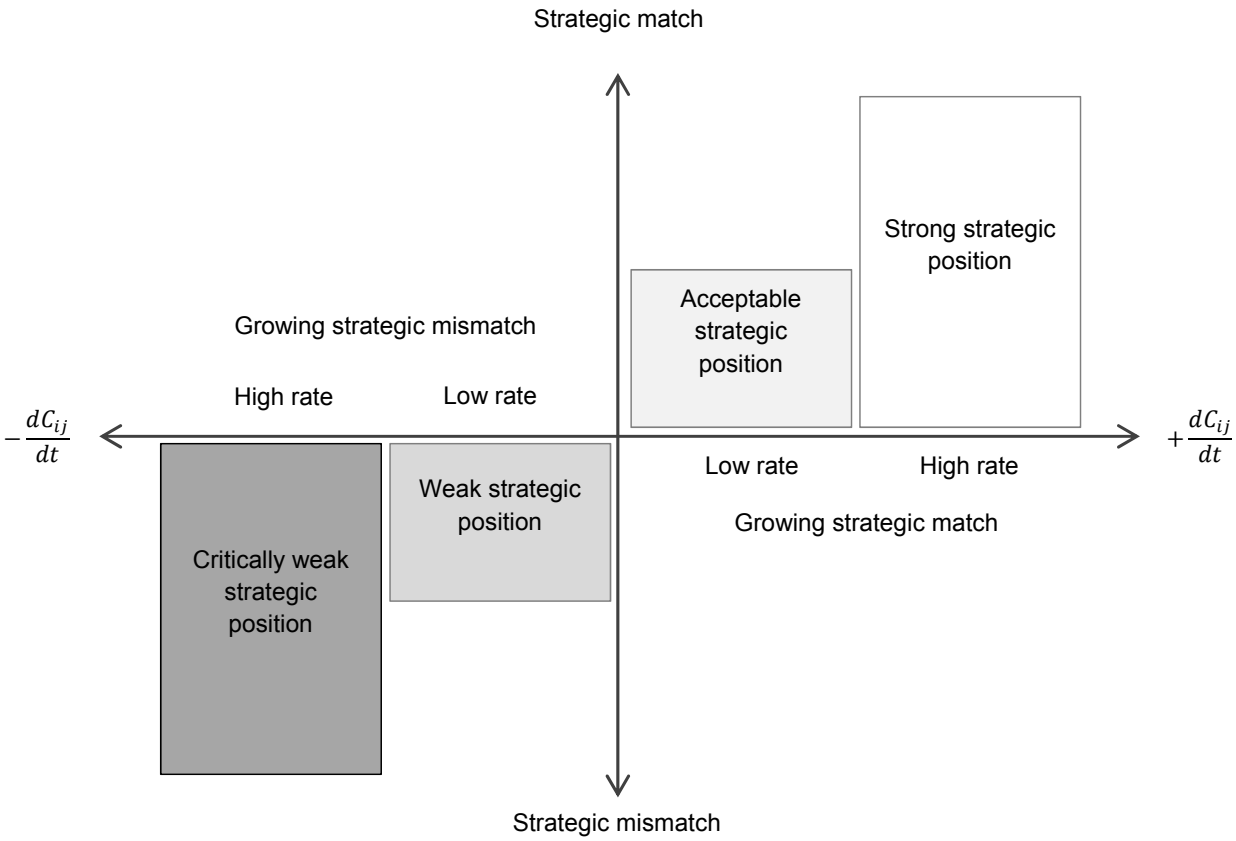

Fig. **Graphical interpretation of strategic positions depending on dynamics of strategic consistency or inconsistency**

Source: developed by the author.

important to pre-classify external factors into opportunities and threats.

The term "stochastic" in the name of the method indicates that experts generally cannot accurately determine the state of internal and external strategic factors. It is even more difficult to identify their strategic match, so estimates can only be probabilistic. Thus, it is relevant for experts to determine the direction and speed of strategic compliance, while it is important for analysts to take into account the variance of expert assessments as a measure of the stochasticity of conclusions.

SSMD-ANALYSIS ALGORITHM

The ultimate goal of the strategic analysis is to develop a company strategy, the further implementation of which requires organizational changes. Based on these theses, the algorithm SSMD-analysis is based on the method of management of organizational changes. The optimum intensity of their implementation is determined by the equation [16]:

$$A = \sqrt{2E / \sigma}, \quad (2)$$

where:

$$E = \frac{1}{n}\sum_{i=1}^{n} e_i, \quad (3)$$

E — Average expert assessment of the rate of growth of strategic match or несоответствие between internal and external factors: this variable is a model of the dynamics of strategic

Table 1

An expert assessment scale

–2	–1	0	1	2
High level of inconsistency	Low level of inconsistency	Consistency	Low matching	High matching

Source: developed by the author.

match; n — number of experts; e_i — individual expert assessment;

$$\sigma = \sqrt{\frac{\sum_{i=1}^{n}(r_i - E)^2}{n-1}}, \quad (4)$$

σ — standard deviation of expert estimates: this variable reflects the stochastic nature of the model.

Implementation of organizational changes with optimum intensity (2) provides as a result a minimum of both mathematical expectation and variance of deviations of the company's performance indicators from the target values [17].

Experts can make their individual assessments using the scale (*table 1*).

Supposing, that I1 — is an internal factor of "production technology", and O1 — opportunity for a "growing market". Let the first expert assess match e1(I1; O1) = 2, which means "the economic efficiency of the new production technology is rapidly increasing under the conditions of high demand for the produced products in the growing market". In other words, there is a high rate of match growth. But at the same time, another expert may give a different assessment e2(I1; O1) = –1, i.e. "the economic efficiency of the new production technology is slowly decreasing in the context of high demand for the products, as it cannot provide the required rate of diversification of the range". In this case, the average estimate of the experts will be calculated as E = [2 + (–1)]/2 = 0.5, and standard deviation of expert estimates would be equal to σ = 2.12. According to formula (2), the growth rate of the match between I_1 and O_1 would be equal to A = 0.69.

Variable A — is the relevance of the strategy. By calculating its value for all pairs of factors, the decision maker will be able to choose strategic alternatives according to their relevance.

To accommodate the specificity of the expert group and to avoid zero denominator in formula (2) a variable is used e_{im} as "virtual (n + 1) expert", where n — number of real experts. In case of σ = 0 "virtual expert" generates evaluation

$$e_{im} = e_1 - g, \quad (5)$$

where e_1 — evaluation of the 1st expert; g — empirical index of expert group qualification:

g = 0.3, if all experts have high competence in the company, industry and market issues (the expert group is a "precise tool");

g = 0.6, if some experts have a high competence in the company, industry and market, or all experts have a satisfactory competence in these issues (the expert group is a "inaccurate tool").

Thus if σ = 0, then the standard deviation applies σ_{n+1} estimate n + 1 of expert, including the "Virtual Expert" which made the assessment e_{im}.

A coefficient λ is used to normalize the comparative value A:

$$\lambda = \sqrt{2e_{\max} / \sigma_{\min}}, \quad (6)$$

where $e_{\max}$ — maximum value in the rating scale (in the case of the *table 1*, $e_{\max}$ = 2); $\sigma_{\min}$ — standard deviation n + 1 of expert evaluation,

Table 2

Scales of average values of internal and external factors and potential strategic positions

Scale (%)	–100...–50	–49...–1	0...49	50...100
Internal factors (*I*)	Critical weakness	Weakness	Forces	Significant forces
Opportunities (*O*)	Lack of opportunities	Hard-to-implement	Implemented	Confidently implemented
Threat (*T*)	Insurmountable	Hardships	Surmountable	Insignificant
Rate of growth of strategic compliance (inconsistencies)	High growth rate of strategic inconsistencies	Low growth rate of strategic inconsistencies	Low growth rate of strategic conformity	High growth rate of strategic conformity
Strategic position	Critically weak	Weak	Acceptable	Powerful

Source: developed by the author.

provided that all of the n real experts have chosen the maximum absolute value of the rating scale, and the "virtual expert" has formed an e_{im} rating in accordance with (5).

At first sight, it is quite difficult to calculate the coefficient λ before each analysis cycle, but this operation can only be performed once. Suppose that the expert group consists of four experts. The coefficient will be calculated as λ = 5.46, if the expert group is an "precise tool", and λ = 3.86 — if "inaccurate", and one of these values can be used throughout the analysis period with a standing group of experts.

Thus, normalized rate of match growth (A_N) will be calculated in %:

$$A_N = \frac{1}{\lambda}\sqrt{2E/\sigma} \times 100\ \%. \qquad (7)$$

The proposed method takes into account the dynamics and uncertainty of the combination of internal and external factors. Variable A_N takes maximum value when experts agree on the rate of matching growth. This value shows that this match can be the basis for a real company strategy. In the *table 2* presents scales of average values of intensity of internal factors, opportunities and threats, as well as rate of growth of strategic correspondence, which can be used to interpret the results.

Thus, the categories of internal and external factors are not assigned in advance, but formed through analysis. It should be borne in mind, however, that the average intensity of a factor is not exhaustive.

SSMD-ANALYSIS OF AEROFLOT COMPANY

This section describes the procedure and the main results of SSMD-analysis of the strategic position of PJSC "Aeroflot" (further — Aeroflot). This case deliberately did not address aspects related to the COVID-19 pandemic and current (at the time of writing) factors that contributed to the decline in global political stability. The conclusions of the analysis were formulated on the basis of the study of the economic condition and dynamics of the company, described in the annual reports, financial statements and other open sources for the period 2015–2020.

Aeroflot is a national carrier and the largest airline in Russia and is among the top 20 world air holding companies. Founded in 1923, it is one of the oldest airlines in the world. Thanks to the extensive SkyTeam alliance network (Aeroflot became a full member of this second largest aviation alliance in the world in April 2006), the company serves 1036 destinations in 170 countries worldwide. Aeroflot is recognized as the strongest brand of Russia, and

Table 3

Argumentation option for strategic compliance assessments "Internal factors / Opportunities" for Aeroflot

	O_1 — Russia — one of the world's largest aviation markets, which continues to grow and develop	**O_2 — optimization processes continued in the global aviation industry: many carriers went out of business**	**O_3 — global passenger turnover is increasing, although slower rate**	**O_4 — digitalizing the interface between passengers and airlines promotes social mobility**
I_1 — Aeroflot market share	↑ Higher: Aeroflot is the market leader in Russia (41.3%), and its market share is growing faster than the Russian air transport market as a whole	↑ Lower: Aeroflot's share of the world market grows slowly	↑ Lower: Aeroflot's share of the world market grows slowly	↑ Lower: Aeroflot's share of the world market grows slowly
I_2 — Aeroflot market segments	↑ Higher: Aeroflot is actively developing key market segments: from premium to low-budget air transportation	↑ Higher: Aeroflot is actively developing key market segments: from premium to low-budget air transportation	↑ Higher: Aeroflot is actively developing key market segments: from premium to low-budget air transportation	Consistency: Aeroflot is developing key market segments: from premium to low-budget air transportation
I_3 — Aeroflot staff skills and match with international environmental standards	↑ Lower: Aeroflot staff skills grow more slowly than required by the growing market	Consistency: Professional skills of employees correspond to requirements of international standards and Federal Aviation Regulations	↑ Higher: Employees' professional skills are upgraded in accordance with the latest international standards and Federal Aviation Regulations	↑ Higher: Employees' professional skills are upgraded in accordance with the latest international standards and Federal Aviation Regulations
I_4 — Aeroflot fleet	↑ Lower: Aeroflot has one of the most modern air fleets in Europe, but the share of leased aircraft in the total fleet of the company is not decreasing	↑ Lower: Aeroflot has one of the most modern air fleets in Europe, but the share of leased aircraft in the total fleet of the company is not decreasing	↑ Higher: Aeroflot has one of the most modern air fleets in Europe	Consistency: Aeroflot possesses of the most modern air fleets in Europe
I_5 — availability of budget segments of Aeroflot Group	↑ Higher: low-cost airlines Aeroflot take advantage of untapped market potential	↑ Higher: low-cost airlines Aeroflot take advantage of untapped market potential	↑ Higher: low-cost airlines Aeroflot take advantage of untapped market potential	↑ Lower: low-cost airlines Aeroflot take advantage of untapped market potential
I_6 — Aeroflot digital transformation	↑ Higher: Aeroflot continues digital transformation in accordance with the adopted IT-strategy	↓ Lower: Aeroflot's digital transformation is slower than international competitors'	Consistency: Aeroflot continues digital transformation in accordance with the adopted IT-strategy	↓ Lower: Aeroflot's digital transformation is slower than international competitors'
I_7 — complexity of organizational structure and management	↓ Lower: organizational structure and management optimization is slow	↓ Lower: organizational structure and management optimization is slow	Consistency: organizational structure and management is carried out	↓ Higher: organizational structure and management optimization is slow

Source: developed by the author.

Note: the up arrow indicates a strategic matching increasing, the down arrow indicates its decreasing.

Table 4

Matrix of normalized estimates of the rate of change in strategic matching IO

	O_1, %	O_2, %	O_3, %	O_4, %	Average value *I*, %
I_1	48	0	0	13	15
I_2	100	48	48	–18	45
I_3	71	0	48	42	40
I_4	0	–24	–16	–32	–18
I_5	48	48	48	71	54
I_6	30	–32	–18	–41	–15
I_7	–11	–13	23	–32	–8
Average value *O*	41	4	19	0	

Source: developed by the author.

according to the world's leading independent consulting company on evaluation and strategy of development of the brand business Brand Finance — the strongest brand of the airline in the world. In 1994 the company was registered as a public joint-stock company (since 2015 it is a public joint-stock company). The Russian Federation owns 57.3% of its shares, 40.7% are in free circulation with institutional and retail investors. Aeroflot shares are traded on the Moscow Stock Exchange and on the international market.

The company's fleet, which is one of the youngest in the world, consists of 230 aircraft, which are modern liners of the family Airbus A320, A330, A350, Boeing 737, Boeing 777 foreign production and domestic Superjet 100 new generation. As part of the business strategy until 2028, Aeroflot set itself the goal of transporting 130 million passengers per year through the development of a multi-brand structure and to reduce the average tariffs for economic class passengers in Russia by 30%. Its strategic goal is to strengthen leadership in the world aviation industry by taking advantage of opportunities in the Russian and international air transport markets.[1]

[1] Official website of the company "Aeroflot". URL: https://www.aeroflot.ru/ru-ru/about (accessed on 22–25.11.2021 and 6–10.12.2021).

To conduct SSMD-analysis of the strategic position of the company, four experts were invited, possessing information and personal opinion on the dynamics of internal and external factors of the aviation enterprise. The expertise was conducted on the basis of open sources of information on 22–25 November and 6–10 December 2021.

The version of brief reasoning of one of the experts when he determines the direction and pace of change of strategic correspondence in pairs "Internal factors/ Possibilities" (*I*; *O*) is shown in *table 3*

Table 4 is a matrix of normalized estimates of the rate of change of strategic correspondence between internal factors (*I*) and capabilities (*O*), based on the results of processing the individual assessments of four experts according to the algorithm SSMD-analysis.

Average values of assessments of all possibilities meet the criterion of "realizable", but opportunities O_2 — "optimization processes continued in the global aviation industry: many carriers went out of business" and O_4 — "global passenger turnover is growing, although at a slower rate" close to "hard to realize" for companies (see *table 2*).

Average estimates of internal factors I_1, I_2 and I_3 correspond to the criterion of "strength",

Table 5

Argumentation option for strategic compliance assessments "Internal factors / Threats" for Aeroflot

	T_1 — geopolitical events, risks of losses from conflicts, terrorist attacks or other threats	**T_2 — price volatility of aviation fuel and foreign exchange rates, including because of potential sanctions risks**	**T_3 — restrictions on social mobility and ability to pay**	**T_4 — requirement of ICAO* for carbon offset and reduction for international aviation**
I_1 — Aeroflot market share	↓ Lower: the presence of Aeroflot covers a large number of countries, which increases the risks	↓ Lower: the presence of Aeroflot covers a large number of countries, which increases the risks	↑ Lower: the presence of Aeroflot covers a large number of countries, which increases the risks	↑ Lower: Aeroflot is present in a large number of countries, so the company is committed to the ICAO scheme to compensate and reduce carbon emissions for international aviation
I_2 — Aeroflot market segments	Постоянство: Aeroflot actively develops key market segments, which increases risks	↓ Lower: Aeroflot actively develops key market segments, which increases risks	↑ Higher: Aeroflot is actively developing key market segments	Consistency: Aeroflot is actively developing key market segments
I_3 — Aeroflot staff skills and match with international environmental standards	↑ Lower: Employee skills that appropriate to the requirements of the latest international standards and Federal Aviation Regulations	Consistency: Employee skills that appropriate to the requirements of the latest international standards and Federal Aviation Regulations	↑ Lower: Employee skills that appropriate to the requirements of the latest international standards and Federal Aviation Regulations	↑ Lower: Aeroflot has pledged to comply with the ICAO scheme to compensate and reduce carbon emissions for international aviation, but this task is being carried out slowly
I_4 — Aeroflot fleet	↑ Lower: Aeroflot has one of the most modern air fleets in Europe	↓ Lower: No decrease in the share of leased aircraft in the company's total fleet	↑ Lower: Aeroflot has one of the most modern air fleets in Europe	↑ Higher: Aeroflot has one of the most modern air fleets in Europe
I_5 — Availability of budget segments of the Aeroflot Group	↓ Lower: Aeroflot's budget segments' efficiency may decline in face of these threats	↑ Lower: Efficient use of budget segments allows Aeroflot to counter these threats	↑ Higher: Effective use of budget segments allows the Aeroflot Group to counter these threats	Consistency: Effective use of budget segments allows the Aeroflot Group to counter these threats
I_6 — Aeroflot digital transformation	↓ Lower: Aeroflot's digital transformation is slower than international competitors'	↓ Lower: Aeroflot's digital transformation is slower than international competitors'	Consistency: digital transformation of Aeroflot generally corresponds to the current state of the threat	↑ Lower: Aeroflot Group continues its digital transformation in accordance with the adopted IT-strategy
I_7 — Complexity of organizational structure and management	↓ Lower: Organizational structure and management optimization moves at a slower than required to address threats	↓ Higher: Organizational structure and management optimization moves at a slower than required to address threats	Consistency: Organizational structure and management practices are broadly consistent with the current state of the threat	↑ Lower: Optimization of organizational structure and management practices in line with international environmental standards

Source: developed by the author.

Note: the up arrow indicates a strategic matching increasing, the down arrow indicates its decreasing.

* ICAO – International Civil Aviation Organization – UN specialized agency setting international civil aviation standards and coordinating its development with a view to improving safety and effectiveness

Table 6

Matrix of normalized estimates of the rate of change in strategic matching IT

	T_1, %	T_2, %	T_3, %	T_4, %	Average value *I*, %
I_1	–32	–13	71	32	14
I_2	0	–32	48	18	9
I_3	41	18	48	48	39
I_4	–71	–41	–13	71	–14
I_5	–71	71	48	18	17
I_6	–32	–13	18	32	1
I_7	–32	–29	18	32	–3
Average value *T*	–28	–6	34	36	

Source: developed by the author.

factor I_5 — "significant strength", factors I_4, I_6 и I_7 — "weakness".

Obviously, the correspondence (I_2; O_1) with the assessment A_N = 100% provides a strong position for Aeroflot and can be considered as the basis of the company's development strategy: "Active development of key market segments (from premium to low-budget air transportation), as Russia is one of the world's largest aviation markets, which continues to grow and develop".

Strategic match (I_3; O_1) — "training of employees in accordance with the requirements of the market" and (I_5; O_4) — "low-cost airlines of the Group "Aeroflot" can use unused market potential due to digitalization of the interface between passengers and airlines" with estimates A_N = 71% also indicate the strong strategic position of Aeroflot and can be adopted as the basis of development strategy.

Low growth rate of strategic mismatch (I_4; O_2), (I_4; O_4), (I_7; O_4) etc. indicate the weak position of the company in these pairs of factors [in pairs (I_4; O_2) and (I_4; O_4) this is due to the slow reduction in the dependence of the Aeroflot fleet on leasing of foreign aircraft]. These strategic inconsistencies as early as 2019–2020 years could be considered as the basis of the strategy of immediate internal transformations of the airline.

Table 5 is a version of a brief argument by one of the experts in determining the direction and rate of change of the strategic match in pairs "Internal factors / Threats" (*I*/*T*).

Table 6 is a matrix of normalized estimates of the rate of change of strategic correspondence between internal factors (*I*) and threats (*T*), based on the results of processing individual assessments of four experts according to the algorithm SSMD-analysis.

Average of threat assessments T_1 — "geopolitical events, risks of losses from conflicts, terrorist attacks or other threats" and T_2 — "volatility of aviation fuel and foreign exchange rates, including because of potential sanctions risks", correspond to the criterion of "formidable" (see *table 2*). The other threats are, on average, classified by experts as "surmountable".

Average estimates of internal factors I_4 — "Aeroflot fleet" and I_7 — "complexity of organizational structure and management system" experts attributed to "weaknesses", the rest — to "forces" of the company.

The most notable strategic mismatches (–71%) were pairs of factors (I_4; T_1) — "Aeroflot has one of the most modern air fleets in Europe,

but its growth rate is low in the context of geopolitical events, risks of losses from conflicts, terrorist attacks or other threats" and (I_5; T_1) — "efficiency of use of budget segments of Aeroflot may decrease in the face of geopolitical events, risks of losses from conflicts, terrorist attacks or other threats", which point to critical weaknesses and can form the basis of an internal change strategy.

The most visible match (71%) that determines the company's strong strategic position is a couple of factors (I_4; T_1) — "Aeroflot has one of the most modern aircraft fleets in Europe, which allows it to rapidly increase matching with the ICAO requirements for compensation and reduction of carbon emissions for international aviation".

CONCLUSION

Dynamic analysis of the strategic position (SSMD-analysis) of Aeroflot Company, conducted with the help of experts in 2021, allowed to make a conclusion, that the most relevant directions of the company's strategic development in the beginning of 2020 were active development of key market segments and accelerated replacement of aircraft under leasing on their own.

Other potential areas include: improving the skills of employees in accordance with market requirements; digitalizing the interface between passengers and airlines; reducing the complexity of the organizational structure and management system of the company.

The proposed method of analysis allows assessment of dynamic characteristics of interaction of key internal and external factors of the company and to make proactive conclusions about the promising strategic directions of the company's development, its competitive advantages and necessary changes in internal factors. An important feature of it is that the totals of normalized speeds of interaction of internal and external factors are not only estimates of dynamics, but also estimates of the degree of current information uncertainty. The proposed method makes it possible to create a dynamic portrait of the company's interaction with the external environment, and the values of standard deviation of expert assessments are indicators of relevance and prospects of the generated strategic decisions. SSMD-analysis presents increased demands on the knowledge and competence of experts, but there is reason to believe that modern economic conditions require dynamic assessments.

Subsequent researches of this method can be directed at studying the possibility of its application in various sectors of the economy and types of business. In addition, the development of guidelines for participating experts in strategic analysis is an important part of its development.

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Anti-Crisis Measures to Reduce the Consequences of the Impact of Sanctions on the Tourism Industry of Russia

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ABSTRACT

In the conditions of existing threats – the lack of full-fledged travel mobility, the growth of air fares due to the complication of flight logistics and the duration of air travel, currency risks – the opportunities for the development of outbound and inbound tourism are limited. It is necessary to reorient the tourism business to the development and support of domestic tourism with the fragmented development of the incoming flow from neutral and friendly countries. To promote the development of various types of domestic tourism in demand by Russian citizens. To develop and implement a number of management solutions for leveling the emerging threats to the tourism sector. The object of the article is management decisions in the field of tourism in the context of international sanctions. The purpose of the article is to analyze possible measures to stabilize it in the face of sanctions by the international community. The tasks are to study the state of the tourism industry and hospitality; identification of risks posed to the industry by the imposition of sanctions; determination of the main types of instruments that mitigate external threats and consideration of the possibility of applying the proposed anti-crisis measures. In the article used common methods of research, such as observation, systematization and synthesis of collected theoretical and practical material.

Keywords: tourism; international sanctions; inbound and outbound tourism; domestic tourism; instruments of influence; sustainable development

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INTRODUCTION

The global tourism and hospitality industry is going through difficult times today. Anti-covid restrictions have affected this area in all countries. According to the World Tourism Organization (UNWTO), the number of international trips in 2021 compared to 2019 decreased by 72%, and the industry revenue was only 54% of 2019 level.[1] While the tourism industry has not recovered from the effects of the pandemic, international sanctions are being applied to it, which endanger its sustainable development and, in particular, — its international dimension. Thus, it becomes obvious that it is expedient to find managerial solutions aimed at leveling these threats.

Analysis of data of Rosstat for each type of paid services in the field of tourism in Russia for the period of restriction of tourist flows shows a significant decline in indicators in 2019–2020 (*table 1*).

Turnover of the Russian tourism industry in 2021 amounted to 2.5 trillion rubles, or 70% of the level of 2019 [1]. Anti-covid measures significantly reduced the flow of inbound tourism to Russia: from January to September 2021, foreigners made 175.8 thous.visits, although in the same period of 2019, this number reached 4.3 million.

These and subsequent data confirm that the tourism industry of the Russian Federation for the last three years is experiencing difficult times [2, 3] — annual performance indicators of industry organizations, given in *table 1*, can be observed to be negative.

Based on the data of the *table 2*, in the period of 2017–2020 there was a reduction of workers employed in the field of tourism: Their average and average number decreased by 45 038 people respectively (or 3.8%) and for 33 827 people (or 3.0%). The industry has been negatively affected by the restriction of tourist flows, which was reflected in the fact that until 2019, there was an increase in the main indicators of its activity, and in 2020, there was a sharp decline: turnover decreased by 1 096.8 billion rub. (or 36.1%), investments in fixed assets decreased by 16.1 billion rub. (or 4.5%), total cost of fixed assets decreased by 1464.9 billion rub. (or 29.6%), and residual — for 1072.5 billion rub. (or 34.4%), introduction of new fixed assets decreased by 138.7 billion rub. (or 32.6%). Depreciation of fixed assets increased from 35.5% to 41.1% in 2017–2020 (per 5.6 p.p.), average salary of workers in the tourism industry decreased by 1200 rub. (or 2.2%) (see *figure*).

This was the state of the Russian tourism industry after the pandemic. Much was done for its sustainable development and return to its previous level, to restore the flow of travelers. This is what the national project "Tourism and hospitality industry" was aimed at,[2] which set a course for the development of domestic tourism and clearly defined support measures. Today's external sanctions have spurred and accelerated this strategic objective. Strict measures by the international community endanger the sustainable development of the Russian tourism sector and especially its international component. In this context, it is advisable to reorient to the development and support of domestic tourism.

Restriction of Rosaviation' flights over the territory of the Russian Federation to airlines from 36 countries of the world in response to the ban on air travel over the EU countries, Canada, etc. reduces opportunities in the field of outbound and inbound tourism. There is an increase in air fares due to the complexity of logistics of flights and their duration — the remaining foreign airline in our market and

[1] Website of the Association of Tour Operators of Russia (ATOR). URL: https://www.atorus.ru/News/Press-Centre/new/58410.html

[2] National project "Tourism and hospitality industry". URL: https://tourism.gov.ru/contents/documenty/plan-deyatelnosti/natsionalnyy-proekt-turizm-i-industriya-gostepriimstva

Table 1

The volume of paid services in the field of tourism in Russia for the period 2017–2020

The volume of paid services to the population, million rubles	2017	2018	2019	2020
Tourist	166 520	172 090	179 826	91 884
Hotel and similar accommodation facilities	219 916	255 708	247 279	181 577
Specialized collective accommodation facilities	137 031	155 296	163 824	114 755
Of these: health resort organizations	112 305	124 783	127 186	85 527

Source: developed by the author based on the materials of Rosstat. Paid services to the population in the field of tourism. URL: https://rosstat.gov.ru (accessed on 04.03.2022).

Table 2

Performance indicators of tourism industry organizations excluding small businesses for the period 2017–2020

Indicator	2017	2018	2019	2020
Average strength of employees, people	1 191 464	1 166 350	1 179 697	1 146 426
Average number of employees, people	1 117 138	1 091 346	1 104 288	1 083 311
Average monthly wages of employees, rub.	46 160.3	51 580.0	54 185.4	52 984.9
Turnover, billion rub.	2416.5	2785.4	3041.1	1944.3
Investments in fixed assets, billion rub.	313.1	348.9	359.5	343.4
Availability of fixed assets at full year-end cost, billion rub.	4254.3	4807.5	4942.9	3478.0
Availability of fixed assets at year-end at residual book value, billion rub.	2744.2	3091.7	3121.8	2049.3
Introduction of new fixed assets, billion rub.	242.1	385.4	425.9	287.2
Depreciation of fixed assets at the end of the year	35.5	35.7	36.8	41.1

Source: developed by the author based on Rosstat. Separate performance of the activities of the tourism industry (by the amount of OKVED 2 codes included in the collecting group "Tourism". URL: https://rosstat.gov.ru (accessed on 04.03.2022).

(in particular, Emirates, Turkish Airlines) have already announced a 20% increase in ticket prices.

Risks are seen from international hotel chains: withdrawal of franchises, breaking of contractual relations with owners of enterprises. It has already become a fact that the Finnish holding S-Group stopped operations in the Russian Federation, manager of Sokos hotels and working in the Russian market since 2006.

Since 22 international hotel operators are now represented in our country, such sanctions become a real threat to the industry. By 2023, at least three more operators working in the top price segment planned to enter the market: Jumeirah Group, Mandarin Oriental Hotel Group и TASIGO. Five international hotel operators (Accor Hotels, Radisson Hotel Group, Marriott International, IHG, Hilton Worldwide) are form 80% of the Russian network hotel room (78%

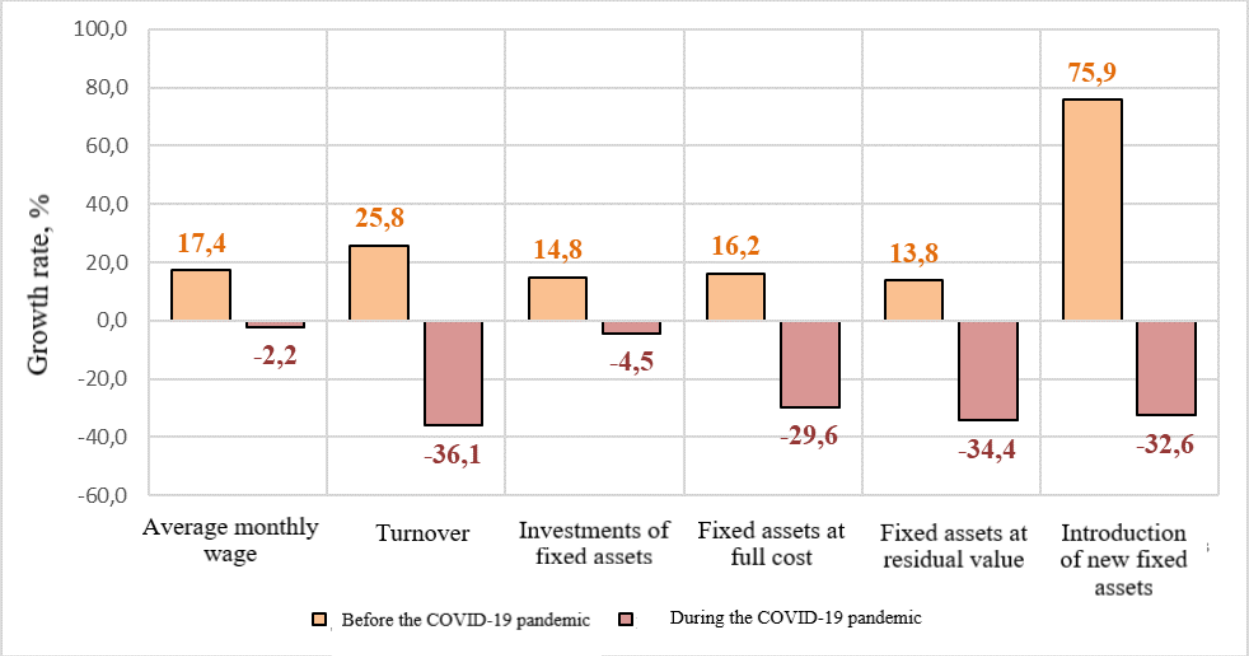

Fig. **Dynamics of the main indicators of tourism industry organizations (without small businesses) before and during the pandemic**

Source: developed by the author based on Rosstat. Separate performance of the activities of the tourism industry (by the amount of OKVED 2 codes included in the collecting group "Tourism"). URL: https://rosstat.gov.ru (accessed on 04.03.2022).

of hotels). 35 domestic networks are also on the market, but their concentration of Russian networks, unlike the international, is lower. At the same time, of the 25.3 thousand funds of accommodation in Russia, a quarter refers to the construction of the Soviet period (sanatoriums, boarding houses, recreation centers), including a large number of hotels and resorts in the Crimea, many of which have not been renovated for 10–20 years.[3]

The threat of revocation of licenses and withdrawal of software support for the tourist and hotel business is also real (Micros, Fidelio, Epitome) its international producers (Booking. Com doesn't work anymore on the territory of the Russian Federation).

Currency risks, currency movements, devaluation of the ruble, decrease in the purchasing power of the population also have an impact on the development of tourism. Imposition of sanctions, deficit, increase in prices of imported products not subject to import substitution (coffee, chocolate, etc.),— all these factors will cause disruption of the production chains of cooking from many hotel restaurants in the short and long term. One cannot but mention the psychological aspect. Travel with the probability of unpredictable situations and possible threats increase the level of anxiety of Russian tourists, consequently, they delay travel indefinitely.

Thus, the expected impact of the sanctions on tourism could be as follows:

- loss of its humanitarian and social function with those countries that supported the sanctions;
- threat to the development of inbound and outbound tourism;
- lack of income from this industry in Russia due to exports of services;

[3] Federal Agency for Tourism (Rosturism). URL: https://tourism.gov.ru (accessed on 04.03.2022).

• actual termination of those firms that specialize in international activities;

• breaking partnerships with foreign companies;

• restriction of event and business tourism markets;

• temporary large financial losses for tour operators of outbound tourism, air carriers, airports, travel agencies.

From the working version of the draft Government Plan[4] it follows that the total cost of priority measures to support the Russian economy for the federal budget will exceed 1 trillion rub. Most of the additional spending will go to social support, including labour market stimulation,— 496 billion rub. In second place — transport (275 billion rub.). It is planned to direct 23.3 billion rub. to help small and medium business., industry — 20 billion rub. To assess the damage caused by the Russian tourism and hospitality industry, it is not yet timely. But now you can talk about those losses, which are primarily related to the organization of outbound flights for tourists from abroad, the potential financial losses of airlines, accommodation, as well as tour operators (due to the refusal of foreigners to travel to our country). According to preliminary calculations, starting from February 25, 2022, the tourist business loses 40–45% of sales compared to January 2020. Number of reservations for various resorts for the summer of this year decreased by about 30%. Travelers choose Krasnodar Krai, Crimea, orient on available destinations. The most popular are Turkey, Egypt, Southeast Asia.

To assess the damage done to the tourist and hotel business in the medium term, it is advisable to carry out a full qualitative and quantitative monitoring. To do this, you need to collect information from tour operators:

• expected tourist flows before and after the sanctions in quantitative and monetary terms (general and in various directions);

• on the number of tourists planning to travel to Russia before the imposition of sanctions, and the estimated cash income of the industry organizations;

• suspected denials of visas and related losses;

• about companies that are closing and are planning to close soon (number of employees reduced).

Special attention should be paid to regions and data should be obtained from the field on tourist flows, means of accommodation and related infrastructure. This can serve as a basis for further management decisions regarding the development of domestic tourism in Russia and the reorientation of the entire industry to its support. At the same time, the entry flow from neutral or Russia-friendly countries (such as Turkey, Egypt, Tunisia) can be supported fragmentarily.

A number of states have not imposed sanctions against Russia: Brazil, India, China, South Africa, Turkey, Mexico, Argentina, Serbia, Bosnia and Herzegovina, Cuba, Venezuela, Nicaragua, Syria, Egypt, the UAE, as well as CIS countries — Belarus, Kazakhstan, Tajikistan, Armenia, Kyrgyzstan, Georgia, Azerbaijan, Moldova. Hungary is ambivalent, Africa and Latin America — are neutral. This is the target market with which in the future you can work on inbound and outbound tourism. Based on past experience, it accounts for just over a third of foreign citizens' visits to our country [4, 5]. Due to geopolitical situation and security requirements of international routes possible increase of flow from India, China. For these countries, it is advisable to simplify the visa regime, increase the stay on electronic visa, reduce the consular fee for its registration.

[4] Izvestia (based on the working version of the draft government plan). URL: https://iz.ru/1303423/evgenii-kuznetcov-mariia-kolobova-mariia-perevoshchikova/po-bolshomu-raschetu-stoimost-antikrizisnykh-mer-prevysit-1-trln-rublei

But priority should still be given to domestic tourism as a driver of leveling existing sanctions threats. And there's a real reason for that — in Russia there is a positive dynamic of recovery of travel in the country: 56 million people participated in them in 2021, which accounted for almost 90% of the "pre-covid" indicator 2019 [6].

With regard to sanctions, it should be noted that they have a long history (in the history of antiquity and the Middle Ages they had their name — "reprisals"). States often influenced their neighbors through indirect methods. The most common cause of sanctions, especially by the US, is the demonstration of force and the deliberate coercion of the targeted country to increase its economic costs. But, as history shows, sanctions, which create problems, often offer opportunities for extraordinary measures to overcome them, often having the effect of bringing people together around the Government and finding alternative solutions [7]. The author offers some anti-crisis measures to respond to threats and challenges to the tourism industry (*table 3*).

In modern conditions, the tourism industry should use the following opportunities:

Development of rail and road tourism and related infrastructure.

• Restrictions on the operation of some airports in the Russian Federation and the threat of lessor seizing aircraft from Russian airlines imply not only the development of a new transportation scheme for airlines, but also to take advantage of the existing transport infrastructure and to draw attention to the development of rail transport and rail tourism (possible use of the experience of Russian Railways).

• Increasing the role of car tourism will, in turn, require auditing of existing infrastructure. It is advisable to develop and implement as soon as possible an investment project for the construction of a national network of motels that ensure the quality and safety of hotel services for budget travel (level of 2–3 stars), camping grounds, as well as roadside modern and safe places for rest, equipped with showers, toilets, etc. B Owing to declining incomes of potential tourists, further tariff increases are not feasible on toll roads GC "Autodor".

Development of agro-tourism and private enterprise, for which it is necessary:

• to develop a number of measures for the development of agrotourism, the use of villages, villages, guest houses in various regions of the Russian Federation as tourist facilities; to equip beach areas of rivers, lakes, reservoirs;

• agree with private investors to provide preferential loans and tax incentives;

• to implement the system of booking of such objects developed by Russian specialists;

• Ministry of Agriculture, Ministry of Construction, Federal Agency for Tourism — prepare accordingly proposals for the construction of agricultural land housing, taking into account the protection of agricultural land from abandonment (which would require changes in legislation).

Introduction of new hotel formats, including non-capital construction.

Given the demand for rehabilitation tours and recreation in nature, it is necessary to audit the facilities of the sanatorium and resort, and to introduce modular structures (glamping) in the immediate vicinity of recreational zones, national reserves, to develop the appropriate infrastructure. A good example is the project of development of the natural park "Kudykina mountain" in the Lipetsk region, offering guests not only accommodation and food, but also participation in various leisure activities.

Creation of tourism products territories.

Regions such as Crimea, Krasnodar Krai, Altai, Kamchatka, Kaliningrad Region, Karelia, Sakhalin, Murmansk Region, Dagestan, Kabardino-Balkaria are fully restored the failures in the tourism industry, caused by

Table 3

Anti-crisis response measures to threats and challenges for the tourism sector

Subjects of tourism and hospitality	Response immediate measures	Short-term measures	Measures in the medium term
Tourist companies and tourist infrastructure facilities	• Regular online information meetings, meetings on the real situation in the tourism industry with Rosturizm, Rosaviation, the Ministry of Foreign Affairs of the Russian Federation and other departments. • Organization of information tourist industry through specialized media on the situation in the industry	• Allocation of grants to tour operators to compensate for failed tours • Well-organized work with insurance companies on payments to tour operators • Cashback program extension in 2022 • Easy participation in cashback program • Development of cashback system for children	• Reduction of the tax burden on tourist companies, transport companies, airlines (air ticket offices), who have suffered significantly from force majeure circumstances: cancellation of VAT payment within 3 years, reduction of profit tax rate to 3%, reduction of PIT rate to 5%. • Granting of state-guaranteed preferential loans to tour operators (with a rate of no more than 5%) for the payment of funds to tourists for tours that failed in 2022 due to sanctions and payment of salaries to employees. • Granting credit holidays. • Facilitating the work of tour operators in the domestic and inbound tourism market in terms of insurance contribution or bank guarantee [8]. • Creation of a strategy for the development of children's tourism in the Russian Federation, identification of policy measures for the development of children's tourism in the Russian Federation. • Establishment of additional funding programmes for in-country recreation (for children, persons with disabilities, the elderly — retirees, for young people). • Development of a programme for the development of railway tourism between the cities of the Russian Federation. • Development of a program for the development of river tourism, construction of berthing walls in the cities of Astrakhan, Makhachkala, Derbent for the development of sea cruise tourism in the Caspian Sea. • Development of a system of measures to develop cooperation in the field of tourism with countries that do not impose sanctions against Russia and are open to cooperation. These are China, India, other Asian and Arab countries, CIS countries. • Solution of the issue of the accelerated procedure for obtaining visas in the Russian Federation, launching of e-visas for foreign tourists. • Subsidizing charter flights from countries that have the potential to increase tourist flows: China, Arab countries, India. • Assistance in the creation of Russian air ticket booking systems, railway tickets • Making transportation affordable through domestic travel subsidies, including off-season travel. • Assistance in creation of digital platforms about tourist resources, event events in tourism, about tourist regions. • Development of a system of measures to support and develop the spa sector

Table 3 (continued)

Subjects of tourism and hospitality	Response immediate measures	Short-term measures	Measures in the medium term
Hotel complexes	• Audit of all available Russian online booking channels or alternative distribution systems: Ostrovok, AllHotel Market, Bronevik.com, Яндекс.Путешествия, Academservice (Best Eastern Hotels), One Two Trip, Tvil (analogue Airbnb, service of daily rent of apartments and apartments). • Development of new online booking channels, as well as booking modules adapted for large and network hotels. • Development of cloud-based hotel management systems • Development of new start-ups for the development of secure hotel management software	• Development of options for management of hotel enterprises, their entry into Russian networks, taking into account the experience of western and network technologies (copying and implementation) and the application of new standards. • Reorientation of hotel owners to new software instead of recalled international hotel chains	• Improvement of the quality of services by Russian hotel companies, restoration of the outdated number stock especially in the regions of the Russian Federation. • Development of a system of support measures for the development of the hotel industry. • Creation of a system of grants for the construction of rapid-construction complexes — accommodation facilities. • Granting of preferential loans for construction, reconstruction of hotel infrastructure. • Exemption from income tax, VAT of enterprises that reconstruct or erect accommodation facilities for tourists. • Audit of the hotel fund in the Russian Federation, comparing the number of network and independent hotels of different classification, to draw up a regional map of the coverage of different regions by hotel facilities. • Creation and priority development of Russian hotel groups and networks. • Development of new formats of hotel enterprises: budget camping (modular structures), motels (for the development of autotourism), sanatorium resort facilities and development of national networks of spa facilities in the long term

Source: developed by the author.

antithetical restrictions, proving that they have great potential in 2020. There is a need for further work on tourist territorial design in order to create tourism products of state entities, taking into account their unique features, cross-regional coordination and synchronization. First of all, it should affect those 11 priority areas, which are defined by the national project "Tourism and hospitality industry".

Development of Russian software in the field of tourism and hotel business.

The threat of revocation of licenses and termination of software support by international manufacturers leads us to the need to develop among young entrepreneurs, students, start-ups, aimed at the production of Russian software in the field of hotel management, hotel income, sales. There should be a system of grants for the establishment of digital laboratories in specialized educational institutions, providing integration of specialists in the field of information technologies and hotel security for the project implementation of tasks in the short term.

Early completion of the modernization of the legal framework for tourism development [9, 10], adoption of the updated law on tourism activities, a new legislative act on tourist areas.

Use of financial measures to support the tourist and hotel business by the state:

- subsidizing the cost of summer tickets to distribute the tourist flow not only to the Crimea and Krasnodar Krai, but also to other regions;

- lengthening loan repayment periods;
- elimination of PIT on subsidies;
- deferral of insurance premiums;
- subsidies for part of the rent payments (especially for the restaurant business);
- the allocation of funds for the resumption of the program "Tourist cashback".

Creating a positive image of domestic travel for the short and long term for those countries that support the Russian Federation and do not impose sanctions.

Development of vocational schools on the basis of specialized educational establishments, providing specialized training and education of specialists of the hotel and tourism sector, aimed at improving the quality of services provided to the population.

Formation of Russian hotel chains.

The Russian Association of Independent Hotels is similar to the European structures "The Leading Hotels of the World" etc. need:

- to implement their own networks, which, by allowing owners to maintain operational independence, will force the introduction of quality standards and marketing support;
- make audit the hotel fund in the Russian Federation, comparing the number of network and independent hotels of different classification, draw up a regional map of the coverage of the various regions by hotel facilities in the short term, with the involvement of specialists from specialized educational institutions, Rostourism, leading hotel analysts and consultants, not affiliated with international companies.

Separately need to focus on working with regions.

In this direction is advisable:

- creating tourist passports and placing in the online space to inform the population about tourist resources;
- budgetary support for the construction and development of infrastructure in the regions;
- issuing tourist calendars in regions and informing the population;
- creation of tourist brands of regions and the positioning of the region through the developed brands;
- organization of volunteer tourist movement;
- development of information quality resources on the tourist potential of the region;
- training of representatives of the regions responsible for tourism, the main aspects of tourism activities, development of business plans and attraction of investors, marketing promotion, etc.;
- development of interregional cooperation, establishment of interregional tourism programmes.

Communication with the population plays an important role among anti-crisis measures:

- organization of competent information about the tourist potential of Russia, unique tourist sites, regions;
- TV series on tourist opportunities in the country, including multilingual;
- introduction of the subject "Local Studies" in schools;
- revival action of "My Motherland — Russian Federation" in educational institutions;
- development of the cycle of general developing lectures on tourism within the society "Knowledge";
- involving the public in the events.

Another direction of the anti-crisis measures is the training of qualified personnel, which means that it is necessary to:

- support of educational organizations implementing secondary and higher education programs for tourism;
- allocation of additional budget places for the areas of preparation "Tourism", "Hotel business";
- involvement of educational organizations in the implementation of training and retraining

programs at the expense of the federal budget and regional budgets;

- revival of the system of developing training in the field of tourism.

CONCLUSION

In the current conditions, it is necessary to mobilize all components of the tourism industry: transport infrastructure, hotels and tourist complexes, specialists in this field (including representatives of travel companies and tour operators), experts on territories — to prepare new tourism products and provide them to Russian citizens. The article analyses current threats and risks of the sphere of tourism and develops some anti-crisis measures of response.

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Hybrid Project Management Methodologies as a Sign for Organizational Ambidexterity

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ABSTRACT

Project management plays an important role in the modern economy and public administration. Trends in project management have a significant impact on the performance of companies, public organizations, and programs for the socio-economic development in Russia. One of the interesting developments in project management is the expansion of hybrid methodologies, which combine tools and approaches of flexible and predictive approaches. This article aims to study the forms, results, and types of hybrid project management methodologies through the lens of the concept of organizational ambidexterity. Methodologically, the research is based on a systematic review of the Russian-language scientific literature on project management hybrid methodologies and organizational ambidexterity, as well as a qualitative content analysis of selected papers. The results of the study indicate that there are significant similarities between key aspects of hybrid methodologies and organizational ambidexterity. The authors conclude that hybrid project management methodologies can be considered as the instruments of organizational ambidexterity. As practical recommendations, the authors propose to expand the use of hybrid methodologies in the management of not only project-based firms, but also in other organizations, as well as in the management of socio-economic programs, especially in conditions of high uncertainty. The potential of hybrid methodologies to improve organizational ambidexterity and thereby simultaneously ensure the stability and flexibility organizations makes them invaluable tools to increase the resistance organizations and strategic programs to technological disruptions, socio-economic crises, and global shocks.

Keywords: project management; hybrid methodology; organizational ambidexterity; content-analysis; qualitative data analysis; systematic literature research; global shocks

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INTRODUCTION

Project management plays an important role in modern economy, public administration and social development and is actively used not only in traditional project-oriented industries (such as information technology and investment construction), but also in manufacturing, especially when developing new types of products [1]. In the Russian Federation, project management plays a crucial role in the strategic development of the country, serving as a tool for the implementation of the State priority initiatives at both the federal and regional, municipal levels [2].

Along with the increasing role of project management in the modern world, its methodological development also impacts significantly the performance of projects and companies. Due to the increased dynamics and uncertainty of the business environment, the need to learning digital technologies and ensure the sustainability of the enterprise has to develop and develop new project management methodologies, including flexible, lean, extreme, evolutionary and some others, aimed at increasing the adaptability of management systems.

But, with the technological transformation of many industries, waves of disruptive technological innovation, social change, and economic crises accompanied by global shocks, such as the COVID epidemic and the Ukrainian crisis, flexibility alone is not enough. There needs to be a balance between adaptability and innovation on the one hand, and stability of current operations on the other. As a result, companies are beginning to apply so-called hybrid methodologies (HM) for project and program management, connecting elements of the predicate (appropriate for stable conditions), as well as oriented to dynamic and even extreme flexible or Agile approaches. The science of the HM relates to the incorporation into the theory and practical tools of project management of the methods, resources and research principles developed in operational and strategic management. In addition, the perspective of the HM is related to the analysis of their impact on organizational capacities to improve adaptability, flexibility and, at the same time, improve project outcomes.

The HM have been developing very rapidly over the past three years. Several well-structured and established HM have been already elaborated, such as Scrumban, PRINCE 2 Agile, P3.express, etc. More and more companies report using their own developments in this field. However, HM issues in project management are poorly researched in Russia. And it is not so much a small number of scientific publications (6 articles in Russian — language journals and 5 — in the proceedings of conferences), how much about the lack of conceptual understanding of this phenomenon in its relation to the already established in management science constructs and concepts. Current research focuses on the identification of different options for hybrid models, which is useful for the development of practice, but not sufficient for an in-depth study of the phenomenon.

Because the HM assumes a duality embedded in project management systems, they are closely related to the concept of organizational ambidexterity (OA), which is understood as the ability to successfully implement two types of activity at the same time: operational (in foreign terms — exploitation), related to the stability and efficiency of current processes, and research (exploration), related to the flexibility and implementation of innovative and exploratory business initiatives [3]. OA plays an important role in the system of

modern managerial knowledge. More than 600 OA publications are found in the Scopus database, with half of these publications occurring in the last three years. Rapidly increasing number of materials on topics related to OA and in the Russian-speaking scientific space. OA researchers identified its positive impact on the long-term performance of companies in various contexts, especially under conditions of high turbulence and uncertainty. But the OA problem is studied mainly at the level of strategic management. Methods and tools for improving OA at the project management level, i.e. where strategies are largely implemented, are not well researched. This makes it a theoretical construct with an excessive number of possibilities, as it is not clear to the practicing managers which methodologies, methods and tools can be used to implement OA.

Also, until recently, researchers of OA emphasized the contradictory, conflicting nature of the combination of operational and research aspects in the activities of one organization. But more and more scientists pay attention that the duality of the OA is not necessarily manifested in contradiction. It appears to the authors that the practice of using the HM and its current variations suggests that at the project level the OA can be implemented as a conflict-free, harmonious combination of operational and research types of activities.

Thus, the research question can be formulated as: to what extent are the HM and the OA conceptually linked? If HM can be recognized as a manifestation of OA, it would indicate a huge potential for conflict-free implementation and thus more effective use of its positive results for the activities of companies. It will also prove that the rapid development of HM is largely due to their ability to create positive OA results, and HM itself can be seen as a practical tool to improve OA at the project management level. Hence, the following research issue is considered as the main focus of the article: **are hybrid project management methodologies the manifestation of organizational ambidexterity?**

METHODOLOGY OF THE STUDY

The present study is based on the study of Russian-language articles in scientific journals and conference materials. Principles and tools for a systematic review of the literature were used to identify and select them:

- source search bases have been substantiated (RINC, Google Scholar and Grebennikon);
- formulated search queries;
- criteria for selection of literature (attitude to management and business; belonging to articles in scientific journals or conference materials, professional standards or professional reviews mentioned in the list of literature in scientific articles; availability of full texts in electronic form; presence of search terms in the material itself, text or bibliographic descriptions).

The selected articles were analyzed qualitatively using techniques such as thematic coding of text, table and graphic fragments, cross-tabulation and thematic code hierarchical models. In particular, for OA, coding was done in the context of different terms describing the concept, the placement of terms in different elements of articles, varieties, orientations, OA aspects and related other concepts. Cross-tabulation was performed based on the terms used and their placement in the articles (to justify the most appropriate ones, as well as in terms of coded fragments and documents) to categorize the articles by depth of study of

the concept. The hierarchical model was used to organize thematic codes. For qualitative data analysis was used software MAXQDA®.

RESULTS OF THE STUDY

The first part of the section presents the results of the analysis of the HM, then the CCA, followed by — a comparative analysis.

Hybrid methodologies in Russian scientific and professional sources

The term "hybrid methodologies" in the professional and scientific environment is well established, it is fixed in the Russian-language edition of the authoritative standard PMBoK [1] and used by the vast majority of researchers and specialists. To reduce the scope and focus of the search on the desired subject area, the term "project management" was added to the search query.

Russian sources considering HM project management in databases RINC, Google Scholar and Grebennikon found 18, of which 4 could not find full-text documents, 2 were deleted (one re-publication and one graduate qualification work bachelor). Analysis of the remaining 12 revealed 3 additional Russian sources: standard PMBoK and standard "Agile: practical guide" [4], as well as the professional review of the HM [5]. All 15 selected materials were analyzed.

Not only the concept of "hybrid methodology" is used for project management, but also "hybrid life cycle», "hybrid project environment", "hybrid approach", "hybrid organizational structure", "hybrid model", "hybrid technology", "hybrid control", "hybrid control process", "hybrid systems", "hybrid dual control", "hybrid method" and "hybrid methodology" [4–7]. All of these terms either refer to individual elements or aspects of hybrid methodology (life cycle, project environment and organizational structure) or are synonymous (the rest).

The simplest interpretation of HM is that they combine classical and flexible methodology [6] or, in terms of [4] — predictive methodology, on the one hand, and flexible, adaptive or iterative methodology, on the other. The first (classical) type is most suitable for projects with high certainty content, technologies used and the environment, and is most often used for those that can be called generic or repetitive. The second set of flexible methodologies is suitable for high-risk projects with changing content, technological uncertainties and a dynamic external environment, in other words, mainly innovative, research, entrepreneurial. This kind of hybridity is the most common. It is noted in all studied sources. But HM can also combine elements of two or more methodologies [7], and can be different: flexible, adaptive or iterative [4].

At present, there are HM, connecting the methodologies: predictive (so-called "waterfall" or "cascade") and Scrum (in a broader sense — Agile); Scrum and Scrumban; PMBoK (predictive) and Agile (in different versions — Scrum, Crystal, Kanban etc.) [4]; PRINCE 2 (predictive) and Agile [10]. Hybrid methodologies are also considered P3.express, model interconnection Stage-Gate and Agile, "Hybrid Manifesto" Binfire, as well as scaled (i.e. applicable to large-scale projects and programmes) flexible methodologies LeSS and SAFe [9, 10]. But HM can be created situationally, in different organizations in their own way, based on specific needs and circumstances [7].

The sources reviewed identify hybridization options such as:

[1] A Guide to the Project Management Body of Knowledge. USA. Pennsylvania: Institute for Project Management; 2017. 726 p.

• Level: for example, Agile can be used at one level (usually at a lower level — at the level of executors), and on the other — "waterfall" (generally at a higher level), or separate elements of a predictive methodology (partly present in a "hybrid manifesto" [5], LeSS and SAFe) [4].

• Consistent: for example, in the early stages of projects (conceptualization, development, testing, design) flexible tools are used, and later (project product creation) — incremental methodology tools (partly present in the framework P3.express) [9].

• Structural: for example, for some company projects a predictive methodology is applied, and for others, more innovative and risk — one of the flexible; methodology thus adapts to the specifics of the subject area of the project [10]; Similarly, a separate part of the project, not necessarily sequential, could be implemented on the basis of an iterative methodology and the rest — on the basis of a predictive methodology.

• Methodical, which combines tools specific to different methodologies and used jointly to manage a single project; focus (depending on the circumstances) on more flexible, iterative or predictive aspects; for example, in the framework of Scrumban, Scrum tools are in many ways fused with Kanban [4]; in [6] this kind of approach is called "convergence of methodologies" and is separated from hybridization; or in [4, 11] the combination of predictive methodology in the gradual transition to Agile or other flexible.

The results of the hierarchical modelling of the thematic codes identified in the HM analysis are shown in the *figure*.

Organizational ambidexterity in the works of Russian scientists

As is common to many new scientific categories, the OA concept under study at the early stages of development is characterized by a variety of terminology. In the Russian-language scientific literature it is described by such terms as:

• ambidextria (and also ambidexterity, ambidexterness, and derivatives — ambidextrous, ambidexter);
• bilateralism;
• duality;
• bilateralism;
• ambicapability and etc.

Also actively used and the original English name "ambidexterity".

The large number of articles mentioning the concept (65 pcs.) indicates the need to harmonize terminology. The results of the quantitative analysis of the use of terms are shown in the *table*. Column "K" indicates the total number of references to the term, column "C" — the number of articles in which the term occurs (without the number of references within one article). The original name "ambidexterity" appears mainly in references to foreign sources and in translated versions of titles, abstracts and keywords. The most commonly used Russian term is "ambidextria".

The results of frequency analysis allow to recognize as the basic term "ambidextria". To distinguish it from similar in the field of medicine, pedagogy, sports, etc. it is proposed to use the phrase "organizational ambidextria". It is recommended to use the terms "ambidextr" and "ambidextrous", established in pedagogy, sports and other fields of knowledge as derivatives.

71 unique sources found in Russian journals indexed in the RINC and Google Scholar. Of these, were deleted 6: 1 — unable to find full-text version and 5 — due to lack of OA connection. The remaining 65 contained two publications in English (including one by foreign authors), which were left for study.

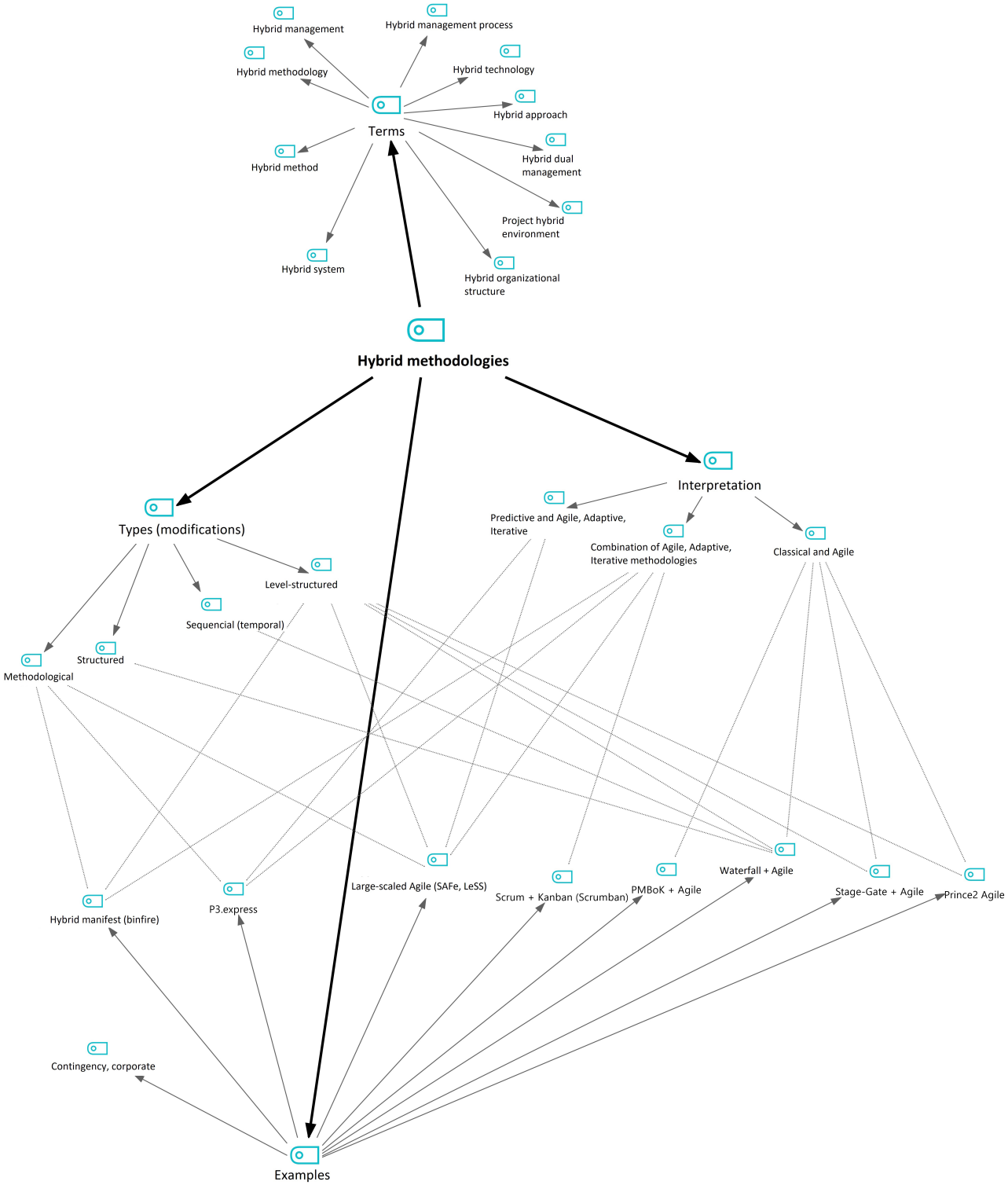

Fig. **Hierarchical model of thematic codes for hybrid methodologies**

Source: developed by the authors.

Table

Frequency analysis of the use of the different terms describing the concept of organizational ambidexterity

	Ambidexterity		Ambidextria		Bilateralism		Duality		Uncertainty		Bilateralism		Ambicapability		Universality		Total	
Place in the article	**K**	**C**	**K**	**C**	**K**	**C**	**K**	**C**	**K**	**C**	**K**	**C**	**K**	**C**	**K**	**C**	**K**	**C**
Title of the article	2	2	1	1													**3**	**2**
Abstract, including:	11	7	12	9			1	1	2	1							**25**	**10**
Abstract	11	7															**11**	**7**
Abstract (In Russ.)			12	9			1	1	2	1							**14**	**10**
Keywords including:	6	6	8	8					1	1							**15**	**9**
Keywords	6	6															**6**	**6**
Keywords (In Russ.)			8	8					1	1							**9**	**9**
Main text	23	16	172	26	11	3	1	1			2	1	1	1	1	1	**210**	**34**
References	121	54															**121**	**54**
Annex	1	1	1	1													**2**	**1**
Total	164	63	194	26	11	3	2	1	3	1	2	1	1	1	1	1	**376**	**110**

Source: developed by the authors.

Based on the results of the frequency analysis of the use of OA terms in different parts of the OA text and the quantitative analysis of its volumes, four categories of articles were identified based on the role of OA in the study:

- C — OA as a central concept (found in 1 article);
- V — OA is an important but not central concept (10 articles);
- P — OA is used as a term at the periphery of the main study (17);
- S — OA terms are found as random (37).

The substantive analysis of the articles from the first three categories can be said, that OA is understood as a combination of operation and research with an emphasis on the different shades of this compound or without [3, 12–18]. OA — this ability to "combine the effective implementation

of current market opportunities with innovation activities to meet future market challenges" [16], the ability to "use existing and known technologies and produce the same goods and services", "to research new technologies and to produce new products and services in accordance with changing demand" [17], "the ability of a company to use current business processes with an ever higher level of efficiency, while simultaneously searching for new opportunities and radical innovations" [3], the ability to accumulate resources and adapt quickly to radical changes, "keep focus on operational issues and long-term opportunities" [18].

The investigated sources of the OA understand as a combination of internal flexibility and discipline, flexibility and stability, creativity and discipline, increase of efficiency and search for new opportunities, strategic planning and operational activities, creative and "production-exploitation" thinking, classical and innovative approaches to management, routines and search for new opportunities, teamwork and activities within hierarchical structures, a standard mechanism for coordination and development of adaptation solutions and innovations [19–21].

The relationship between the two aspects of the OA is perceived as conflicting [17], conflict and tension [3], arising from the divergence of activities difficult to reconcile and requiring conscious efforts to mitigate [18], find a compromise, balance, conflict management, balance, and the right mix of resources for different contexts [19].

The utility of OA is related to the need to overcome the trap of excessive focus on one of the aspects [3] which may lead to either excessive rigidity or misalignment. OA benefits from overcoming structural inertia, increasing productivity and ensuring competitive sustainability [3], with the growth of the company [16], better financial performance, better learning and innovation [3], with crisis survival and shock mitigation [20].

OA can be implemented [3, 13, 14, 19]:

- by means of alternate focus on operational, then research aspects;
- by structural differentiation, which involves specialization of different parts of the company in different aspects;
- through structural decentralization, where delegation of authority leads to the adaptation of organizational resources to those high-priority aspects of the activities, as structural formalization (ensuring effective transfer of knowledge and other resources from units and projects involved in different activities);
- by creating an organizational context in which the same resources can carry out both types of activities.

Based on the different directions of implementation, it is possible to speak of several types of OA:

- temporary, or alternating [3, 13, 14];
- structural, based on structural differentiation [3, 22];
- contextual, based on communication, organizational culture or simultaneous focus on both aspects of the OA [3, 19];
- different combinations of the types (reciprocal, harmonic, divided, cyclic, etc.) [3].

OA research is carried out in the context of other scientific concepts. In [20] the OA converges with strategic entrepreneurship, which also involves combining two aspects of the company's business: strategic, planned, progressive, on the one hand, and risk, opportunistic, exploratory — on the other. [19] ACS is a relevant area for knowledge management development, as it integrates existing and new knowledge,

and is based on leaders' ability to connect different approaches and work in different contexts. [17] shows that OA contradictions can be overcome through transformational leadership. And [23] refers to a positive relationship between OA and transactive (i.e. collective) memory.

Comparative analysis of hybrid methodologies and organizational ambidexterity

The results of the study indicate that the concepts of the OA and the HM are indeed very close. Both reflect a combination of two different activities — the exploitation of existing resources in established markets, products and technologies on the one hand, and studies that explore new business opportunities, adapt flexibly to change, innovate — on the other, and highlight the benefits of balancing them through different organizational solutions. Similarities are also found between OA types and HM directions. In both cases, temporal (or consistent) and structural forms are distinguished, and methodical hybridization has a number of similar aspects to contextual ambidexterity.

In some cases, the characteristics of the other can easily be seen in the description of one concept. For example, the [18] OA describes, on the one hand, how informal planning is combined in the product creation process, and on the other — as long-term formalized planning within the operation of the product. The HM also assumes that the preparatory and initial project requirements phases are carried out according to a predictive methodology, while the design, development and testing phases are carried out using a flexible methodology.

Several sources argue that both flexibility and streamlined planning are necessary for successful project management [6–8]: thus, [24] states that a combination of predictive and flexible methodologies can improve the efficiency of company management (achieving better results, going to goal, minimizing costs) and its adaptability to the external environment (finding solutions suitable for individual needs). Many consistent formulations can be found in OA descriptions [20] — improving efficiency and finding new opportunities, classical and innovative approaches to management, stability and flexibility.

However, there are also differences between the OA and the HM. First, the organizational ambidexterity appears to be a more dualistic concept, often emphasizing the inconsistency and complexity of coordination between the two dimensions. The HM most often combines two methodologies (predictive and flexible), but increasingly focuses on harmonizing elements from other: for example, iterative and adaptive. That is, the HM implies (which, of course, is not a trivial task) the ability to effectively reconcile elements of different methodologies without creating antagonism even between very different ones. Second, the OA is a strategic concept for the organization as a whole (hence, apparently, acute dualism, as it is difficult for one company to move in several directions at the same time). The HM addresses the project level where the OA can be implemented as a combination of innovative projects with varying degrees of radicalization (which does not necessarily imply duality).

Summarizing the comparison of the two concepts, it can be concluded that the HM is a manifestation of the OA at the project management level and, in this context, it is acceptable to consider it as an instrumental implementation of the OA. Organizational ambidextrous can be understood as a general direction of development of project management, which stimulates

hybridization, while increasing stability and adaptability of management systems.

The positive impact of OA on both short-term and strategic company results, reflected in a large number of studies, leads to the conclusion, that the HM should be actively developed in contexts where organizations have to simultaneously ensure the stability of ongoing operations, the search for new opportunities and interaction with a highly dynamic environment.

At the same time, the well-established and evolving practical tools of the HM can be applied in organizations that are not purely project-oriented but are committed to the development of the OA. To date, there are a number of proven cases of successful HM application not only in IT-companies, including large [24] but also in other sectors of the economy. [9] Positive results of using tracking as a hybrid project management tool in JSC "TVEL" (Russian manufacturer of nuclear fuel), a part of the state corporation "Rosatom". In [25] reviewed in detail the encouraging outcome application of the HM by a large Russian FMCG-company.[2] In [8] presents the positive experience of the HM's integration into a university that is both an ongoing academic process and developing new technological directions. In [11] substantiates the positive effect of the HM in the management of digital business transformation.

The examples document such results as improved efficiency of standard (reduced implementation time, reduced violations of budgets, positive economic results), as well as innovative, research and business projects (increase in the share of those whose results reached the market or internal user; reduction of budgets for closed to the results). This demonstrates the ability of the HM to create the positive impact of the OA.

CONCLUSION

The conducted content analysis obtained during the systematic selection of literature of Russian-speaking sources allows to conclude that hybrid methodologies can be considered as a manifestation of organizational ambidexterity at the project level of company management. The HM has a wide range of institutional solutions and practices, which allow a balance between the operational and research activities of the organization and actually allow for a more harmonious and consistent integration of the two aspects of the OA.

The theoretical significance of the study lies in the conceptual understanding and better understanding of the actively developing trend of hybridization of methodologies, methods and tools of project management. The study enriches the management theory with new ambidextrous aspects arising from the use of the HM and points to the possibility of developing objective perceptions of the OA.

The value of the study for practice lies in the rationale for using the HM to achieve the OA and to improve simultaneously both the efficiency of current operations and the sustainability of innovative initiatives. The HM does have the potential to bring OA benefits to companies, and the practices identified therein can be used by enterprises and institutions to ensure their sustainability even in the most adverse, chaotic and shock-like conditions. In cases of radical technological change and global shocks, the HM could usefully be used in public project management and strategic socio-economic development programs to enhance their adaptability and long-term sustainability. In addition, the development

[2] FMCG — fast-moving consumer goods.

and application of the HM can be enriched by existing tools to enhance the OA. A disadvantage of the study is that it is based only on Russian and mainly on scientific publications.

The findings stimulate further research of hybrid methodologies using the concepts of strategic and corporate entrepreneurship and strategic flexibility. Empirical studies of the relationship between the use of the HM, the performance of companies under various uncertainties and OA levels seem to be promising. The most relevant is the analysis of the potential of hybrid methodologies to increase the resilience of organizations in times of shock and catastrophic change.

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Improving the Efficiency of the Company's Activities while Optimizing Auxiliary Business Processes

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ABSTRACT

The directions of improving the efficiency of economic work and operational efficiency of the company in modern conditions are gradually shifting from the predominant assessment of the main activities to a complex analysis, including auxiliary and non-systemic processes. Such a shift is based on innovative management approaches formed within the framework of the individual functioning of individual commercial organizations, the application of which is complicated by the lack of proven and reasonable ways to optimize activities and increase operational efficiency. The purpose of the study is to identify standardized opportunities to improve the efficiency of the functioning of commercial enterprises based on the use of auxiliary reserves for business processes. The relevance of the topic is determined by the need to develop solutions that provide additional economic benefits to organizations interested in this. The object of the article was to select the activity of private economic organizations from the sphere of transport services, and its subject was their resource base as a reserve for increasing the efficiency of work. Methods of econometric and statistical analysis and modeling, theoretical formulation of promising development directions was used as tools. The results of the article showed the importance of improving operational efficiency to achieve the final financial result of a commercial organization. The development and analysis of optimization solutions aimed at the development and functioning of the company within the framework of orientation to sustainable development were carried out, the negative impact of certain aspects of ESG transformation on the final result of a commercial enterprise was assessed. The economic result of the introduction of the author's conclusions and recommendations into the workflow of a particular organization was an increase in the effectiveness of its activities.

***Keywords*:** commercial companies; business processes; operational efficiency; reserves; optimization; economic activity; management; ESG

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INTRODUCTION

In today's unstable business environment, the efficiency of the company is determined by its ability to quickly adapt to changes in economic realities combined with the maximum use of internal resources. The activities of a business organization within a market system (both country and international) also depend on a qualitative and integrated definition of the strategy formed by dependent business units. In the conditions of competitive activity, the companies are interested in identifying all resources capable of influencing the preservation and strengthening of competitive advantages and control in the course of economic relations.

According to the typologization of management approaches M. Porter to achieve leadership in this case is allowed in the following areas:

- establish a cost leadership strategy;
- define a strategy for broad differentiation;
- adopt a focused low-cost strategy;
- define a focused differentiation strategy [1].

The experience of organizations during the COVID-19 pandemic has shown that applying differentiation strategies during the period of decline in the income of the main consumer category is rather high risk. Striving to reduce costs while maintaining the same acceptable level of consumer characteristics of the goods and services requested by customers, leads to unpreparedness to switch to those with fundamentally new and distinctive characteristics.[1]

The reduction of production and business activities and the increase in the number of bankruptcies of commercial organizations present a potential opportunity to attract new audience of users (consumers) [2]. In such circumstances, American researchers believe that the cost leadership approach is appropriate, attracting new and keeping old consumers at low prices (as a consequence of lower costs) [3].

R. Grant took a similar approach to identifying sources of efficiency improvement, considering the resources of the organization from the perspective of searching for strategic gaps [4]. Similar research views have been noted by D.J. Collis and S.A. Montgomery, which focus on strategic decisions capable of obtaining sustainable competitive advantages based on company resources [5]. Detailed search of strategic gaps and competitive advantages present in both main and auxiliary business processes is recommended to be conducted on the basis of value chains (M. Porter), decomposing business processes.

Approach to achieving cost leadership and understanding of theoretical proposals of M. Porter, R. Grant and other researchers, leading to the search for the most favorable management solutions aimed at increasing operational efficiency, organization, activity and determination of its additional reserves.

In order to create such solutions, companies involve internal and external experts (approach proposed by a number of Chinese researchers) [6]. Within the existing economic system, in fact, lack of developed application and universal type proposals for the development of corporate activities by optimizing business support processes and resulting operational efficiencies, as these are often considered to be a business advantage of the company and are not disclosed [7].

Research aimed at identifying standardized solutions to identify hidden performance-enhancing resources, conducted on the basis of generalization and analysis of economic-management approaches, implemented and tested on the basis of the enterprise

[1] Research on the impact of the COVID-19 pandemic on Russian business. Marketing Agency RBC, SAP. Analytical compilation. RBC Moscow; 2020. 49 p.

"X" (next — the company "X"), organizing transportations in Moscow and the Moscow region.

According to the results of economic activity in 2020 the management of the company "X" has decided on the need to improve the activity in the conditions of the increasing epidemiological situation and the fall of consumer demand. For this purpose, the authors of the article as an external expert were invited to analyze the functioning of the structural business units of the organization and propose ways to optimize it on the basis of available reserves. The objectives of the research were:

- identification of compliance of the mission and values of the company "X" with the results of its work;
- identifying efficiency improve the effectiveness based on an analysis of its activities;
- development of directions of optimization of functioning of the company "X", corresponding to its mission and values;
- implementation results of the work into the business process and assessing its importance.

SOURCES OF INCREASE OF EFFICIENCY OF THE COMPANY

Basics of functioning of the company depend on the use of high-quality strategic opportunities, which, for commercial organizations, appear as meeting the minimum competitive requirements the existence of core competencies (activities and resource management processes).

- Efficiency, in this case also a strategic opportunity for the organization, is expressed in:
- company experience;
- value of resources used and supplies;
- efficiency of resource use;
- level of load production capacity;
- technical feasibility of the activity to the required standards [8].

The combination of these factors, which constitute the potential business development environment, together with sustainable strategic planning and systemic analysis of the company's performance, allows to make the right scale decisions and, as a result, systematically increase the value of the enterprise by obtaining a positive financial result.

The scheme reflecting the conditions necessary for sustainable business growth is presented at *fig. 1*.

This scheme reflects the organization of the main activity of the company, which consists in increasing the value of the business (creation of new capital), directed to search for new, unique ways of its development. At the same time, increased efficiency of work at the expense of resources and capabilities allows the economic entity (producer of goods or services) to increase its importance within the economic system and increase its market share.

Business enterprises have an interest in a favourable domestic environment for such growth, with maximized use of the following reserves:

- full involvement of employees in the labor process;
- reduce the use of resources to ensure that staff are on the job;
- the ability of employees to quickly and independently master innovative software and technical complexes;
- absence of costs due to inefficient inter-office interaction;
- no illegal expenses (theft) of materials and property of the organization.

Attempts to comply with these conditions are limited to the search for "strategic breaks" in the work of the company, which can be combined into 3 main categories:

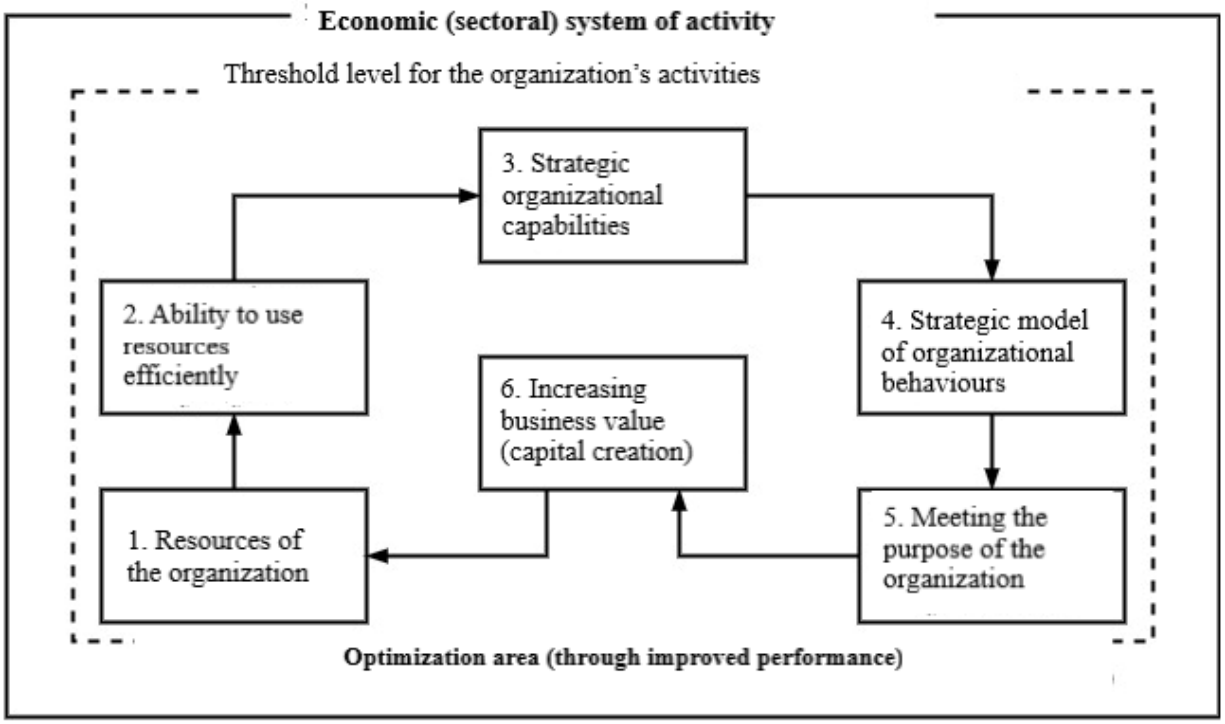

Fig. 1. **The scheme of using the resources and capabilities of the organization**

Source: developed by the authors based on [4].

• material costs (direct use of material resources of the company in the implementation of the work process);

• labour costs (reduction in the staff member's real time at work and consequent reduction in his or her productivity);

• illegal expenses (expressed in unjustified expenditure of resources of the organization for the purpose of profit: own or benefit of others).

Eliminating such «gaps» improves the quality of the organization's activities.

ANALYSIS OF THE COMPANY'S KEY ACTIVITIES "X"

During the preparation of the recommendations for the development of the company "X", management decisions contributing to the reduction of its operating costs were given priority and, accordingly, which reduce to "threshold level of opportunities" [9], to increase the market share in the competition and to redirect resources to the creation of additional capital (increasing its size within the "economic [sectoral] system") (*fig. 1*).

In order to determine the reserves of the functioning of this organization, which can be used to increase efficiency, an analysis of the status of its business processes was conducted.

Brief description of the company "X" at the beginning of 2021:

• main activities: organization of road freight transportation;

• organizational and legal form: limited liability company (LLC);

• company size according to Russian classification: average enterprise;

• main activity region: Moscow region;

• revenue from sales for the year 423 mln rub.;

• net profit for the year 10.6 mln rub.;

• staff — average annual number of 106 people;

• managerial staff — 23 people;
balance currency — 770 mln rub.

Company "X" specializes in providing logistics, forwarding and organizational services for the delivery of goods by road. Its main operational process is carried out in the office through the functioning of:

• marketing department (sales);
• department for claim work;
• legal service;
• financial department (including accounting);
• household department;
• call-center (external communication and information services);
• digitization services.

Until 2020, the company abandoned a number of non-operational activities related to cleaning of premises, courier deliveries and transportation movement (services of personal drivers), by outsourcing them. Such a decision in the past has already allowed the enterprise to reduce the cost of its operation by 6.5% per year.

The company's values are aimed at implementing sustainable development activities and ESG [10].[2] Mission, the implementation of which management strives to ensure sustainable business growth through the provision of quality and efficient services to clients.

ENSURING THE EFFICIENCY OF "X" COMPANY

Sustainable development is accepted by company "X" as a priority way of business formation within the framework of state and international policy [11].

Solutions are also attractive for other organizations, advanced within the framework of ESG-development in this case — economic actors.

[2] ESG (environment, social, governance) — environmental factors, social responsibility and corporate governance, respectively.

Sustainable development should be assessed within the framework of a comprehensive qualitative analysis.

On *fig. 2* shows how certain aspects of the ESG-segment as additional factors (marked with dotted lines) interact with each other and affect the end result of the organization's work — capital change: these factors affect the integrated functioning, ensuring compliance with the objective — improve performance.

Optimization solution for the company "X", from the model on *fig. 2*, was based on the following principles:

• it should lead to improved performance, expressed in positive change in capital and financial result;
• the cost of its implementation cannot exceed the profit that the company can additionally derive from the optimization (the profit of the organization for 6 months corresponding to the implementation period was taken into account);
• its application should improve the quality of process administration (management);
• the results of its implementation are aimed at increasing the interest of employees in the economic process and improving their working conditions;
• it is designed to have a positive impact on the environment (ecology).

That is, following these principles is a condition for qualitative improvement of the company's activities within the framework of the system functioning of business processes when using existing reserves.

IDENTIFICATION OF RESERVES OF INCREASE OF EFFICIENCY OF ACTIVITY OF "X" COMPANY

According to the management of "X" the main volume of expenditures by categories of "strategic breaks" was on material and labor expenses (see section "Sources of improvement of efficiency of the company").

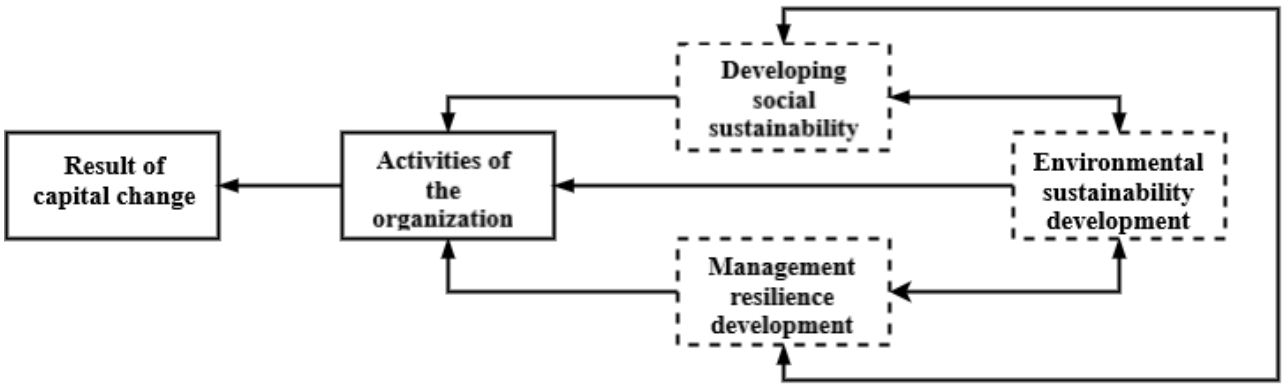

Fig. 2. **The model of the impact of ESG activities on the result of capital changes**

Source: developed by the authors based on [11].

The assessment of the enterprise management of various types of costs that need to be optimized is given in the *table 1*.

As the company did not keep records of the cost presented in the *table 1* cost per individual offices and staff member, caused by illegal activities, proved difficult. Management to simplify activities took into account that staff members did not embezzle the assets of the organization.

The estimate of material costs was based on accounting procurement data and was therefore the most accurate.

Food products, rental and service of office and warehouse costs have a reputation for the organization and are expressed in providing a comfortable environment for employees (one of the principles ESG), they were therefore not included in the analysis.

Cost of stationery as determined by retrospective analysis (based on 7-year quarterly data), were compared to the cost of purchasing paper products by calculating the correlation value of the formula (1):

$$r_{xy} = \frac{\overline{yx} - \overline{y} \times \overline{x}}{\sigma_x \sigma_y}, \quad (1)$$

where x — percentage of office paper costs of operating costs (explanatory variable);

y — percentage of office supplies costs (paper excluded) of operating costs (explained variable);

$\overline{x}$ и $\overline{y}$ — average values x and y by sample respectively;

$\overline{xy}$ — average value of products of cost categories;

σ_x and σ_y — standard deviation of cost categories x and y by sample, respectively.

The calculated correlation is 0.916, indicating a close and almost direct relationship between cost categories. Consequently, the percentage of paper costs (as an explanatory factor) can be used to determine the percentage of office supplies costs (an explanatory factor).

In order to determine the most favorable econometric model, the data were checked by Goldfeld-Quandt tests[3] and Darbin-Watson (their homoskedability and lack of autocorrelation of residues were recognized).[4]

[3] Goldfeld-Quandt test (GQ) is based on an assessment of the random (unexplained) perturbation of the remnants of the data array, allowing to test the hypothesis of their homoskedability (homogeneity) or heteroskedability (heterogeneity).

[4] Darbin-Watson test (DW) is used to test the Gauss-Markov theorem for the absence or presence of autocorrelation (relationship) of residues. This econometric analysis method makes it possible to determine the interval boundaries on which covariance (measure of dependence) of their values is observed or absent.

Table 1

Resources to improve company "X" from the point of view by cost category

No.	Category	Cost	Cost management estimate (annual averages,% of cost)
1	Material costs	Office supplies costs (excluding office paper)	Up to 0.20
2		Office paper costs	Up to 1.55
3		Food costs (coffee, cream, tea, sugar, water)	Up to 0.15
4		Cartridge refilling costs (toners)	Up to 2.00
5		Cost of service and rental of office and storage space	Up to 25.00
6	Labour costs	Actual labour costs (including labour taxes and fees)	Up to 22.00
7		including labour costs due to inefficient organization of activities (costs of design, printing and preparing of paper documents)	No cost
8		including costs associated with limited software packages	No cost
9	Costs caused by illegal activities	Appropriation and personal use of office supplies (excluding office paper)	No cost
10		Appropriation and personal use of office paper by employees	No cost
11	Costs caused by illegal activities	Personal appropriation and use of refilling (replacement) cartridge, printers	No cost
12		Office food appropriation	No cost

Source: by the author on the basis of expert data collection.

And then the relationship between the indicators is evaluated using linear, polynomial (second-degree polynomial), degree, logarithmic and exponential models.

The exponential model with the formula was chosen as the most favourable (based on the highest determination coefficient of 0.839) (2):

$$y = 0{,}0714 \times e^{0{,}5327 \times x}, \quad (2)$$

where $e^{0{,}5327 \times x}$ — exponential value in degree $0{,}5327 \times x$.

The graph of this model is shown at *fig. 3*.

This model explained the cost of related materials used in business activities and gave the management of the organization the basis

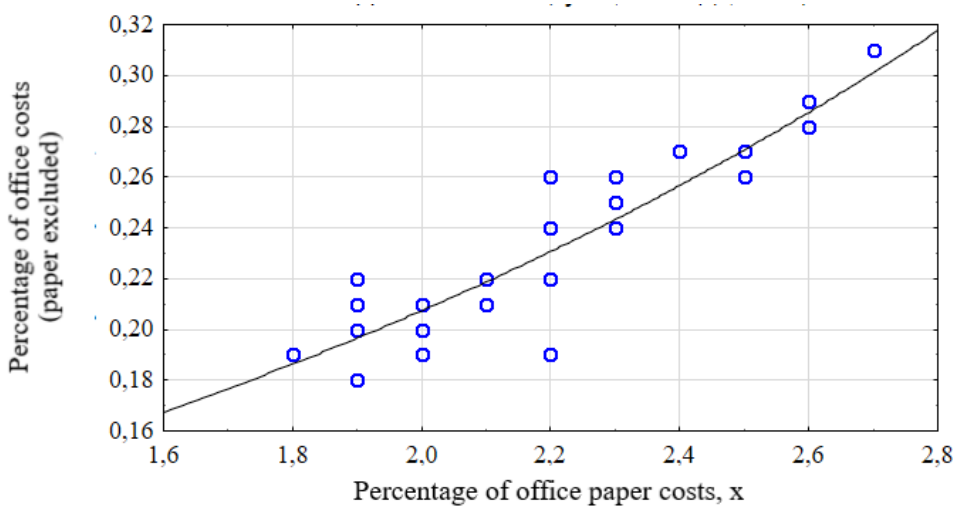

Fig. 3. **Logarithmic model of the dependence of office expenses on paper consumption**

Source: compiled by the authors.

to check the use of resources in the future. Since management personnel believed that the cost of replacing and refueling toners and cartridges was also economically related to the cost of purchasing paper, calculations were made.

When calculating the correlation coefficient for formula (1), the following parameters were selected:

x — percentage of office paper costs of operating costs (explanatory variable);

y — percentage of cost of replacement and refilling of cartridges and toners (explained variable).

A correlation coefficient of 0.543 was obtained from similar calculations, which indicates that there is an average correlation and does not allow the creation of qualitative regression models.

Data for model construction proved to be heteroskedatic.

Company "X" avoided long-term crisis situations, reorganizations and other events during the seven-year period under consideration, can significantly influence the cost of printer accessories and multifunctional devices (MD), comparison data of office paper and cartridge and toner usage. The network memory of printed devices did not store information on the periods prior to the last 3 months (they were subsequently applied to determine the percentage of printouts of a particular device and to count daily transactions), that is why we used the information about the decommissioning of cartridges and toners from the warehouse of "X" (pcs.) and reserve of their printing[5] (in the number of sheets) on the basis of which the formula (3) was derived:

$$S_t = \sum_{i=1}^{n} ((R_i - \beta_i - \xi_0 - \xi_1) \times f_i^t), \qquad (3)$$

where t — time period (certain calendar year);

S_t — total office paper consumed by all printers per year t;

i — indicator reflecting the printing device model;

n — the number of the last model of the printing device (in the company "X" is 4);

R_i — resource of cartridge or toner model in

[5] The printing reserve refers to the difference between the actual printing of office paper and the average value of sheets printed by one cartridge.

Table 2

Comparison of normative and actual paper costs based on company "X" printing data

Year	Normative paper costs calculated on the basis of formula (3), (sheets, pcs.)	Normative paper costs, based on column data 2 (packs of 500 sheets, pcs.)	Actual expenditure of paper cancellation from stock (sheets, pcs.)	Actual paper expenditure, based on column 4 of the table, (packets of 500 sheets, pcs.)	Excess of normative costs of paper, over actually written off, %
1	2	3	4	5	6
2017	845 500	1691	364 500	729	131.962
2018	795 000	1590	373 000	746	113.137
2019	825 000	1650	382 500	765	115.686
2020	705 000	1410	321 500	643	119.285
2021*	815 000	1630	369 500	739	120.568

Source: compiled by the author on the basis of the accounting data of company "X".

Note: * – forecast data estimated by the company.

sheets of office paper, declared by the cartridge manufacturer;

β_i — average error value of refilling of the cartridge or toner model by the manufacturer (from 1.5 to 3%);

ξ_0 — average error value of underuse of the cartridge or toner model, obtained on the basis of data of the household department of the company "X" (оценена в 3% от ресурса картриджа и тонера);

ξ_1 — average value of sheets of paper not used for printing (and for technical installations and manual records), obtained on the basis of analysis of expenses of office paper by "X" (estimated at 4.5% of total paper consumption);

f_i^t — number of cartridges of the given model, written off from the warehouse of the company for a certain year *t*.

The data obtained on the basis of calculations on the formula (3) were compared with the results of consumption of office paper on the basis of information from the accounting system of the company "X" (*table 2*).

Presented in the *table 2* data show a significant excess (more than 110%) of standard costs of paper for printing (based on information on the write-off of cartridges and toners) over actual write-offs. As the management of the household department of the company "X", which accounts for the write-off of materials, could not explain these discrepancies, the authors have admitted that the excess of write-offs can be attributed to the category "costs caused by illegal actions of employees" (*table 1*). At the same time, the cost of actually spent paper according to the data of the use of property in 2021 amounted to 202 766 rub. (based on the information about the purchase of paper).

A comparison of the value of cartridges and toners was made to verify and analyse the approval:

- it actually purchased and written-off by the organization (according to the accounting system);
- used for printing on discarded paper [based on assumptions β_i, ξ_0, ξ_1 formula at (3)].

To correctly calculate the cost of the latter, the formula was derived and applied (4):

$$P_t = \sum_{a=1}^{m} \left(\frac{(Q_t - \xi_1) \times \frac{E_a}{\sum_{a=1}^{m} E_a}}{R} \times c_a \right), \quad (4)$$

where P_t — amount spent on replacement of cartridges and toners used for printing by company "X" for a given year t;

a — footprint symbolizing the specific printing device of company "X";

m — total number of printing devices (in the company "X" equals 32);

Q_t — total office paper consumed by all printers during the period (is shown in column 4 in *table 2*);

E_a — number of documents printed on a specific printer (MD), calculated on web-based office paper consumption by printing devices;

c_a — cost of replacement of cartridge or toner for specific model, based on data from dealers;

$\frac{E_a}{\sum_{a=1}^{n} E_a}$ — share based on 3month network printing data; (was accepted as a constant value for a specific device according to the data of the household department of the company "X" on the uniform loading of printers).

The results of calculations carried out under formula (4) are presented in *table 3*.

The sum of the values in column 4 indicates a loss of 1 316 690 rub. for 5 years due to the lack of effective control over the expenditure of material resources, which is 1.84% of the organization's net profit in 2020.

According to preliminary data on net profit for 2021, similar illegal write-offs are forecast at 2.03%.

Paper, cartridge and toner consuming process is subsidiary and supporting for individual business processes, but it is present in all companies and creates (with inadequate accounting) opportunities for illegal actions of staff. The results of the calculations show that the cost reduction reserves at the optimization of operating activities can be significant for any enterprise, but they are most relevant for organizations with a large document management. Efficient use of support resources reduces the amount of natural resources used for their production and contributes to the realization of ESG-goals of the company.

Additional costs associated with the printing process are labour costs (*table 1*, rows 7 and 8), who print the documentation. Taking into account the fact that in the company "X" 95,5% of the amount of office paper written off from the warehouse is sent for printing every year [on the basis of the ξ_1 of formula (3)], to calculate labour input data, the following formula was derived: (5):

$$N_t = \left(\sum_{i=1}^{n} \left(\frac{Q_t - \xi_1}{V_t} \times \frac{U_i}{3600} \right) + \sum_{i=1}^{n} \left(\frac{F_i}{3600} \times K \times m \right) \right) \times V_t \times \frac{1}{8} \times \frac{Z_t}{D_t}, \quad (5)$$

where N_t — annual amount spent on staff printing time during working hours for a given year t;

V_t — number of working days in a given year t;

U_i — printing time of 1 page of a given printer model or MD per second (for all devices of the company "X" 4 second);

$\frac{U_i}{3600}$ — ratio of printing time of 1 page (second) to the number of second per astronomical hour;

F_i — duration of activation and warm-up of the printing unit of a particular model before each start of printing in second (for all devices of the company "X" 9 second);

Table 3

Comparison of information on discarded and used cartridges and toners of company "X" printing device models*

Year	The cost of cartridges and toners actually purchased and cancellation by the organization, rub.	The cost of cartridges and toners used when printing on cancellation paper, rub.	Variances between costs from columns 2 and 3, rub.	Variances between costs from columns 2 and 3,%
1	2	3	4	5
2017	372 343.19	155 172.51	217 170.68	139.95
Corrected values of 2017 to2022	520 182.91	216 784.11	303 398.80	–
2018	392 453.74	179 543.00	212 910.74	118.58
Corrected values of 2018 to 2022	502 815.50	230 032.22	272 783.29	–
2019	414 571.14	187 516.43	227 054.71	121.09
Corrected values of 2019 to 2022	494 478.69	223 659.75	270 818.94	–
2020	354 673.34	159 719.22	194 954.12	122.06
Corrected values of 2020 to 2022	394 438.92	177 626.76	216 812.16	–
2021*	424 129.49	185 519.22	238 610.27	128.62
Corrected values of 2021** to 2022	449 488.90	196 611.72	252 877.18	–

Source: compiled by the author based on the organization's accounting data.

Note: * – the values given have been calculated by a multiplier based on the CBRF key rate. ** – forecast data estimated by company "X".

$\frac{F_i}{3600}$ — ratio of activation and warm-up time to the number of second in astronomical hour;

K — average number of printer's inclusions and warmers before each printing [for "X" company — this is 14 times (based on data from network memory devices]);

$\frac{1}{8}$ — ratio intended to translate the number of hours received on working days (8 hours);

Z_t — average salary of employees for a certain year t in rub. per month (employee pay is taken into account non-staff personnel: printing of documents is not their main activity);

Table 4

Costs incurred by company "X" for employee labour in printing documents

Year	Printing time of all employees, number of working days	Working hours (column 2) per 1 printing officer, number of working days	Cost of employees' time from (column 2) spent on printing, rub.	Expenditures from (column 4) expressed per 1 printing officer, rub.
1	2	3	4	5
2017	82.93	0.99	259 859.92	3130.84
2018	84.05	1.01	272 785.15	3286.57
2019	85.31	1.03	295 526.23	3560.56
2020	77.36	0.93	277 572.47	3344.25
2021*	83.59	1.01	307 015.89	3698.99

Source: compiled by the author based on data on the reflection of salaries in the 1C Enterprise system, and expert assessments.

Note: * – forecast data estimated by company "X".

D_t – average duration of 1 month (in working days) for a given year t;

$\frac{Z_t}{D_t}$ – ratio, which determines the average salary of the employees engaged in the printing of documents in a month (in rub. for one working day).

Formula (5) allows the calculation of the cost of working time (in ruble terms from wages), and also take into account working hours (when used without multiplication by $\frac{Z_t}{D_t}$), that staff used to print documentation.

Such employment actually distracts the staff and contradicts the ESG's environmental focus (for paper consumption rather than electronic workflow). The result of these costs for the company "X", calculated according to the formula (5), is given in the *table 4*.

These *tables 4* allow to approve: printing of documents in the company "X" annually leads to underperformance of employees one working day (column 3), this is the reason for the increase in their salaries (column 4). It is appropriate to consider that this type of activity in this case causes additional labour and material costs (*table 1*).

USE OF EFFICIENCY RESERVES IN ECONOMIC ACTIVITIES

Improving the performance of the company has an impact on the optimization of the work of specific units that determine the end result of the activity. This is due to both the ease of administration and the ability to assign responsibility for results. Since the identified losses, which led to the search for ways to improve business efficiency, are the result of all identified cost categories (material, labour and illegal,

Table 5

Optimisation matrix of company "X" activity

No.	Optimization solution name	Impact effect optimization of cost category			Implementation risk
		Material	Labour	Illegal	
1	Establishment of a staff monitoring system	Reducing office space costs	Improving the workflow quality	Increasing staff responsibility	Reducing staff motivation
2	Introduction of additional staff motivation systems	Reduced use of material resources	Increasing employee loyalty	Failure of staff to engage in defamatory activities	Increase in operating costs
3	Establishment of compulsory accounting for targeted material consumption	Material cost reduction	Increasing staff responsibilities	Reducing non-earmarked material costs	Bureaucratization of activities
4	Introduction of new technological solutions	Technology implementation and services costs	Improving the quality of operations	Avoiding unnecessary expenses of activities	Staff skills shortage
5	Identification and prosecution of individuals with illegal expenses	Reimbursement costs to the organization	Loss of employee loyalty	Minimizing the costs of the illegal type	The emergence of new ways of avoiding responsibility
6	Rejection of the use of expensive materiel	Loss of value of material resources	Reducing the quality of staff	Reducing the cost of illegal write-offs	Company reputational loss
7	Transfer of individual business processes to outsourcing	Loss of synergy of activities	Staff reductions	Reduction of illegal expenses	Loss of competitive advantage

Source: compiled by the author.

table 1), it is possible to divide the ways of their optimization. Possible solutions and their risks are given in *table 5*.

Presented in the *table 5* decisions are acceptable to use when choosing methods of optimization of economic activity of a commercial organization, and it is advisable to single out those that aim to avoid the negative consequences arising from the minimization of operational risks.

For the company "X" such solutions are established taking into account the principles of ESG and should have a qualitative impact on the results of the organization of work. In the case considered, the exclusive application of decisions 1 or 5 will not lead to the optimization of the enterprise's activities, negatively affecting its social orientation. Decisions 6 and 7 can disrupt the workflow and affect the quality of its organization.

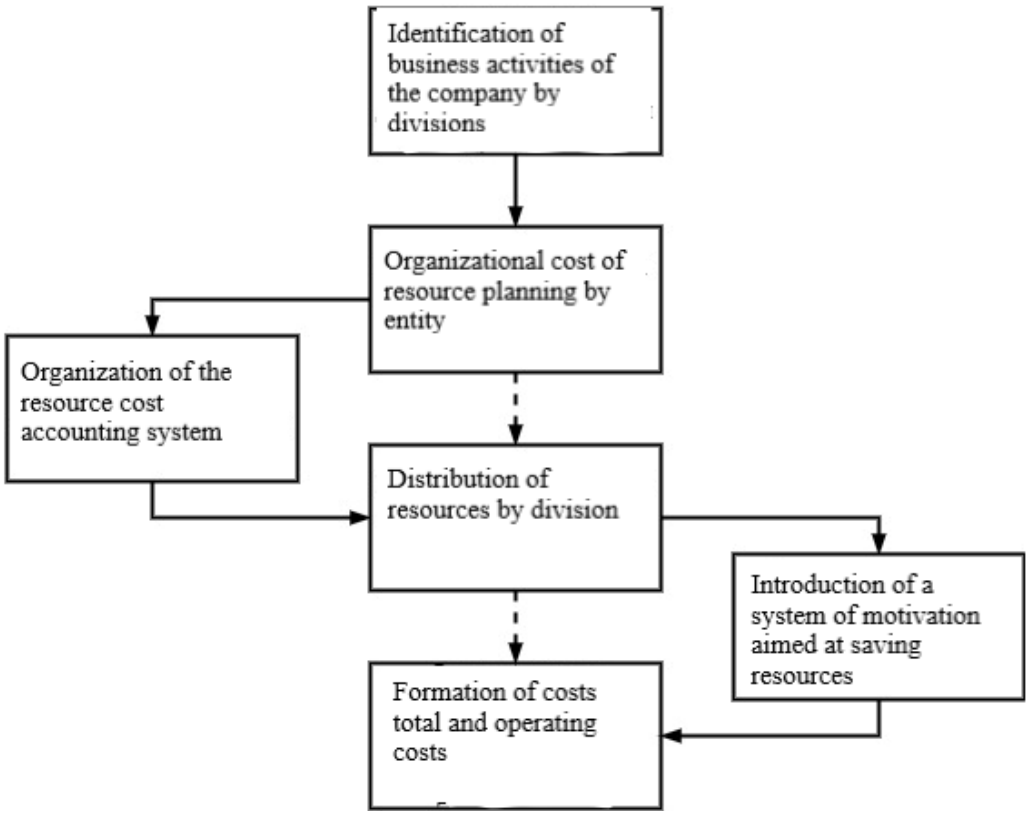

Fig. 4. **Scheme of implementation of optimization solutions in the economic activity of the organization**

Source: compiled by the author.

However, the application of all indicated in the *table 5* directions of changes can improve the efficiency of the organization as a whole.

Based on these *table 5* will formulate 2 final decisions:

1. Organization of accounting for the distribution of the organization's material costs among units in order to minimize illegal write-offs in future periods.

2. Establishment of a staff motivation system, aimed to awards a staff and offices, trying to reduce costs of the company "X", including through saving of support materials.

In order to implement the first organization recommended to oblige the household department to carry out a permanent inventory of sets of office paper and cartridges (toners) sent to specific departments of the company. Such accounting system allows for the identification of the entities with the largest expenditure of resources and the adjustment of their targets.

The second decision aims to encourage (reward) employees and divisions in the organization to reduce printing and to convert documents to electronic format.

The scheme given in *fig. 4* allows to assess the need for a step-by-step introduction of these optimization decisions, which is due to the lack of information in the company "X" about the target spending of resources. They involve a change in the organization of activities (previous versions are marked with a dotted line).

When assessing the potential reduction in printing costs, the authors based their

assessment on the data on "X" activities during the period of distance work caused by the COVID-19 pandemic in 2020. The transfer of employee interactions to an online format allowed for almost complete suspension of material consumption, labour and illegal costs of printing documents due to the absence of staff in the office and the establishment of ways to provide and preserve basic documentation in electronic format.

Distance activity contributed to a 6.4% decrease in the cost of material write-off for the year, with no deterioration in the performance of "X" company. As a result, the reduction target for cartridges, toners and paper, the amount of this reduction has been determined.

This level has been proposed through the staff motivation system. In the early stages of the project, a premium of 125% of the cost of the material saved was proposed (paper and cartridges), further — pay fees up to 75% of the savings. Since around 40% of printing costs are wages (data on *tables 3*, *4*), a 1% reduction in printing volumes will result in an additional 0.66% reduction in staff labour input. As a result, the company "X" will get the opportunity to save up to 1.7% of material costs (taking into account the summing with labor). Payment of a premium equivalent to 125% of the cost of the saved materials in this case will allow the company to save the amount equal to 0.45% of the price spent on the used materials.

Accordingly, the company will be able to optimize its printing and training costs up to promotion the amount of the employee, up to 180% (short term) of the cost of the material saved.

According to the authors, this decision on staff motivation is economically justified and recommended for introduction into economic activities.

BUSINESS PROCESS CHANGES BASED ON OPERATING PROCESS OPTIMIZATION

The proposed solutions on *fig. 4* to increase the efficiency of activity were gradually introduced into the economic process of "X".

In the first phase, a cost-accounting system was established. The Department of Household, which is responsible for the preservation of materials in the warehouses, began to maintain detailed records of the allocation of resources to specific units of the company.

This system was tested over two quarters, the results are shown in the *table 6*.

Data *table 6* about the period before (from 2017 to 2020) and after (2021). Implementation of the accounting system shows a significant reduction in the excess of the normative costs of office paper, which indicates the effectiveness of its use and a decrease in the illegal write-offs of cartridges and toners by almost 69%.[6]

Cost accounting additionally allowed to identify the units of the company "X", carrying the largest consumption of office paper and cartridges. This information contributed to further training and implementation of the staff motivation system. Ideally, the preparation and content of printed documents is not appropriate only for those reports for which such type of legal regulation exists.

Implementation and testing of recommendations were carried out between III and IV quarters 2021. The implementation of the system was carried out by informing staff about the payment of bonuses amounting to 125% of the cost of the saved cartridges, toners and office paper relative to I–II quarters and prior periods.

As a means of reducing material costs, it was suggested:

[6] The value is obtained from the calculation of the excess of illegally written-off materials.

Table 6

Data on the results of the implementation of the resource accounting system in the company "X"

Period	Normative paper costs calculated on the basis of formula (3), (packs of 500 sheets, pcs.)	Actual paper costs calculated on the basis of formula (3), (packets of 500 sheets, pcs.)	Excess of standard costs of paper, over actual cancellation, %
1	2	3	4
I–II quarters 2017	881	521	69.10
I–II quarters 2018	850	533	59.48
I–II quarters 2019	873	546	59.89
I–II quarters 2020	746	459	62.53
I–II quarters 2021	526	442	19.01

Source: compiled by the author on the basis of the accounting records of company "X".

Expenses of "X" company for remuneration of employees before and after introduction of motivation system

Period	Printing time of all employee, working days	Cost to pay for working time (column 2) basis of formula (5), rub.	Cost growth rate on column 3, %
1	2	3	4
III–IV quarters 2017	39.68	124 334.89	–
III–IV quarters 2018	40.80	132 419.98	6.50
III–IV quarters 2019	41.01	144 159.14	8.87
III–IV quarters 2020	36.84	132 177.37	– 8.31
III–IV quarters 2021	29.85	109 648.53	– 17.04

Source: compiled by the authors on the basis of data from the 1C Enterprise system and expert assessments.

- transfer all documents to electronic format, acquire qualified electronic signatures;
- explore independently way to optimize its activities based on software packages;
- transfer paper-based documentation to cloud services and hard drives.

As a result, staff salaries decreased (*table 7*).

Table 7 shows a significant reduction in staff time to print documentation. Relative to 2020, the change in 2021 was more than 17%, as for 2019–23.94%. As a result, staff became more efficient in managing their work

processes, performing more scheduled tasks, and printing losses were reduced.

At the same time, according to "X", the aggregate reduction of costs for office paper, replacement and refueling of cartridges, toners and wage of employees was 6.64% after the introduction of the first and second optimization solutions (including premium costs).

The organization managed to develop ESG-sustainability, increase its investment attractiveness, increase the motivation and quality of its employees.

CONCLUSIONS

In today's unstable environment, a company's market success will be determined by rapid adaptation to changing environmental conditions combined with the most efficient use of its own resources, and, given the drop in demand for some services caused by the pandemic, to a large extent — the ability to mobilize all available reserves. Known strategic approaches focus on finding opportunities in the value chain and in company resources. A significant increase in the efficiency of the enterprise can provide analysis and optimization of the use of auxiliary resources: office paper, cartridges, etc. Proper accounting for support materials and monitoring of office equipment exposes financial losses (of which incurred as a result of unproductive work by staff), substantiate recommendations to improve business processes, find opportunities for material remuneration of staff by saving resources. The developed methodical approach and mathematical apparatus can be used for analysis of efficiency of use of other support materials.

Optimizing the use of support resources contributes to the company's ESG goals by reducing the cost of natural materials needed for their production. But it should be noted that at the same time the question of the impact of the ESG-orientation on the economic activities of a single organization in terms of support processes and their costs remains little studied.

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Knowledge Management in Higher Education: Theory and Practice

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ABSTRACT

Knowledge is now recognized as the driving force behind economic growth and productivity. The purpose of the article is study of the theory and practice of knowledge management as the basis for the competitive advantage of a modern organization on the example of a specific institution of higher education — Astrakhan State University. The methodological basis was a categorical apparatus of the knowledge management system, methods of description, analysis, synthesis, content analysis, as well as a systematic approach in relation to the description of the experience of a particular university. As part of the study, the systematization of theoretical views on the management of explicit and implicit knowledge was carried out, the features of this process in the higher education system were studied, and the barriers that prevent the free transfer of knowledge in organizations of this type were identified. The data considered in the article can be used in the institutions of higher education in Russia in the development of strategies in the relevant field of activity.

Keywords: explicit knowledge; tacit knowledge; socialization; externalization; internalization; combination; knowledge management; higher education institutions; Big room.

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INTRODUCTION

The need for creative, intuitive, inspiring leaders capable of managing human intelligence and transforming it into useful products and services continues to grow around the world [1]. At the same time, knowledge, necessary for long-term sustainable competitive advantage and success of any organization, is considered as the most important organizational resource [2].

Knowledge exists in explicit (material) and implicit (intangible) forms. And since the main achievements in the organization largely depend on the tacit knowledge possessed by its employees, an important research question becomes the development and application of strategies that encourage the sharing and ability to manage this knowledge in the workforce.

This is especially true for organizations of higher education, as the academic environment is a "treasure trove" of knowledge, but if it is not properly organized, it loses its usefulness and carries out repetitive activities.

Most existing works in the Russian and foreign literature are mainly devoted to the creation and exchange of knowledge in the corporate sector, without reference to any industry, including higher education [3]. In this regard, the topic of the present study is of particular interest.

EXPLICIT AND IMPLICIT KNOWLEDGE

The importance of knowledge management in the companies is devoted to the works of many foreign and domestic scientists. M.S. Volodkina, systematizing the milestones of evolution of theoretical developments on this topic in the world practice, distinguishes three stages in foreign studies (starting from 1959), while in Russia this direction, according to the author, begins to develop only since 1995 [4].

Among the works of foreign scientists, the approach of I. Nonaka, H. Takeuchi [2] stands out significantly, with the appearance of which the topic of knowledge management in its modern form began to be paid close attention.

I. Nonaka provides two types of knowledge: explicit and implicit.

Implicit knowledge is highly individual, context-dependent, difficult to formalize and transfer from one person to another in the process of written or verbal expression, it is not fixed by language or mathematics, it is also difficult to reduce to a written form — it consists of mental models, values, beliefs, perceptions and assumptions [2]. However, K. Dalkir [5, p. 8] notes that tacit knowledge is rather relative concept: something that is easily formulated by one person can be difficult to externalize to others. That is, the same content may be explicit to one person and implicit to another. E. A. Smith [6], based on the analysis of a number of papers on implicit knowledge, is summarized their properties as follows:

- live in human minds as well as in relationships;
- are acquired through exchange of experience, observation, and imitation;
- rarely documented, being personal and difficult to formalize;
- unstructured, difficult to see, codify, evaluate, research, record, document and accurately transfer;
- hidden in actions, procedures, values, emotions, etc.;
- assimilated through experience, skills, observations, intuition, mental modes, beliefs;
- experience-based (knowledge-action);
- unconscious;
- are transmitted through conversation, storytelling, discussion, analogies, demonstrations;
- are submitted to be practical, job-specific (know-how), experience-based, dependent on the "here-and-now" context and the expert's knowledge.

In other words, tacit knowledge includes skills, ideas and experiences that are difficult to acquire and transfer [7]. They consist of complex,

scattered and mostly "unrefined" knowledge accumulated in the minds of knowledgeable individuals as a unique understanding. Within the company, they represent the underlying array of organizational knowledge, having a priority value and are key to building individual and organizational innovation capability [8]. Decision-making efficiency, production capacity, customer service and task accuracy can be improved by using it. They increase the smoothness of operation and increase quality of work [9]. At the same time, according to some authors, it is difficult to gain access to them and to transfer them — you can only convert them into explicit knowledge [2, 10]. Implicit knowledge is often underestimated and underutilized in the workplace, so it is very important for the organization to determine where it is located. Almost two-thirds of work-related information from direct personal contacts, such as casual conversations, stories, mentoring, internships, and apprenticeships, gradually turns into them. Spontaneous, creative conversations often arise when people exchange ideas and practical questions in a free and open environment.

Explicit knowledge, on the other hand, is easily encoded, transmitted and disseminated within an organization. They can be expressed in a formal and systematic language, easily shared [2]. Most of them are technical or academic data such as manuals, mathematical expressions, copyrights and patents. This systematized knowledge is easily transmitted and disseminated through print, electronic and other formal means. Therefore, they are also otherwise known as "formal" or "formalized" and are technical in nature, requiring a certain level of academic knowledge or understanding that is acquired through formal education or structured learning. An important feature of explicit knowledge is that, according to the views of D. Isaacs, it cannot be transformed into implicit knowledge [11].

Thus, there are two types of knowledge: explicit (formalized) and implicit (unformalized) (see table).

There are four main models of knowledge creation in organizations [2]:

1. Socialization (from implicit to implicit): Learning by observation, imitation and practice or socialization. At this stage, knowledge is not explicit. An example is on-the-job (or off-the-job) learning, for example by mentors or peers.
2. Combination (from explicit to explicit): combining separate parts into a new whole; combining different forms of formal knowledge. Contributes to the creation of system knowledge or samples of it and new technologies, for example, using multiple data sources to write a financial report.
3. Externalization (from implicit to explicit) — recording discussions, descriptions and innovations in a manual, and then using the content to create a new product. Externalization is manifested in the creation of new knowledge in the form of analogies, hypotheses, metaphors, concepts and models, and means finding a way to express the inexpressible [12].
4. Internalization (from explicit to implicit) — reformulating or interpreting explicit knowledge (using the human frame of reference) so that it can be understood and then absorbed or adopted by others, such as creatively applying someone else's unique tacit knowledge to expand, augment, or reinterpret a particular idea. Allows for operational knowledge, often presented in the form of diagrams, guides, etc.

Creation of organizational knowledge is a process of continuous active interaction of unformalized and formalized knowledge. The main role in this process belongs to the team finding new points of view through conversations and discussions. The task of the organization is to provide the necessary conditions for group interaction, such as autonomy, intention, redundancy and

Table

Two types of knowledge

Non-formalized knowledge	Formalized knowledge
From experience (body) Simultaneous (here and now) Analog (practice)	Derived from reasoning (soul) Consistent (there and then) Digital (theory)

Source: [11, p. 86].

diversity of information, shaking and creative chaos. Experts recognize the company British Petroleum as the leader in the field creation and management of knowledge at the corporate level [13]. The leading role in this process, according to K. A. Leontieva, belongs to the human resources management service [14].

In the article "Tacit knowledge for the development of organizations", Mohajan H.K. [15] gives the classification of barriers to the transfer of implicit knowledge:

- individual: the personality of the person, temperament, attitude, interpersonal skills;
- organizational: leaders in some organizations are barriers to the sharing of implicit knowledge as they create bureaucratic and hierarchical organizational structures;
- technological: the cost, speed and accessibility of information technology tools that include the codification, personalization and customization of knowledge and information play an important role in knowledge management [16].

Analyzing the problem of transfer of tacit knowledge for higher education institutions, let us focus on a comprehensive study: "To share or not to share? Research-Knowledge Sharing in Higher Education Institution", which was conducted by a team of staff from Portsmouth University (UK) in 2013 [3]. Two groups of scientists, consisting of eleven researchers[1] and seven research-leaders,[2] representing four different disciplines in the business school of one higher education institution in the country, were interviewed using the purposive sampling approach. By conducting 18 semi-structured interviews, the authors received answers to a series of questions: when is knowledge worth sharing? why? why not to share knowledge?

They identified six main reasons why respondents thought it was worthwhile to share academic knowledge:

1) this contributes to the fulfilment of academic requirements (making a contribution to the development of the university);

2) satisfies personal interests (allows to learn what others are doing and better understand one's own research);

3) increases the productivity of research (the overall quality of its results is improved);

4) helps validate the quality of the research (facilitates getting feedback from colleagues, shapes more creative thinking);

5) ensures the fulfilment of university requirements (primarily, in terms of publication activity);

6) promotes career growth.

This research paper takes a fresh look at the need to create and implement an appropriate mechanism and culture that encourages employees to share their knowledge.

[1] Researchers were identified as academics employed as teachers and researchers on employment contracts and with early-, mid-career, and senior professional status (with 5, 10, and more than 10 years of experience, respectively).

[2] Research-leaders were defined as individuals with formal managerial authority who are involved in repeated research at various levels of the institution: university (e.g., provost for research), faculty or school (e.g., dean) and department (e.g., professor and associate professor).

Since ancient times it was believed that the main source for their creation and application was capital, raw materials and labor. Nowadays, knowledge is regarded as an exceptional fund of economic resources and a factor of long-term advantage in all fields, since it provides the potential for economic and social development and international competitiveness.

Unlike all other industries, the knowledge that is created in higher education is its main task and goal: education includes the training of specialists with certain qualifications, researchers (scientists), who can create new knowledge and as a result of experimental activities and scientific work to develop high-tech products and innovative systems, demanded in modern branches of science and economy.

The purpose of knowledge management in universities is that they serve to innovate, make creative and informed decisions, transform seamlessly, thereby creating more valuable educational products and services and enhancing the overall effectiveness of the organization, supporting an interactive learning environment built on trust and openness. At the same time, building a knowledge management system should imply significant changes in the corporate culture of an educational organization [17].

KNOWLEDGE CREATION EXPERIENCE AT ASTRAKHAN STATE UNIVERSITY

Consider the example of Astrakhan State University (ASU) as a university, which for many years has been forming a new management system that promotes the creation of knowledge.

In the previous 15–20 years, developing and implementing domestic and foreign experience in the sphere of innovation, improving the quality of services and products, ASU faced with the problem of formation of various models of an open space for interaction between managers and employees, the need to create a new structure, which led to an intensive study of the world experience, which generally fits into the paradigm of the university, creating knowledge.

1. Knowledge transfer through the organizational learning system

In order to increase the efficiency of knowledge transfer within the university, a system of organizational learning has been established at ASU, which on the first phase included weekly (on Mondays) meetings of all levels of management, including rector, vice-rectors, deans, heads of departments, managers of departments (legal, accounting, library, administrative and household part, etc.), commandants of academic buildings and dormitories (about 250 people in total), to study the best international and Russian concepts, theories and organizational practices.

The next step included training for institutions, faculties and other units, covering all departments and all categories of staff.

Later moved on to the training of student activists — leaders of student organizations (starting with the seniors and ending with the heads of faculties), chairmen of student councils of faculties (for academic, scientific, sports, cultural and mass work, etc.). To implement this project there were created Territories of student initiatives, on the basis of which there were held faculty events according to a certain schedule.

Further this pyramid was expanded to socialization projects (creative, sports, science, etc.), and almost all students were involved in the process of organizational learning. Thus, on the one hand, there was a transfer of knowledge: through individual speeches, including personal experience, which helped participants to understand the information for further implementation in the workplace; on the other, the development of new

organizational, technological knowledge and skills. Based on this experience, new innovative products and processes were improved and created.

2. "Big room" as a way to improve communication and creative process

The effective experience of the workshops (briefings) was realized based on the created the "large room",[3] i.e. space, where joint operational and strategic planning issues were conducted: pull-out sessions, daily and weekly meetings lasting no more than 40 minutes in stand-up regime.[4] An important element of this space are the "big boards" placed around the perimeter, on which visual information on the issue under discussion is located: graphs, histograms, statistics. The participants in each meeting (session), other than speakers, did not specifically prepare for a particular topic, and learned about it immediately at the beginning of the event and improvised with the help of explicit and implicit knowledge, which was deeply owned and could operate. It kept everyone in the audience engaged.

Working in the Big room allowed to develop intuitive, logical and informal thinking, to train the ability to discuss and find non-standard solutions. The speeches had a strict time limit, which allowed the attendees to "feel" time and not to spray on unrelated issues. If necessary, everyone moved from one point of the room to another depending on the material under consideration and the question under discussion. The presentations welcomed the use of theories studied on organizational training: lean production tools, theory of constraints, Pareto's law, etc. All of this strengthened the connection between theory and practice stimulated managers' ability to apply the knowledge of humanitarian and philosophical theories, engineering training (CDIO), natural science research, recreational activities in the current and strategic activities of the unit (in their training the emphasis was primarily made on three points: the importance of human relations and people involvement, methods and value of continuous improvement of processes and services [18]). Much attention was paid by the speakers to the analysis and development of the industrial culture of the university staff.

An example of using the Big room to solve problems is the experience of collective design and search of design and architectural solutions of the new laboratory complex ASU. The initial deployment to the new facility was: four faculties — two economic (economics and management; business) and two engineering (physics, mathematics and engineering technology; digital technology and cybersecurity), research laboratories and supporting infrastructure (swimming pool, catering center, including restaurants and cafes, gyms, large halls, which could be used for different purposes). The long-term construction of the complex (due to the lack of uniform federal funding) has created new ideas and opportunities for its improvement, including the innovative space, designed in the Big room, which includes the Caspian Higher School of Translation, Territory of development of writing and thinking, modern library and reading room. Creating a new building, the university moved from the only prospect of development of the university as a rigid structure, from simple observation and reflection (Newtonian paradigm) to multiple, multivariate expansion and constant change, to the use of university staff such tools as intuition, ingenuity,

[3] The Big Room experience was studied on the example of Toyota and adapted based on the internship of a group of ASU scientists and employees. The Big Room concept is related to the concept of co-location; in the case of Toyota, co-location of multidisciplinary teams to improve communication and creative process in the creation of cars.

[4] Stand-up is a regular short team meeting held standing in order to save time and increase the productivity of the discussion.

awareness and consciousness. All this testifies to the quantum of the organization, in which there is "a relationship between complexity and self-organizing structures" [19, p. 572–573].

3. Transforming implicit knowledge into implicit in the organization of extracurricular activities

The Cultural Centre of the University, as well as the territory of its outdoor and indoor sports grounds, were experimental areas for the implementation in the educational and extracurricular work of the knowledge and information that were created during the process of organizational learning and socialization: creative, sporting, scientific [20]. Let us consider in more detail the project "Socialization for the development and improvement of physical education of ASU students", which became one of the effective forms of this work and is implemented in ASU starting from 2015. Its organizers proceeded from the assumption of the possibility of physical self-improvement of the individual (students) throughout their life through the formation of a collective interest in certain types of sports based on the basis of relevant knowledge and skills.

The project took place twice a year (in the first and second semesters) in the form of a festival, which includes theoretical training and practical part (mastering the skills of sports games and competitions). The first festival was dedicated to volleyball and basketball (further handball, football, hockey, water polo, lapta, etc.). The theoretical part was devoted to the history of games, their development in different countries and the success of our athletes in international championships and Olympiads, as well as the history of outstanding Russian leaders, winners of the corresponding competitions (including the Astrakhan athletes). Then followed practical training of "beginners" by senior students (student leaders), who had experience and success in a particular sport and organized and held competitions within the framework of the sports festival and sports socialization projects, also acting as judges. When summing up the results took into account, not only the real wins, but also the number of students who participated for the first time in the competition, both as members of teams and as fans.

During one semester about 800 students of the university took part in sports socialization projects: in two months, they could get not only the skills of the game, but also get acquainted with the history of these sports.

The main task was to create a favorable educational environment that develops students' personal and professional qualities, motivation and sustained interest in health promotion. The games provided optimal improvement of physical qualities (including physique), hardening of the body, and harmonious development of physiological functions. The project was implemented on a voluntary basis and was based on the creative initiative. Any student admitted by a doctor to physical training and health-improving activities could become a participant. The atmosphere was informal and friendly, the winners were awarded cups the participants received certificates.

The teams were composed equally of young men and women who had not previously participated in these sports. The long-term objective was to provide students with knowledge, skills and interest in sports, to make this hobby spread among their friends, relatives and family members; to raise loyal fans who enjoy the success of not only Astrakhan people, but all Russians in various competitions in our country and abroad.

The impact of this work is evidenced by the comments of the participants: "The sports socialization was exactly what the university lacked", "The project was held at a high level.

It was interesting to see what the guys learned during socialization", "Projects had a good effect on students — improved skills: in a certain sport, communicative skills (the guys began to communicate more with each other), and team games rallied the teams", "It was nice to get the experience of a leader, interact with students, organize daily routine" [21, p. 2, 3].

As a result, a new technology was created, forming another method of organizing a healthy lifestyle. The project showed that the formation of knowledge and skills development in two or three kinds of sports during education at the university allows adjusting the long-term program of a healthy lifestyle. This experiment is socially significant as it was aimed at important social changes in the student community — popularization of healthy lifestyle, sports; organization of active leisure time and formation of a harmonious personality.

The following facts testify the success of the project:

- it demonstrated specific performance indicators — increasing the satisfaction of consumers of educational services of ASU; involving 10% of students per year in different sports;
- has shown signs of scalability — it was implemented not only within the university walls, but also aroused interest and was applied and further developed in schools of the region;
- has been open to both new participants and those who would like to launch a similar product independently (by colleagues from other Russian and foreign universities).

When assessing the effectiveness of creative socialization, it was also revealed that the implementation of the strategy of innovative management in this area in ASU led to the growth of students' activity and increased their social-role mobility (growth of initiative and leadership competencies) [22].

4. Formalization of new knowledge in ASU

For the development of analytical thinking and systematization of the university experience the newspaper "News of ASU" was published monthly, in which the experience of various ASU divisions and successful Russian and foreign practices were broadcast to students, teachers and staff. The newspaper had the following headings: the latest news, international cooperation, the main theme of the issue, practical application and there was a liner "Organizational training".

In order to better transfer of knowledge, the university started to publish a student magazine "Leadership holding[5]". The publication was conceived and functioned as a platform for leaders of organizational projects, who shared their experience on its pages and helped inspire others to their own achievements. The journal was the result of many years of work on organizational learning and development of the philosophy of learning organization of students and employees, lean management at ASU. The main content tool was an essay.

These publishing projects allowed for a long period to analyze the current activities of ASU and to use the gained practical experience of interaction with Russian and foreign partners to assess the effectiveness of contacts, analysis of quantitative parameters presented in various issues of the newspaper and magazine, assessment of progress the development of the university, implementation of the search for more effective forms of work.

5. "Middle-up-down" management

Taking into account that the greatest impact of knowledge transformation is achieved through the use of the management model "middle-up-

[5] Holding in this context means supporting environment, innovative environment, space of mental and physical retention of students.

down", ASU has implemented and applies the practice where the main role in this process is given to mid-level managers (who lead a team or a working group). Let's consider one of the examples of implementation of this model in the case "Digital Platform for Financial Cybersecurity".

The management of the Astrakhan branch of Sberbank (at the level of deputy manager) asked university researchers to initiate and create a product that would help counter the illegal actions of telephone financial fraudsters against citizens. After a brief discussion by a mid-level manager, a digital cybersecurity simulator platform was proposed as an idea that could contain a number of cases of financial fraud and advice on how to counter it. During the following meetings, it started to take shape and became a complex consisting of three main components: digital materials on countering financial fraudsters (cards with tips, social videos, etc.); simulator on financial cybersecurity and its basics training course; program that was formed during the brainstorming sessions by the project team, composed of psychologists, lawyers, economists, information security specialists, video recording and editing.

The project was approved by the stakeholders.

Its head (leader), who was a mid-level manager, divided the team into two groups. The first was responsible for the preparation of the financial cybersecurity simulator (development of solution logic, content preparation, software implementation). The second was responsible for the preparation of the training course (pedagogical design, schedule of preparation of materials and recording of video, coordination of material, development of the course management system and test implementation, video processing). In turn, the project leader was the organizer and transformer of organizational knowledge, monitored the quality of the created digital product and participated in its development.

A working version of the product was presented to all stakeholders and potential customers: at the open meeting mechanisms for further joint work on the project and its promotion by groups of the identified target audience were discussed. The product received positive feedback from top managers, and support was expressed for its future development.

The project team was characterized by a high level of self-motivation (reinforced, including due to the high social value of the project), self-education (the new direction of the project allowed to delve into the specifics of the new problems under consideration) and self-management (the project leader was the coordinator, allowing participants to realize their creative potential and innovative vision).

Involvement of senior management in the project took place at the final stage (presentation stage) of the project in order to assess the quality and further support. The team created a product, which is in demand (according to the target audience) on the regional market. The middle management acted as the managing creator of knowledge and the release of a demanded product based on the problem, transformers of organizational knowledge into a really working mechanism, managers-integrators and leaders of change in their sphere. Being in the middle of the intra-organizational interaction, such managers are able to initiate direct communication, development of solutions (products) using the accumulated knowledge, experience and expertise in the subject area.

So, through the work of middle-level managers in accordance with the model "middle-up-down", targeted knowledge creation was organized by providing subordinates with a conceptual framework that helps them to comprehend individual experience.

CONCLUSION

As a result of the research on knowledge management in higher education organizations, it should be noted, that:

1. Of the rather impressive number of works on the creation and transfer of knowledge, only a limited number are devoted to the study of conditions, which contribute to this, and concrete successful examples of forming the relevant environment in higher education organizations. Most focus on the knowledge itself (its types), the stages of its transformation and the barriers to its effective transfer.

2. At the same time, purposeful creation of a full cycle knowledge management system in higher education institutions seems necessary, as it will help to support innovators, strengthen research infrastructure, develop new competitive services and educational products, distribute basic technologies inside and outside the organization and promote specific industries.

3. The article reviewed the ASU experience that encourages knowledge sharing at the individual, team, and organizational level. Specific conditions and projects that created a systematic approach to self-learning and knowledge transfer were described. The practice of Astrakhan State University confirms that in order to increase the ability to transfer knowledge, it is important that the structure of the university allows the exchange of information between different units and networks of external experts. In this regard, leaders of public sector organizations should take advantage of decentralized structures and cross-functional teams, project management from "middle-up-down". However, the experience of ASU shows that tacit knowledge can be lost through outsourcing, mergers, and employee layoffs.

According to the authors, an effective environment through which the organization can support knowledge creation and transfer is best formed through the introduction of an organizational learning system, covering all levels of management and categories of staff. In addition, for the implementation of project activities in universities, a special space for intensive interaction should be created, which is an effective source of assistance for knowledge management. At ASU this is the Big room, where a favorable atmosphere was provided for access to updated, higher-quality and "transparent" information, which made it possible not only to avoid a large number of errors and rework, but also to increase the speed and efficiency of decision-making.

Also in the university should be established a process of dissemination of knowledge, formed through formal and informal mechanisms of their exchange. Two periodicals were created at ASU for this purpose, which served as both translators of knowledge and keepers of organizational memory (i.e. providing a knowledge storage function for future use in organizational systems).

4. Development and progress in research are impossible without new technologies and methods, which are actively applied in all spheres of material and non-material production. The transition from the Newtonian, mechanistic model of organization to the learning, quantum model, which began in the developed countries since the 1980s [18], is the main tool of economic transformation and assumes the presence of similar processes in the sphere of higher education. The main characteristics of this transition are: recognition of the value of staff as individuals; problem solving not by focusing on a single segment, but by systemic thinking; learning the experience of leaders and innovations of leadership and finding ways to apply this experience in creating new organizational knowledge; flexibility in solving any situations, etc.

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Yu.N. Tomashevskaya — development of a research structure, description of the conclusions of the study.
A.V. Koshkarov — collection and processing of material for theoretical analysis, preparation of a literature review.

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Application of Various Marketing Concepts in Strategic Management

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ABSTRACT

The object of the article is marketing tools used in the strategic management of a modern organization. The purpose of the research is to analyze the key directions of their development, and the objectives are to identify the main types of marketing tools in strategic management and to consider the possibilities of their application. The article considers trends in the field of marketing for companies, among which the main ones are the development of effective ways to satisfy customers, the formation of their loyalty to the brand, the ability to build clear competitive strategies; the concept of customer orientation and its role for a trade organization is given, as well as examples from foreign practice and the world's leading developments in the field of artificial intelligence. The article is also aimed at contributing to the definition of the Concept of Sustainable Development and its implementation. This concept is widely used by many modern companies and occupies a central place in the programs of state and non-governmental organizations, as well as enterprises around the world. But the scientific literature in the field of marketing and sustainable development still lacks a detailed and complete explanation of it. The author used such research methods as observation, systematization and generalization of the collected theoretical material, including foreign practice and the world's leading developments in this field.

Keywords: marketing; strategic management; marketing concepts; marketing tools; brand marketing; sustainable development; innovation; concept; digital environment; digital marketing

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INTRODUCTION

It is important to note that development, implementation and marketing management — an important part of the strategic management of the organization, which requires certain types of costs both from the management of the enterprise and from its employees. However, quite often there are situations when companies, deciding not to spend extra funds, do not carry out the whole range of marketing activities, but only its individual elements. In this case, they face a worsening of the situation, and it is impossible to say in advance on which area of activity the negative impact will be most pronounced.

The main concepts of marketing are:

Product: products produced by organizations for customers. Products can be of two types: material (product) and non-material (service).

Price: the money the buyer pays for the product. The price of the product is indirectly proportional to its availability on the market.

Place: location where products are available (sold or purchased in both physical and virtual markets).

Promotion: different methods and ideas used by marketers to raise awareness of end users.

MARKETING STRATEGY AS AN ELEMENT OF SUSTAINABLE DEVELOPMENT

Marketing management — is the process of creating, planning and controlling the development of a new product, its advertising, promotion and subsequent sale. The basic concept underlying the marketing strategy is that the company produces the product after identifying and analysing the needs of the target market. It is based on the knowledge of the values and needs of the audience, which helps to carry out large sales and make a handsome profit.

It is important to keep in mind such marketing strategy as analysis of the situation in which the needs of the client are not satisfied. The subsequent identification of the reasons is used to assess the company's capabilities and then to understand the environment in which it operates. Consumers may be in different geographical locations, which in turn automatically creates differences in their needs. This problem can be solved by studying the wishes of customers who are in different places [1].

In a highly competitive environment, enterprises often have to rely on price levels and other short-term market strategies. They are constantly faced with constraints on their productivity and economic capacity, the main one being the marketing of products and services in the right market for investment returns. The results of the survey showed that companies rely on "gossip radio", reducing the price and cost of advertising strategies for marketing and trading purposes, but this does not give the desired effect. A change in strategy is more appropriate to ensure long-term returns.

In today's fast-changing, disorderly and paradoxically disoriented competitive environment with continuously shrinking product and enterprise life cycles, the expected return on current processes is highly uncertain, so much so that firms are constantly looking for new opportunities [2]. They must be able to operate under increasingly risky conditions, with fewer forecasting capabilities, less barriers to entry, changing management objectives and new structures that exacerbate change. They are under increasing pressure to be more innovative and flexible in marketing.

Main marketing objective — modeling and formation of demand for company products and services. Marketing management — it's essentially demand management, but it's also managing the timing and nature of demand in this way, to help the company achieve its goals in an increasingly competitive environment

and the need for improved distribution methods to reduce costs and increase profits [3]. In the current business situation, marketing management is the most important function for the organization.

A sustainable product must maintain the price-quality ratio to which customers are accustomed, evoke positive emotions and help preserve the environment. Sustainability is a shared value for the company and its customers. Promotion should be based on moral principles, providing wide and creatively adapted advertising related to environmental protection and sustainable development.

The term "sustainable development" has been used since the 90s XX century, when it was widely used as a subject of discussion at scientific conferences, as the slogan of environmental activists and development planners [4].

The complex environmental situation in many parts of the world need for an innovative way of doing business in terms of resource conservation and environmental protection. Sustainable development — a relatively new and evolving field, it can be seen as a concept of business theory and practice, which is not constant and depends on local conditions, the needs of the population and their interests.

Addressing the challenges associated with this concept is a priority for the State, global companies and all people with vision and concern for the future. Part of the sustainable development challenge is the adverse impact of the population on the environment [5]. The process of implementing the concept of sustainable development is not only long-term but also costly. But it is still necessary for the future of our planet. Marketing activity — goes beyond customer satisfaction. This should contribute to the general welfare of society and the protection of the environment.

MAIN TYPES OF MARKETING

Marketing management enables the implementation of actions and functions related to the distribution of goods and services [6]. This area of activity involves the development (after careful analysis and forecasting of market situations) of a certain program, the embodiment to achieve the desired goal. Marketing strategy affects objects of different types: products, services, events, people, places, properties, organizations, information and ideas.

Main factors revealing the importance of marketing management:

1. Introduction of new products to the market.
2. Increase in production.
3. Lower sales and distribution costs.
4. Export market.
5. Development of communications and transport facilities within and outside the country.
6. Growth in per capita income and increased demand for goods by consumers.

Management research has shown that marketers use different tools: from economics and competition strategy to analyze the industry context in which the firm operates. These include 5 Porter forces, analysis of strategic rival groups and analysis of the value chain, etc. [7]. In market research, marketers develop detailed profiles of each opponent (cost structure, sources of profit, resources and competencies, competitive positioning and differentiation of products, degree of vertical integration, historical reactions to the development of the industry, etc.), paying particular attention to their relative competitive strengths and weaknesses through SWOT- analysis.

TERRITORIAL MARKETING

Provided (which can be called optimal) that the participants of socio-economic processes

in the regions conduct their economic activities, develop their own resistance to negative processes on the basis of flexible and soft support, becoming in demand marketing practices of the territory. Moreover, they are applied to needy economic entities while taking into account the interests of the residents of the territory, attracted partners and investors [8]. The regulatory mechanism in this case implies consideration and coordination of the interests of the parties involved in the development and enhancement of the viability of the regional economy. Note also that a number of researchers directly note the insufficient effectiveness of the social and economic policy in Russia, both at the level of the state and at the level of its subjects, as evidenced by the low standard of living of the population, the marked disparity in the level of income of citizens, the quality and accessibility of social services [9, 10]. This directly indicates the demand for marketing of the territory as an integrator of interests and generator of ways to achieve them, because it requires a flexible approach that takes into account the views of the local population (in the provision of basic services, jobs, improved quality of life), and business (looking for profit and business development) in both tactical and strategic perspective [11].

In this context, based on the opinion in the literature, we note that the marketing of the territory is a direction of socio-economic policy, which includes (regional) elements such as planning, organization, monitoring and motivation [12]. Territorial planning in this context refers to the setting of goals and objectives for the development of the socio-economic system, including both tactical steps and a strategic vision of the situation for the future through an assessment of domestic resources, understanding how to build them on the basis of consolidating the interests of the parties involved and taking into account the influence of external factors and growth opportunities by involving players and resources from the outside. Reorganization of management of the socio-economic system of the region is possible due to marketing thinking of managers and their practical work, during which interests in the framework of social and economic initiatives should be agreed. The monitoring function involves the continuous monitoring of various deterrence indicators and threats to their leveling in the implementation of regional socio-economic policies [13, 14].

The motivational block in the marketing of the territory is also very important, as it is aimed at finding development priorities among different audiences, linking their targeted and personal trajectories with the region, as well as their harmonization within the framework of the social and economic policies implemented.

ENTREPRENEURIAL MARKETING

As a modern medium-sized business management concept that can not only help the business survive, but also to obtain positive results in a highly competitive environment, while satisfying the needs of customers in the best possible way, supported entrepreneurial marketing, which is a theoretical construction of the relationship of marketing and entrepreneurship [15]. Entrepreneurial thinking — nonlinear, creative, unpredictable — was contrary to the traditional marketing model, and thus creates a gap between marketing theory and practice.

There is no single commonly accepted definition of business marketing. M. Morris defines it as "proactive identification and use of opportunities to acquire and retain profitable customers through innovative approaches to risk management, resource use and value creation" [16]. The distinctive feature of this interpretation, which is

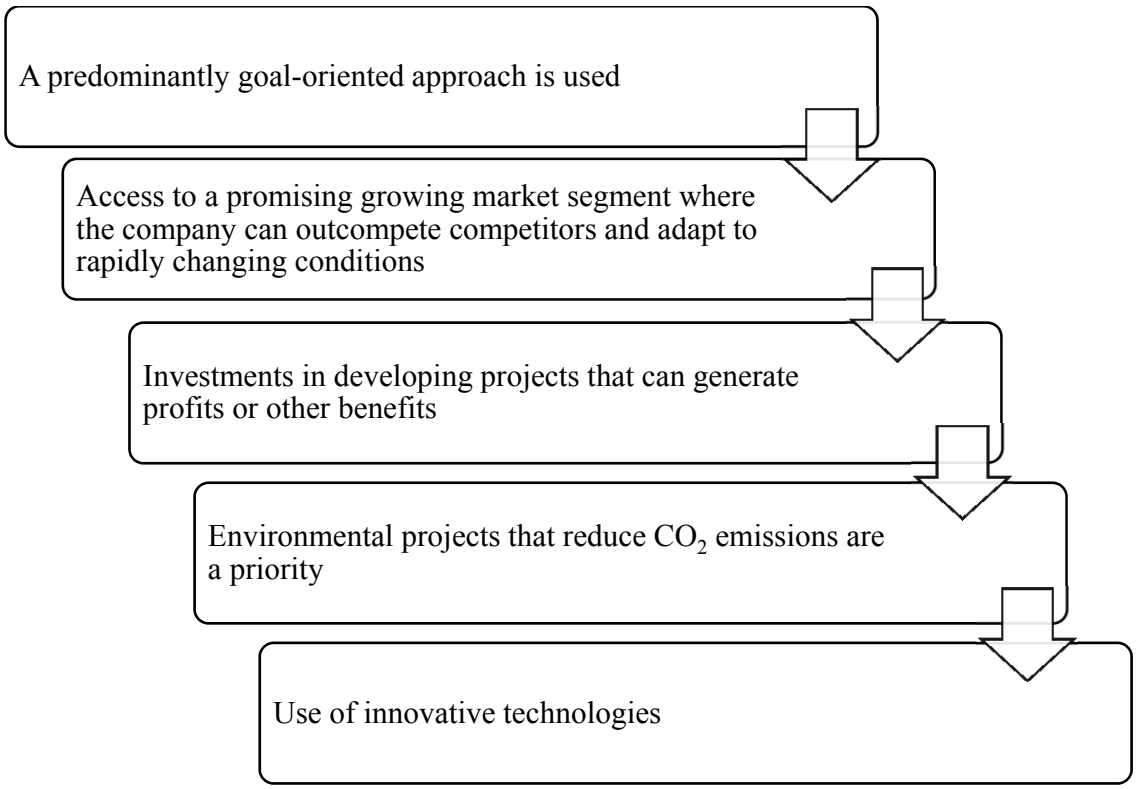

Fig. 1. **The essential steps to develop a marketing strategy for VIC**

Source: compiled by the author.

oriented to the market from within, is the development of specific competencies of the firm through entrepreneurial activities in order to meet the latent demand of future customers for products, which does not yet exist. This can be called the concept of entrepreneurial marketing.

MACROMARKETING

Consider the use in Russia of the VIC system (vertically integrated companies), which play a strategic role and to some extents are supervised by the state. In these structures there is a certain "macro-marketing", which is implemented at the level of the state as a whole [17].

To a large extent, this is the field of branding, rebranding and PR, in which measures are developed to improve the image of corporations on the Russian and international markets.

The most common steps of VIC marketing strategy, applied by Russian enterprises, are systematized on *fig. 1*.

It should be noted that the most important in the marketing of VIC is the analysis of the capacity of the market and its segmentation, because it is this aspect allows to determine the direction of further development, to seek for new technologies [18].

The study of the position of the products in the market allows to identify the weaknesses of the enterprise and find tendencies of its improvement by improving the offered products and selling the most demanded part at competitive prices.

The analysis of the market share of the organization (with a view to increasing it) also determines the needs for the development of the technologies used and the products produced by VIC.

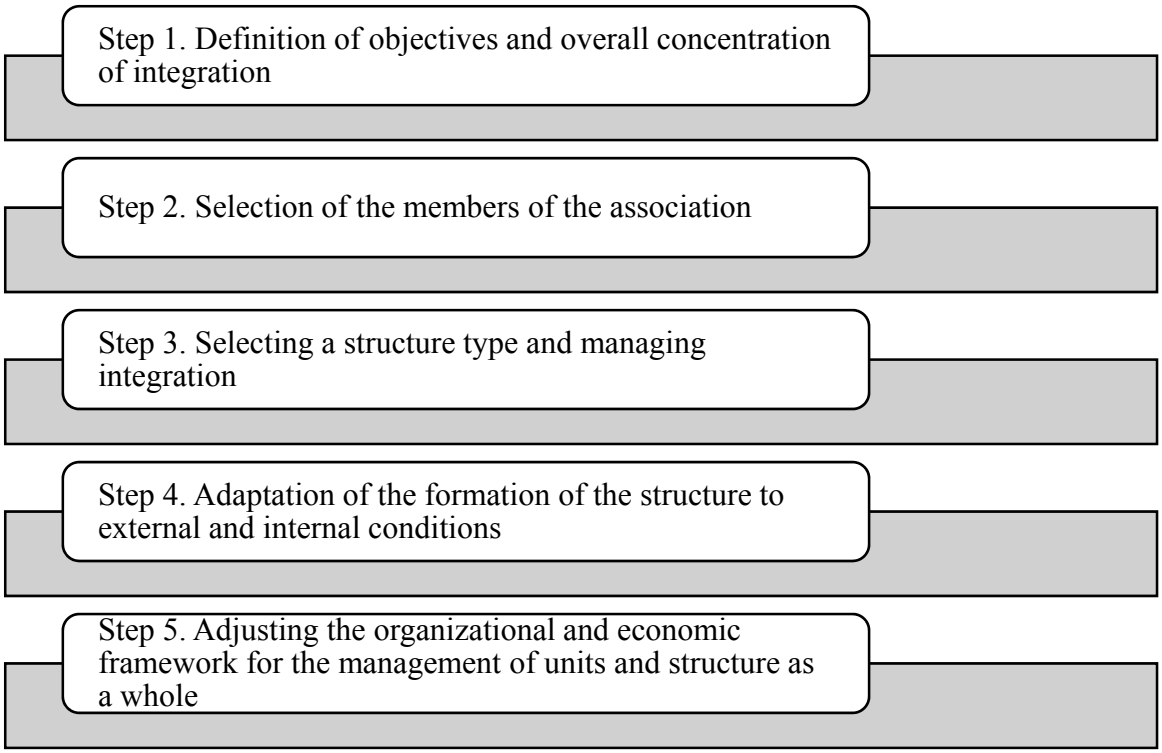

Fig. 2. **Stages of formation of vertically integrated structures**

Source: compiled by the author.

The degree of market monopolization is controlled not only by the VIC, but also by the state, helping to find the optimal model of its functioning and to ensure an appropriate degree of competition. Based on the revealed trends and the formed strategy, a marketing plan is formed, which contains a number of directions to ensure the necessary vertically integrated company market share and competitiveness of its products in the international arena [19]: its essence is in the fact that it is developed in the context of each component of this structure and includes not only traditional market analysis, but also directly advertising, PR, as well as the use of necessary measures aimed at bringing the products of certain parts of the corporation to the final buyer [20].

The total marketing budget includes the costs of the overall development of the corporation and the activities implemented by its entities: specialized exhibitions, so called "technological days" for their clients, during which they have the opportunity to get acquainted with the production of products, assess the innovation of equipment, as well as see the properties of the proposed product and assess its manufacturability and competitiveness of the company as a whole [16].

Marketing, being a necessary activity for every modern company, for vertically integrated structures is of particular importance. Understanding this leads to revealing the essence and specificity of VIC, which can be presented as a targeted process, stimulating the development of all integrated enterprises and industries, while simultaneously accumulating capital and distributing investment to all group participants (*fig. 2*) [21].

Successful marketing strategy of modern VIC is based on the advantages

Table

The influence of organizational elements on the level of customer orientation of the company

Component	Characteristic
Corporate culture	Organizational culture is a pattern of collective basic concepts and values, the informal consciousness of the organization, which, when reflected and shaped in the behavior of workers, directly influences its manifestation in the internal and external environment
Management specification	Impact of the concept of partnership, initiation of the introduction of marketing relationships (marketing of partnerships), increase of market power, integration with companies of partners for formation of new values and level of relationships
Organizational structure	The structure of the company is built to implement the strategy organized by the principles of marketing of partnerships: categories of relationships with current potential and new buyers, with partners, intermediaries, suppliers, investors, media
Human resources (HR)	The primary role of labour, the human factor in relationships. Performance of professional functions is supported by information and organizational and technical technologies, principles of marketing relationships, functional and expert qualities, sufficient authority to carry out processes with special categories of relationships
Systematic analysis of clients and their needs	Formation of a system of information on the affiliation of buyers to specific groups, differentiated segments and strata, differing in needs, standards of consumer behaviour, established norms, solvency. Identify social groups of pensioners, students, entrepreneurs, innovators and conservatives, loyal and negative buyers
Technological features	Marketing technologies accelerate and standardize relationships both within the company and between the company and customers. Contacts (communications) are identified in the process chain: external — with public and consumer internal (in team); a significant role should be given to customer focus in the creation, implementation and commercialization of a variety of innovative projects
Specificity of construction of all business processes	The process is formed around a partner, a client and requires significant changes in approach and content. The mass communication process aimed at informing the market segment could be replaced by interactive interaction with several small groups
Consumer retention	Satisfied consumers benefit the company, built interaction with regular customers helps to save money on attracting new buyers. Loyal customers are ready to wait, make prepayment, pay for certain types of goods in connection with brand awareness and quality guarantee, recommend their friends this product. According to experts, one disappointed customer will affect the rejection of 35 potential buyers

Source: compiled by the author.

and disadvantages of competitors and the availability of a specific budget for its development and implementation. The most promising is the targeted approach, as well as innovation strategies that will meet all requirements and minimize the costs of the company for marketing [14].

CLIENT-ORIENTED MARKETING

Customer focus is the result of systematic work to create the highest (relative to competitors), consumer value that ultimately attracts new and retains existing consumers, increasing the sales and profits of the enterprise and ensuring its financial sustainability.

When comparing and assessing the relationship between internal and external customer focus of staff, it is necessary to emphasize the direct relationship between business processes, which is intra-corporate marketing. A qualified employee will be able to offer the external client better service, quality service, if the working conditions and relations with colleagues are optimal. Even if the employee works only with colleagues within the company due to its functionality, the atmosphere created by it supports those who are in direct contact with consumers. There is a correlation where the increase in external customer satisfaction is associated with increased staff satisfaction [22]. The impact of organizational elements on the level of customer focus of the company is reflected in more detail in *table*.

DIGITAL MARKETING IN THE IMPLEMENTATION OF MARKETING STRATEGY

Let's analyze the main tools actively used in digital marketing, identify their main advantages and disadvantages in managing the promotion of goods and services:

E-mail — an online service that allows users of computers, mobile phones or tablets to send and receive text messages (documents, photos) [23]. The fact of "retention" of clients is determined by the method of implementation of the "divider strip", which records who belongs to the organization and who — not. Separation of "our" from "other" consists of additional preferences, which apply only to "our". Providing guests with a unique organizational identity is captured internally. Thus, e-mail is used both to attract customers and to keep them using a pre-compiled list (database), consisting of e-mail addresses and information about users who have previously agreed to contact them, thus expanding the "zone of trust" [24].

Social networks — a place where users exchange views, comments and information through various applications, the main condition of which is the availability of the Internet. At its core, social networks — a large structure consisting of people or organizations connected by certain relationships (for example, friendship, business interests, beliefs, shared interests, etc.). The most important thing for them — the ability to stay in contact and receive information at any place and at any time. Internal life as a subject of ongoing monitoring: testing, certification, evaluation of the de facto progress of individuals — become grounds for user identification and conditions for the creation of trust; their personal experience takes second place, and coded representations of this experience come first [12]. Thus, complex electronic access systems, border control and internal monitoring reflect the organization's work system.

Social networks are actively used by the population of Russia and are therefore one of the main channels of interaction in digital marketing. Although they have existed for many years, companies have drawn attention to them as a powerful virtual promotion management tool relatively recently. Advertising of brands was concentrated in print media, broadcast advertising and mailings [25]. The advent of social networks has given enterprises another way to communicate with consumers, so it is necessary to develop strategies that can ensure the brand a permanent presence in this virtual space. In this regard, it is necessary to clarify that the network interaction is based on soft values, involvement in interaction and trust and is closely related to such concepts as "social potential", "social atmosphere" [26].

Let's describe the main techniques:

- Visualization of the brand: application of brand-specific color schemes and fonts in

images, videos and other content, publication of photos and display of videos tailored to brand aesthetics and color.

• Exploring the target audience: building interoperability across communities based on relevant content. For example, an account in the "Odnoklassniki" network should focus on older users compared to the audience Tik-tok or Instagram. Social media analysis allows the study of audience characteristics (including demographics), which makes it possible to optimize content so that it is interesting to real consumers and inspires confidence and maximum response.

• Definition of "voice and tone of brand": company individualization based on what and how publications describe how they are demonstrated on social networks. Publications are designed to create a certain image and expectations in the user's mind; each one should contribute to strengthening this individuality.

• Create accounts for different areas of interest: if the business is large enough or its offer is designed for different target segments, it is better to have multiple accounts to interact with each of them and create relevant content for each [12].

Assessing the results of campaigns, which are conducted in several social networks and complemented by interaction on other channels, may be difficult. In this case as an additional monitoring tool for understanding: level of brand awareness, determining which audience is most effectively affected and whether users perceive the brand exactly as required, can be used customer surveys.

SEARCH ENGINE OPTIMIZATION AS A DIGITAL MARKETING TOOL

Search engine optimization (SEO) allows to ensure that the site occupies the most "relevant" position in the search results. Getting higher organic listings depends on understanding the process by which the search engine selects and displays sites that correspond to search criteria [27].

The technology used to create organic declarations includes four processes:

• tracking: defining the page for indexing by search robots ("spiders");

• indexing: adding a site to a database that allows the search engine to quickly perform a full-text search on its pages;

• ranking: placement in order of relevance, taking into account various factors;

• requesting and obtaining results: transfer an ordered list of different addresses and links to the search engine after classifying the query and sorting the results, and display it accordingly on the search results page.

Search engine optimization is traditionally divided into two parts:

On-Page (internal search engine optimization) includes the methods used on the web page to optimize and improve positioning in search engines. Its main techniques can be: keyword matching; short URLs containing main keywords; meta-tags (are responsible for providing information about the site to search engines (name and description of the website, author); tags H1, H2 and other (refer to the structure of headers, web pages tables or articles); tagging photos, including keywords; analysis of competitors (study of competitors' promotion tactics by keywords) [25].

Off-Page (external search engine optimization) consists of any elements of digital marketing external to the website that improve its organic positioning through keywords. Techniques of external search engine optimization: Link Building — external links to certain pages with their own text (purchase or exchange); Link Baiting — attempt to get links to your resource using other resources, such as writing interesting

content on another site with the ability to leave a return address (ideal, but time consuming); use social media where content can link to a website or blog; collaborate with other blogs (advice and link exchange, comment, participation in reviews and online events).

SEARCH ENGINE MARKETING (SEM) AS A DIGITAL MARKETING TOOL

Search engine marketing provides control over demonstration in search results. All major search engines have their own paid ad screens, which are usually placed at the top of the search results list and are highlighted by color, which are usually placed at the top of the search results list and are highlighted so that they cannot be confused with the results of an organic search. The principles of payment for such services may vary: per click or per number of views.

SEO and SEM technologies have certain similarities and differences.

Similarities between SEO and SEM [27]:

- both technologies allow you to find a brand in your search results if users are interested in topics that are consistent with industry, business or brand offerings;
- generate large volumes of traffic to the site, due to the use of tactics aimed at increasing the click ratio and attracting more consumers to the search results;
- help better understand the audience, their needs and interests in order to provide them with relevant content;
- spend research on keywords, including studying the popularity of the latter, competition for them, i.e., similar to other brands targeting the same search queries, use them for their promotion;
- require expertise, close monitoring and continuous optimization to improve productivity.

ONLINE PR (INTERNET PR)

This term refers to activities aimed at developing reputation, raising brand or company awareness, achieved through interaction with various media. Online PR is used to increase site attendance, create important referral links to improve search engine optimization, increase recognizability or support viral marketing events. In other words, it is the transfer of traditional public relations into digital space. Some of the most commonly used methods — blogs, podcasts, widgets, creating comments.

FEATURES OF MARKETING ACTIVITY REALIZATION BY SMALL BUSINESS ENTERPRISES AND LARGE COMPANIES

A small business may not be able (and does not seek) to have a separate division to implement a marketing strategy. Typically, one to three people are engaged in marketing in such companies. Different combinations are possible from the following positions [28]:

- Marketing Director: Chief Marketing Officer, responsible for strategy development and implementation.
- Marketing Coordinator(s): responsible for content creation and strategies developed by the company.
- Marketing Assistant (s): responsible for all administrative tasks and helping the Marketing Coordinator develop assets and content for the company [20].

When the company's marketing team starts to feel the need for additional support as it grows, it is necessary to add to this department:

- Social Media Specialist: this officer is responsible for developing social media strategy and supporting your social media platforms.
- SEO specialist: develops an organic search strategy by being in contact with a marketing coordinator who creates content [19].

• Partnership Coordinator (in other words, an agent of influence): works with influential persons, which is important for the company as it grows, and develops partnerships with brands.

• Public Relations Officer(s): handles media inquiries and outgoing communications [11].

• CRO Expert: responsible for creating proposals that the company's audience wants to see.

If you consider the marketing activities of a larger company, in addition to the above employees and units, its structure should be present:

Vice President: implements marketing strategy; the company may have several vice-presidents responsible for various marketing activities, such as attraction, editing, brand management, etc.

• Creative services group: responsible for the development of logo, colors and templates, as well as for brand management [23].

• Market explorers: responsible for research and analysis that determine marketing decisions.

• Content specialists: create content (posts in blogs, social networks or websites.

CONCLUSION

Since digital communication is a relatively new phenomenon compared to other marketing tools used in the strategic management of a modern organization, in the article they are discussed in some detail.

Advantages of digital communication tools are:

First, broader coverage: Internet allows the discovery of new markets on a national and global scale, with relatively little investment, which is not possible with other media (radio or television).

Second, lower costs: well-planned and well-targeted digital marketing campaign can reach the right customers at a much lower cost than traditional methods.

Third, measurability of results: it is easy to get detailed information on how customers use the site or react to advertising using web analytics tools and many others.

Fourth, increased conversion: availability of an accessible platform (website, online store) allows customers to be only a few clicks from downloading the coupon, registration or completion of the purchase.

Fifth, high personalization: the higher the interaction with clients, the more effective it is possible to form marketing tailored to the needs of clients and prepare targeted offers for visitors.

Sixth, greater openness: allows you to build customer loyalty and earn a positive reputation by managing social networking.

The Marketing Department is responsible for promoting the business and increasing sales of the company's products or services, overseeing the research needed to identify target customers and other audiences. Business without marketers is unthinkable. All companies understand the need to hire specialists to communicate with potential customers.

It is up to each organization to direct its management to develop a marketing strategy to preserve the environment and the public interest while achieving good economic results. Such a sustainable strategy is forward-looking, meeting consumer needs while ensuring profitability for investors. Marketing with its extensive knowledge and experience of customer behavior and promotion of new ideas can greatly help in spreading the idea of sustainable development. The focus on social and environmental issues can be considered as one of the drivers of this process. There is great potential to initiate cultural change in society, to provide the consumer with the necessary behavioural foundations, to educate the environment and the environment — all of this must be prioritized in all important decisions.

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