Abstract. The article touches upon the consideration of corporate management strategies aimed at maintaining the company in the conditions of the economic crisis. The authors highlight the signs and causes of the recession of 2020 as well as the actions taken to stabilize the economy in Russia. The necessity of finding an adequate response to the high risks of bankruptcy of the enterprise, the destruction of supply chains and sales of products, failure to fulfill payment obligations is noted. To solve the problem, theoretical research methods were used: systematization and generalization, the study of documents and activity results when identifying problems and finding ways to solve them, generalization of experience. The article suggests using scientifically based approaches as a means of making managerial decisions. In order for anti-crisis measures to be balanced and effective, it is proposed to use a variety of possibilities of quantitative analysis, mathematical modeling, strategic choice, econometric forecasting, and solving optimization problems.

Keywords: Anti-crisis strategies ∙ Economic crisis ∙ Management decisions

1 Introduction

Systemic economic crises are a periodic phenomenon that occurs due to various reasons at the national and world levels [7]. The economic crisis of 2020 arose against the backdrop of a confrontation between leading oil exporters and was exacerbated by the negative economic consequences of the coronavirus pandemic. The resonant effect of these causes led to grave consequences. The collapse in oil prices in March of this year led to a significant weakening of the ruble and a decrease in the financial transactions profitability. The spread of viral infection caused the collapse of a number of industries, airlines, travel companies, goods importers from China. The Russian economy showed signs of a recession: a long-term decline in business activity, a decrease in production volumes, an increase in unemployment, etc.

According to the Federal State Statistics Service, from January to March 2020 [12] real incomes of citizens decreased by 0.2% compared to the same period of the previous year. According to the results of the first quarter of 2020, relatively low inflation rates remained: consumer price growth amounted to 2.4% in annual terms, including 2% for food products. The average per capita cash income for the first quarter is estimated by the Federal State Statistics Service at 31.2 thousand rubles per month. However, this is only the beginning of the process. The introduction of a self-isolation regime at the end of the first quarter of 2020 reduced consumer spending on a number
of goods to almost zero, which led to an almost complete loss of income by entrepreneurs. Small and medium-sized businesses began to incur significant losses. The list of the Russian economy sectors most affected by the spread of a new coronavirus infection according to data for April 18, 2020 includes 38 types of economic activities [9], including air transportation, leisure and entertainment organization, sports activities, hotel business, catering, retail trade in non-food products, etc. As a result, unemployment has been recorded. Enterprises transfer part-time employees and send them on unpaid leave.

Further decrease in the income level of the population, expected in the second quarter of 2020, can be considered as an extremely negative factor for the country’s economy. Against the background of this alarming dynamics, the government is developing an anti-crisis measures system of state support in the economic and social spheres: granting delays in paying taxes and contributions, increasing minimum wages and unemployment benefits, developing supplementary employment programs, subsidies for the payment of salaries and rents, extending reporting deadlines, a decrease in the supervisory burden, a reduction in the premium rate, a moratorium on bankruptcy, relief in licensing and other licensing procedures, direct payments from the budget, etc. Government support measures are likely to have a stabilizing effect. However, each enterprise in these conditions is forced to independently and efficiently look for ways to survive, retain staff, established business contacts. This article will discuss some methods of making managerial decisions to preserve production in crisis conditions.

2 Methodology

The following general scientific methods are used in this study: observation, systematization, and generalization (when analyzing general trends in socio-economic dynamics). Methods of theoretical research were also used: the study of literature, documents and results of activities in identifying problems and finding ways to solve them. Legal documents and statistical data on the research topic, published in the media, were studied. To formulate the results, methods of studying and generalizing the experience were used. In particular, measures to overcome crisis conditions at small and medium-sized enterprises are analyzed. As the most effective measures, quantitative methods of analysis and forecasting based on economic and mathematical models are proposed.

3 Results

When the economy enters into a state of turbulence, it is important for company managers to use all available measures for the survival of enterprises and the stabilization of their activities. Crisis economic conditions are a stimulating factor for the creation and implementation of new ways to preserve business, especially for small and medium enterprises that are most vulnerable in such situation. When choosing forms of response to the challenges of the external economic environment, it is important to be guided by scientifically sound methods, make managerial decisions based on reliable
forecasts and calculations. Significant help in this case can be provided by economic and mathematical methods of assessment, optimization and forecasting. Their implementation using software, digital technologies, platforms, services and applications with a competent approach will help reduce risks and avoid the negative effects of the crisis.

4 Discussion

The specifics of the situation during the crisis period stimulate enterprise managers to search for new forms of organizing production activities in order to preserve business. It is necessary to find opportunities for an adequate response to the high risks of bankruptcy of the enterprise, the destruction of supply chains and sales of products, and failure to fulfill payment obligations. To a large extent, these measures are classic solutions to crisis management, however, the search for new interaction strategies to stabilize the situation is also important.

Factors of the Enterprise Stabilization During the Global Crisis

Lower production costs. The main factor in increasing profitability is the reduction of fixed and variable costs by optimizing production processes and organizing production, reducing the tax base, flexible pricing, reducing non-manufacturing costs, etc. Customer-oriented approach as the main business strategy. Priority is given to solutions aimed at maximizing customer satisfaction. The actions to create long-term mutually beneficial relations with the client [8] include correct determination of the consumer’s expectations, analysis of the proposal (situation) from the consumer’s point of view, finding positions that can be improved, forming a mutually beneficial proposal or managerial action, using the personal qualities of employees as rationally as possible. In the context of this strategy, during the crisis period non-standard solutions are born: individual offers, non-standard order picking, targeted delivery, service and maintenance, spare parts sale, semi-finished products and consumables, customer consulting support, comfortable space organization.

Workforce optimization to reduce costs. External adverse conditions force companies to severely reduce staff, saving payroll and corresponding deductions, expenses for maintaining staff and jobs, etc. In April 2020, according to various estimates, about half of Russian companies reduced their headcount, and about a third did not exclude this possibility in the next half year [10]. It is clear that this forced and extreme measure has negative prospects both for laid-off employees and for the enterprise itself in the future. The social responsibility of the business encourages management to search for and use measures to retain staff, such as: changing the schedule of staff, reallocating employees, making paid holidays, sick leave, switching to part-time work, retraining staff, and expanding staff qualifications. If there is no alternative to staff reductions, staff optimization should be carried out as sparingly as possible: by transferring to subsidiaries, using early preferential pension programs and compensatory payments. First of all, employees of inefficient units with low professional potential are forced to fall under the reduction.

New forms of interaction with partners and consumers: the use of digital platforms, services, remote access technologies for the most beneficial cooperation. Digital
technologies provide new business development opportunities [4]. During the period of stable operation of the enterprise, software changes, the introduction of business promotion information tools are associated with certain inconveniences of users and may not be considered as necessary measures. In a state of instability, the transition to digital means of business communication is a powerful driver of development [11]. Modern mobile applications, services and platforms allow us to find new ways to promote goods, the interaction of the seller and the buyer, partners, regulatory authorities and accountable persons. Through their use, you can pre-order, browse product catalogs, keep records, create a chain of production operations - from production support to delivery of goods to the final consumer and much more.

Use of government support measures for small and medium-sized businesses. In a situation of economic crisis, authorities at the state and regional levels seek to provide maximum support to entrepreneurship by implementing targeted programs. At the end of the first quarter of 2020 two packages of documents on state support at the federal level and a number of decisions at the regional level were adopted. The government of the Russian Federation allocated 2 trillion rubles. to support small and medium enterprises. Thus, the state is taking unprecedented measures to stabilize the economic situation [5]. The proposed measures include: grants and interest-free loans for wages, soft loans, installments and deferrals for loans and for utility bills to entities of the most affected sectors of the economy, tax rates, tax breaks on the use of municipal property and land, financial support for employee remuneration, a moratorium on bankruptcy, tax audits, debt collection and fines, federal subsidies for banks to reduce debt, help to goods exporters. We also note the recommended possibility of concluding exclusive agreements with private owners of leased real estate: in an effort to preserve the contingent of solvent customers, the owners are invited to consider the treatment individually and provide in some cases special conditions for tenants.

Reorientation and diversification of production, partial reprofiling of production. The transformation purpose is to turn towards the production of goods (services) of increased demand. Promising areas can be considered production with an extended shelf life, the development of related areas, the production of related products, and optimization of the assortment [2]. So, in the spring of 2020 the sewing manufactures of the Italian company Prada arranged in a few days the release of medical protective equipment - overalls and masks. Faberlic took the initiative to re-profile part of its capacity for the production of antiseptic agents and received approval and support from the capital’s authorities [1].

Implementation of digital corporate management services. The transition of the enterprise to new forms of functioning in any aspect is associated with a change in the usual forms of internal interaction. To avoid lack of control, it is necessary to establish a management structure, a communication system, build business chains, competently organize document management, information flows, internal audit, identify control points and require each employee to clearly perform duties. Moreover, each employee should be able to take the initiative, be heard and receive feedback [3]. These tasks are perfectly handled by corporate governance software. Among the abundance of corporate software, we can distinguish groups of analytical systems, security systems, systems for business development, accounting systems, logistics and storage systems, business process management systems (including document management, efficiency,
A significant market share (at least 40%) of electronic document management tools in Russia is held by 1C, but there are also other equally effective software products. The choice of funds is made taking into account the qualifications of employees, the cost of the product, the scale of the tasks to be solved, technical capabilities, development prospects.

Formation of a positive image of the enterprise through participation in charitable assistance projects, social events. Responsible attitude to objective social problems and the provision of feasible assistance to those in need creates a positive perception among the consumer, and subsequently can become a factor of preferred choice. This is a job for the future, but crisis conditions are ending, and the company’s reputation is an enduring value. Thus, the global holding company LVMX, a manufacturer of luxury goods, in the conditions of the crisis of 2020 announced the start of antiseptic gels production at three French enterprises instead of top brands of perfumes. The first batch of disinfectant gels began to come for free to hospitals, pharmacies, nursing homes within a week. Later, other manufacturers of elite perfumes, alcohol in Europe and Russia joined the action. As part of social assistance, the automaker Hyundai Motor Company decided to provide training centers as a room for treating patients, and allocated 100 cars to volunteers for transporting food and medicine to those in need in several cities of Russia. This list goes on and on. Thus, leading manufacturers, providing charity assistance, help to cope with global challenges, demonstrate caring for people in difficult moments for society, while receiving a positive PR effect.

The use of science-based approaches in business, organization of production and logistics, in planning and forecasting. Despite the instability of the economic situation, during the crisis it is especially important to have significant arguments for making informed management decisions. Currency volatility, high risks of financial assets, the destruction of supply chains, falling demand and other negative factors are actually an incentive to resort to special forecasting and planning methods based on economic and mathematical modeling, statistical forecasting methods, risk assessment and operational efficiency.

**Problems of Production Optimization, Planning and Forecasting and Mathematical Methods for Their Solution**

As noted above, during a period of unstable economic situation, scientifically substantiated quantitative methods of analysis and forecasting based on economic and mathematical models are of particular importance. A wide variety of mathematical methods and models of linear, integer and dynamic programming, game theory, graph theory and network modeling, queuing theory, probability theory and mathematical statistics, correlation and regression analysis can contribute to the successful solution of business problems. The list of problems solved by these methods is wide and it continues to grow due to the latest theoretical and practical developments. Here are some of them.

The quantitative substantiation of decisions on production optimization is the main task of such branches of applied mathematics as the study of operations and optimal decision methods. Based on mathematical modeling of production processes, the following problems can be solved:
- tasks of resource allocation (arise when it is required to find the optimal production plan with a limited supply of resources),
- inventory management tasks, which consist of finding the optimal values of inventory levels and order size,
- tasks of repair and replacement of equipment, which are reduced to determining the optimal timing, the number of preventive repairs and inspections, as well as the timing of replacing obsolete equipment,
- tasks of network planning and management, which consider the relationship between the deadlines for the completion of a large complex of works and the moments of the beginning of all operations of the complex and consist in finding the minimum durations of the complex of operations, the optimal ratio of cost and timing of their implementation,
- tasks of scheduling, which determine the optimal sequence of operations on various types of equipment,
- queuing tasks, which are devoted to the analysis of service systems with queues of applications and consist in determining performance indicators of systems,
- tasks of planning and placement of new objects, taking into account their interaction between themselves and with existing objects,
- route selection tasks or network tasks, which consist in determining the most economical routes.

To solve the problems associated with data analysis in the presence of random influences, an arsenal of tools and methods of applied statistics and econometrics is intended. Based on the correlation and regression analysis, a mathematical model is built, its parameters are evaluated, and forecasts are made. Econometric forecasting methods have taken a worthy place in economic practice, which was facilitated by the use of affordable and high-quality software packages and applications.

In order to navigate in the difficult financial situation of the crisis period and determine prospects, it is necessary to adequately assess the financial stability of potential partners, competitors, shareholders, creditors on a probabilistic basis. To determine the parameters of financial transactions, property and risk assessment, statistical methods of financial and economic calculations are used. Financial calculations are a tool not only for fixing, but also for assessing market expectations of various financial outcomes (discount and interest rates, exchange rates, payback ratios and performance standards, tax rates, insurance premiums, margins, annuities, etc.), performed, as a rule, in conditions of uncertainty and risk, taking into account future gains or losses. Simple types of financial calculations cover calculations of bank interest, deposit, borrowing and tax rates, rental, collateral, leasing, lend-lease, social payment rates and benefits, usually determined by directly assigning their sizes. More sophisticated methods are used to analyze contractual insurance, investment, exchange, currency, trust, and other transactions in the face of uncertainty and risk. This also includes the calculation of the outcomes of special financial transactions, their unfixed benefits or losses, transactions with securities, forward, futures and options transactions, factoring and forfaiting, exchange and all over-the-counter transactions carried out in conditions of extreme uncertainty and, therefore, complete risk [6]. A special place among the methods of mathematical support for management is occupied by
decision-making methods in situations of uncertainty or risk, studied by game theory. This is a mathematical theory that develops recommendations on the most rational course of action for each of the participants in a situation where their interests are opposite (in a conflict situation) with repeated occurrence. Participants in conflict situations may agree on joint actions or act independently from each other, communicate their decisions to other participants or not inform about them. At the same time, none of the parties can fully control the situation. So, from the position of game theory, setting the price of a product in a competitive environment is a conflict. It is beneficial for the conflict participant to set the maximum price, but at the same time, a competitor’s price reduction can lead to an outflow of customers and a decrease in revenue. In conflict situations, each player seeks to find the best action strategy for himself, having only a general idea of the set of response actions acceptable for the partner. Another type of conflict occurs in a situation of uncertainty, when one of the partners acts randomly (the so-called games with nature). Methods for choosing the optimal strategy in games with nature of is one the most effective decision-making tools in a crisis economic situation.

5 Conclusion

Any economic crisis, on the one hand, deals a significant blow to the welfare of citizens and the state, but on the other, it is a powerful incentive for development in various fields. The need to take decisive anti-crisis measures puts into action previously unused opportunities, solutions and communications in the field of management, science, technology, finance, education, etc. When choosing methods for stabilizing a business, much attention is paid to production optimization methods, a significant part of which is based on the use of qualitative methods, advanced management experience, and the other part is based on quantitative approaches. In a difficult socio-economic situation, an entrepreneur, businessman or leader has a reliable means of assistance, which are economic and mathematical methods. In their arsenal there is a variety of opportunities for quantitative analysis, mathematical modeling, strategic choice, econometric forecasting, solving optimization problems. The application of a scientific approach to stabilize a business using modern software and digital technologies can serve as a tool to overcome the economic crisis.

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