Artificial Intelligence as an Innovative Tool of the Support System for Making Management Decisions

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Abstract. This article is devoted to the analysis of the capabilities of artificial intelligence as a factor in increasing the competitiveness of a corporation by introducing into the decision support system and optimizing corporate governance mechanisms. The article reveals the problems associated with the adoption of managerial decisions in large corporate structures, which reduce competitiveness and require the development of new approaches to corporate governance. The stages of the management decision making process in the corporation are considered. The main characteristics of artificial intelligence as one of the innovative tools for supporting management decision-making in a large corporate structure are analyzed.

1. Introduction

The development of corporate governance that has been going on in Russia for almost 20 years has not led to the formation of effective mechanisms for shareholders to control corporate governance actions. This situation is due to both the specific structure of the Russian economy and the low quality of corporate legislation.

2. Problem Statement

Researchers note that most Russian corporate structures are united by the fact that executive management rather than representative management bodies play the main role in them: corporate managers easily make the necessary decisions and administratively implement them. Subjectivism and bureaucratization are a natural consequence of this problem, reducing the quality of managerial decisions made by managers. Another problem that does not allow the institution of corporate governance to effectively develop in our country is the overwhelming role of the state in the capital and leadership of domestic corporations. Using the support of power structures, corporations under state control force private companies out of the market and close financial flows [1]. Confirmation of this conclusion is the official position of the FAS, given below. According to the Federal
Antimonopoly Service, the share of the state in the economy of the Russian Federation at the end of 2018 amounted to about 70%, the share of suppliers from among state enterprises was 25%, and contracts for orders of state bodies reached 6.9 trillion rubles. The official description of the state of the corporate sector, given by the specified state control body over the state of competition, is "merging of monopolies with the state" and "direct nationalization of production" [2].

All of the above leads to the fact that management decision-making systems in Russian corporations work inefficiently, having the following imbalances: excessive bureaucratization as a result of the transfer of methods and models of public administration to the private sector; the formation of informal centers of corporate power, locking on key decisions; ignoring, when making managerial decisions, the interests of minority shareholders and the goals of the corporate structure; lack of transparency associated with the lack of effective ways and methods of corporate control.

All this leads to a decrease in the competitiveness of Russian corporate structures and requires the formation of new approaches to optimizing management decision-making systems under the conditions of limiting factors.

3. The Analysis of Artificial intelligence in the Management Decision-Making System

The level of development of modern technologies allows us to offer the necessary organizational and managerial innovations, one of which is the model of artificial intelligence [3].

The management decision-making process in the corporate structure is a series of interconnected stages.

Stage 1. Setting management tasks. The process of making managerial decisions starts with the formulation of the task, and its cycle ends when the task is completed.

Stage 2. Formation of alternatives. Managers monitor the factors of the external and internal environment to obtain the necessary data, which are then used to develop a number of alternative solutions leading to the solution of the task and the achievement of targets.

Stage 3. Comparison of alternatives. The managers of the corporation conduct a comparative analysis and evaluate alternatives, using various criteria and techniques, attracting the necessary expertise.

Stage 4. The choice of alternatives. The leader makes a decision by choosing one of the alternatives.

Stage 5. Organization of the implementation of the decision. The manager organizes the implementation of the decision into action, using the necessary resources of the corporation.

Stage 6. Monitoring and analysis of results. After the decision has been implemented, the head compares the result with the planned one, identifies the causes of deviations.

We will analyze the possibilities of including artificial intelligence models in the above stages of making a managerial decision and determine the benefits that corporate management can get from this.

Artificial intelligence refers to a certain functionality of automated systems to take on individual functions of human thinking, in our case, to choose and make the most effective decisions based on previous experience and a rational study of factors taken into account. The models of artificial intelligence are based on the principles of self-learning, self-organization and progressive development while minimizing human involvement in these processes; however, a person can act as a mentor and partner - an element of a man-machine system [4].

Modern intelligent systems process information on the basis of the fundamental learning process, using the so-called "images" in this process. These images can be characterized through a set of attributes in such a way that different models of artificial intelligence for the most part equally and independently from each other carry out the classification of the same objects. Such objectivity of images makes it possible for different people to understand each other.

4. Purpose of the Study

The purpose of the article is to provide, on the basis of the analysis of artistic intelligence in the management decision-making system, a forecast of the economic effect of their use.
5. Methods of Research

Learning is the process of formation in a certain system of a certain reaction to groups of external identical signals through repeated exposure to the recognition system of external correction signals. The mechanisms that determine this adjustment, which most often works on the basis of the "encouragement-punishment" principle, are almost entirely determined by the learning algorithms of the system. Unlike training, self-training does not provide additional information about the accuracy of the reaction to the external system. Currently, artificial intelligence models use large sets of algorithms and teaching methods that are combined into libraries.

6. Findings

Modern models of artificial intelligence can be used to solve various typical business problems, among which we can distinguish: assessment of the quality of organizational decisions in corporate governance mechanisms; choice of investment direction; logistic tasks; optimization of the distribution of resources of the corporation; development of corporate strategy and formation of plans; selection of personnel, including top management.

As part of the implementation of the functionality of artificial intelligence models in the decision support system, it is most difficult to automate the construction of summary indicators that would characterize the state, effectiveness or quality of work of corporate governance mechanisms. Also, automation of the interpreting functions of artificial intelligence is a challenge. However, large corporate structures have enough resources—financial and human—to properly configure artificial intelligence models.

Thus, the integration of artificial intelligence models into the corporation decision support system, as well as their relevant programming, will significantly reduce the subjectivity of decisions made, reduce time costs, as well as reduce the proportion of personnel supporting current non-automated procedures. These are general conclusions valid for any business; but for the corporate structure in the Russian economy, taking into account the above limitations, there are specific benefits: leveling imbalances in corporate power, ensuring corporate control over management actions, reducing costs for the corporate communications bureaucracy and operational product planning based on the design of future demand. It follows that the use of artificial intelligence as an innovative decision support system in corporate governance mechanisms is a factor in increasing the strategic competitiveness of a corporation.

![Figure 1. Promoting the use of artificial intelligence in corporations. Source: The Enterprise AI Promise Study. August 2017. N=100.](image)
success of competitors, and 30% say that it affects their business. A return on investment and profit from artificial intelligence models was found by about 40% of the polled corporations. We see that artificial intelligence technologies go into widespread use in large business and are considered by corporate management as a factor in competitiveness. However, the successful use of artificial intelligence models without their integration into corporate governance mechanisms is impossible [5].

Most often, a separate unit is engaged in the promotion of artificial intelligence methods and tools in corporations—either a dedicated department or laboratory, or one of the business units (Fig. 1).

The profit of companies depending on the industry and implemented solutions using machine learning can vary from 5% to 30% or more [6].

In October 2019, the President of the Russian Federation approved the national strategy of artificial intelligence until 2030, the use of artificial intelligence technologies and models will ensure the growth of the Russian economy by an additional percentage point [1].

7. Conclusion

Summing up, we can assume that the implementation of artificial intelligence models in the management decision support system will improve the corporate governance of Russian companies, ensure their competitiveness and increase profits [7]. Decision-making based on artificial intelligence technologies optimizes the activities of the corporate sector and allows predicting the growth of national competitiveness in the amount of 1% of GDP.

References


