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**ADVERSE EXTERNAL FACTORS NEUTRALIZATION MODEL
FOR DECISION-MAKING IN EDUCATION AND SCIENCE**

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Abstract

The author considers the use of a model approach in decision-making in order to neutralize adverse external factors hindering the development of an educational organization. In previous papers the author, when developing a model of a favourable external environment, named actors, conditions and positions, as well as risks of adverse effects. This research provides positive and negative impacts on a significant range of issues. Basing on the general concepts of control mechanisms, the author suggests two different models: descriptive and prescriptive. The first one is a model of a favourable external environment that positively influences the educational process, since all its components (actors, positions, conditions) are revealed from the point of view of favouring the educational process and the development of an educational organization. At the same time, certain risks are manifested and described in the literature, however, they are not disclosed, the mechanisms for their prevention or overcoming are not given. The prescriptive model of neutralizing unfavourable external factors of decision-making in the education system is, in a certain sense, instructive, or prescribing any actions in order to achieve a positive result. This model provides for problems that arise when conditions for the activities of an educational organization change, which requires other solutions, procedures, and mechanisms

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1. Introduction

Carrying out this research it appeared to be not possible to find the description of this aspect of the problem of adverse external factors neutralization in scientific publications. At the same time it should be assumed that the issue of a model for neutralizing unfavorable external decision-making factors in the educational sphere is posed for the first time. The development of the model makes it possible to technologize an approach to the difficult problem of neutralizing the negative influence of external factors, to define a range of problems together with identifying individual components of this sphere. Each factor should be considered comprehensively, which makes it possible to propose solutions that will be holistic and will exclude palliatives.

2. Problem Statement

Suggestions for the creation of the model mentioned above require a certain justification. When making decisions, the consistent consideration of adverse factors in order to neutralize them makes it possible to achieve the fair result, regardless of the specific, personal characteristics of the subject making the concrete decision.

Any managerial decision is influenced by many different factors, including objective ones: goals, objectives, standards, precedents and so on, which in various combinations, in our opinion, can be represented as models. In this case, the model range is quite diverse; however, all of these are models that prescribe or justify the very fact of decision-making in the field of human activity, in particular, in the educational system. In this case, the author means the general methodological approach. However, then this step creates the opportunity to fill models with specific content, to present tasks, goals, ways and methods for solving them in a particular sector, that is, to create a specific model and methodology for its implementation. The effectiveness of the method of management modeling seems indisputable.

3. Research Questions

It is known that decision-making is influenced by many personal characteristics of the decision-maker: style of management, experience, level of professionalism, age, gender, mental state, level of awareness of the problem, and others. All this taken together can radically change the vector of the approach and, consequently, a specific solution. The following questions can be posed: is there any way to compensate, perhaps, partially, the lack of professionalism, experience, information? How can the use of the appropriate model influence the preparation of draft decisions?

4. Purpose of the Study

The author's aim is to propose models of neutralization of adverse external subject factors of decision-making in the education system: a descriptive one, which is sufficient for scientific research, and a prescriptive model, which suggests actions, mechanisms, algorithms for its implementation in practice.

5. Research Methods

Model approach allows:

- constructing a specific model on a general methodological basis;
- creating a sequence (algorithm) of actions;
- taking into account all aspects of the subject matter;
- creating a specific (typical) methodology that is used repeatedly in similar cases;
- preventing the influence of insufficient, unreliable, negative, non-professional information;
- reducing the risk of voluntarist or palliative decisions.

The feasibility of a model approach used in this work to study the problem of neutralizing the adverse factors of decision-making in the field of education, in our opinion, is obvious. Rubtsov (2001) stated in his monograph “Target management in corporations. Change Management”, noting that “due to the properties of the human brain, all conclusions made by the individual (including management decisions) are typical and are based on conscious or unconscious models” (p. 288).

The problem of decision-making in the educational sphere considered in this material is full of stereotypes. Attempts to overcome some of them are reflected in the monographic collection “Decision Making in the Education System” with the participation of the author of the paper (Prinyatie resheniy v sisteme obrazovaniya, 2014). In particular, stereotypes in the field of decision-making in the educational space of higher education still even consist in looking at the problem only within the framework of pedagogical science and partly of psychology. For this reason, pedagogical issues are considered: goals, objectives, content, methods, techniques, means and technologies of training, skills and qualifications of the teacher, and so on. However, this complex of problems mainly concerns the internal organization of the educational process, that is, the micro level of decision making. If we talk about the macro level, then it is more expedient to apply other approaches.

When creating a model for neutralizing adverse external decision-making factors in the system of higher professional education, it is important to refer to the previously developed theoretical model of a favourable external environment that positively influences the educational process, which is described by the author in several publications (Ivanova, 2012; Ivanova, 2010).

6. Findings

6.1. Model approach to making decisions with the consideration of neutralizing the impact of adverse factors in the education system

In line with the classical ideas about the mechanisms of control, we can suggest two fundamentally different models. The model of a favourable external environment, which has a positive effect on the educational process is descriptive, that means, it describes all the components of this model, all the initial data related to the external environment of the educational organization in a certain logic. This model is revealed through such components as actors, positions, conditions. All of them are presented in terms of favoring the development of an educational organization, while at the same time some obvious or hidden risks are shown. However, they are only manifested, named, described; their disclosure, and even more so overcoming or, more importantly, prevention, requires a different model.

The model of neutralizing adverse external subjective factors of decision-making in the education system is prescriptive, that is, in a certain sense (in which it is possible in scientific research) instructive, prescribing any actions in order to achieve a positive result. This describes the obvious risks that may arise from a different development of the situation, that is, the lack of consideration for the impact of adverse external factors. What changes are important to consider? First of all, we should take into account changing conditions that require, as a result, different measures. The principle of such mobility in actions when conditions change is extremely important to observe when using a prescriptive model, because stationary models in a “live” and mobile educational process cannot exist. Any activity of people is characterized by mobility and dependence on new circumstances and conditions. Firstly, in the educational process, the obvious and mandatory goal is a qualitative change in all of its participants. Secondly, the interconnectedness of the educational process with the social environment also influences significantly on it. The very understanding that education is part of a megasocium gives rise to the idea that it is not possible to make decisions in the education system in a fixed, inflexible way (Prinyatie resheniy v sisteme obrazovaniya, 2014). Thirdly, an important factor is the direct and indirect influence of the economy and the market on the social environment and on educational organizations, these effects are obvious and are confirmed by practice and reflected in scientific literature.

For these reasons, when creating a model of a favourable external environment, which positively influences the educational process, as well as the model proposed in this study to neutralize unfavourable external subject decision-making factors in the educational system, it is important to take into account the principle of mobility and flexibility of the system.

It is generally accepted that the use of the two models is more sustainable and therefore effective in the management of any industry, including education. We should note that a model with a descriptive nature is important, however, it is sufficient for scientific research. Prescription model allows developing mechanisms for its practical use. This proves the necessity of using two models.

Now let us turn from substantiation of a solution to the problem of constructing a prescriptive model for its development. Following the descriptive model created earlier, it is necessary to study the same positions, conditions, and actors who, being external to the educational organization, have a direct or indirect influence on it.

Speaking about the neutralization of adverse conditions, it is necessary to distinguish two aspects of this consideration: in the short and long term.

We will explain it on the relevant specific example. The imperfection of the legislative base forces educational institutions (organizations) leasing premises for the educational process to repeat the licensing procedure in the special government agencies when concluding a new lease agreement (usually annually), although, if not for this, the license could be issued for 5 years. Licensing is a complicated procedure that distracts human and financial resources in significant amounts, but is not directly necessary for the educational process; at the same time, it may also be detrimental due to the diversion of forces and means, additional checks by different authorities. In the short term, the educational institution (organization) will take several steps to neutralize this actor: try to extend the lease term, establish additional contacts of various kinds with inspection and licensing structures, in some cases a small organization will start an educational process that does not require licensing (for example, short-term

seminars). In the long run, the proposal to continue the licensing of educational programs will play a positive role.

6.2. Identification and neutralization of the adverse effects of actors, positions and conditions

To study this question, we should refer to the table, which reminds about the actors identified earlier and helps understand the vectors and the strength of their influence (Table 1).

Table 01. Actors, positions and conditions influencing the formation of the external environment of the educational organization

Positive influence	Negative influence
A harmonious system of legislative and other regulatory acts with mechanisms (instructions) for their implementation. The fullest possible conformity of normative acts of a regional level with federal acts: a) horizontally - compliance of laws and bylaws at one level (federal or regional), their completeness, sufficiency and clarity; vertically - compliance of regional legislation with federal one, accuracy and timeliness of communicating and explaining regulations.	Contradictions between federal and regional laws and regulations. The lack of mechanisms for the introduction, execution and monitoring of the implementation of regulations.
Creation of by-laws and guidance documents, the development and application of effective formats for the explanation and introduction of legislation and other regulations. Professionalism of executives. Due attention in the education authorities to the work of legal services.	The possibility of voluntarist decisions, the use of peculiar interpretations of legislation. The use of efforts to combat unlawful decisions and to prove the fallacy of interpretations of the law by lower level executive bodies.
The presence of serious scientific research in the field of education. Providing conditions for the development of educational research. Formation of mechanisms for the introduction and use in practice of modern scientific research.	Lack of material, technical, financial and personnel conditions for the development of science in the field of education.
Highly professional training, advanced training and retraining of teaching staff.	The absence or inadequacy of advanced training and retraining in the field of higher education pedagogy. The low quality of training for teaching staff.
Effective interaction with representatives of the labor market on a wide range of issues	Lack of interaction with the labor market. Refusal to respond to a request and to the state of the labor market from vocational education organizations, lack of vocational guidance in secondary school
Availability of proposals to educational organizations of investment or charity projects from sponsors and investors.	The inability of universities to promote their scientific services in the market. High degree of dependence on federal budget funds.
Positive interaction with the media. Accounting for the influence of media on the rating and development of the educational organization. Skillful use of advertising tools.	Negative experience of interaction with the media. Underestimation of the influence of the media and advertising on the development of an educational organization, its reputation and participation in investment projects.

The positive influence of art on the formation of students' personality, on the organization of the educational process.	The negative impact of mass culture. There is a significant gap between the spheres of being of adult educators and adolescents / youth, which is ideological, psychological, informational.
The geographical location, the location of the educational institution in a major scientific and cultural center with favorable climatic conditions.	Lack of computerization and internetization; training local scientists to reduce negative impact. The absence of a request from enterprises with high-tech production or the absence of such enterprises. Extremely negative climate conditions.
Due attention to the formation of a positive attitude to the educational organization with the help of ratings, external assessments and so on. Care for reputation and image of the organization.	Inattention and lack of solutions on the problem of forming a positive attitude towards the organization.
Supporting educational traditions at different levels, historical and cultural connection with the local community.	Lack of reliance on the traditions of the organization, the historical development of the region
The sustainable economic situation of the region, the village where the university is located, the opportunities for practical training and employment of young people.	Economic problems of the region, weak opportunities for the development of the university infrastructure, its interaction with enterprises, employing organizations and investors.
Quality, level of development of the social environment of the region, settlement.	Difficult social environment in any respect or group of factors.
The university is located in a research center where the local self-consciousness is connected with science and education. The influence of the national factor is secondary here, but may also be present. Direct religious influence on education should not be exercised in accordance with federal law.	The negative impact of the national factor in the conditions of insufficient attention to educational work and the settlement of problems in the sphere of interethnic relations. Negative religious influence in the conditions of the prevailing influence of any single confession on the participants of the educational process, who are representatives of different confessions.
Special efforts to create a positive attitude of the public to education and a separate educational institution on the basis of all of the above.	Negative manifestations during the implementation of the educational process, as well as the negative image formed by the media.

The first step in the model of neutralizing the adverse influence of actors is monitoring, which includes:

- monitoring of legislative acts in the field of education and in adjacent areas (social, personnel policy) of the federal and regional levels;
- monitoring of the timeliness of the creation and quality of by-laws, the instructive-methodical base, explaining the legislation, developing mechanisms for introducing regulatory legal and methodological acts into practice;
- monitoring of scientific research in this area;
- monitoring of practical implementation of innovation;

- monitoring of the state of training and professional development of personnel, primarily managerial, in the field of education;
- monitoring of the labour market state, the current situation and problems of interaction between educational institutions and employers;
- monitoring of the socio-economic status of a particular region;
- monitoring of media coverage of education issues;
- monitoring of attitudes towards the public institution of higher education, assessment of the position of the university in socially significant rankings.

As we see, the proposed comprehensive monitoring is not a stepwise, but a horizontal construction with a view to a wide coverage (on the principle of “sieve”) of all actors and clarifying the situation as a whole (Ivanova & Bebenina, 2018).

At the same time, monitoring assesses the situation itself, the presence of unfavourable conditions for the educational process, the need to neutralize them, including after applying the model approach to a specific problem, comprehensively covering all positions, conditions and actors. The purpose of monitoring is to measure and evaluate the occurring substantial changes in the descriptive model, which allows us to develop the following specific prescriptive model in order to neutralize other adverse factors.

The system analysis, based on the monitoring of the sphere of vocational education, allows taking into account the factors of negative influence of adverse external conditions and ensure the implementation of an integrated approach to solving the identified problems and improving the quality of the educational process.

The second stage of the model is setting goals and objectives. This is a well-known, but absolutely necessary stage. Moreover, the goals are set as common, at this stage, and are concretized at the next. In this case, the determining direction of the forces application vector, that is, the definition of the problem, for the resolution of which a specific model is created, is automatically included into the problem of developing goals and objectives. Goals and objectives determine the composition of the influence map, the scale of work deployment, and much more. Under these circumstances, we can talk about the “goal tree”, however, we will not dwell on examples of its practical development, since this is a fairly well-studied activity in the field of education in recent years. After many years of Soviet power, when the goal was determined by politics and ideology, and education answered only the question “how?” in the 1990-s, great attention was paid to goal-setting in education and several successful approaches were suggested.

The third stage of the model is the development of an “influence map” on actors, positions and conditions based on the analysis of monitoring data.

It should be clarified what is meant under the “influence map”. This concept is periodically used in the field of applied political science and real politics, but even there it is not a commonly used term, rather, it is a technological designation of the outcome of political work. In our case, the “influence map” means a list of points of contact and problem areas, working with which, that is, influencing which during the interaction, it is possible to constructively neutralize the negative impact on educational organization and seek constructive solutions for the education system. These maps can be different in terms of performance, in format and their status significance.

The fourth stage of the model is the development of an algorithm and an action program (plan). As in the previous steps, the project method is used here. Depending on the results of the monitoring, goals and objectives, the composition of the “influence map”, an algorithm is formed first that includes several important consecutive steps, and then a detailed program or plan. The type of the latter document is determined by the activity that needs to be dealt with in order to neutralize adverse factors. Thus, for example, an educational organization can hardly use or completely ignore the rich history of the region where it is located, or not take into account in the educational process (both in training and in education) the national traditions of the indigenous peoples of a given territory. In this case, to neutralize the negative consequences of such neglect by aspects related to mentality, values, identification, a broad program of actions should be developed, including various forms and methods of work. If we talk about the harmonization of regional legislation with federal laws, then a plan of measures with specific performers and deadlines is sufficient.

The fifth stage of the model is control over the implementation of the previous stages of the model. In addition to direct control over the execution of all stages and parameters of the model during the implementation of the control function, an adjustment is made to the decisions made following their implementation.

7. Conclusion

Our proposals for creating a model for neutralizing adverse environmental conditions are methodological in nature and are applicable to solving problems that negatively affect the educational organization.

Earlier, when developing a model of a favourable external environment, actors, conditions and positions were named, as well as risks of adverse effects. Here we describe positive and negative impacts on a wide range of issues. From the above it is clear what a wide scope of influence exists for the development of a model applicable to these circumstances, the main thing is to determine the composition, stages of the model, and its content, while its content is dictated by all actors, positions and conditions.

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