A System of Indicators as a Measurement of the Contribution of Science to Our Social Development

VENELIN TERZIEV
Black Sea Institute, Bourgas,
BULGARIA

Abstract: The definition of social efficiency and social technology is the basis of evaluation methods and models, taking into account the wide range of objective and subjective factors. The methods for evaluating the effectiveness of social programs (projects) are related to the orientation of the social system towards social protection and social services of the population and the use of the process approach and the transition to program-target methods, outlining basic problems, mechanisms for social services and tasks for measurement, defining the basic requirements for evaluating the effectiveness of social programming and the different stages. Considering all these questions, the study proposes a model for evaluating the effectiveness of social programming based on the approach of "organizational effectiveness", covering the set of certain elements - a system for acquiring resources, choosing goals, assessing the impact of the external environment, choosing a strategy, respecting the "what-if" principle and priorities in social activity resulting from dynamic changes in the social environment
Special emphasis is placed on the differentiated effect on higher education institutions, depending on the area in which they carry out teaching and research activities, as well as on the peculiarities of the university business model in the changing environment for the development of higher education institutions.

Key-Words: Social Programming, Development, Social Economy, Social efficiency, Science, Indicators, Measurement

Received: May 11, 2023. Revised: May 16, 2024. Accepted: June 19, 2024. Published: July 23, 2024.

1 Introduction

Speaking of efficiency, as a key concept for any socio-economic activity, the emphasis is traditionally placed on economic efficiency, the manifestation of which is in the dependence on "costs-effects (benefits)". And since every public activity is carried out with increasingly limited resources, the approach should be like an economic activity. Moreover, it is considered as such "any purposeful activity in which limited resources are allocated and combined between alternatives, while it is possible to maximize the effect or minimize costs" [1]. The ratio between the costs and benefits of a given resource or combination of resources to reach a given, predefined goal comes to the fore, and on this basis, the rationalization of management decisions. In this sense, the cost-effect relationship can be used as a "planning method; a decision-making tool and environment for historical documentation of decisions made" [2].

This fundamental principle characterizing economic efficiency is one aspect of studying business efficiency. But every activity is by its nature social and determines the need for measurability of social effects. On this basis, in recent years there has been more and more talk about the so-called social efficiency. Unlike economics, social efficiency is not so direct, it is a more complex category and it is difficult to give one-dimensional expression [3].

2 Measuring Social Effectiveness

In foreign research practice, a certain amount of experience has been gained in the measurement of social effectiveness within the framework of the predictive assessment of the social consequences of scientific and technical projects, and economic and social programs. Thus, in the United States of America, at the beginning of the seventies, an independent direction of research was built in the field of "social impact assessment" (SIA-Social Impact Assessment), or more precisely, the integral social consequences of the implementation of various projects and programs for development. The business and political circles in the USA realize that every technological breakthrough brings "unplanned" losses of an ecological, social, and psychological nature, which eventually turn into an indirect economic loss. In the field of scientific and technical development, both at the level of companies and at the level of national programs, the entire methodology for planning and management is being

restructured. If earlier it was oriented only towards the purely economic criteria for efficiency, now the social, psychological, and other consequences in the implementation of the scientific and technical projects are starting to be taken into account, already at the stage of adopting a decision for their development and implementation. Thus, there is a need for a complex assessment of the various categories of impact of technique and technology on society [4].

The evaluation of the social impact of the scientific and technical projects and programs in the United States of America became an independent direction after, with the Environmental Policy Act in 1969, the mandatory procedure for evaluating their environmental impacts was created [4].

All state projects that may have a significant impact on the environment, as well as projects of private companies and enterprises requiring a special state sanction, are subject to environmental expertise.

An impressive example of the use of increased environmental requirements in the implementation of economic development programs in the United States of America is the organization of the development and implementation of the oil pipeline project through Alaska in the mid-seventies [4].

Project planning was carried out throughout the period of construction, operation, and dismantling of the oil pipeline after the field was exhausted.

It should be noted that the entire complex multi-level program management mechanism is formed and functions on the basis of the economic law in force in the United States of America and special legislative decrees and agreements.

This determines the specificity of the form of this management mechanism, in which its separate parts and elements, represented by state bodies, owner companies, and specialized firms, are connected to each other in a single organizational system of bilateral and multilateral agreements and contracts. From the standpoint of the nation's long-term interests, the project is recognized as highly effective and correct.

For a long time, the very formulation of the problem of social efficiency was considered debatable in sociology and economics. To date, no unambiguous and generally accepted definition of the concept of “social efficiency” has been established. There are quite a lot of studies of a different nature, in which the authors try to study the social effectiveness of various types of activities, including managerial ones. First of all, most authors develop the concept of social efficiency, the criteria, and methods for its evaluation against the goals of social production.

The monograph of the Bulgarian scientist M. Markov can be considered a classic work on the problem of social efficiency. According to him, effective is what leads to a result, to an effect (in Latin effectus - action, performance, and afficio - I act, perform) - effective, that is, effective [5].

A popular model for evaluating efficiency is the dependence on “resources-costs-result”, whose characteristic feature is the separation of the role of resource provision and the costs of increasing efficiency from management activity.

In R. Likert's model for effective organization, the following three factors are defined [6-7]:

Internal organizational factors, including the formal structure of an organization, the economic structure and social policy, the professional and qualification composition of the staff;

Intermediate variables such as human resources, organizational climate, decision-making methods, level of trust in management, means of stimulation, and motivation for activity;

Outcome variables, such as growth or decline in labor productivity and income, degree of satisfaction, consumer demand, etc.

In such an approach, efficiency is born as a result of a complex interaction between various factors, among which human and socio-ecological factors occupy a dominant position.

Attention is also paid to the approach according to which effectiveness is assessed by the degree of protection of the balanced interests of the state and society. The work of the state apparatus can be recognized as effective only in this case if it successfully solves the problem of optimal protection of the interests of the population, social groups, and every person. In this dual task, the most important aspect is the concept of efficiency of the state apparatus. According to this approach, effectiveness is expressed in the expansion of opportunities for active civic life of every citizen, of society and the effectiveness of the state. It is determined by a well-functioning system of activity of the state bodies, by their ability to lawfully implement the state interests, to implement the state policy for social and public development.

Another point of view is that which links the efficiency of state activity with the presence or absence of an optimal paradigm for administrative-political management. It is about the opposition of the traditional technocratic political management paradigm to the new - participatory one.

In general, the authors directly connect the effectiveness of state activity with the presence of a bureaucracy that actually serves society [4, 6-7]. This is the bureaucracy, which: is under the real control of

society; expresses the interests of social progress; and is minimal in its quantitative and qualitative parameters.

This claim is based on the internal contradiction of the bureaucracy between the broad public goals for which it was created and its narrow corporate interests tending to dominate.

According to the opinion of some authors, the criteria for the effectiveness of social management are concluded in the following:

In the degree of conformity of the directions, content, and results of the activity of the management structures and of those parameters thereof, which are determined by the functions and status;

In the legality of decisions and actions corresponding to management structures and users (recipients, beneficiaries);

In the reality of the influence of management activity on the state and development of management objects;

In the depth of reporting and expression in management decisions and actions on the specific and complex needs, interests, and goals of people;

In the nature and volume of direct and "reverse" relations with the beneficiaries, or in other words - in the democratization of the activity;

In the degree of authority of the decisions and actions of the management structures;

In the veracity and appropriateness of information transmitted to management structures and beneficiaries;

Influence of the management activity in relation to the external environment.

Any action, social phenomenon, or quality, including social efficiency, are characterized by quantitative and qualitative aspects. And although these two sides of the object exist in an inseparable unity and interrelationship, they are still different characteristics of the social reality surrounding us. In the scientific literature, it is accepted that the qualitative side of the obtained result (effect) is indicated by the term "criterion", and the quantitative side by the term "performance indicator".

In other studies, a slightly different interpretation of the term "riterion for social effectiveness" is offered, considering it from the point of view of the relationship between the quantitative and qualitative determination of the studied and evaluated object. On the quantitative side, the criterion appears as a method, tool, and reference measure for movement towards the desired result, and on the qualitative side, as an opportunity to separate "positive sides, forms of this movement in space and time".

Despite all the differences in the understanding of the term "criterion" in the indicated approaches, a semantic unity is observed. Moreover, their synthesis gives us a new, deeper understanding of the social nature of social efficiency.

Thus, the "performance indicator" (quantitative criterion) fixes the objectified and integral, mainly quantitatively expressed (for example, from the point of view of the natural volume of social goods and the time interval for their provision) assessment of the achievements of the social system of each rank.

The "criterion of effectiveness" (the qualitative criterion) is more focused on the study of the internal mechanisms for achieving the given result, including the degree of limitation and the so-called activation of the human factor, as a condition for self-development, effective activity, the social cost of what has been achieved, the degree of its limitation, etc.

This distinction is essential and important for the development of the social activity assessment system.

In whatever magnitude the effectiveness of the functioning and developing social system is expressed, it is always the result of the actions of all factors of the system in their totality, presented as integrative effectiveness. At the same time, it is important to emphasize that no matter how extraordinarily effective the activity of individual factors in the social system may be, its high efficiency can only be ensured by the corresponding quality of systemic social interaction. It originates as its irrevocable organic property and serves as a general algorithm and a universal motivational mechanism for activity for all factors in the given system.

The relationship between economic and social efficiency is complex. The growth of economic efficiency is usually based on the following methodological principle, according to which the implementation of the social program in itself must become a catalyst for effective economic development.

The funds spent by society to satisfy social needs are eventually returned in the form of an increase in social and labor activity. In this system, the implementation of social management ultimately appears as one of the subordinate factors for achieving economic efficiency.

The attempt in an analogous way to consider the impact of the economic factor in reaching integral social efficiency inevitably suffers from a simplistic approach. It is already recognized as completely obvious that with a certain essence of social efficiency, the classic criterion (the "cost-profit" ratio) is clearly insufficient. Another approach is needed, with the help of which the effectiveness of

one or other social actions could be evaluated. The degree of achievement of social effectiveness is determined by the position of movement towards a socially significant strategic goal, which is meaningfully revealed as a state of maximally complete realization of man's needs and the self-realization of his essential powers, in other words, his personality. Human well-being, as the highest value for society, becomes an end in itself for social development. Hence, the projective goal of any development usually arises as a requirement to determine the complete well-being and free all-round development of all members of society, the realization of which is primarily in the creation of human-worthy conditions for life and creativity.

In doing so, it is necessary to make a number of important methodological clarifications. The notion of social efficiency as performance, evaluated from the positions of approaching the socially significant goal, must necessarily relate to the changes corresponding to the general line of progressive development of the social system, i.e. with her gradual transition from less to more perfect existence.

We can note that before comparing each achieved social result with the costs, it is necessary to clarify the significance of the very fact of reaching this result, first of all from the point of view of its compliance with the goals of social development. It is also important to consider the time interval needed to achieve the set goal.

The importance of this clarification for the understanding of the basic principle of social efficiency and its criteria, expressively emphasizes the specific experience of social policy. The American scientist D. Rothblatt emphasizes that in the United States of America in the thirties, a fundamental rethinking of the principle of effective social policy was done [6-7]. The government's measures to expand unemployment insurance funds and increase the number of welfare recipients, which were initially seen as completely progressive, in the long run increasingly show their ineffectiveness, insofar as they have little impact on the improvement of human resources. Experience has shown that "providing well-being without offering viable alternatives" for human development and initiative becomes a brake on social development, insofar as it generates "reproduction of the culture of poverty from generation to generation". Obviously, to the same extent that the time element allows to more precisely reveal the main line of social development, the evaluation of the social activity of the activities carried out can be radically changed. So let's say that it is more effective to include people in need of social support in the labor process, bringing a promising result both from an economic and a social hunger point, than to give aid aimed at short-term "smoothing" of social tensions in society.

Examining the problem of social efficiency depending on the notions of social development and its ideal gives rise to additional difficulties. In those cases when the social effect is difficult to measure quantitatively, the only reliable criterion for its evaluation can only serve the degree of approaching the goal, to the realization of those values that are foreseen by it.

In a number of works, the substantive side of the concepts of social effect and social effectiveness" is considered. As a rule, the authors of publications agree that the social effect is a certain social result, a purposeful activity carried out in life by economic decisions.

Moreover, in some cases it is understood as "something related to human development" which "forms new features in the image of life and activity, both individual and collective, testifies to an increase in social activity, supports all-round development of personality and the formation of a new type of worker". In another case, it is treated as a "result meeting the objectives of social development". In the third case, as "the degree of increasing the socio-psychological or sanitary-hygienic comfort of the person". In the latter cases, in fact, it is not the social result as such that is meant, but the efficiency, i.e. the ratio between the result and the goal, the initial and subsequent state of social comfort [4, 6].

The proposed definitions make it possible to capture the essential differences between the concepts of "social effect" and "social effectiveness". The first reflects a finding of reaching certain, quantitatively or qualitatively evaluable results of social activity in an independent sense. In the second case, there is a correlation of these results with the measure or degree of realization of the normatively set goal or ideal for social development. This measure of evaluation of social effect, in turn, serves as an important indication of this qualitative side of social activity integrated into its systemic organization. Thanks to the same, social efficiency itself is achieved. This inherent efficiency of social activity - the constitutive quality characteristic - can be defined as a principle of social efficiency. It is directly related to the criteria of social efficiency, as specific qualitative signs and determinants of meanings, on the basis of which, as a kind of "zero reporting points", social activity is evaluated as effective or ineffective. Looking at the signs distinguishing social efficiency from the result, they relate it either to the goals or to the needs. It should be noted that "the most effective, other things being

equal, will be an activity in which the goal maximally depicts human needs." Along with this, the question of the specific social results (effects) of its managerial impact is not raised, although it is presented in the given context as very essential. The thing is that the examination of the issue of assessment of social effectiveness and the very content of this concept is inseparable from the specific analysis of both the normatively or ideologically set goals of social development, as well as the needs (expectations, interests, ideals) of the various social subjects.

It seems that social efficiency cannot be thought of in the categories of an abstract social good or only in terms of the movement of the social system towards some extremely generalized goal of social development.

The social object and this is the object of management, to which the concept of social efficiency refers, is sufficiently complex in its structure. It encompasses the entire set of social relationships and relationships existing in society. The very goals of social management inevitably affect the entire "space" of these connections and relations, including the social system (society) as a whole, social groups (communities), and individual individuals (personalities). Based on this and the effectiveness of the social management activity, one should think in the overall assessment of the development of all countries, aspects, and components of the social system.

It is obvious that the above-considered correlation of effective social activity with the goals of social progress indicates one of the important moments of social connection and interdependence between the system-wide, social-group, and individual-personal dimensions of social activity, of the aggregate and, as a rule, long-lasting nature of its manifestation.

Examining the issue of the socio-economic efficiency of the targeted complex programs, it was found that "the main purpose of calculations and the assessment of social efficiency within the framework of the program-target method is the justification of the adopted planning and management decisions" [8]. Taking into account the need to predict the social consequences of economic activities, which must be considered in the general assessment of their effectiveness, several authors note that for this "the persistent quantitative or (albeit sequential) dependencies between production-technical and social changes, between the characteristics of the targeted events and indicators reflecting the corresponding target norms" [9-10].

Some authors link the social efficiency of the economy with the problem of efficiency. In economics and sociology, even the question of the legality of this concept, such as "social efficiency" (as opposed to the more or less clear economic maximum production at minimum costs) is debatable.

Those scholars who consider this concept legitimate try to give it a more specific definition. In particular, the criterion of social efficiency is the degree to which ripe social problems can be solved in minimum terms and at minimum costs to society. The given definition is debatable because the development of a criterion for optimality in the social sphere would significantly advance the understanding of the criterion of social efficiency, whatever final formulation this concept receives [9-10].

Posing the question of the optimality of social activity as an integral criterion for its effectiveness is promising precisely because of the complexity of each social object, its dependence on multiple variables, and also the presence of multi-vector internal system contradictions.

We should bear in mind that optimization in the mathematical theory of optimal processes is called the process of choosing the best option from the possible ones, bringing the system, the object, to the best possible (optimal) state, a process in which it is maximized the quantitative characteristic of the most desirable property of the object and vice versa, the most undesirable is minimized.

The issue of optimality criteria (the optimum) is an important theoretical result for the optimization of the national economy. In the most general form, the criteria for optimality in economics are defined as particular economic and mathematical models expressing public attitudes. In other words, they are a special type of formalization of the goals of economic development in the form of an analytical and, in this sense, a priori set function.

The problem of the ratio of optimality and efficiency problems is also debatable. One group of economists actually equates them, while others try to separate these concepts. This is where targeted research work is needed. For now, one thing is clear: between the criteria for optimality and efficiency, there is unconditionally the closest relationship and the theoretical clarity in this regard allows us to achieve significant success in the objective assessment of the consequences of the implementation of plans, programs, projects, and decisions. It is obvious that, for example, social efficiency can be thought of narrowly pragmatically, as the best outcome in solving an urgent social problem. Within a broad social approach, the

strategic and long-term consequences of the measures taken are taken into account.

Certain contradictions and divergences may arise between these approaches. Under these conditions, the task of achieving overall social efficiency should be formulated primarily as a task of optimization of the social management activity.

Social and economic efficiency has two aspects. Each bearer of a certain type of work is treated as part of the general, direct social work. Concerning the product of any given labor, it manifests itself as a quality or property capable of satisfying a rising need.

Economic efficiency applies its criteria for evaluating the results of labor to solving the question of how much it costs us to achieve the obtained effect for social activity, and to whom and how this effect serves. Proceeding from this, it can be assumed that, unlike the criterion of economic efficiency, the criterion certifying social efficiency is not understood only within the given "closed" system of social action, rather than having an externally set normative-ideal character. This greatly complicates the assessment of the social effectiveness of each management institute, as it forces it to take into account in its field, the "internal environment" of its activity within which the performance can be correctly assessed and measured. At the same time, the measurement is exclusive to the quality of the given social-management system, as well as with the "external environment", which is not in the sphere of its control. Nevertheless, it is a task of normative goals from which the integral evaluation of social efficiency is derived.

It is appropriate to emphasize the distinction and interrelation between the categories of efficiency and quality. The criterion of effectiveness is the ratio of costs and results, and the criterion of quality is the ratio between the effect and the goals, the goals and the means to achieve them. An expression of the principle of efficiency is less cost - greater result. The manifestation of the principle of quality is the highest degree of achieving the goal with rational and optimal use of the available means. It is obvious that with such consideration of the principle of social efficiency, it is taken from the standpoint of the quality of social activity, and not as a "cost-effect" ratio.

The problems of the social efficiency of the activity are considered directly in the specific management. The social consequences of management activity in the broadest sense of the word are clarified by the already mentioned American system for assessing social consequences – SIA (Social Impact Assessment - SIA). American authors include economic in the narrow sense of the word, political, cultural, and psychological impacts. From the point of view of the one who is affected, social entities and organizations are distinguished. Such are society, social groups, socio-territorial communities, and individuals. From an organizational-institutional point of view, the impacts to which the activities of management bodies, ministries, industries, and companies are subjected are analyzed [9-10].

From the point of view of the spatial scales of the impact, the consequences for the country, the region, the district, the municipality, the territorial unit - the population of the object of impact or the specific target group of beneficiaries are evaluated.

Social impact in the narrow sense of the word means the impact on employment, the creation of new jobs, education and training, self-education, health and quality of life, communication within and between social groups, social cohesion, and social segregation. within the local territorial community.

In this case, the task is to answer the questions of who gains and loses if the supposed action takes place, what these are, and how the social costs and benefits are distributed.

To assess the social effect of management decisions, it is necessary to have criteria that allow us to assign social consequences to goods or costs. In other words, the presence of certain benchmarks and value orientations is assumed.

The procedure ends with the determination of what some authors call "target" and "need" efficiency, i.e. efficiency, understood in a normative-ideal dimension.

The indicated experience allows us to realize several simple truths, without the consideration of which one cannot proceed to the creation of socially significant programs and projects, namely:

Before proceeding with the implementation of any management decision, it is necessary to assess its social meaning, and therefore its expediency;

Insofar as there are no universal criteria for social efficiency, each specific management decision must be accompanied by a justification of its expected social effect and defined criteria for its evaluation;

The interpretation of the social effect depends on the scale of the management decision, on the level of consideration of the subjects experiencing the impact of the innovation, on the motives and the pursued goals, and also on the time interval during which the expected result is expected to be obtained;

It is important to distinguish the social effect in the broad and narrow sense of the word, taking into account that there is a dependency between them. The justification of management decisions increases

if the concept of social effect is complex and includes economic, social, psychological, socio-cultural, and other significant consequences;

Evaluating the supposed social effect, it is necessary to orient ourselves against certain value benchmarks, allowing us to thoughtfully judge the social "value", and the social "continuity of decisions". Such an assessment is possible only in the case of comparing the social effects of several alternative solutions.

The problem of the social effectiveness of management began to be actively studied in the late sixties and early seventies of the last century. Previously, it was related to the development of the theory of social management, which raises the question not only of the economic but also of the social effect of management activity. The question of the effectiveness of the management system, as the effectiveness of the activity of the subject of management or the management subsystem, is necessary to focus on the following questions: what is the contribution of the management system in solving these or those socially significant tasks? What is its contribution to the achievement of the goals facing the particular organization?

The primary criterion is the degree of impact of the managed subsystem. But insofar as the management system is relatively independent and functions as a complete complex, one more set of criteria can and should be defined. It is formulated based on the primary criterion and answers the questions related to the internal state of the management system, with its ability to act with an increasing degree of efficiency.

Along with the evaluation of the effectiveness of the management system in the general aspect, the effectiveness of the main components of the management can and should be determined - the functions, functional structures, and technologies.

Efficiency can be considered not only as a phenomenon from the economic sphere. Moreover, it is a relatively independent social phenomenon. It is based on the consideration of the multi-level structure of elements, value criteria, and indicators. They fix the effectiveness of social programs and events, the activities of different population groups, and the social consequences of the implementation of economic, scientific, and technical projects. Social efficiency indicators are considered tools for evaluating the realization of the interests and needs of society, the state, the collective, and the individual.

Effectiveness, as a social phenomenon, appears in the form of the qualitative-quantitative characteristic for maximum development of human resources, forms of social life, and management of society, taking into account the minimum social, political, economic, and moral costs. This approach allows us to consider social efficiency as a universal approach for expressing the degree of effectiveness of positive and negative functioning in the development of social institutions and processes. At the same time, the widely understood principle of social efficiency goes beyond the limits of the given ratio, insofar as it takes into account and integrates several more important dimensions of the effectiveness of social activity. It is about its orientation towards reaching socially significant, normatively set goals for the development of the object for social management, the assessment of the consistency and the real degree of approximation to the sought public interest in the order of "self-development" of the system, the orientation towards the quality of management activity. These aspects for measuring social efficiency should naturally be reflected in the construction of the general model or principle for social efficiency.

The analysis of the problem of social efficiency shows that in the process of birth and development of science, it naturally receives the necessary attention in the context of different management systems. In particular, the importance of this context should be emphasized with the system of state and local management of the social spheres of society. The public character of these systems implies their limitation in their activity for social effect and its determining quality of social effectiveness in the wide range of social needs and goals. Therefore, the social efficiency of the state management system objectively requires the application of a polymodal multiparameter approach to its measurement. The connection of the entire complex of social and effective state management with the social safety of the country as a whole, and also with each region and territory in its independence, is also essential.

When defining the complex assessment of the effectiveness of social programs, it is appropriate to note the following:

The evaluation of the effectiveness of social programs should be considered in the context of quantitative and qualitative indicators: the quantitative indicator is expressed in the natural volume of social goods, as well as in the material costs for their receipt, and the qualitative indicator or criterion is reflected in the internal mechanisms the achievement of the given result, the quality of the organizational and management system, the system norms and values, the norms of law, based on which the activity in the given social system is considered effective or not;

When evaluating the programs, their economic and social efficiency should also be taken into account. Economic efficiency is expressed in the fact that the implementation of the social program in itself must become a catalyst for effective economic development. The funds spent by society to satisfy social needs must eventually be returned in the form of increased social and labor activity;

The degree of achieving social effectiveness is determined by the position of movement towards the socially significant goal, which is meaningfully revealed as a state of maximally complete realization of man's needs and self-realization of his essential powers, in other words, his personality, which is realized above all in creating human-worthy conditions for life and development.

In the case of complexity or the possibility of calculating economic efficiency, the weight in the assessment is the optimality in achieving the social effect.

It should be noted that the results of the programs relate either to the goals of the program creators or to the needs of those to whom these programs are directed. To the greatest degree of effectiveness in the given case, those programs reach those programs in which the goals of the managers and organizers of the program most fully reflect the needs of the subjects of the program [8].

3 Measurement of Science, as an Indicator of its Significance

In recent years, a lot has been said and written about measuring science, quality, sizing in some way, and finding an element for its valuation. An interesting undertaking, both from a professional and a research point of view. There are at least two parties to this process – those who create the science and those who will evaluate it or, more precisely, those who will consume it. So that all this does not seem rather primitive and consumerist, we should consider all this as a process that is too complex, both for its accounting and even more so for its valuation. Historically, the benefits of various scientific discoveries came quite late, even after the death of their authors.

The challenges of looking for answers to questions from the point of view of usefulness, effectiveness, and efficiency are related to a definite and precise knowledge of these processes and their reflection on the entire social process in which they fall or, more precisely, are part of this social process.

Perceiving science as something abstract and incomprehensible rather harms or at least does not help the process of its perception and appreciation.

Various state and public institutions deal with this difficult task, including the Ministry of Education and Science in Bulgaria, which is called upon to perform this activity in accordance with its duties. In the implementation and development of various models and technologies in this direction, there are always satisfied and dissatisfied. This should in no way frighten, offend, or discourage either party. Achieving maximum justice is a strong enough motive to go in this direction of objectifying the essential processes related to scientific and research activities. Moreover, it has been proven in life that progress is related to scientific discoveries and they are part of human development.

Very often we take things quite pragmatically from our point of view, contenting ourselves with the explanation that they are still going well or are acceptable enough for the community to which they relate. This acceptable way may be relatively good for a certain period of time, but it is by no means acceptable and progressive for the development of these processes.

The concept of “process” is complex enough in the sense that we use it because, on the one hand, it has a long duration in terms of time and has a complex of characteristic features, complexity, and even contradictions. It must be considered, defined, and even understood both by all participants in the process and, above all by those who will consume the results of this process, i.e. society. The opposite will be a self-serving game of science and will bring satisfaction to man for himself without benefiting others. You will agree that the main benefit in this direction is the applicability of everything that scientists and researchers do. Historically, this has been repeated enough times over the years, and in quite a few cases, scientific discoveries have been accepted and evaluated in a much later period of time, after their realization. Acceptance or denial of certain results of scientific activity requires understanding, feeling, or approval by society. This is not always an easy and achievable task from any point of view.

Usually, scientific discoveries, research, or developments are published in specialized publications that are accessible to a limited circle of users who are engaged in this activity or these publications are not public enough, i.e. have limited access or in most cases this access is paid for. This further complicates the process of approval or acceptance of these circumstances. The imposed need for scientific developments to be published in refereed editions, i.e. those that contain scientific

information of high value, has turned them into publications of a closed nature or limited availability of the published information. This is also understandable, considering the efforts and work of the respective teams or specific researchers to receive feedback for their efforts and to be evaluated in an appropriate and sufficiently acceptable way.

On the other hand, the work of scientists must reach a larger community, because it is practically the potential user of their work. This forces, or perhaps the correct word obliges, scientists and researchers, to present their theses, developments, and discoveries in various forums to reach the user as quickly as possible through various information channels. Explained in this way, it sounds rather simplistic, but it is relatively true. A study is sometimes presented, advertised, and displayed at dozens of scientific conferences, roundtables, symposia, and trade shows, and becomes a complex, difficult, and lengthy validation process. The resistance from the scientific community in such cases is very serious because the search for non-traditional approaches in the validation of scientific research violates the generally accepted framework of slowness and closedness of the academic community. This "irritates" the scientific community, which is quite introverted and even rigid in its understanding of the promotion of scientific works.

It is our understanding that almost all presentation options are acceptable as long as they produce a good result and provide reliable and true feedback and useful information in this direction. The relationship between the authors of scientific research and development and users should be more than warm and sincere, to establish in a sufficiently accurate and correct way gaps, negatives, or imperfections.

The changes in the Law on the Development of the Academic Staff and the Rules of its Application in Bulgaria try to find an answer to these questions by trying to create a system of criteria that is measurable for the relevant field of higher education and professional direction. This system is served by the National Center for Information and Documents at the Ministry of Education and Science of Bulgaria. Whether the quantitative measures that are embedded in this model can provide the necessary qualitative coverage is difficult to say and rather the answer is negative. Despite everything, this system creates a certain order and visibility of the results, but for objectivity, it is difficult to even think in this direction. Especially considering that different assessment and eligibility systems and requirements have been in place at different times. Meeting certain criteria to date sometimes makes it impossible for some scholars and researchers to present adequate information, with an additional difficulty presented by paper-based information from older time periods that cannot be ignored or denied.

This does not detract from the efforts being made in this direction to introduce uniform or more precisely measurable requirements to be taken into account in the habilitation procedures for associate professor and professor, as well as for the educational and scientific degree "doctor" and the scientific degree "Doctor of Science".

Naturally, they are differentiated according to certain criteria, with the relative weight being placed in several main directions: articles and reports published in scientific publications, referenced and indexed in world-famous databases with scientific information; articles and reports published in non-refereed peer-reviewed journals or published in edited collective volumes; citations in peer-reviewed monographs and collective volumes; citations or reviews in non-refereed peer-reviewed journals; supervision of a successfully defended doctoral student; a published university textbook or a textbook that is used in the school network, etc. Here, particular importance is given to publications that are in the referenced systems of Web of Science and Scopus. It is believed that the requirements for such editions are high enough and the evaluation of the published works is high. This, of course, is a matter of perception by the relevant evaluation body as one of the main criteria in determining the quality of the scientific activity of the individual himself and of the institution as a whole.

All this directly corresponds to different rating systems, which take into account certain articles in certain editions and rank the institution according to these indicators, including citations of these scientific reports, articles, or announcements. This seems quite acceptable and adequate as an assessment technology, but the result does not always correspond to the reality of the state of the relevant scientific and research institution. Such an assessment is also made in Bulgaria and at the end of each year, the results of the previous year are presented. The time of assessment was chosen non-randomly. The indexing of relevant publications in the two main systems is a lengthy period, in some cases lasting more than a year. Sometimes in these cases, there is a possibility that part of the publication activity of scientists and researchers is not correctly and accurately reported. In some of the higher schools, progress is due to one or more scientists who have formed a team and established themselves in the community and are free to publish in this type of scientific journal. This in a certain way distorts the information that is presented and leads to quantitative accumulations that do not

correspond to the overall assessment of the institution. In some cases, if we exclude these few scientists from the composition of the relevant higher school, the data that will be obtained is insignificant.

The created Rating system of higher education institutions in Bulgaria uses a methodology that is based on a system of indicators.

The main information in the rating system is represented by a set of indicators. These indicators were formed as a result of collected statistical information from centralized registers and surveys conducted among students, teachers, and administrative and managerial staff in higher education institutions, as well as among employers who hire personnel with higher education. The indicators are divided into 6 thematic groups according to the main categories by which higher schools are evaluated. These groups are: Learning process; Research; Learning environment; Social and household and administrative services; Prestige; Labor market realization and regional relevance.

There are two main types of indicators in the rating system - rating and informational. Rating indicators are those that can be used to form rankings of higher education institutions in a given professional direction. Information indicators provide information about a given higher education institution and its professional fields but are not used to create rankings. For example, the indicator "Number of students in professional direction" is informative. It can serve for comparisons and provide additional information about a given higher education institution in a given professional field, but it cannot participate in the formation of rankings, since the presence of a larger or smaller number of students in itself is not an indication of the presence of a higher or lower quality of the education provided.

The rating system contains indicators summarized at three different levels: Professional direction in the relevant higher education institution; Professional direction at the national level; and High school. Some indicators are available in the system at all three levels, others - at two of them, and others - exist only at one level, depending on the cognitive meaning of each of the indicators. The indicators, which are calculated for higher education institutions as a whole and participate in some kind of ranking of higher education institutions by professional fields, have the same value for all fields in the higher education institution. The indicators calculated for the professional fields in a national plan are not used in the formation of rankings, but they can be used to make comparisons between the different fields in the Bulgarian higher education system as a whole (but not between the different higher schools within the same field). These indicators carry aggregated information at the professional level and can be used for further comparisons and analyses. They can be viewed in the "Comparisons" section of the system's website.

Until 2015, two criteria were used for weighing the data obtained from the sociological survey among employers from the respective administrative area in which the respective employer is located and the number of persons employed by the respective employer according to data from the National Social Security Institute. For the 2018 edition, two data weighting criteria have been used again - the administrative area in which the relevant employer is located and the economic activity code (according to data specified in the survey) according to the Classification of Economic Activities 2008. For the 2019 edition d. when preparing the weights, in addition to the "administrative area" and "code of economic activity" criteria, a third criterion was added - the number of employees, obtained from data from the sociological survey conducted among employers in June-July 2019. When preparing the weights for the 2020 edition of the Rating System used the same three criteria as in 2019. No sociological research was conducted in 2023. For the standardized rankings, the most up-to-date available data was used, i.e. those from the 2020 edition of the Rating System.

Changes in the methodology and the addition of new or removal of existing indicators may have a partial impact on the standardized rankings, and this should be taken into account when interpreting the changes in the positions of various higher education institutions in this type of rankings in the different editions of the rating system.

Information about the indicators and the weight with which each of them participates in the formation of a selected standardized ranking can be found by selecting "Show indicators" in the corresponding standardized ranking for the relevant year on the web platform of the Rating System at https://rsvu. mon.bg / [13].

When preparing the Rating System of Higher Education Institutions, indicators were used in different measurement units (number, scale rating, percentage, BGN, etc.). Therefore, it is necessary to unify their values by a statistical procedure called "standardized z-scores", which brings them to the same scale and at the same time preserves the order and proportions between them. Standardization is performed using a classical method that uses an arithmetic mean and a standard deviation. The calculation goes through the following basic steps:

1. Arithmetic average values are calculated - for each of the indicators, the arithmetic average is calculated for the entire studied population in total - $meangr$.

2. Dispersions are calculated for each of the indicators:

$$\sigma_{gr} = \frac{1}{N-1}\sum_i (x_i - mean_{gr})^2,$$

where i moves according to the number of units in the studied population, and the total number of units in it is denoted by N. This quantity shows how different, on average, individual cases are from their average size.

3. Standardized points are calculated:

$$Z_i^{gr} = \frac{(x_i - mean_{av}^{gr})}{\sqrt{\sigma_{gr}}}$$

with this procedure, the distribution of the indicator values is translated and an average is obtained 0 and variance 1 (within the studied population), while the order and proportions between the values of the individual units are preserved.

To convert the standardized points to points between 0 and 100, another transformation is done: $Zi = * 20 + 50\ i$

At values less than 0 and greater than 100, i.e. those differing from the mean by more than 2.5 standard deviations are given values of 0 and 100, respectively.

In the rankings, the final grade for each institution of higher education is presented as a score on a scale from 0 to 100. Since the 2013 editions of the Ranking System, there have been changes in the aggregates used, based on which the z-scores are calculated. To avoid instability arising from the use of small populations, the entire population of study units is used in the calculation of z-scores. For example, if the indicator is based on subject-level data, the z-scores are calculated using all values for all subjects in all higher education institutions. This means that the base on which the z-scores are calculated in this case includes over 300 values.

Each rating system has its limitations. This one is no exception. These limitations must be taken into account when considering the information part of the system and when analyzing the results of the different rankings because they can have an impact on the cognitive characteristics of the information in the rating system.

In cases where the data collected for a higher education institution in a given professional field is not sufficient to allow its ranking in comparison with other higher education institutions in the same professional field, the corresponding higher education institution in the relevant professional field is excluded from this ranking. In these cases, the data on the individual indicators for the out-of-ranking for the relevant higher education institution are available to users, but this higher education institution is not included in the standardized rankings for the relevant professional field. The grounds for placing a higher education institution in a given professional field outside the ranking may be related to the lack of a sufficiently large number of persons who graduated in the last 5 years, among students in the relevant professional fields in the respective higher schools, with denied or expired accreditation, as well as with the lack of sufficient data in the official registers used as a source of information for the rating system.

The "detachment" of scientific research from social development as a whole is also a fundamental and unimportant problem in its nature. The questions here are what is this good for, when and how will it be useful to us, or will it be useful at all. We must exclude purely theoretical developments, which in themselves have another meaning and necessity.

In recent years, the Ministry of Education and Science, in connection with the implementation of the national policy related to regular monitoring and evaluation of scientific research activity (Government Gazette No. 54/29.06.2018), has made an Evaluation of the scientific research activity carried out by higher schools and scientific organizations and the "Scientific Research" fund, and later the created Rating System of Higher Schools.

The opinion of Celia Luterbacher from Switzerland is interesting, and she makes interesting interpretations in this direction. She says that in the scientific international community, there is a ruthless principle "I publish, therefore I exist". In this direction, the thoughts are that special importance is given to the quantitative measures that take into account the number of publications and their references. In Switzerland, a reform is being prepared, which is related to a change in this direction. "In recent years, quantitative indicators are increasingly used at the expense of qualitative ones, and so there is practically no way to motivate scientists, not to mention that this process can lower the quality of scientific research. All this should be linked to a change in the national strategy, which takes into account the diverse disciplinary and institutional requirements, applying differentiated assessment practices".

The most serious problem turns out to be the creation of a relatively good system of indicators and evaluation criteria that would provide accurate and reliable information about the state of scientific research and the overall state of higher education and

research institutions. Mathematical interpretation would be a far easier problem and doable quickly if we could find the most accurate and measurable indicators.

The main problems are outlined in several main directions:

1. Building a sustainable and effective relationship between higher education institutions and the labor market.

In connection with the implementation of Contract No. D03-26/23.07.2020. with subject: "Performance of analytical activities based on the annual results of the Rating System of Higher Education Institutions in the Republic of Bulgaria" under project BG05M2OP001-2.005-0001 "Maintenance and improvement of the developed rating system of higher education institutions - phase 1", financed under the Operational Program "Science and Education for Smart Growth" 2014-2020, between the Ministry of Education and Science and "Global Metrics" EOOD, the following problems and proposals are defined.

The quantitative expression of mismatches between demand and supply can be presented for several key areas where we have the opportunity to trace emerging imbalances at the national level in the horizon up to 2027:

Specialists with a pedagogical profile are expected to be in the first place with the greatest shortage by 2027. The main factors that influence the shortage of this type of specialist are aging of the teaching staff and a higher share than the national average of teaching specialists who are of pre-retirement age; the smaller number of graduating specialists (on an annual basis) compared to the needs of the educational system; still a high share of specialists graduating from pedagogical specialties who are employed in positions that do not require higher education (on average between 42 and 58% in different higher education institutions do not work in positions that require higher education). A reserve of specialists in this professional field are both graduates who are employed in other positions, Bulgarians who live abroad, and specialists from practice (especially for teachers in secondary vocational schools);

In the next place the greatest discrepancy between the real needs of the sector and the specialists graduating on an annual basis will be the sectors of human health care and medico-social care with accommodation and social work without accommodation. The shortage on an annual basis is expected to be around 2,000 specialists (from all professional fields related to these two sectors). There is a reserve in this direction among the graduates of the professional fields of "health care" and "public health", where the share of persons employed in positions that do not require higher education varies between 13 and 30% in the individual higher schools for the professional field of "health care" and between 11 and 41% for the professional field of "public health". Reserves among graduates of dentistry, pharmacy, and medicine are almost non-existent, as they occupy positions that require higher education;

The next sectors in which a clear shortage is emerging are activities in the field of information technology and information services and the production sectors related to engineering activities. A reserve for this type of specialist is again the persons working in positions that do not require higher education. Despite the demand for this specialty on the labor market, in all higher education institutions outside of Sofia, the share of graduates in "information technologies and information services" majors who occupy a position for which higher education is not required varies between 42 and 65%. The share of engineering graduates occupying positions for which higher education is not required is similar (58%). This shows that, in addition to territorial imbalances, there are also imbalances in the quality of training and acquired skills, which do not allow graduates to realize themselves in more attractive positions, despite the shortage of personnel in these sectors.

The needs of high-tech industries and knowledge-intensive services from personnel with higher education in specific professional areas outline the role of pedagogics, humanities, social sciences, economics, and law for sectors dominated by public participation, such as education, health, and public administration. The role of business sciences can also be traced to the manufacturing industry and the service sector. The importance of the so-called STEM professional fields in almost all spheres of the economy.

To overcome these imbalances, it is necessary to:

To improve the quality of secondary professional education, so that it is not necessary to hire persons who have completed a bachelor's or master's degree in positions that do not require higher education;

To improve the quality of secondary education in other fields in the country (language, science, mathematics, etc.) to meet the necessary standards for a full and qualitative continuation of education in the next levels of education;

To develop learning skills, including the attitude of lifelong learning, which will give flexible adaptation of graduates of higher education to

different fields and activities, including adaptation to rapidly changing working conditions;

To develop STEM skills and the conditions for teaching subjects from the group of natural sciences, mathematics, and informatics in secondary education, to create better prerequisites for training and professional development of a wide range of professional areas, to which currently there is little interest in the growing demand and needs of the labor market;

To create more flexible forms of training and interdisciplinary programs (especially in the initial years of training) to enable the development of a mix of skills relevant to the future labor market. Among them, in addition to specific professional skills, are also important for employers skills for learning new knowledge and skills, self-organization, discipline, teamwork, communication skills, initiative and entrepreneurship, working with information, writing text, etc.;

To improve the quality of higher education in professional fields for which there is a high demand on the labor market, but also a high proportion of persons who have graduated from this professional field, who are employed in positions that do not require higher education. These imbalances give reason to assume that, despite the demand for specialists with a similar profile, despite the acquired diploma and education, the available training is not sufficient for labor mobility or realization of a position that requires higher education;

It is necessary to improve the connection between the educational content and the real needs of the labor market (not only business but also the needs of employers from the public sector), paying particular attention to joint partnership initiatives between employers and the relevant HEIs (joint projects, research, open-door days, participation of guest lecturers from practice, initiatives to "change places" with the aim of better mutual understanding and familiarization, etc.;

To improve career guidance to minimize the irrational choice of education and the waste of both public and personal resources that could be directed in other forms of personal and professional development. In this way, non-rational choice can be transformed into appropriate training for implementation purposes, which will be much more effective and less resource-intensive, including shorter duration. At the moment, 49.7% of the graduates of higher education (average value based on the realization of the graduates of all professional fields) occupy a position for which higher education is not required. An interesting additional analysis to be carried out in the future could look for an answer to the question of whether this share changes with the progression of work experience (through a study among graduates in the 10th and 15th year after their graduation), as well as what is their career, what additional training and qualifications have they received, etc.

The key professional areas identified above, from the point of view of the long-term needs of the labor market in Bulgaria, provide grounds for carrying out targeted measures for:

Stimulation of applications to Bulgarian higher education institutions by increasing the level of awareness of the labor market, the required skills, the realization of students who have graduated from Bulgarian higher education institutions, and the reputation among employers of individual higher education institutions;

Encouraging interest in the key professional fields and stimulating realization of the Bulgarian labor market with targeted information campaigns both to parents and to the representatives of a given generation of student candidates in general;

Promotion of less attractive professions among young people and implementation of an adequate income policy for employees in the budget sector;

Selection of the best candidates in these key professional areas;

Provision of scholarships - sufficient in size, subject to high success and realization of the Bulgarian/regional labor market in the medium term (e.g. five years), covering a smaller number of learners to motivate them to fully engage in the educational process and achieve high academic results;

Reducing the number of subsidized places in certain fields and/or modernizing the less attractive fields for young people (but at the same time no less needed on the labor market) in the direction of developing digital skills and working with digital applications;

Linking the subsidized study places for students with the quality of education and science in higher schools;

Stimulating the development of both narrow specialization in the identified fields and interdisciplinary specialization – for example, combining STEM fields with humanities, social and economic sciences;

Stimulation of the research and development activities of teachers in higher schools, including its implementation in practice (business, financial sector, public administration, etc.).

Of the listed specialties, those for which there is a tangible need for support from the state to overcome

the long-term deficit in the labor market are the following:

Medicine and health care - the encouragement of young people to study these specialties should be supplemented with measures to increase their income level in the Bulgarian labor market. Otherwise, the intensive investment in these professional fields will not benefit the Bulgarian labor market (in other words, if the production of more medical specialists is not combined with a significant increase in their income, the Bulgarian budget will directly subsidize the health systems in the rest EU member states, to which the graduating medical specialists in our country are mainly directed; at the same time, the existing problems in our country will deepen more and more);

Pedagogy and Pedagogy of training in... - given the large number of teachers that are needed in the long term, and accordingly the large amount of funding for such training, the provision of subsidies and scholarships should be tied to the quality of education.

In all three professional areas, the social and demographic specifics of the Bulgarian population and the growing need for long-term care, improving the access of children and people with disabilities to quality education and healthcare, etc., should be taken into account. This means that special attention should be paid to all those professions which are not yet regulated and which should be regulated by the state.

At the same time, the state intervenes, regulating admissions in specific specialties, and placing them in the list of priority and protected specialties. In the Law on Higher Education, protected specialties are defined as "...specialties of higher education, for the study of which there is no declared interest or the declared interest is low, but at a certain stage of the economic and social development of the Republic of Bulgaria there is a need to train highly qualified specialists for these majors."

2. Stimulation of research activity in higher schools and innovations oriented towards market realization.

In connection with the implementation of Contract No. D03-26/23.07.2020 year with the subject: "Performance of analytical activities based on the annual results of the Rating System of Higher Education Institutions in the Republic of Bulgaria" under project BG05M2OP001-2.005-0001 "Maintenance and improvement of the developed rating system of higher schools - phase 1", financed under the Operational Program "Science and Education for Intelligent Growth" 2014-2020, between the Ministry of Education and Science and "Global Metrics" EOOD, the following problems and proposals are defined.

Based on the analysis, the following conclusions were drawn:

At the moment, a high-quality rating system of Bulgarian higher education institutions has been created, which provides rich objective information about the higher education system and which develops and adapts constantly to be in synergy with the dynamics of the environment;

Over the years, the information provided by the rating system has outlined trends that serve not only as a guide for prospective students but also as academic guides to make managerial decisions;

A serious scientific infrastructure is being created, provided with funds from the Operational Program "Science and Education for Smart Growth" and other programs - these positive changes are already showing results - the scientific output of higher schools has started to grow noticeably in recent years, as can be seen from the annual editions of the Rating System of Higher Education Institutions in the Republic of Bulgaria;

The introduced normative changes in the last two years have their a positive influence on the development of the higher education system, which is in continuous dynamics to meet and be in harmony with the highest international standards;

Acceptance and application by the National Agency for Evaluation and Accreditation of the European standards for quality assurance - the criteria for accreditation of doctoral programs provide an additional assessment regarding the quality of the teaching staff, scientific activity, competitiveness, and realization of the doctoral students:

Leader among all Bulgarian beneficiary organizations (universities, private organizations, non-governmental organizations) under the Horizon 2020 program is a higher school, which is a direct proof of the high level of scientific capacity of higher schools;

The applied scientific activity and innovations in higher schools, which would contribute to the more intensive development of the Bulgarian economy, are still lagging.

Recommendations for inclusion of additional criteria:

Since the indicators included in the Higher Education Rating System objectively measure the components of the higher education research activity, our recommendations are only to consider the possibility of including indicators aimed at their technological and innovation activity:

In the criteria for evaluating the scientific activity, one could find a place that takes into account the actual cooperation of the university with business, and that for the benefit of society and/or the economy;

Received grants for the research infrastructure above a certain threshold (not less than BGN 50,000);

Contracts with the industry above a certain threshold (for example, not less than BGN 50,000);

Level of activity in terms of funding applications (submitted applications to national and international instruments).

3. Modernization of the higher education management system and profile definition of higher education institutions and educational and qualification degrees.

In connection with the implementation of Contract No. D03-26/23.07.2020 with the subject: "Performance of analytical activities based on the annual results of the Rating System of Higher Education Institutions in the Republic of Bulgaria" under project BG05M2OP001-2.005-0001 "Maintenance and improvement of the developed rating system of higher schools - phase 1", financed under the Operational Program "Science and Education for Intelligent Growth" 2014-2020 between the Ministry of Education and Science and "Global Metrics" EOOD, the following problems and proposals are defined.

The management of higher education can be based on different principles. The approach chosen and applied so far in Bulgaria is based on the understanding of the rational choice of students and the economic expediency of funding, linked to market criteria for efficiency: unemployment, social security income, realization of the specialty, and interests of employers.

Due to structural regional inequalities in the country's economy and the labor market, due to the specifics of internal migration flows, the universities based in Sofia receive a competitive advantage in the ranking, which is not only due to the educational achievements of the respective higher schools. The practices and attitudes registered in the course of the research show that universities offer majors in fields that do not correspond to their specific profile. This is motivated by the attraction of state funding and relies on the attractiveness of these specialties for students. At the same time, however, there is a risk of lowering educational achievements and dilution, and the opportunities for generating scientific production that meets the global criteria for good academic work are reduced. In this regard, it can be recommended to rethink the weights of the rating system and revise it following global trends, namely - to comply with the goals of the millennium in education and to give greater weight and importance to the cultural specificities of the regions, as well as to gender equality. One could consider quotas and scholarships for children from poor and socially disadvantaged families in prestigious specialties with a high rate of realization and a high initial salary, as a measure to overcome poverty through education (similar to the quotas for male veterans that existed before the abolition of compulsory military service). Such measures exist at the moment, but at the moment there is a strong feminization of professions with low starting salaries, which should be overcome, it is important to provide access to this information, as well as the environment that would support (affirm, not discriminate) for these students to enter higher education. A huge part of young people in socially vulnerable families do not reach higher education, and the state closes the opportunity to use these human resources with a higher economic value.

In its current form, the thinking of regional criteria also does not correspond to social reality, because the communication links between Vidin and Pleven or between Vratsa and Pleven, for example, call into question how correct it is to talk about regional significance there at all, since the number of higher schools in Northwestern Bulgaria is extremely limited compared to other regions of the country. On the other hand, traditional ties from before Bulgaria's accession to the European Union call into question the dividing lines and the definition of a region in northeastern Bulgaria. One possible way out of this is some form of redefinition that would take into account a possible index of educational inequalities, transport flows, and infrastructural accessibility, as well as the property market and prices of living in different municipalities (The standard of living in Bulgaria is often-related to the municipal levels than to purely regional specifics at the NUTS 2 and NUTS 3 level. For example, wage levels in Kozloduy municipality and Radnevo municipality differ greatly from their neighboring municipalities in the same administrative areas and the regions as a whole).

In addition, one can think about the calculation of indicators from the Rating System at the level of education and qualification level, so that the Ministry of Education can know how the personnel in the different qualification levels are realized and apply a policy to them. Such a classification would allow the delineation of professional fields in which a higher degree of qualification is required in the labor market and such fields in which professional training of 3 years can be completely sufficient to satisfy the market needs of a specific field. The qualifications themselves should be clearly and distinctively

distinguished so that students can choose between them. Otherwise, their choices may turn out to be unfavorable to the realities of the labor market, or it may turn out that the state or the families of the students themselves pay the price of an education that is not fully realized.

Although the framework of Bulgarian higher education has a large oversupply in some professional fields, decisions on the consolidation and optimization of the network of higher education should be made based on the variety of specialties in the relevant professional fields, as well as based on the infrastructure accessibility to a higher education institution within the planning region where it is located. Last but not least, the existing network of universities is an important resource for creating local ecosystems for the development of the knowledge economy, which places the need to increase the quality of teaching, develop research and scientific activity at the regional level, improve international exchange and even internationalization of the economy.

A recommendation from part of the rectors is to reduce the admission of students in general but to preserve the funding of the university so that they can continue their activities with a higher quality. The current way of funding universities does not allow higher education institutions to reduce their intake because it would cost a large part of their budget.

One of the recommendations to increase the quality of education is to encourage universities to work together with business organizations to provide scholarships for students. Such a form of joint activity will allow businesses a greater horizon of human resource planning, as well as greater confidence in their knowledge and skills after completing higher education. For higher education institutions, it will ensure the better realization of their students, as well as the opportunity to teach in more depth with more practical or other hours to meet the requirements of employers in the region.

In some sectors, which are of strategic importance to the state, it is possible to establish professional directions - e.g. “Pedagogy” and “Pedagogy of the trained in...” in cities where there is an increased offer of higher education, but in other professional fields. In other professional areas, the need for educational and qualification degrees should be assessed.

“Professional Bachelor” so that it can be designated as a recognized qualification or be closed, depending on the results that such future assessment shows.

The promotion of the Rating System, as well as its results, remain one of the most serious recommendations. The system contains a lot of rich information that students - future and current - can use to navigate the labor market, the quality of higher education in each of the professional fields, and to be able to better plan their professional careers for themselves. development. This promotion should take place both within higher education - through higher schools and their websites, and among high school students. A possibility in this regard would be to organize a competition for the analysis of the data from the Rating System together with the National Statistical Institute. Such a possible approach could increase interest in certain professional fields, but also in research, analytical thinking, and critical view of students.

This, in turn, would support the student's future academic development. One of the recommendations related to scientific activity is not only subject to the policies of the Ministry of Education. It is a policy to increase the income of scientists upon achieved or demonstrable success. Rectors say that it is very difficult for them to retain good researchers at the low salaries offered in the sector. Investments in foreign language learning are also very important given the possibility of international joint publications.

In some sectors of higher education, it will be more difficult to achieve better results concerning the realization of the labor market, because the sectors they supply with personnel are often dominated by the state as an employer. Therefore, it is a matter of state policy to raise incomes in these sectors - pedagogy, medicine, and social activities. This means that the low results achieved by some universities in these professional fields are not tied only to the quality of education or regional economic specificity, but to a targeted state policy, and in this sense it is important for the Ministry of Education to develop these fields and personnel, but it is also important to work inter-institutionally so that these same personnel can remain on the labor market in the country [14-29].

4 Conclusion

Due to the extreme complexity in the reporting and evaluation of the strategic and long-term consequences of social events, which is undoubtedly a scientific activity, within the broad social approach in determining social effectiveness, we consider the social effectiveness of the implemented activities in a narrowly practical manner. And this means the highest efficiency in solving a specific social problem. The evaluation of the effectiveness of the social processes in the given case is reduced to the task of optimizing the social management activity in the process of solving specific social programs

through the program approach. This, more than ever, requires the definition of criteria for the effectiveness of social processes and, on this basis, the application of appropriate evaluation methods.

The introduction of such rating systems would raise several questions and criticisms. The first of these is who will do this qualitative assessment and how. At the moment, the accepted technology is the h index, which takes into account the corresponding number of references to a certain article and the other time indicator, which is used to determine it for the last 5 years. Different systems would show different digital dimensions because the information databases are of different completeness and accessibility. For different areas of higher education and professional fields, different ones can be used, which again will give relatively true and accurate information. Some will say that it is better to have some kind of system than none at all, and they would be right. The lack of a system of measurable criteria led to a series of paradoxical differences in assessment levels. I could not say whether this determines the quality of the candidate himself for a certain academic position, but it is a kind of certificate of the expertise of the relevant committee. In this case – a scientific jury to evaluate and rank the candidates. Competitions in our country are usually held with only one candidate. For some professional areas, this is simply the lack of other candidates, but sometimes it is also the impossibility of filling the relevant position due to a series of objective circumstances. These circumstances are related to difficulties in the development of the academic staff in recent decades, unattractiveness of the direction, or lack of funding for scientific research. Sometimes the location of the respective higher education institution is also unacceptable for applicants. In another case, only candidates from the internal environment are tolerated, even though the possible pool from the external environment would be large enough. In this case, the work of the experts would be much more difficult and the competition would be greater. The possible choice would come down to more than one candidate. Another issue of propriety is the subsequent selection by the academic and faculty council. In many cases, they are quite heterogeneous in terms of directions and interests, convincing becomes difficult and is not always related to an objective assessment and, in the end, to the right choice. In this case, it is asked whether they are competent enough to change the final result with their plow, even though this is included in their powers.

If we put that aside as a secondary problem, then finding and finding suitable candidates in this very limited job market for scientists and researchers leads to a closed loop. It's no secret that some universities have been a place of livelihood for entire families for years. There is nothing wrong with this because the craft is passed down from generation to generation, but to what extent our children's capabilities are covered with our lives and, in particular, scientific interests? It's hardly the case, but it's an easy enough option, aided by academic autonomy. Such a study would yield frightening results of proximity and interrelationships. Particularly interesting developments are observed in smaller communities and the processes there are self-regulated by this factor.

The change we are moving towards seeks a certain fairness and accuracy, but we are unlikely to achieve it with these adjustments in the legislation alone. Rather, it should be related to those in system management. It is often talked about mandate, creativity, strategies, etc., in general, it is related to modeling the attitudes of the general meetings in a certain way, which in some cases borders on the norms of morality and the law. However, the procedures are legal and not particularly moral. Evidence in this direction is abundant and constant.

The democratic rules do not always select the most capable, and sometimes they do not even allow a part of the scientists to appear for several reasons. This is a problem of a general nature that applies more forcefully to the academic community. There are many individualities here and in different directions. Unification is sometimes at the expense of a choice that is related to other circumstances rather than the qualities of the individual. A change in this direction is possible if, with this choice, there is a competition based on maximally objective criteria.

In the current development of society, there is no way to do science independently, just as the existence of science by itself is impossible. This requires working in wider teams and cooperation in different directions. It also requires the development of an interdisciplinary approach and the development of studies in different directions and planes. This does not make the man/scientist a “penkiller”, but makes him far better able to respond to the dynamics of the demands of a rapidly changing environment.

Finding such a system of social criteria, that describes and values this social process as well and as fairly as possible is a rather difficult task, which requires the analysis of a large amount of information and the conduct of research of a different nature, which would allow the “construction” of such a mechanism that would meet expectations on the one hand, and achieve a relatively accurate and true assessment of these processes on the other hand

This scientific article has been presented at the plenary sessions of the following scientific conferences: International Conference on Computing in Natural Sciences, Biomedicine and Engineering Athens, 2024 [30] and 112th International Scientific Conference on Economic and Social Development – "Creating a unified foundation for Sustainable Development: Interdisciplinarity in Research and Education", Varazdin, 4-5 June, 2024 [31].

References:

[1] Stankevich, V. *Yohanes Gerber one of the creators of the German microeconomics of the armed forces*, Sofia, Economy, 1998.
[2] Semerdzhiev, Ts. *Strategy: environment resources capabilities planning*. Sofia, 2007.
[3] Terziev, V. *Opportunities to increase the effectiveness of social adaptation* of servicemen released from military service. "Primaks" Publishing House, Ruse, 2014.
[4] *Social management* theory, K., 1996.
[5] Markov, M. *Technology and effectiveness of social management*. Per. from Bulgarian Moscow. 1982.
[6] Terner, Dzh. *The structure of sociological theory*. Moscow, 1985.
[7] *Theory and methodology of social work*. Moscow, 1996.
[8] Terziev, V. *Impact of labor market policies to ensure employment*. "Primaks" Publishing House - Ruse, 2013.
[9] *Fundamentals of modern social management*. Moscow, 1999.
[10] *Fundamentals of modern social management: theory and methodology*. Moscow, 2000.
[11] Terziev, V. *Social development and science as a science that helps us move forward*. Management and Education, University "Prof. Dr. Asen Zlatarov", Burgas, 15, 2019, 2, pp. 97-104, ISSN 1312-6121.
[12] *Report of the Commission to the Ministry of Education and Science (Bulgaria) for monitoring and evaluation of the research activity carried out by higher schools and scientific organizations for 2018*, 2019.
[13] https://rsvu.mon.bg/, Retrieved 18 March 2024.
[14] Terziev, V. *Measuring science as a way to indicate its importance*. 61st International Scientific Conference on Economic and Social Development (Varazdin, 22-23 October 2020), Economic and Social Development (Book of Proceedings), Cakovec, Croatia, 2020, pp.173-183, ISSN 1849-6903.
[15] Dincsoy, M., Can, H. *The Relationship of Renewable Energy Generation, Renewable Energy Consumption, and Economic Growth: The Case of Türkiye*. Optimizing Energy Efficiency During a Global Energy Crisis, IGI Global, 2023, pp. 65-74, DOI: 10.4018/979-8-3693-0400-6.ch005.
[16] Georgiev, M. *Uses of the balanced scorecard model for enhancement of in-tangible assets*. International scientific conferences: Business and Economics: Collection of scientific articles, Verlag SWG imex GmbH, Nuremberg, Germany, Conferencii.com, 2019, pp. 78-81, ISBN 978-3-9819288-3-2.
[17] Georgiev, M., Terziev, V. *The Labor Market Policies and Social Development in Bulgaria*. Optimizing Energy Efficiency During a Global Energy Crisis, IGI Global, 2023, pp. 239-281, DOI: 10.4018/979-8-3693-0400-6.ch015.
[18] Ninova, V., Ninov, N. *The place and role of banks as distribution channels in the Bulgarian insurance market in the context of the Covid-19 pandemic*. 107th International Scientific Conference on Economic and Social Development – Economic and Social Survival in Global Changes – Zagreb, 16-17 February, 2024., Economic and Social Development (Book of Proceedings), Cakovec, Croatia, 2024, pp.276-293, ISSN 1849-7535.
[19] Ninova, V., Ninov, N. *The Effect of the COVID-19 Pandemic on the Health Insurance Market in Bulgaria: Empirical Analysis of Market Concentration*. Optimizing Energy Efficiency During a Global Energy Crisis, 2023, pp. 165-177, doi:10.4018/979-8-3693-0400- 6.ch011.
[20] Ninov, N., Miteva, L. *Health organisation staff awareness of the risk management agenda - a key prerequisite for tackling Covid-19*. 107th International Scientific Conference on Economic and Social Development – Economic and Social Survival in Global Changes – Zagreb, 16-17 February, 2024., Economic and Social Development (Book of Proceedings), Cakovec, Croatia, 2024, pp.208-226, ISSN 1849-7535.
[21] Georgiev, M., Simeonov, S., Ivanov, I. *Factors for the successful implemantation of self-dependant training during the educative process*. 20th RSEP International Economics, Finance & Business Conference – Virtual/Online 17-18 February 2021, Holiday Inn Vienna City, Vienna, Austria, Review of Socio-Economic Perspectives RSEP, Ankara, Turkey, 2021, pp. 129-136, ISBN: 978-605-06961-8-9.
[22] Georgiev, M., Simeonov, S., Ivanov, I. *Independent training of the cadets*. 20th RSEP International Economics, Finance & Business

Conference – Virtual/Online 17-18 February 2021, Holiday Inn Vienna City, Vienna, Austria, Review of Socio-Economic Perspectives RSEP, Ankara, Turkey, 2021, pp. 137-145, ISBN: 978-605-06961-8-9.

[23] Andrii, Z., Georgiev, M. *Shadow Investment Activity as a Factor of Macroeconomic Instability*. Financial Markets, Institutions and Risks, ARMG Publishing Center of Sumy State University, Volume 4, Issue 4, 2020, pp. 83-90, ISSN (online) – 2521-1242 ISSN (print) – 2521-1250.

[24] Georgiev, M., Solovev, D. *Applications of the Balanced Scorecard concept in relation to social development*. 107th International Scientific Conference on Economic and Social Development – Economic and Social Survival in Global Changes – Zagreb, 16-17 February, 2024., Economic and Social Development (Book of Proceedings), Cakovec, Croatia, 2024, pp.73-82, ISSN 1849-7535.

[25] Georgiev, M., Solovev, D. *Evolution of the concept of the Balanced Scorecard*. 107th International Scientific Conference on Economic and Social Development – Economic and Social Survival in Global Changes – Zagreb, 16-17 February, 2024., Economic and Social Development (Book of Proceedings), Cakovec, Croatia, 2024, pp.83-93, ISSN 1849-7535.

[26] Ninova, V., Ninov, N. *The Effect of the COVID-19 Pandemic on the Health Insurance Market in Bulgaria: Empirical Analysis of Market Concentration*. Energy Efficiency During a Global Energy Crisis, IGI Global, 2023, pp. 165-177, DOI: 10.4018/979-8-3693-0400-6.ch011.

[27] Grabar, D.M., Egorova, V.P., Gorkavyy, M.A., Solovev, D.B. (2022). *Intellectualization of the Online Platform of Flexible Learning System by Predictive Agent Model Elements*. In: Solovev, D.B., Kyriakopoulos, G.L., Venelin, T. (eds) SMART Automatics and Energy. Smart Innovation, Systems and Technologies, vol 272. Springer, Singapore. https://doi.org/10.1007/978-981-16-8759-4_69.

[28] Popova, V.S., Solovyev, V.A. (2022). *Synthesis of an ETL Icing Forecasting System*. In: Solovev, D.B., Kyriakopoulos, G.L., Venelin, T. (eds) SMART Automatics and Energy. Smart Innovation, Systems and Technologies, vol 272. Springer, Singapore. https://doi.org/10.1007/978-981-16-8759-4_75.

[29] Solovev, D.B., Savaley, V.V., Bekker, A.T., Petukhov, V.I. (2022). *Correction to: Proceeding of the International Science and Technology Conference "FarEastCon 2021"*. In: Solovev, D.B., Savaley, V.V., Bekker, A.T., Petukhov, V.I. (eds) Proceeding of the International Science and Technology Conference "FarEastCon 2021". Smart Innovation, Systems and Technologies, vol 275. Springer, Singapore. https://doi.org/10.1007/978-981-16-8829-4_101.

[30] https://www.youtube.com/watch?v=kyjeAI3fQV0, Retrieved 22 July 2024.

[31] Terziev, V., Georgiev, M. *Social development and the contribution of science*. // 112th International Scientific Conference on Economic and Social Development – "Creating a unified foundation for Sustainable Development: Interdisciplinarity in Research and Education" – Varazdin, 4-5 June, 2024, Economic and Social Development (Book of Proceedings), Cakovec, Croatia, 2024, pp.209-231, ISSN 1849-7535.

Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

The author contributed in the present research, at all stages from the formulation of the problem to the final findings and solution.

Sources of Funding for Research Presented in a Scientific Article or Scientific Article Itself

No funding was received for conducting this study.

Conflict of Interest

The author has no conflict of interest to declare that is relevant to the content of this article.