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THE SYSTEMATIC APPROACH TO CREATING THE PROPER MOTIVATION OF YOUNG RESEARCHERS IN SCIENTIFIC INSTITUTIONS

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Abstract

The study aimed to find out how to develop an optimal and effective motivation model considering the preferences and requests of young researchers, in view of the fact that scientific specific of building and organising an internal work system, its scientific potential and resources, which provides a valuable fundamental insight. The task of the study was to develop and propose a mechanism that would be specially adapted for scientific institutions and universities. That was based on an in-depth analysis of the existing approaches of scientists regarding the specifics of the work of these organisations. The developed method is relevant to modern literature, where the definition of a motivational approach eliminates the dichotomy between existing studies. The data were collected by interviewing responders from Russian and Iranian universities. The study results show the subjective aspects of the perception of research activities by students and researchers and the shortcomings in constructing motivation systems. As a result of implementing the proposed optimal and effective "Model of proper motivation system", scientific institutions can strengthen their positions and establish sustainable activities to attract talented scientists and innovators to develop scientific progress and compete in the market knowledge-intensive services.

Keywords: motivation, scientists, scientific institutions, cluster analysis

1. INTRODUCTION

Unlike commercial companies, the corporate culture of scientific institutions such as universities has its specific features and represents a complex mechanism with differing principles and postulates of employee motivation. Motivation not only determines the organisational behaviour of its members but also directly impacts the

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organisation's performance, which indicates the relevance of research on this topic. As for the monitoring of highly qualified scientific personnel, it was revealed that the material incentive is only one for this type of organisation. However, it plays an essential role in current research activities and complements the personal and social motives of a scientific career.

This study aims to develop a conviction of scientists' and researchers' real motives, goals and objectives. That will make it possible to form internal policy to attract talented scientists, innovators and original thinkers. It will allow them to be the engines of scientific progress and science both in the country and globally.

Nevertheless, the material and non-material motivation of scientists, its specific manifestations and incentives remain problematic and a matter in dispute and close study by various scientists and researchers. The existing problem of optimising the scientific policy of such organisations and entire countries, including human capital development, is given relevance by grand challenges: value transformation, temperature change, demographic evolution, Etc. The search for answers to these challenges lies in the framework of international scientific cooperation and joint training of participants in collaborative projects (OECD, 2014). Moreover, it is precisely human capital associated with "the ability, motivation and the very possibility of innovation" (OECD, 2015), which gives particular importance to the effectiveness of human resource management and the spread of interest in scientific work among young people. Mihajlović et al. (2016) concluded, "Within the project, joint research of all partner institutions was carried out based on the surveys to collect students' opinions and literature review". As a result, that focuses mainly on the nature of scientists ' motivation rather than on various mechanisms for stimulating research activities. Exploring and exploiting potential opportunities is critical to multiple studies' existing opinions and approaches (Cucu-Ciuhan & Guita-Alexandru, 2014; Pavlović et al., 2014; Akhtyrskiy & Tyumaseva, 2020) devoted to scientific employee motivation, including modern ones. It is worth noting that a generally accepted approach to its theoretical definition has yet to be. In the study were analysed the research of classical scientists Maslow (1954), McGregor (1960), Alderfer (1969), Taylor (1911), Mayo (1934), Vroom (1965), Herzberg (1966), Porter (1979), as well as modern scientists Brabander and Martens (2014), Kanfer and Ackerman (2000), Brabander (2018), and others.

The study aims to help young scientists and researchers analyse their motivational aspects, address gaps in actual issues and generate a proper system for improving the status and rating of research institutions. In addition, a subject of research is creating conditions for attracting and integrating scientists, and young workers, offering recommendations to resolve existing and emerging situations. Although several formal and informal links can facilitate knowledge transfer (Dust, 2006; Finkelshtein et al., 2014), one of the key links is the creation of developments and implementation of new ideas. Most scientists and researchers believe that the pattern of decreasing interest among talented youth in building their careers in the area of higher education is associated with a lack of impulse for such a variant of personal enhancement (Castelló et al., 2017; Broton & Goldrick-Rab, 2018; Shin et al., 2018; Perez-Felkner et al., 2020). The University

promotes formal motivation mechanisms through administration and creating motivation in science (Benyahya & Macurova, 2021). Research centres also contribute to developing informal technology and knowledge transfer between scientists, universities, and youth researchers (Safronova & Kosareva, 2016), for example, through exhibitions, meetings and competitions to search for innovations.

Despite the progress made in understanding researchers' possibilities in motivation and how to study and use them, most previous studies (Dolzhenko et al., 2019). They suggested that the most critical aspect for the full functioning of universities and research institutions was increasing attention on creating additional jobs in the field of work under study. Therefore, they should have considered the behaviour dynamics and imagination of the workforce involved. For the category of scientists generating and implementing relevant and promising research, the most crucial incentive is intrinsic motivation. Therefore, understanding the peculiarities of creating this motivation in science is of practical importance. Due to this, it is possible to find the right direction and concentrate all possible efforts and resources on creating favourable conditions for increasing performance and effectiveness.

This study may conceptually and empirically resolve this obvious imbalance in the interpretations of unsuccessful opinions of various studies, where material incentives are essential when choosing a job (Lin-Siegler et al., 2016). Shevchenko (2022) concluded, “financial motives and labour practices dominate the motivation of workers with high-school instruction”. In most enterprises, employees are more likely to indicate the reason for getting a reward. Therefore, the search for mechanisms and motives for providing and retaining personnel in the practice area of research and development is of great scientific and practical importance for the field of science. Because thanks to this, it is possible to determine the right direction and concentrate all possible efforts and resources on the moments that have a critical role in creating favourable conditions for increasing activities' productivity and effectiveness.

Finally, this study contributes to the theory of the development of the motivation of young researchers of scientific institutions, noting the need to constantly ensure a high level of professional interest for the category of researchers. Internal motivation is the most crucial incentive for such a category as scientists who can generate and implement relevant and promising research. These are essential aspects for maintaining the competitiveness of science, its sustainability, and professional environment formation.

2. MATERIALS AND METHODS

2.1. Materials

Many studies are devoted to employee motivation, where a particular direction is dedicated to labour activity. It is the object of study of many scientists, especially abroad. The first foreign researchers who contributed to the study of this issue, which is particularly significant in societies with developed market economies, were Maslow (1954), McGregor (1960), Alderfer (1969), Taylor (1911), Mayo (1934), McClelland (1972), Lowther (1995), Vroom (1965), Herzberg (1966), Porter (1979), and many others. These scientists created various

theories and models of labour motivation and developed practical recommendations for their application (OECD, 2014). However, as for the current opinions and approaches of various studies devoted to the scientific employee, there has yet to be a generally accepted approach to their theoretical definition.

Existing opinions are presented in disparate theories and concepts and must be reconciled or compared; nevertheless, researchers still closely study motivation and its specific manifestations in different professional sectors. Modern approaches involve the construction of complex models. For example: Through the experiment, Ryan (2014) revealed the relationship between the sources of intrinsic motivation of self-esteem and instrumental reason. As a result, external self-esteem motivation was significantly higher among young scientists and had a positive impact, while instrumental cause had a negative one. According to a study by Brabander and Martens (2014), an attempt to combine current theories of motivation into a single model in the form of the interaction of four moderately independent types of valences makes positive valence numbers initiate the motivation of approximation, while negative ones-the motivation of avoidance.

Furthermore, the four types of valences were classified as practical or cognitive, as well as positive or negative. Kanfer and Ackerman (2000) claimed that motivational traits affect performance through task-specific self-regulation processes, such as motivation control, i.e. maintaining motivation at a high level by creating personal rewards, emotion management preventing the impact of anxiety and negative emotions on performance, mental focus on task and metacognition, such as monitoring learning and progress. According to Leontiev (2016), motives perform two main functions in the activity structure - motivating and sense-making. Therefore, explanations defining the target area are closely related to the needs and objectives of the activity. Regarding research, Kompella et al. (2020) paid particular attention to the sense-making function of motives as the main factor that provides work with personal meaning. Researchers' considered approaches and opinions are reduced to three main motivations for intellectual labour activity: wages, professional growth, career advancement, and work scope. All these motives are closely related since external encouragement can reduce personal motivation and enthusiasm to a purely financial interest. Therefore, a thorough study of the motives of intellectual and creative work involves modelling motivation in general and a comparative analysis of the essential motives for individual groups of employees.

According to the result of research by Roe et al. (2000), Boosten et al. (2013), and Gokhberg et al. (2016) concluded that Studies conducted in Belgium and Hungary showed that the main reason for choosing scientific work 55% and 60% of respondents was the creative and innovative nature of work, followed by the second most crucial motive - their research interest. 45% of Russian, 56% of Belgian and 68% of Netherlands scientists agreed with them.

Minor differences manifest in the preferences among Russian and European scientists as the social motivation. They arise at the stage of choosing a profession. For example, according to research by Roe et al. (2000) and Shmatko (2011), there are only 14% of altruistic scientists among respondents in Russia. In addition, the

motive of service to society is the third most important for the Netherlands (46%) and the fourth for Belgians (32%).

At the same time, Russian responders value the opportunity of being independent in choosing or solving research problems as much as Europeans do. According to the research results of the Higher School of Economics of Russia by Katchanov and Shmatko (2014), "in all countries, material motives have occupied the last place of the reasons list for choosing science as areas of self-realisation". However, in countries like Belgium, where only 10% of respondents preferred a scientific career as a well-paid one, there were at most 5% in Russia and Hungary (Gokhberg et al., 2016). All this makes it possible for research organisations to find an approach to create their own proper individual motivation system that helps attract and retain creative individuals.

2.2. Methods

Data for this study were analyzed by using two methods. The first one is descriptive statistics. The second one is correlation analysis. The cluster analysis is used with the assistance of the SPSS Statistics program for a visual overview of correlations between the experimental variable and their grouping.

Based on the research by Buyul & Tsefel (2005) in their analysis result. According to their theory, cluster analysis is a generally accepted method for various computational processes to make up a classification. This method is designed to separate primary data into certain interpreted groups. Thanks to this separation, it can be done so that the elements in one group will be as similar as possible, and the details from different groups will be as diverse as possible. Based on Nasledov's research (2013), the advantage of this method, among other existing ones, is determined by combining data, where it groups two clusters and provides a minimal increase in the within-cells sum of squared deviation within.

Furthermore, objects can be grouped using the hierarchy approach by applying various distance functions. This study used the "Euclidean distance" function as the most suitable and practically proven measure for calculating the distance on the plane between points. The result might be shown in the type of hierarchical cluster analysis. That is resulting a dendrogram with a graphical effect and a sequential clustering process in the distance matrix.

Parameters are presented that characterise the reasons noted, according to respondents, as the main ones if they do not want to work at universities or scientific institutions are shown in Table 1.

The study's research methodology was based on analyses of the attitude of students to research activities in several stages. Continuous sampling was executed in the first stage since it is assumed that students should have the necessary theoretical and practical basis in this area.

In the second and third stages of the study, a more in-depth analysis was interviewed and conducted. In the second stage, students with ideas and developments, projects that took part in various competitions, "Startup Tour", "Umnik ", "Technocrat", and "Start" were added to the sample as an object of research to show their relevance and significance, to receive funding for the promotion of their projects with the possibility of their further commercialisation.

During the study, 150 responders from Russian and Iranian universities were

interviewed. Among them are students of V.G. Shukhov BSTU (Russia, Belgorod), 100 from K. N. Toosi University of Technology (Iran, Tehran), and 50 responders. Universities were selected on the principle of accessibility. The study was conducted using an online Google form questionnaire and direct questioning. A survey is a form for receiving feedback. The invitation to fill out the questionnaire was sent to the respondent by email. The survey was carried out by emailing an online questionnaire form developed by Google form, then transported to Google Docs.

In the third stage, 75 respondents were added to the sample as the object of research. These candidates and doctors in the natural and technical sciences field answered that, in their opinion, the essential needs they wanted to meet when choosing a profession. That was carried out to create a complete picture of all possible motives and create the right sustainable motivational system to strengthen internal policy and corporate culture, which allows for attracting new and retaining existing talented scientists and

Table 1. The list of parameters that characterise the motives noted by respondents as the main ones (Source: Compiled by the authors)

Parameters	Parameters name	Group
Parameter 1	low wages	financial motive
Parameter 2	lack of information about R&d	intangible motive
Parameter 3	the uninteresting organisation of research at the University	intangible motive
Parameter 4	lack of interest in working in scientific institutions	intangible motive
Parameter 5	lack of desire to engage in research, material incentive	intangible motive
Parameter 6	lack of required time for research	intangible motive
Parameter 7	lack of interest in the creative nature of work	intangible motive
Parameter 8	lack of interest in creating innovative products	intangible motive
Parameter 9	lack of prospects for personal growth	intangible motive

Table 2. The list of parameters characterises respondents' motives as necessary when choosing a job in scientific institutions (Source: Compiled by the authors)

Parameters	Parameters name	Group
Parameter 1	wages, bonuses, allowances	financial incentives
Parameter 2	opportunity to gain work experience in scientific organisations	intangible incentives
Parameter 3	social security	intangible incentives
Parameter 4	serving the community	intangible incentives
Parameter 5	comfortable working conditions	intangible incentives
Parameter 6	independence	intangible incentives
Parameter 7	professional growth and career in science	intangible incentives
Parameter 8	own research interest	intangible incentives
Parameter 9	creative and innovative nature of work	intangible incentives

innovators, creative and non-standard thinking people in the organisation. In this regard, the toolkit of questions asked has been expanded. The parameters that describe the motives that the respondent noted as necessary when deciding to choose a job at universities or scientific institutions are reflected are shown in Table 2.

This study was conducted to identify the activity and assess the attractiveness of research work for students and their interest in it. The study's novelty is an attempt to build a typology of students in terms of their attitude to research activities.

3. DISCUSSION

After analysis of numerous scientific studies about motivation in science, there needs to be a general approach to its theoretical justification.

Existing concepts are disparate theories that do not agree with each other, despite constant attempts to bring this subject of discussion to a single definition, according to the opinions of scientists such as Kanfer and Ackerman (2000); Ryan (2014), and Brabander and Martens (2014). According to their theories, three primary motivations for implementing labour activity are labour duties, wages, qualification and career growth. All these criteria directly affect each other. For example, external encouragement can reduce an individual's motivation in an organisation since it reduces the enthusiasm and inspiration inherent in a person to a purely material interest. Studying the motives of intellectual, creative work, we consider a comparative analysis of the most significant motives for individual groups of workers. Thus, according to Bokhan et al. (2019), the main trigger of a high level of motivation among intellectual workers, in particular, characteristic of scientific institutions, is the possibility of prospects for professional and personal growth.

On the other hand, researchers consider freedom of planning and organisation of work, conditions, and the collective as the main incentives for creativity (Todericiu et al., 2013). Thus, in enhancing researchers' reasoning, comparing the most sought-after management measures used with the scientists' point of view about their effectiveness is possible. Thus, the authors, after conducting surveys of the teaching staff of universities in Poland and Slovakia in 2015 (Blaskova et al., 2015), concluded that management personnel most often resort to expanding independence in the schedule and planning of teachers' activities, as well as creating a specific zone of freedom. According to the research activities by Romanovich et al. (2018) and Romanovich et al. (2021), “the organisational culture of universities and scientific organisations should not be based solely on the material stimulation of researchers since the activity of scientists only with the help of external stimuli can significantly reduce their motivation since it reduces the inherent creativity and enthusiasm of a person only to material interest”.

Thus, the presented modern approaches involve the construction of complex models, for example, metatheories of motivation (Ryan, 2014), and the general trend is the transition from the study of individual elements of this definition to the creation of new theories that can be universal, combining internal and external factors of motivation with variability over time (Leontiev, 1978; Kanfer & Ackerman, 2000; Brabander & Martens, 2014).

As a result, gaps in this area are identified,

and it is necessary to identify the fundamental factors of motivation of creative people. In addition, the mechanisms and models they propose need universal recommendations that scientific organisations could use to form an appropriate organisational culture with their motivation system.

Our research meets the set goals and objectives and offers a mechanism by which scientific institutions should build their management mechanisms and fundamental factors of motivation of creative people. Such management is based on building trusting communications, respect, and mutual understanding between management and subordinates. In those organisations where corporate culture is developed, control is more accessible due to incentives through access to all infrastructure facilities and tools, laboratories, resources and various benefits. It was noted that scientists, as a rule, need to perceive the command and control management model with them.

The research is aimed as a result of establishing a systematic approach to forming the correct motivation. It is necessary to rebuild the internal and external stimulation system, adjust the management approach, and eliminate existing gaps in youth agitation, accessibility and dissemination of this information. The essential function of the fact of motivation itself influences the goals and aspirations of a young scientist. As for the result, that is, the decision-making process on whether to work at a university or another scientific organisation. It may also affect the decision to continue working in this organisation. Thus, constructing a motivation system is one of the most fundamental functions of a scientific organisation and a priority task of the leadership of research institutes.

4. RESULTS

To eliminate the existing gaps in the study and develop practical and theoretical recommendations, we processed the responses of our respondents: students and employees of institutions, that is, researchers, about their activities and preferences. As a result, the scientific results are obtained after the survey.

The respondents were divided into two main groups: A) students who do not generate new projects or ideas and B) actively engaged in research. Figure 1 is shown the parameters for the three object clusters. The clusters in the two groups do not distinguish significantly in the composition of the parameters.

In the first group, cluster 1 has the highest average scores for the significance of parameters. Such motives include low wages, lack of interest in the creative nature of work, and lack of interest in making innovative products. The closest clustering distance is parameters 7 and 8 in both groups. At the same time, they have tremendous significance for the first group (Figure 2) and have the most significant pair correlation (r=0.55) and a close relationship.

The second cluster of motives is vital for the second group of survey respondents. It includes low wages, lack of desire to engage in research, material incentive, and lack of prospects for personal growth. This cluster significantly characterises the level of remuneration and career prospects. An inverse correlation between low wages and most other motives describes the first and second groups of respondents.

Next, the motives noted by respondents as "important" when choosing a job in a scientific institution are analysed. The respondents were grouped into three groups

according to their level of involvement in the research. Respondents are divided into three groups:

1. Group A are students who need to acquire new research and idea generation competencies.
2. Group B is directly involved in research and projects.
3. Group C are scientists engaged in research.

Table 3 shows that the parameters form 2 clusters. Hierarchical analysis using the Ward method allows identifying two main clusters at this study stage. These clusters differ significantly in the composition of parameters in the analyzed three groups of respondents.

Figure 3 is shown the disposal of the

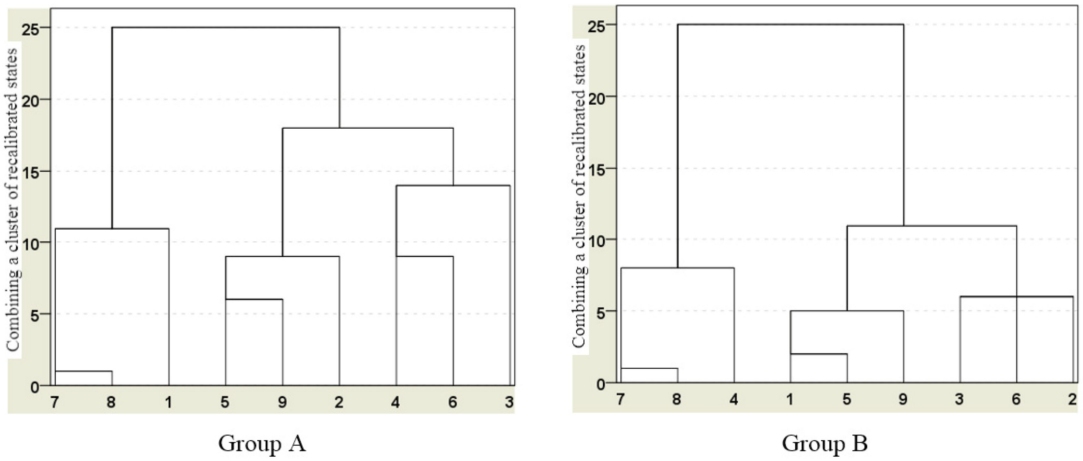

Figure 1. Dendrogram using the Ward method. Reasons noted by respondents as the main ones for refusing to work in scientific institutions (Source: Compiled by the authors)

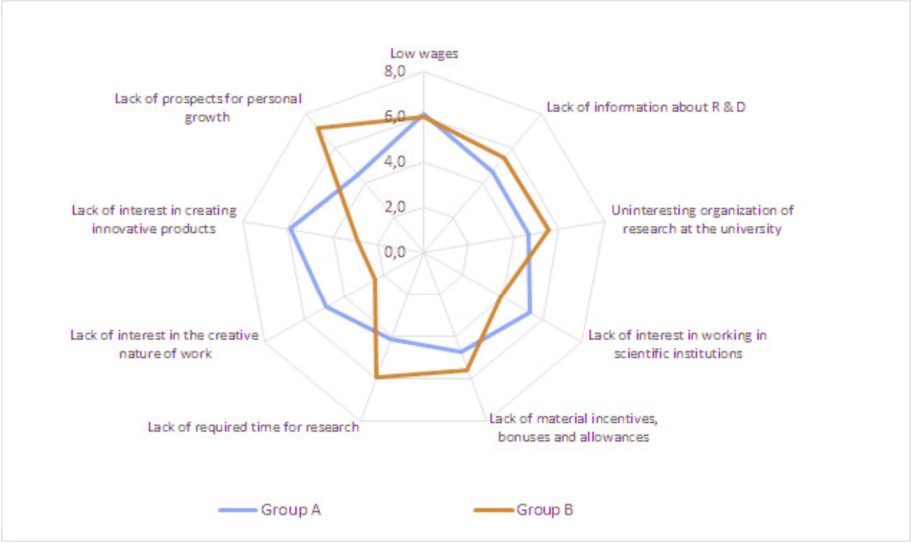

Figure 2. Group groups of respondents noted average values of the motives as the main ones when refusing to work in scientific institutions (Source: Compiled by the authors)

average value of the reasons noted by respondents as the main ones when refusing to work in scientific institutions. For the second group, the lack of prospects for personal growth and the required research time is the most important when refusing to work in a scientific organisation. However, for the first group, the reason for refusal is mainly a need for more interest in creating innovative products and in the creative nature of work.

In the first group considered, cluster 2 has high indicators of the significance of the parameters. It includes motifs 1, 3, 5, 6 and 7. Parameters 1 and 7 are at the closest clustering distance and are equal to r=0.22. At the same time, it should be noted that the first group of respondents is of significant importance (Figure 2). A pattern of dependence in the first cluster between the creative and research component is revealed. In contrast, in the second cluster, this is expressed depending on working conditions and career opportunities. Finally, the most

Table 3. Clustering of motives is essential when choosing a job in 3 groups of respondents, carried out using a hierarchical method of data ordering (Source: Compiled by the authors)

	Group A	Group B	Group C
Parameters	**Cluster**		
Wages, bonuses, allowances	2	2	1
Opportunity to gain work experience in Scientific organisations	1	2	1
Social security	2	2	1
Serving the community	1	2	1
Comfortable working conditions	2	1	1
Independence	2	1	2
Professional growth and career in science	2	2	2
Own research interest	1	1	2
Creative and innovative nature of work	1	1	2

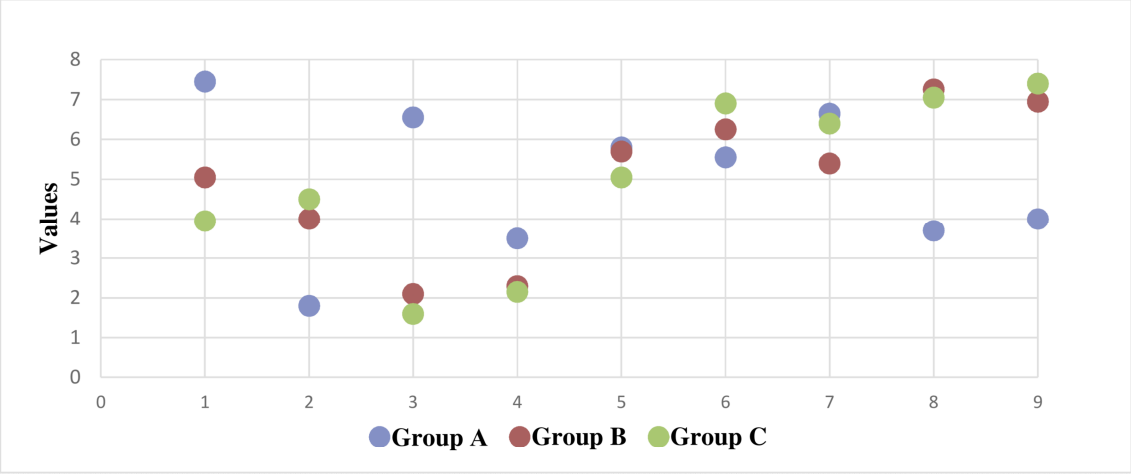

Figure 3. Average values of motives were noted by respondents as the main ones when choosing work in scientific institutions. On the horizontal axis, the numbers of motifs from Table 2 (Source: Compiled by the authors)

excellent pair correlation is observed between 8 and 9 parameters (r=0.65).

It is considering the second group, cluster 1, where it is apparent that it has the highest grade point average in the order of importance of the parameters. It is described by motives 5, 6, 8 and 9, where academic interest and the knowledge-based character of the work are so significant. That is typical for the first group too. Independence and comfortable working conditions for both groups are fundamental factors for them. Since this group includes students engaged in research and development, they should be interested and strive for self-actuating and research activities when choosing a job. The average score for each described motive is similar to the third group and differs significantly from the first group (Figure 3).

In the last third group, cluster 2 has the highest averages. It includes motives 6, 7, 8 and 9, where the composition of the parameters largely coincides with cluster 1 in the second group of respondents. This group is characterised by the need for the possibility of self-actuating in the scientific sphere and career development, which is essential when choosing a university or a scientific organisation as a place of work. Therefore, the wage factor is less significant for them than in the first group.

After processing and combining the respondents' replies at the first, second and third stages and the current employees of the University, we can offer a system - the formula of proper motivation and develop practical recommendations on its application.

The formula that had been shown in Figure 4 for a proper motivation system is equal to the sum of the following parameters:

First parameter. Talented scientists, innovators, and creative and original thinkers are potential and active employees who can generate new ideas, projects, and technologies and implement their scientific products with the right motivation.

Second parameter. Flexible corporate culture. Speaking about certain specifics of the scientific organisation activities, it is a

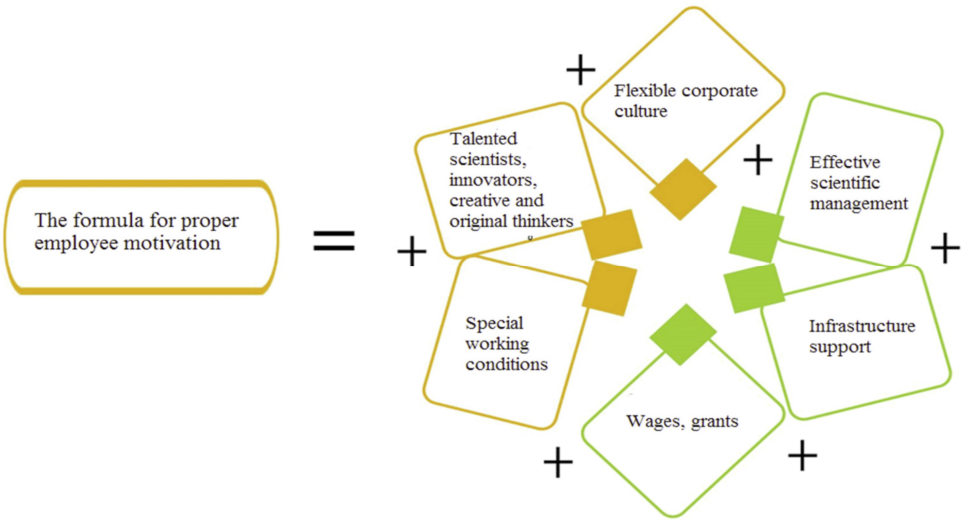

Figure 4. Model of proper motivation system that is suitable for scientific organisations and universities (Source: Compiled by the authors)

fact that the corporate culture should be relaxed, including external and internal motivation. It should adapt to non-standard preferences and requests of scientists and researchers, starting from a comfortable workplace and ending with the necessary infrastructure support. Such support is a complex of services adapted for scientific activity: laboratories, modern equipment and devices, access to the latest literature and databases, and cooperation and joint experiments with domestic and foreign scientific organisations.

Third parameter. Effective scientific management. Using this management type in the organisation makes identifying the conditions for more valuable and effective scientific collaboration possible. Scientific analysis is also used to determine the best ways to achieve goals and solve problems: selecting researchers most suitable for specific tasks, their training, and the need to provide these employees with the resources required to perform their creative tasks effectively.

Fourth parameter. Special working conditions and infrastructure support. For example: creating a more formal environment, improving work in project groups to increase the motivation of control, and offering free working hours.

A scientific organisation can improve its mechanism by creating an internal incentive campaign and adjusting the corporate culture. This may be due to expanding access to infrastructure facilities by providing access to laboratory and technically equipped premises, materials for experiments and scientific activities in some geographical regions. That also includes assistance in securing, accounting and protecting the company's and its employees' intellectual rights. In addition, organisations can create scientific platforms, business incubators and technology parks to support and stimulate their innovation activities comprehensively.

Fifth parameter. Wages, grants. On the one hand, the high salary level and additional financial support, such as grants and subsidies, eliminate the need to find other earnings, allowing the researcher to focus on self-realisation and new scientific discoveries.

The presented system of proper motivation for young researchers will ensure the successful operation of scientific institutions. This will allow:

1. To solve an actual research problem to attract and retain youth, education and innovation researchers.

2. To solve the issue of the productive use of existing human capital, namely scientific personnel, thanks to competent and effective scientific management.

3. To identify various career orientations of young researchers with the help of a specially selected program and motivation system, this should be based on their request. That will affect personals' desire to continue staying in this scientific organisation and thereby strengthen its positions and performance indicators.

4. To implement young researchers' creative ideas and scientific developments through close cooperation, grants, subsidies, and support of a scientific organisation.

5. To introduce developments into production and sell them to the scientific marketplace by making up strong and stable infrastructure support for the ideas and projects of youth and scientists, which will allow the organisation to reach a new higher level of development and successfully compete in the market of high-tech services among other scientific institutions.

5. CONCLUSION

The obtained results contain the author's system of proper motivation presented for the first time. This system was specially developed for scientific institutions and universities, in view of the fact that particularity of the work of these organisations. This study was carried out to find an optimal and effective motivation model, considering the preferences and requests of young researchers and current employees, the particularity of the internal work system, and the existing scientific potential and resources. For a solid and successful scientific activity stimulating and promoting the successful commercialisation of ideas and scientific research results, we have generated a system of proper motivation of a scientific institution and proposed a model for its implementation. The obtained results allow us to conclude that the creation of the right motivating system will allow:

1. Form internal approaches to create a proper motivation system that helps attract and retain creative individuals and young scientists who can develop and implement intellectual products and developments.

2. Transform scientific institutions' weak corporate culture and internal policy to attract talented and intelligent young people for successful and stable functioning in the scientific marketplace.

3. Bring innovative processes related to all stages of commercialising research projects, intellectual argument, and intellectual deliverables to an entirely new successful level.

Thus, the research made it possible for to assess the subjective perception aspects of research activities by young scientists and identify weaknesses in the creation of motivation to develop an effective system of proper motivation for universities and scientific institutions. This scientific contribution will significantly advance research in the field of motivation, and in particular in scientific organisations, contributing to the effective selection or creation of methods and tools for motivating young scientists and market opportunities for the successful implementation of their projects and ideas, commercialisation of their results in the knowledge-intensive services markets.

The findings are carried out at the Belgorod State Technological University, named after V. G. Shukhov (Russia) and the K. N. Toosi University of Technology (Iran, Tehran).

References

Akhtyrskiy, A.A., & Tyumaseva, N.V. (2020). Features of labour motivation of pedagogical workers (in Russian). Sociology and Law, 2020 (2), 51-61.

Alderfer, C. P. (1969). An empirical test of a new theory of human needs. Organizational Behavior and Human Performance, 4(2), 142175.

Benyahya, P., & Macurova, L. (2021). Utilisation of shop floor management as a tool for communication and knowledge sharing in the framework of lean logistics: A case study. Serbian Journal of Management, 16 (1), 267-276.

Blaskova, M., Blasko, R., Figurska, I., & Sokol, A. (2015). Motivation and development of the university teachers' motivational competence. Procedia - Social and Behavioral Sciences, 182, 116-126.

Bokhan, T., Shabalovskaya, M., Galazhinskaya, O., & Atamanova, I. (2019).

СИСТЕМАТСКИ ПРИСТУП СТВАРАЊУ ОДГОВАРАЈУЋЕ МОТИВАЦИЈЕ МЛАДИХ ИСТРАЖИВАЧА У НАУЧНИМ ИНСТИТУЦИЈАМА

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Извод

Студија је имала за циљ да открије како да се развије оптималан и ефикасан модел мотивације с обзиром на склоности и захтеве младих истраживача, с обзиром на научну специфичност изградње и организовања интерног система рада, његових научних потенцијала и ресурса, чиме се обезбеђује вредан фундаментални увид. Задатак студије је био да развије и предложи механизам који би био посебно прилагођен за научне институције и универзитете. То је засновано на дубинској анализи постојећих приступа научника у погледу специфичности рада ових организација. Развијени метод је релевантан за савремену литературу, где дефиниција мотивационог приступа елиминише дихотомију између постојећих студија. Подаци су прикупљени интервјуисањем испитаника са руских и иранских универзитета. Резултати студије показују субјективне аспекте перцепције истраживачких активности студената и истраживача и недостатке у конструисању система мотивације. Као резултат имплементације предложеног оптималног и ефикасног „Модела одговарајућег система мотивације“, научне институције могу ојачати своје позиције и успоставити одрживе активности како би привукле талентоване научнике и иноваторе да развијају научни напредак и да се такмиче на тржишту услуга које захтевају пуно знања.

Кључне речи: мотивација, научници, научне институције, кластер анализа

Value development indicates personal readiness for self-realisation among starting researchers (in Russian). Integration of Education, 23 (2), 208-231.

Boosten, K., Vandevelde, K., Derycke, H., te Kaat, A. J., & Van Rossem, R. (2014). Careers of doctorate holders survey 2010. In R&D and innovation in Belgium research series (Vol. 13). Belgian Science Policy Office.

Brabander, C. (2018). Testing a Unified Model of Task-specific Motivation: How teachers appraise three professional development activities. Frontline learning research, 6 (1), 54-76

Brabander, C., & Martens, R. (2014). Towards a unified theory of task-specific motivation. Educational Research Review, 11, 27-44.

Broton, K., & Goldrick-Rab, S. (2018). Going without: An exploration of food and housing insecurity among undergraduates. Educational Researcher, 47 (2), 121–133.

Buyul, A., & Tsefel, P. (2005). SPSS: Art of information processing (in Russian). Moscow Press.

Castelló, M., Pardo, M., Sala-Bubaré, A., & Suñe-Soler, N. (2017). Why do students consider dropping out of doctoral degrees? Institutional and personal factors. Higher Education, 74, 1053–1068.

Cucu-Ciuhan, G., & Guita-Alexandru, I. (2014). Organisational culture versus work motivation for the academic staff in a public

university. Procedia - Social and Behavioral Sciences, 127, 448-453.

Dolzhenko, R., Karpilianskii, V., Hady, R., & Didenko, A. (2019). Young scientists' motivation for the research activity in Russian regional universities. The Education and science Journal, 21 (9), 122-153.

Dust, T.J. (2006). Motivational influences to pursue graduate studies in secondary music education. Alberta Journal of Educational Research, 52, 158–166.

Finkelshtein M., Iglesias K., Panova A.A., & Yudkevich M.M. (2014). Prospects of young professionals in the academic labor market: Global comparison and assessment (In Russian). Voprosy obrazovaniya – Educational Studies, 2, 20–43.

Gokhberg, L., Kitova, G., & Kuznetsova, T. (2016). Russian Researchers: Professional Values, Remuneration and Attitudes to Science Policy. In: Gokhberg, L., Shmatko, N., Auriol, L. (eds) The Science and Technology Labor Force. Science, Technology and Innovation Studies. Springer, Cham.

Herzberg, F. (1966). Work and the nature of man. Cleveland: World Publishing.

Katchanov, Y. L., & Shmatko, N. A. (2014). Complexity-Based Modeling of Scientific Capital: An Outline of Mathematical Theory. International Journal of Mathematics and Mathematical Sciences, 2014, 110. https://doi.org/10.1155/2014/785058.

Kanfer, R., & Ackerman, P.L. (2000). Individual differences in work motivation: Further explorations of a trait framework. Applied Psychology: An International Review, 49 (3), 470–482.

Kompella, P., Gracia, B., LeBlanc, L., Engelman, S., Kulkarni, C., Desai, N., June, V., March, S., Pattengale, S., Rodriguez-Rivera, G., Woo Ryu, S., Strohkendl, I., Mandke, P., & Clark, G. (2020). Interactive youth science workshops benefit student participants and graduate student mentors. PLoS Biology, 18 (3), 3000668.

Leontiev, A. N. (1978) Activity, consciousness and personality (Englewood Cliffs, Prentice Hall).

Leontiev, D. (2016). A.N. Leontiev's concept of motive and the issue of the quality of motivation. Moscow University Psychology Bulletin, 2, 3-18.

Lin-Siegler, X., Ahn, J.N., Chen, J., Fang, F.F.A., & Luna-Lucero, M. (2016). Even Einstein struggled: Effects of learning about great scientists' struggles on high school students' motivation to learn science. Journal of Educational Psychology, 108 (3), 314–328.

Mayo, E. (1934). The human problems of an industrial civilization. New York: Macmillan. Vroom, V. H. (1965). Work motivation. New York Wiley & Sons.

Maslow, A. H. (1954). Motivation and personality. New York: Harper and Row.

McGregor, D. (1960). The Human Side of Enterprise, New York, Mc Graw Hill

Mihajlović, I., Voza, D., Milošević, I., & Durkalić, D. (2016). Environmental awareness is a universal European value. Serbian Journal of Management, 11 (2), 149-153.

Nasledov, A. (2013). IBM SPSS Statistics 20 and AMOS: Professional Statistical Data Analysis (in Russian). Sankt-Peterburg, Piter press.

OECD (2014). OECD Science, Technology and Industry Outlook 2014. OECD Publishing, Paris. Retrieved from: https://doi.org/10.1787/sti_outlook-2014-en.

OECD (2015). The Innovation Imperative: Contributing to Productivity. Growth and Well-Being. OECD Publishing, Paris Retrieved from:

https://doi.org/10.1787/9789264239814-en.

Pavlović, D., Todorović, M., Mladenović, S., & Milosavljević, P. (2014). The role of quality methods in improving education process: Case study. Serbian Journal of Management, 9 (2), 219–230.

Perez-Felkner, L., Randall Ford, J., Zhao, T., Anthony, M. Jr., Harrison, J.A., & Rahming, S.G. (2020). Teng Basic Needs Insecurity among Doctoral Students: What It Looks Like and How to Address It. About Campus, 24 (6), 18-24.

Porter, L.W., Steers, R. M., Mowday, R. T., & Boulian, P. V. (1974). Organizational commitment, job satisfaction, and turnover among psychiatric technicians. Journal of Applied Psychology, 59, 603-609.https://doi.org/10.1037/h0037335

Roe, R., Zinovieva, I., Dienes, E., & Horn, L.T. (2000). A comparison of work motivation in Bulgaria, Hungary, and the Netherlands - Test of a model. Applied Psychology, 49 (4), 658-687.

Romanovich, M., Safaie, N., & Shirazi, A. (2021). Multi-model of successful organisational culture for science organisations. TEM Journal, 10 (2), 864-871.

Romanovich, L.G., Deryabina, S.A., Romanovich, M.A., & Mamatova, V.V. (2018). Engineering activities in Russian Universities. Advances in Economics, Business and Management Research, 61, 139-144.

Ryan, J. (2014). The work motivation of research scientists and its effect on research performance. R&D Management, 44 (4), 355-369.

Safronova, N., & Kosareva, E. (2016). Continuing Education for Managers as the Basis of Innovation Economy (Experience of the Russian Presidential Academy of National Economy and Public Administration). Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2819320.

Shevchenko, I.O. (2022). Russian employees motivation (in Russian). RSUH/RGGU Bulletin. Series Philosophy. Social Studies. Art Studies, 2022 (2), 72–85.

Shin, J.C., Kim, S.J., Kim, E., & Lim, H. (2018). Doctoral Students' Satisfaction in a Research-Focused Korean University: Socio-Environmental and Motivational Factors. Asia Pacific Education Review, 2 (2), 159-168.

Shmatko, N.A. (2011). Scientific capital as a driver of social mobility of scientists. Foresight, 5 (3), 18-32.

Shmatko, N.A., & Katchanov, Y.L. (2016). Professional Careers and Mobility of Russian Doctorate Holders. In Gokhberg, L., Shmatko, N., Auriol, L., The Science and Technology Labor Force: The Value of Doctorate Holders and Development of Professional Careers, Springer. 145-170.

Taylor, F. (1911). Scientific management. New York: Harper

Todericiu, R., Serban, A., & Dimitrascu, O. (2013). Particularities of knowledge worker's motivation strategies in Romanian organisations. Procedia - Economics and Finance, 6, 405-413.