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La motivación de los trabajadores científicos y pedagógicos y su eficacia

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Resumen. El factor más importante que determina la calidad de la educación en una universidad es la motivación del personal científico y docente, y existen diferentes modelos de motivación para esta categoría de empleados en el mundo. El objetivo del estudio es analizar la motivación de los trabajadores científicos y pedagógicos en Ucrania en comparación con los trabajadores científicos y pedagógicos en Europa y Estados Unidos. Para lograr este objetivo, los autores utilizan los siguientes métodos de investigación: métodos abstractos, comparativos, deductivos, tabulares y gráficos. Los principales componentes motivacionales de los incentivos para el personal científico y pedagógico en los Estados Unidos son los salarios base, las becas de investigación, que influyen significativamente en el nivel de los salarios, y una parte importante de la motivación no financiera son los paquetes de seguro médico. Los países europeos se basan en el salario base en sus modelos de incentivos e incluyen una parte variable de hasta el 20%, que tiene en cuenta estipendios y asignaciones personales. En Francia y Alemania, los paquetes sociales se utilizan ampliamente como motivación no financiera. En Ucrania, la motivación de los trabajadores científicos y pedagógicos está regulada activamente por una serie de pagos y bonificaciones adicionales, que no tienen en cuenta los méritos individuales de los científicos, sino que se aplican de manera formulada.

Palabras clave: trabajadores científicos y pedagógicos, motivación, motivación material, motivación inmaterial, salario, paquete social.

Motivation of scientific and pedagogical workers and its effectiveness

Abstract. The most important factor determining the quality of education at a university is the motivation of scientific and teaching staff, and there are different models of motivation for this category of employees in the world. The purpose of the study is to analyze the motivation of scientific and pedagogical workers in Ukraine in comparison with scientific and pedagogical workers in Europe and the USA. To achieve this goal, the authors use the following research methods: abstract, comparative, deductive, tabular and graphical methods. The main motivational components of incentives for scientific and pedagogical personnel in the United States are base salaries, research grants, which significantly influence the level of wages, and a significant part of non-financial motivation is health insurance packages. European countries rely on the base salary in their incentive models and include a variable part of up to 20%, which takes into account personal stipends and allowances. In France and Germany, social packages are widely used as non-financial motivation. In Ukraine, the motivation of scientific and pedagogical workers is actively regulated by a number of additional payments and bonuses, which do not take into account the individual merits of scientists, but are applied in a formulaic manner.

Key words: scientific and pedagogical workers, motivation, material motivation, non-material motivation, salary, social packages.

INTRODUCTION

Scientific and pedagogical workers play a central role in the development and implementation of the educational strategy of the state, the formation of qualified labor resources, and in the research sphere, which is an important basis for the overall development of each state. The activities of scientific and pedagogical workers are aimed at helping their countries to solve development problems, as their mission is focused on two broad areas. One area is research. This involves generating invaluable contextualized knowledge and recommendations that can be used to formulate and implement policies; solve existential problems; create technological products; and generate new knowledge that can be adapted for economic, political, and social improvement. Research projects can originate directly in higher education institutions or be a response to requests from private organizations or the government with appropriate funding. Another area of engagement of scientific and academic staff is to develop and produce relevant and influential graduates with the necessary skills, knowledge and competencies. Accordingly, scientific and pedagogical staff are a powerful driver of development, educating the next generation of scientists, sociologists, politicians, business leaders and entrepreneurs, civil servants and other professionals.

Despite the all-encompassing role played by scientific and pedagogical workers in society, in the Ukrainian context, this issue requires a deeper approach to understanding in light of the strategic and geopolitical needs of our country. Today, Ukraine critically needs to revise the models of scientific potential development, which should become the basis not only for further recovery of the country after the devastating attack and missile attacks by Russian troops, but also for strengthening the defense capability in general and Ukraine's ability to resist the enemy informationally,

socially and economically. This requires considerable effort and comprehensive knowledge. Modern challenges require restructuring the educational system and strengthening the role of scientific and pedagogical staff in the formation of a competitive workforce within the state. Ukraine needs to strengthen the knowledge and scientific and technological components of its own development, and it is scientific and technological solutions that should contribute to the development of the IT sector and the military complex. These issues are of existential importance for Ukrainian society today. Therefore, today's scientific and pedagogical staff is faced with the task of strengthening scientific and technological innovation by not only increasing development and research, but also training and supporting young people, which will become the basis for further growth of Ukraine's competitiveness on the world stage. This is where the issue of proper motivation of scientific and pedagogical staff to generate new knowledge and disseminate and implement it becomes acute. This leads to the focus of modern research on the search for effective models of motivation of scientific and pedagogical workers through the stimulating effect.

ANALYSIS OF THE LATEST RESEARCH AND PUBLICATIONS

In today's world, many technologically advanced countries have realized that true power lies not in the physical quantity of labor, but in the educated mind. As a result, each country has begun to restructure its education system to meet the demands of technology. In the information age of the 21st century, fast access to information is crucial for the development of society. To take their place among knowledge societies in a world that is rapidly moving towards globalization, states must closely monitor technological innovations and meet the demands of technology. This can be achieved by providing learning opportunities for everyone who is interested in pursuing education in their field of interest. In today's world, it is impossible to talk about education without technology or technology without education (Cetin et al., 2004).

Education and vocational training, and higher education in particular, are the most important areas of contemporary policy for shaping the knowledge-based economy of the 21st century. Education has become a driving force that policymakers use to achieve a wide range of goals, from increasing global competitiveness and creating and retaining high-quality jobs to reducing wage inequality and fostering innovation (Finegold, 2015).

Higher education institutions have close ties to society. While university teaching should be student-centered, scientific and pedagogical staff play a key role in the teaching and learning process. At the same time, higher education institutions are responsible not only for informing students, but also for generating new knowledge that can be useful in order to face the current challenges that humanity must face (Zamora-Polo et al., 2019).

At the same time, scientific and pedagogical staff is the basis for the existence and functioning of higher education institutions, the development of science, and a source of professional education for specialists in various fields and specialties. Every year, new requirements are put forward to the teaching staff of different levels, which complicate self-development. The high costs of publishing scientific achievements in international journals, the underestimation of official salaries at the state level, and remote communication with students make educational institutions think about activating the teaching staff and using both tangible and intangible means of influence to encourage staff to provide higher education services (Ostapchuk et al., 2020; Yekimov et al., 2023).

Motivation is an integral part of personal and professional development and determines the effectiveness of teachers' pedagogical development (Cunter, 2013). Scientific and pedagogical workers are motivated by various elements, both internal and external. The work of scientific and pedagogical staff combines several types of activities - teaching, research and communication of research results. Through this combination, higher education teachers are mobilized to apply the results of their professional work and achieve specific educational goals (Corrales-Serrano et al., 2018). As in any other human activity, the decision to enter the teaching profession is influenced by internal factors, such as vocation or the need for personal satisfaction, as well as external factors, such as family, recognition, or social status, in addition to its results. In the case of the teaching profession, motivational factors refer to the specific characteristics that define the profession. In general, the factors that influence the motivation of a scientific and pedagogical worker can be classified according to two main dimensions (personal and organizational). Another important variable that is analyzed in terms of its impact on teacher motivation is the time spent on professional activities or classes taught. However, the number of studies that examine the pedagogical motivation of higher education teachers is limited (Espejo-Antúnez et al., 2021).

The formation of effective motivation is possible only through a developed incentive system that ensures the motivation of scientific and pedagogical staff to fulfill the tasks set by universities. To effectively manage motivation, it is necessary to combine tangible and intangible methods of encouragement. Ukrainian universities usually use traditional mechanisms of material motivation, which include the payment of a fixed salary, one-time bonuses and other allowances. However, it should not be forgotten that there are more modern models of motivating scientific and pedagogical staff used in developed and developing countries. When using non-financial incentives, attention should be paid to the cultural, mental and psychological characteristics of employees. After all, qualifications, professionalism, experience, knowledge and education are the key to a specialist's work being much better: more efficient and productive. It is worth emphasizing that for motivational measures to be effective, universities need to organize the work of scientific and pedagogical staff, coordinate their activities, and ensure order and compliance with labor discipline. Ukraine has sufficient human and intellectual potential, so it would be justified to switch to HR management methods that give preference to increasing the moral motivation of employees, and the state will make informed decisions on the material remuneration of scientific and pedagogical staff, which will guarantee the quality of the educational process following the example of developed countries (Ostapchuk et al., 2020).

The purpose of the study is to analyze the motivation of scientific and pedagogical workers. Within the framework of this goal, the following **tasks** have been defined:

- 1) to identify the countries with the highest scientific index in the world, with the greatest scientific potential;
- 2) to review the motivational models for scientific and pedagogical staff of leading countries;
- 3) to reveal the model of motivation of Ukrainian research and teaching staff;
- 4) to draw conclusions about the peculiarities of successful models of motivation of scientific and pedagogical workers;
- 5) to determine the directions of perspective revision of the domestic practice of motivation of scientific and pedagogical workers to strengthen the scientific potential and development of young scientists for the long-term development of the state.

RESEARCH METHODS

To achieve the above goal, appropriate research methods have been selected that allow us to fulfill the tasks. To study the specifics of the models of motivation of scientific and pedagogical workers in developed countries and in countries that have accumulated a strong scientific potential, the methods of analyzing literary sources and Internet resources were used. The use of the method of literature analysis allowed us to get acquainted with the modern achievements of developed countries in the field of successful motivation of scientific and pedagogical workers, which became the basis for the country's competitiveness in the field of science development and in the labor market of scientific workers. The application of the abstraction method allowed us to focus the study on the motivation of scientific and pedagogical workers, emphasizing this special category of staff of higher education institutions. The choice of this method is based on its versatility and the ability to focus on specific properties, moving away from non-essential elements that do not contribute to the disclosure of the chosen topic and the achievement of the research goal. To analyze different models of motivation, the author applies the method of comparative analysis, which is traditionally used to study objects and systems of different nature. A specific condition for using this method is that the objects under study have a common property, against which the variability of the variables under study can be distinguished. Therefore, using the method of comparative analysis, the object of the study was the models of motivation of scientific and pedagogical workers in different countries. The deductive method used in writing the article made it possible to identify certain characteristic features of the motivational system of higher education institutions to stimulate scientific and pedagogical staff. In addition, to improve the perception of the information presented, the article uses a tabular method (for compiling 1 table) and a graphical method (for compiling 1 figure). This method, in combination with the methods of grouping and generalization, allowed us to present the results of the study of individual components of the study. The method of generalization was used to draw conclusions.

RESULTS OF THE STUDY

Guided by Article 53 of the Law of Ukraine "On Higher Education" (2014) defines a scientific and pedagogical worker as a person employed at the main place in a higher education institution where they carry out activities of an educational, methodological, scientific (scientific, technical, artistic) and organizational nature.

The most important determinant of quality education in a higher education institution is the motivation of scientific and pedagogical staff. It is important to understand the success of higher education teachers through the prism of their motivation and in comparison, with their cognitive capabilities. Helping others (especially students) and vocation are the most important motivators for scientific and pedagogical staff. Some of the demotivating factors at the professional level for teachers are due to factors such as job instability and lack of recognition both in society and at the university itself (Corrales-Serrano et al., 2018).

According to the results of the study of the motivational component of teacher candidates, it was found that they are more positively motivated by internal factors related to the teaching profession. Almost all negative motivational factors are exogenous. Such motivational factors affect the attitudes and perceptions of teacher candidates about their profession. It is possible to produce

competent teachers who are motivated by their work by increasing the motivational elements that novice teachers perceive as positive and decreasing the elements that are perceived as negative. In this way, significant progress can be made in achieving educational goals (Yarım et al., 2022).

In addition, teachers must be motivated to implement reforms that are based on top-down policy initiatives. Two main theories of motivation are often used to develop motivational models for scientific and pedagogical workers: intrinsic and extrinsic. Intrinsically motivated individuals engage in tasks because they feel an inherent interest and satisfaction in their work. Competence and autonomy are basic psychological needs that often lead to intrinsic motivation. Extrinsic motivation involves performing a task because of expected individual consequences. Although extrinsic motivation is often perceived as a weaker incentive for self-directed change, people can integrate external cues if they are consistent with their values and beliefs. At the same time, teachers with autonomy often accept the goals of administrators, principals, or educational leaders if they believe these goals are reasonable and achievable and rational. When the goals came from an authoritative person such as a principal or administrator, specific and challenging goals elicited more effort at the same time, combining both extrinsic and intrinsic incentives into one motivation policy is difficult because the interaction of extrinsic and intrinsic incentives is ambiguous (Mintz et al., 2021).

Firestone (2014) proposed three main problems when combining incentives to form a motivational model for scientific and pedagogical staff:

- a) intrinsic incentives are negated by extrinsic incentives,
- b) high-stakes exams may not provide teachers with productive feedback,
- c) the time required for administrators to collect evidence of effectiveness competes with time for teacher self-efficacy.

The autonomy needed to sustain intrinsic incentives does not apply when rewards are predictable, such as pay for performance or merit pay (Firestone, 2014). In addition, there are challenges in designing evaluations that can monitor the distribution of extrinsic rewards while creating intrinsic ones. Faculty have used accountability assessment data productively when the data were immediately available and did not have high stakes. Finally, the time it takes for administrators to gather the necessary information to allocate extrinsic rewards competes with the time it takes to create the working conditions that will increase teacher effectiveness. Research has shown that administrators have less time to provide support and productive feedback to teachers in need, often sharing responsibilities with others to minimize the increased demands of accountability policies. As a result, teachers may not receive reliable information to develop their teaching capacity, which negatively affects their motivation. A fundamental question for reform in terms of implementing effective motivation models is how to balance the need for intrinsic motivation with the demands of external accountability and how to use these assessments to improve learning. The two parts of this question are based on different theories of motivation. The first part relies on extrinsic incentives to motivate teachers to improve instruction. The second part focuses on intrinsic incentives, whereby teachers engage in professional development of their own volition to improve learning (Mintz et al., 2021). This explains the existence of different models of motivation for scientific and pedagogical staff.

So, to get acquainted with such models, let us first identify the countries that have achieved success and significant results in this regard.

In accordance with the world ranking of countries, Table 1 presents the countries with the highest level of scientific potential according to the Scientific Index.

TABLE 1. World ranking of countries with the highest scientific index
(Ad Scientific Index, 2023)

Place of country	Country	The best institution in the country World ranking/ Name	Total number of institutions in the country	Total number of scientists in the index	The total number of scientists in 3% of the world's best scientists	The total number of scientists in 10% of the world's best scientists
1	USA	1 Harvard University	3019	290591	17 049	47787
2	United Kingdom	4 University of Oxford	310	53 680	3538	10 509
3	Australia	32 University of Queensland	140	33438	1974	6581
4	Germany	89 Ludwig Maximilians University of Munich	528	40345	1922	5870
5	Canada	16 University of Toronto	272	33209	1838	6108
6	Italy	23 Istituto Nazionale di Fisica Nucleare	243	36406	1724	6729
7	China	73 Tsinghua University	961	61941	1616	5913
8	Netherlands	41 Utrecht University	100	16572	1206	3310
9	France	113 INSERM	469	33606	937	4123
10	Spain	124 University of Barcelona	319	34218	874	3989
	For reference					
69	Ukraine	1540 Institute for Nuclear Research of the National Academy of Sciences of Ukraine	185	7680	6	52

Thus, a strong scientific potential has been formed in the United States, the United Kingdom, Australia, Germany, and Canada. When studying the levels of financial motivation in different countries, it should be noted that academic salaries can vary significantly depending on the rank, country, and institution. The average salary of professors in the United States is \$98,533 per year. The lowest offer from higher education institutions is \$48,262, and the highest is \$201,168 (Indeed, 2023). Associate professors earn an average of \$79,654, and senior researchers earn \$69,206 (Academic Positions, n/d).

US universities usually do not use a bonus system, but large research grants are widely used, which affects the annual process of determining base salary increases for faculty. In general, incentive systems vary widely from university to university and may include (Yaun, 2020):

- 1) Payment of summer salary. Since most professors receive a nine-month salary, they can supplement their income by 1/3 by finding sources to pay for three summer months, such as research grants. So, this is a direct payment for additional summer work.
- 2) Additional base salary - some universities allow you to increase a certain percentage, e.g. 20% of your base salary, by using funds for research. This reflects the additional work on the project.
- 3) Incentive compensation for research.
- 4) A productive researcher can also receive higher bonuses or a scholarship.

An important motivational factor in the United States is the health insurance package offered by different educational institutions in different formats, increasing the competitiveness of the labor market offer.

In the UK, the average salary of a lecturer is £40,760, while the average salary of a senior lecturer is £51,590. The average salary of an assistant professor is £64,356, while a professor earns an average of £91,891. German professors are civil servants, so national legislation fixes their salaries according to the state. Junior associate professors (Juniordozent) earn from 4713 to 5301 euros per month. Associate professors (dozent) earn from 5365 to 6676 euros per month, and professors earn from 5343 to 7578 euros per month. Since French universities are public and state-owned, academics who hold permanent positions are civil servants. The government sets their salaries, which are independent of the institution and discipline. The salary level is broken down by grade and length of service. The salary of a full-time assistant/associate professor can range from 25,225 euros to 53,828 euros per year, depending on the grade and seniority of the scientist. Full professors can expect to earn from 36,560 to 73,343 euros per year, depending on their grade and seniority (Academic Positions, n/d).

The above European countries use fixed and variable salary components, except for Italy, where there is only a fixed component. The variable component is fixed by law in France, while in Germany and the UK it can be negotiated, and on average in these countries it reaches 20% of the base salary. In France and Germany, the incentive policy includes an intangible social security incentive in favor of families and is geographically based, which is important given the cost of living. In contrast, in the UK, academic discipline is important in determining salaries. In the UK, France, and Germany, there is a practice of providing monetary bonuses for outstanding research, which stimulates the level of research in general. Looking at the average gross salary, the UK and Germany are the most competitive systems, followed by Italy, which sets higher salaries than France, despite the complete absence of variable remuneration. At the same time, among these countries, Italy has the lowest average salary for the first two levels of scientific and academic staff (28,256 euros and

40,988 euros, equivalent to 30,400 and 44,000 US dollars, respectively) and is only slightly ahead of France at the level of professor. Scientific and pedagogical workers in the UK occupy the leading positions in the salary table both in terms of basic gross salary and net salary, and professors in the German states receive the next highest levels of net salary, leaving France in last place, slightly behind the net salary of Italian professors. The absence of a variable component in the salaries of Italian scientific and pedagogical staff makes the offers of higher education institutions uncompetitive in the European labor market, leading to a brain drain, especially among young talents coming out of Italian universities (Mitchell, 2023).

The motivation of scientific and pedagogical workers in many other countries is also based on high salaries. For example, in Australia, the average basic salary of a professor is \$194,166 per year, a lecturer - more than \$47 thousand per year, and a senior lecturer - \$67 thousand per year (Indeed, 2023). According to Statistics Canada (Statistics Canada, 2023), the average salary of a full-time faculty member (all ranks) in Canada was \$124,375 in the 2022/2023 academic year. The highest earners are professors with an average salary of \$160 thousand, while associate professors earn an average of \$125.4 thousand and senior lecturers \$103 thousand (Academic Positions, n/d). In Sweden, lecturers earn SEK 41,181 per month. Associate professors earn an average of 44-50 thousand SEK per month. Taxes in Sweden are approximately 45%. Swiss academic salaries are the highest in Europe. They are fixed by each canton (province). For example, at the University of Lausanne, associate professors' salaries range from 125,250 to 158,783 Swiss francs per year. Instead, professors earn from 149,728 to 171,380 Swiss francs per year. Full professors with a departmental assignment receive from 163,564 to 210,793 Swiss francs per year. In Zurich, the range for senior junior researchers is from CHF 148,682 to CHF 214,767 per year and from CHF 178,996 to CHF 245,080 per year for associate professors. While professors earn from 209,247 to 275,359 Swiss francs per year (Academic Positions, n/d).

In Denmark, faculty salaries are determined by contracts concluded between academic unions and the government. A teacher's salary is determined by a combination of seniority and rank. Senior lecturers earn an average of 38 thousand Danish kroner per month. Associate professors earn an average of 44,4204 DKK per month, while professors earn an average of 58,236 DKK per month. Taxes in Denmark are relatively high at 40-50% depending on income. Similarly, to Denmark, the collective labor agreement of Dutch universities (CAO-NU) provides for a scale of remuneration for teachers. Lecturers earn from 3821 to 5943 euros per month. Associate professors earn between 5294 and 7097 euros per month. Professors earn from 5,864 euros to 10,309 euros per month. Taxes in the Netherlands are about 40%. Salaries of Belgian teachers depend on seniority. Entry-level associate professors earn 29,914 euros per year, while associate professors with 24 years of experience are at the top of the salary scale (47,443 euros per year). Associate professors with more than 24 years of experience can earn from 34.2 to 58.4 thousand euros. Salaries of professors start at 40.0 thousand euros per year and after 18 years reach the amount of 61.2 thousand euros per year, and after 15 years of experience, professors earn about 68.6 thousand euros. Belgium also has a relatively high tax rate of 45-52%. Norwegian academic salaries are determined in accordance with collective agreements between trade unions and government agencies. Within the salary scale, the level of remuneration is influenced by academic rank and length of service. The average salary for teaching staff is NOK 629.2 thousand per year and NOK 703.1 thousand per year for associate professors. The average annual salary of a professor is 897.9 thousand Norwegian kroner. Taxes in Norway are about 40%. Academic salaries in Finland are also set according to a collective bargaining

agreement. The salary of a teacher is influenced by the work requirements and individual results. An assistant/associate professor earns from 3709 euros to 6051 euros per month, while a professor earns from 5.2-9.3 thousand euros per month. Taxes in Finland are 25-32% (Academic Positions, n/d).

In Ukraine, a single tariff scale is used to determine salaries, where grades are linked to academic titles. In some institutions, the terms of remuneration may differ. For example, at the Taras Shevchenko National University of Kyiv, a separate Presidential Decree established 2-fold salaries; higher salaries are paid to scientific and pedagogical staff working at national universities. Separately defined tariff categories and salaries are set if the higher education institution is subordinated to another specialized ministry. For the category of scientific and pedagogical workers, according to Resolution No. 36 (2019), a number of additional payments and allowances are applied, as well as an 11% increase in salaries. Such employees work according to individual work plans that provide for the distribution of the workload in hours by the following types of work

- 1) teaching component - work in class, lecturing, conducting practical and seminar classes. All other components are formally considered extracurricular activities, although they can also be conducted together with university students;
- 2) methodological component - preparation of methodological instructions for classes, work and curricula, syllabi, educational projects, etc.;
- 3) organizational component - curatorial work, participation in department meetings, preparation of reports, participation in various meetings held in and outside higher education institutions;
- 4) the scientific component is the preparation of scientific articles, reports at conferences, conducting various kinds of research, etc. The specifics are determined by the field of science to which the teacher's department belongs (Onyshchenko, 2023).

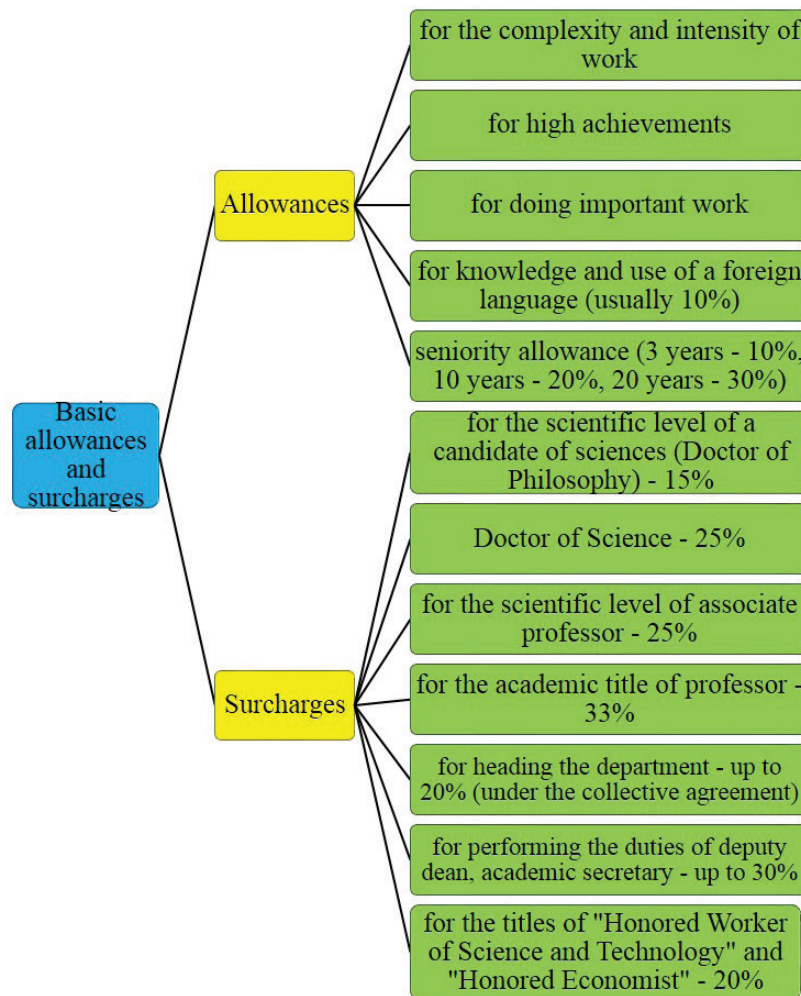
The number of total allowances for scientific and pedagogical workers in higher education institutions with the status of "national" can reach up to 100%, and institutions of other status - up to 50%.

Figure 1 shows the main allowances and surcharges for scientific and pedagogical staff.

Despite a wide range of allowances and surcharges, the average salary of scientific and pedagogical workers in Ukraine is low. Scientific and pedagogical workers in Ukraine receive an average monthly salary of UAH 32,700. The salary range is from UAH 16,700 to UAH 50,400 (the highest) per month. The level of experience is the most important factor in determining salaries - the more years of experience, the higher the salary. For example, scientific and pedagogical workers with ten to fifteen years of experience receive the equivalent of UAH 41,100, which is 20% more than workers with five to ten years of experience. If the level of experience is from fifteen to twenty years, the expected salary is UAH 44,700, which is 9% more than a person with ten to fifteen years of experience. Finally, employees with more than twenty years of work experience receive a salary of UAH 48,200, which is 8% more than people with fifteen to twenty years of experience (Salary explorer, 2023).

Regarding the intangible component of the motivation model for Ukrainian scientific and pedagogical workers, it should be noted that the main intangible motivation factor is the possibility of self-realization, which is contained in an intellectual product. It can also be manifested in the establishment of special working hours, participation in conferences, seminars, securing intellectual property rights, etc. There are three main types of incentives for employees in their free time:

Figura 1. Main allowances and surcharges for scientific and pedagogical workers (Onishchenko, 2023)



- 1) general - for all employees;
- 2) indicative or benchmark - for employees who have achieved specific results
- 3) competitive - for the best employees (Rudyk, 2018).

Thus, the motivation model of Ukrainian scientific and pedagogical workers mainly uses material incentives in the form of tariff wages and allowances and surcharges, intangible factors are based on the flexibility of the work schedule and the satisfaction of the need for self-acknowledgment.

Conclusions and Prospects for Further Research. The main motivational components of incentives for scientific and pedagogical workers in the United States are basic salary and research grants, which significantly affect the level of salary. Health insurance packages are an important part of non-financial incentives.

The most developed European countries rely on a base salary in their incentive models, which is either fixed by law (France) or formed on a contractual basis (UK and Germany), and includes a variable part of up to 20%, which takes into account personal scholarships and allowances. Social packages are widely used as non-financial incentives in France and Germany.

The example of Italy shows the inability of fixed salaries for teaching staff without a variable part that takes into account the personal contribution of a scientist or researcher, and intangible motivation factors to form a competitive offer to retain scientific and pedagogical staff, who choose not only higher education institutions in Northern Europe, but also the private sector in Italy, where they pay much higher salaries, at the beginning of their careers. It should be noted, however, that Italy's motivational model provides for extensive tax benefits that generally smooth out the level of salaries compared to leading higher education institutions in other developed European countries, but their impact is insufficient.

As we can see, the scientific potential of countries is based on powerful motivational models for scientific and pedagogical staff, which provide for a high level of basic salaries, grants or variable supplements and social or insurance packages for families, tax benefits.

In the absence of adequate non-material incentives (personal and family insurance packages, social packages, tax benefits, etc.) and the absence of individual bonuses or widespread use of grants as a variable part of material motivation, Ukraine is actively guided by a number of surcharges and allowances that do not allow for individual merit of researchers but are used in a template manner. Since scientific activity is highly intellectual and socially significant, it is important that it is incentivized in accordance with the complex structure of scientific and pedagogical staff motives. This implies the use of a flexible system of non-material motivation of scientific and pedagogical staff, development and implementation of a wide range of practical ways to stimulate and motivate employees, taking into account their personal contribution. And despite the fact that the main feature of scientific and pedagogical workers is that more often than not, higher-level needs prevail over material incentives, it is important to ensure a competitive level of salary that takes into account the individual merits of each employee and flexibly combines them with material incentives.

In Ukraine, in order to strengthen the scientific potential and retain young scientists for the long-term development of the state, it is necessary to gradually raise the salaries of research and teaching staff to the European level. It is also necessary to individualize the variable component based on research results to a greater extent, i.e. the part of a researcher's income that directly takes into account his or her personal achievements in the scientific field. First of all, a system of grants should be developed at the state level and with the involvement of international donors to finance research of certain groups of scientists. It is also necessary to introduce state awards for significant developments in various fields, for example, an annual award for the largest contribution or a one-time award for scientific contribution during the year (for example, for the number of scientific publications in internationally recognized journals), and it is also possible to introduce ratings of scientists within each institution and set the level of individual surcharges according to the position, for example, to set the level of surcharges for leadership in scientific development. In order for young scientists to compete with experienced colleagues, it is advisable to form a rating for a certain period (six months, a year) with the achievements for this period recorded.

It is also important to introduce open competitions for research grants within each scientific institution and university, attracting not only young scientists but also promising students and motivating them to work on the development of Ukrainian science. The state should act as a customer and major financial investor in important developments in Ukraine's strategic and priority industries, such as agriculture, energy, medicine, transplantation, prosthetics, communications, information and cybersecurity, etc. This will motivate scientists to work on topics important to Ukraine's recovery. Therefore, it is advisable for Ukraine to fundamentally revise not only the salaries of re-

searchers, but also to create a competitive field where individual supplemental payments will depend entirely on the personal work of researchers, which will form a competitive model of motivation.

The vast majority of scientists choose an academic career not because they need high pay, but because they love science and the freedom to decide what to work on. However, there are some conditions that need to be met (keeping in mind that academics come from a limited pool of very talented students), namely, an income that allows for a decent living, a clear career path, and the ability to devote time to their own research. Further research should focus on developing an adequate incentive model for Ukrainian scientific and pedagogical staff that will stimulate research development and be competitive to keep young scientists in Ukraine.

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