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AWARDS FROM PUBLIC ACADEMIES AS A DRIVING FORCE FOR INNOVATION. (Professional awards granted by public academies of sciences serve as a motivating and guiding factor in active innovation activities, based on brainstorming methodologies and integrative, comprehensive solutions that enable the achievement of an ideal final result in the implementation of inventions)

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Abstract

In the modern dynamic business environment, where organizations face the challenges of a rapidly changing labor market, employee compensation and motivation systems become key factors for effective performance and sustainable development. The role of public academies of sciences in the formation of incentive mechanisms aimed at stimulating the accelerated development of innovative smart technology projects, including those utilizing elements of artificial intelligence and artificial neural networks in monitoring and control systems, is of particular importance.

An effective reward system is no longer only a component of personnel policy but also a strategic tool that shapes corporate culture, increases employee engagement, and motivates teams to achieve common goals. Such systems also contribute to the development of creative approaches in project activities, including the use of brainstorming methods, especially in startup environments, facilitating the achievement of optimal project outcomes.

Awards granted by public academies of sciences play an important role in the professional development of specialists, as they confirm the scientific significance and novelty of innovative projects, contribute to expanding access to grants and partnerships, enhance professional prestige, and attract attention to developments in various sectors, including agriculture, information technology, and medicine. These awards facilitate the integration of innovations into scientific and industrial practice.

The significance of such awards lies in the official recognition of contributions to science and technological development, which serves as an incentive for researchers and stimulates further innovation. In particular, awards of the Russian Academy of Natural Sciences recognize

scientific and pedagogical achievements, support new directions in science and education, and promote advanced developments, contributing to the integration of science into practice and strengthening the authority of national science.

Keywords: *Public academies of sciences; Stimulating factor; Incentive for innovation; Activating factor; Innovative smart technology projects; Control and monitoring systems; Awards of public academies of sciences for the novelty of innovative projects; Promotion of advanced developments and their integration into production; Motivation of researchers; Tangible achievements in the development and implementation of new technologies, creation of world-class technologies; Stimulation of innovation through public recognition of achievements.*

As examples:

Awards of the Russian Academy of Engineering recognize outstanding contributions to science and technology, stimulating innovation through the recognition of achievements in the development of new technologies, patenting activities, the creation of high-tech teams, and the training of specialists. This enhances the prestige of the engineering profession and contributes to the technological development of the country. The significance of these awards lies in highlighting real achievements of engineers, motivating further discoveries, and their impact on the innovation process is reflected in the promotion of advanced developments and their integration into production.

The International Engineering Academy grants awards for outstanding contributions to engineering, the creation of new technologies and patents, as well as for the training of specialists. These activities stimulate innovative development, increase the prestige of the engineering profession, promote the implementation of advanced solutions, and strengthen international cooperation in science and technology, which is critically important for progress. The awards recognize tangible achievements in the development and implementation of new technologies, the creation of world-class engineering solutions, patenting, and the training of engineers, directly influencing the development of innovation potential.

The All-Ukrainian Public Organization “Ukrainian Academy of Sciences” unites scientists and industry representatives from various sectors of the national economy. As the successor to the Ukrainian Academy of Sciences of National Progress, it has its own anthem, flag, and other symbols. The main goals and objectives of the Academy include the study

and generalization of scientific knowledge, facilitating the fullest possible use of these achievements in the socio-economic development of Ukraine, supporting the development and reproduction of the intellectual potential of society, disseminating scientific and technical achievements, and protecting the common interests of its members.

As an example, we present a system of public stimulation of innovative activity established within the International United Academy of Sciences (IUAS) and successfully applied in everyday practice.

Professional awards granted by public academies of sciences act as a stimulating and guiding factor in innovation activities, based on brainstorming methodologies and integrative, comprehensive solutions that enable the achievement of an ideal final result in the implementation of inventions.

Brainstorming, as an integral part of this process, is a method of generating, proposing, and collectively processing ideas, aimed at identifying possible solutions to complex problems within a working or startup team.

The core concept of brainstorming is to consolidate the efforts of diverse participants in order to achieve optimal solutions that cannot be obtained individually. Although this method can be applied across various fields, it is primarily used in business environments, where problem-solving often requires collective thinking and reinterpretation.

The number of participants in a brainstorming session may range from a small group to a large team of several dozen individuals. Brainstorming can be organized in various formats: as a formal meeting, a pre-planned session, or as an informal discussion in the workplace. In all cases, the primary objective is to create an open environment that

encourages the generation of new ideas and creative approaches to decision-making.

The essence of the brainstorming method lies in assembling a working group and focusing on solving a specific problem or generating new ideas. Initially, the problem must be clearly formulated so that all participants understand it and are motivated to engage. Each participant is encouraged to freely express ideas, with criticism strictly prohibited during the ideation phase. The greater the number of ideas generated, the better. Even seemingly impractical ideas can lead to innovative or unique solutions.

During the session, participants should strive for collective collaboration and accumulation of the best ideas. These ideas are subsequently evaluated and refined to form a final solution or concept. It should be noted that brainstorming is applicable not only in business but also in any domain requiring the development of new ideas.

Group work using the brainstorming method enables the rapid generation of a wide range of ideas. Participants with different backgrounds, education, and perspectives contribute diverse viewpoints, resulting in a broader and more innovative set of solutions.

The main advantage of this method is its high efficiency, achieved by concentrating multiple perspectives on a single problem in one place and at one time. Each participant can propose, develop, or expand upon ideas, thereby fostering both effective decision-making and the development of collective creativity, as well as improving team management.

However, brainstorming is not a universal method and is not suitable for all tasks. It is most effective when multiple solution options exist and the goal is to determine the optimal one. It is less appropriate when only two predefined options are available or when the problem is overly broad and lacks clear definition.

For effective group work, the presence of a facilitator or leader is essential. The leader defines the task, identifies ideas for further discussion, and ensures adherence to the rules necessary for conducting a productive brainstorming session.

The Academy of Natural Sciences was registered on July 27, 1995, with the Ministry of

Justice of the Russian Federation (Registration No. 5182). Its organizational and legal form is a public interregional organization.

The primary objective of the Academy is to support the implementation of the Doctrine for the Development of Russian Science.

The Academy comprises 20 sections, including: physical and mathematical sciences, chemical sciences, biological sciences, geological and mineralogical sciences, technical sciences, agricultural sciences, geographical sciences, pedagogical sciences, medical sciences, pharmaceutical sciences, veterinary sciences, psychological sciences, sanitary and epidemiological supervision, economic sciences, philosophy of science, regional studies, noosphere development, animal ecology, ecology and public health, and culture and arts.

Several additional sections are currently under development.

The Academy includes 95 full members and more than 600 corresponding members. Its members operate in 92 cities across Russia, as well as in Ukraine, Belarus, Uzbekistan, and Turkmenistan. In total, the Academy unites more than 5,000 members.

Approximately 350 universities, research institutes, and scientific organizations are represented within the Academy. There are 60 registered regional branches.

In accordance with Articles 3 and 14 of the Federal Law of the Russian Federation "On Public Associations," the Academy of Natural Sciences, having branches in more than 45 regions of the Russian Federation, is entitled to use the designations "Russia" and "Russian Federation" in its name.

The Academy includes numerous public and commercial organizations as collective members, legally independent subdivisions, affiliated entities, and associated members.

Scientists from Germany, Austria, Yugoslavia, Israel, the United States, and CIS countries are represented within the Academy. Honorary academicians include distinguished figures in science, culture, politics, and industry.

Under the auspices of the Academy, numerous congresses are held annually across various regions of Russia.

Awards of the Russian Academy of Natural Sciences (RAE), including medals such

as “For Innovative Work” and those named after N. I. Vavilov, recognize outstanding scientists, educators, and innovative organizations. These awards stimulate the implementation of breakthrough developments in science and industry, enhance the prestige of scientific activity, and contribute to the advancement of high-tech sectors, including medicine, ecology, and energy.

Main awards of the Russian Academy of Natural Sciences (RAE) and their significance:

- The Gold Medal “For Innovative Work in Higher Education” is awarded for initiatives, projects, and active contributions in the fields of education and science.
- The N. I. Vavilov Medal is awarded for outstanding achievements in genetics, breeding, and plant science.
- Sectoral medals recognize breakthrough developments in energy, ecology, and medicine, which are critically important for economic modernization.

Importance for the innovation implementation process:

- Recognition and motivation: Awards enhance the authority of developers and motivate young researchers to create new technologies.
- Promotion of developments: The awarding of medals serves as a mark of quality for innovative projects, facilitating their practical implementation.
- Support for research: Awards encourage the involvement of educational and scientific institutions in addressing relevant applied challenges.

Highest award of the Russian Academy of Sciences:

- By Resolution of the Presidium of the Russian Academy of Sciences dated May 26, 1992, No. 177, the Gold Medals named after M. V. Lomonosov are established as the highest award of the Russian Academy of Sciences. They are awarded annually to one Russian and one foreign scientist in recognition of outstanding achievements in the natural and humanities sciences.

Brainstorming methodology and its application:

- The brainstorming method is widely applied in various fields, including education and professional training. However, its greatest value lies in its practical application – finding optimal solutions to real-world problems within business structures.
- Problem definition: At this stage, the objectives and tasks of the session are determined. The problem must be clearly formulated so that all participants understand it and can articulate their ideas effectively. The more precisely the problem is defined, the more effective the brainstorming session will be. A session leader is typically assigned to ensure clarity before proceeding.
- Idea generation: Once the problem is defined, participants freely propose ideas without limitations. All ideas are welcomed, including unconventional and seemingly impractical ones, as they may lead to innovative solutions. Various techniques such as free association, reverse thinking, and the 6–3–5 method may be applied to maximize idea generation.
- Selection of optimal solutions: After idea generation, the ideas are analyzed and the most effective ones are selected. This stage involves applying filters and criteria such as feasibility, efficiency, and resource requirements. The selected ideas are further refined into actionable plans aligned with the strategic goals of the organization or project.
- Brainstorming is a powerful tool for solving complex problems and generating innovative ideas. It enables faster decision-making under resource constraints and enhances productivity.
- However, it is not universally applicable. It is most effective when multiple solution options exist and less suitable when only limited predefined options are available or when the problem lacks clear structure.
- Effective brainstorming requires leadership. A facilitator defines objectives, manages the process, and ensures adherence to established rules.

Neurophysiological aspects of brainstorming in innovation processes:

- The use of brainstorming in innovation development, including in the context of quantum computing and advanced technological systems, requires careful analysis of both the process and its outcomes. These processes increasingly rely on principles of electromagnetic resonance spectroscopy combined with artificial intelligence and neural networks.
- Specialists continuously analyze brain responses to active participation in structured brainstorming processes aimed at intensifying the development of complex, modular innovative projects in smart technologies.
- Research indicates that different brain regions are activated depending on the complexity, psychological intensity, technical requirements, participant qualifications, and even environmental factors influencing the brainstorming process.
- Although direct measurement during brainstorming is difficult, studies show that recalling participation in such processes activates similar neural patterns to those engaged during actual idea generation. This allows experimental modeling of concept development processes, including the integration of technical requirements and system structures supported by AI-based control and monitoring systems.
- Participants in extended brainstorming sessions demonstrate increasing cognitive activity, particularly when evaluating progress toward achieving an ideal final result. The highest levels of brain activation are associated with the perception of success or failure in reaching this ideal outcome.
- Environmental factors also influence cognitive performance. For example, environments designed with elements of nature have been shown to increase cognitive activity without activating unrelated social behavior patterns. Interaction with pets may further stimulate brain activity, particularly in areas associated with social engagement.
- The outcomes of brainstorming range from the emergence of new invention concepts to the formation of structured invention models, including the development of claims defining devices, systems, software, and associated methods.
- Such integrative analytical approaches enable the creation of comprehensive inventions that incorporate all technical parameters across hardware, system architecture, and software components.
- Thus, brainstorming facilitates the development of “smart technologies,” where all parameters and technical characteristics can be analyzed step by step, with full control over changes at each stage of the process.

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