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BACHELOR' THESIS on the topic

INTRODUCTION OF INNOVATIVE MANAGEMENT AT ENERGY INDUSTRY ENTERPRISES

speciality 073 "Management"

Student *Tymoshchenko Vladyslav*
(Name and surname of the students)

Applied for a Bachelor's degree.

Bachelor's thesis contains the results of their own research.
The use of ideas, results and texts of other authors have references to the relevant sources_____ (*name and surname of the student*)

Scientific supervisor___ T. V. Bondar _____ (Scientific degree, academis title, name and surname)

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ANNOTATION

Theoretical and methodical bases of introduction of innovative management at the enterprises of energy sector of Ukraine are considered in the work.

Based on the use of systematic analysis of the energy industry and systematization of factors influencing the intensity of the spread of innovative technologies in the energy sector identified the main problems of innovation and innovation management in domestic enterprises.

The directions of formation of an effective mechanism of innovation management at energy enterprises, which can intensify the process of introduction of innovative technologies in energy in Ukraine, are systematized.

The mechanism of innovation management at the enterprise of the energy sector on the example of NNEGC “Energoatom” is offered. Which involves the introduction of an automated information flow management system at the enterprise.

The effectiveness of the implementation of the mechanism of innovation management at the enterprise is substantiated, its economic and non-financial benefits are determined and the organizational bases of its implementation are revealed.

ABSTRACT

The structure and scope of the bachelor's thesis. The work consists of an introduction, three chapters, conclusions, a list of sources used, which contains 56 items. The total amount of bachelor's work is 78 pages, including 8 tables, 15 figures, 5 appendices, the list of used sources is 6 pages.

The aim of the study- to develop and substantiate the theoretical and applied principles of innovation management in the activities of energy companies in Ukraine. To achieve the main goal of the study it is necessary to solve the following tasks:

- consider the theoretical and methodological aspects of the implementation of innovation management in the energy sector and analyze the intensity of the introduction of innovative technologies in the energy sector in Ukraine and the world;
- to analyze the innovation activity of NNEGC Energroatom and identify problems of innovation implementation and problems of innovation management;
- to develop the mechanism of innovation management at the enterprise of NNEGC "Energroatom", to analyze the efficiency and quality of its implementation and to identify organizational principles for the implementation of innovation management.

Subject of study- theoretical and methodological principles of innovation management implementation.

Object of study- innovative management at energy industry enterprises.

Research methods. The methodological basis of the work is the dialectical method of scientific knowledge, a systematic approach, the fundamental provisions of economic theory and management theory. The paper used retrospective analysis, structural analysis, comparative analysis, factor and trend analysis of the application of innovations in the energy sector.

Approbation of results. Bachelor's qualification work performed within the GDR "Transfer of green innovations in the energy sector of Ukraine: a multiplicative stochastic model of the transition to a carbon-neutraleconomy" (№ 0122U000769)

Keywords: INNOVATIVE MANAGEMENT, MANAGEMENT SYSTEM, INNOVATIONS, INNOVATIVE TECHNOLOGIES, ENERGY SECTOR

CONTENT

INTRODUCTION

Relevance of the research topic. Today, technological and organizational development, based on the innovative component of activity, is becoming necessary for economic growth and increasing the profitability of enterprises. That is why at the present stage special importance is given to innovation management, which is a practical guide to managing innovation processes that are inherent in any modern enterprise. It should be noted that the energy sector is one of the most important components of business development and the Ukrainian economy as a whole. Today,

the basis of the basic business strategy is the use of innovative direction of development, due to the need to maintain competitive advantage and growing consumer demand, which gives innovation the status of one of the factors strengthening the competitive position of the enterprise.

The aim of the study- to develop and substantiate the theoretical and applied principles of innovation management in the activities of energy companies in Ukraine. To achieve the main goal of the study it is necessary to solve the following tasks:

- consider modern concepts of innovation management;
- to analyze the intensity of the introduction of innovative technologies in energy in Ukraine and the world;
- identify and systematize the factors influencing the intensity of the spread of innovative technologies in the energy sector;
- to conduct a study of the factor model of innovation activity of the energy company;
- to systematize the directions of formation of an effective mechanism of innovation management at energy enterprises;
- provide organizational and economic characteristics of the enterprise;
- identify problems of innovation implementation and problems of innovation management;
- to develop the mechanism of innovation management at the enterprise;
- to analyze the effectiveness and quality of the implementation of the mechanism of innovation management in the enterprise;
- identify the organizational basis for the implementation of the mechanism of innovation management in the enterprise.

Subject of study- theoretical and methodological principles of innovation management implementation.

Object of study- organizational features of the introduction of the mechanism of innovation management at the enterprises of the energy sector in Ukraine.

Research methods. The methodological basis of the work is the dialectical method of scientific knowledge, a systematic approach, the fundamental provisions of economic theory and management theory. The paper used retrospective analysis, structural analysis, comparative analysis, factor and trend analysis of the application of innovations in the energy sector.

*Scientific significance of the research*is to systematize the factors influencing the intensity of the spread of innovative technologies in the energy sector of Ukraine.

The practical significance of the study. The recommendations provided in the paper can be used by the management of the enterprise NNEGC “Energoatom” to form a mechanism of innovation management in order to increase the efficiency of its operation.

The structure and scope of the bachelor's thesis. The work consists of an introduction, three chapters, conclusions, a list of sources used, which contains 56 items. The total amount of bachelor's work is 73 pages, including 8 tables, 15 figures, 5 appendices, the list of used sources is 6 pages.

Approbation of results.

1 THEORETICAL PRINCIPLES AND THEORETICAL BASIS FOR THE STUDY OF INNOVATION MANAGEMENT IN THE ENERGY SECTOR

1.1. Modern concepts of innovation management

In the current conditions of the Ukrainian economy to increase the competitiveness of domestic enterprises, it is extremely important to intensify innovation, because without it it is impossible to make progressive structural changes in the country, achieve significant renewal of the real sector and ensure sustainable socio-economic development.

Many researches of well-known Ukrainian and foreign economists are devoted to the issues and problems of innovation management at the enterprise. At the same time, a large number of issues related to the improvement of the mechanism of organizational and economic development in order to intensify innovation processes remain unresolved and need to be addressed in theoretical, methodological and practical aspects.

Analysis of scientific sources on management at the enterprise highlights the existence of different approaches to defining the essence of innovation management. Some of them are presented in the appendix (Appendix A).

Many authors consider innovation management as a functional management system and distinguish it as a kind of functional management (S. Ilyinkova, PN Gerchikov), and the direct object of such management is the implementation of innovation processes in all sectors of the economy.

It should be noted that the main purpose of functional innovation management is to achieve effective management of development, implementation, production and transformation of innovation into a commercial product, which requires achieving synchronization of all functional subsystems of the enterprise, improving organization and implementation of continuous control over the course of innovation processes.

Innovation is of great importance in the modern economy, both for the individual company and the state as a whole. Innovation is a major factor in creating conditions of high competitive advantage. In this regard, the role of innovation management as a

mechanism of economic influence, which is aimed at creating, promoting and implementing innovations.

Throughout its history, innovation management has gradually developed. Considering innovation management, we can determine the change in its development in relation to the cycles of economic activity K. Zhuglyar - 10-year cycles (Table 1.1) [2].

Table 1.1 - Evolutions of innovation management concepts

Time interval	Concept name	Concept description
1900-1910	The concept of scientific management	Following the theory of F. Taylor - to increase production efficiency is possible through the use of new knowledge that can be borrowed from various scientific fields
1910-1920	The concept of focusing on innovative change	It is based on five changes related to innovations in relation to J. Schumpeter: 1) the use of new equipment and technology; 2) use of products with new qualities; 3) the use of new raw materials in production; 4) transformation into production organizations; 5) creation of new markets for products and services
1920-1930	The concept of planning the sequence of technological operations	Creation and application of the method of planning and organization of the sequence of operations according to the Gantt chart system
1930-1940	The concept of scientific organization of jobs by taking into account the psychological factor in the labor process	Using the results of research by F. Gilbert and L. Gilbert labor movements and achievements of industrial psychology. Scientific organization of workplaces
1940-1950	The concept of coordination of production processes	Application of the concept of coordinated assembly line
1950-1960	The concept of rationalization of management decisions	J. Atanasov described and built the first digital computer, which was the beginning of a multifaceted solution to major problems through automation of calculations
1960-1970	The concept of the technology push model G1	The model was presented as a linear sequence of cyclically repeating steps

1970-1980	The concept of the market pull model (market pull) G2	According to this model, commercially successful innovations arise as a result of accounting for consumer demand. Market demand, which puts the direction of scientific research, is actively considered
1980-1990	The concept of coupling innovative model G3	This model is already characterized by nonlinear processes of innovation
1990-2000	G4 integrated innovation concept concept	The solution of problems is accelerated by the coordinated work of several specialists in the field of research and development, technical production, finance and marketing. Finally, the idea should be analyzed by a special group
2000-2010	The concept of the innovative model of strategic networks G5	The concept of the innovative model of G5 strategic networks includes the interaction of company structures, suppliers, consumers and competitors. The result of interaction is the creation of innovation
2010-2020	The concept of the innovative model of information technology G6	Moving the innovative product from the material component to the intellectual component
2020 - the present	The concept of forecasting using modern technologies	Modeling and forecasting becomes a tool for rational decision making as a norm for all innovative companies (Fig. 1.1)

Source: compiled by the author based on [2, 5, 7]

Analyzing the evolution of the concepts of innovation management, we can conclude that in fact all the innovation processes in each individual organization are implemented taking into account the specifics of the enterprise. The presented models show only a change in the perception of innovation processes in accordance with existing trends.

From 2020 onwards, both modeling and forecasting the emergence of certain innovative products will become increasingly important. Organizations have to find a way to survive in an era of pandemic viruses, political sanctions and economic instability. Modeling and forecasting becomes a tool for making rational decisions (Fig. 1.1).

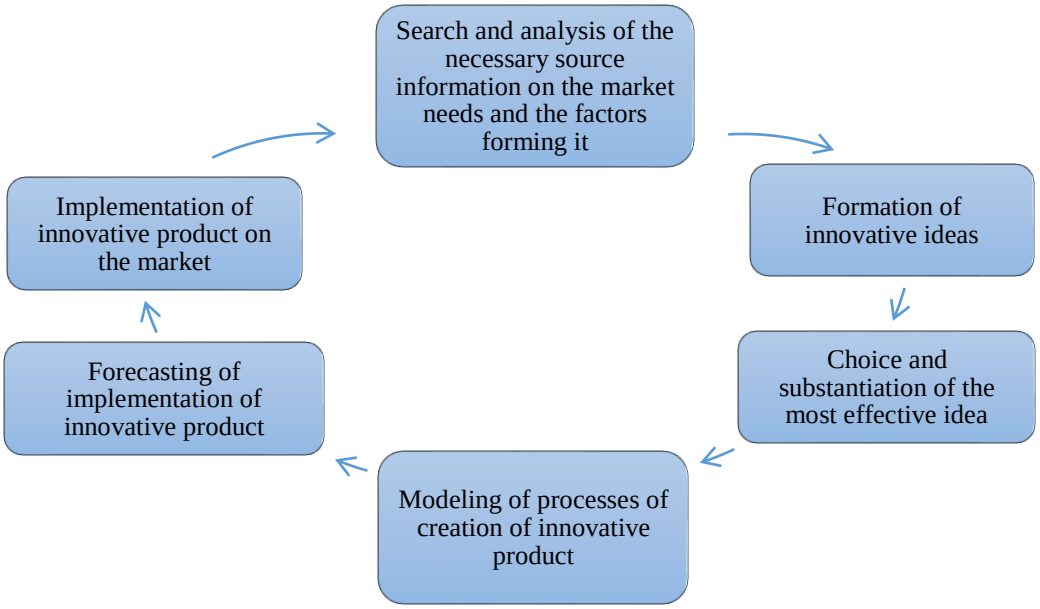

Figure 1.1 - The concept of forecasting using modern technologies *Source: compiled by the author based on [17]*

Modern concepts of innovation management can be divided into four groups:factorial approach, functional concept, system and situational approaches.

The factor approach considers science and technology as the most important factor in the development of the potential of the enterprise and the country as a whole. This approach is most often used in enterprises with traditional production systems involving a large number of material and technical means.

The basis of the functional concept is the consideration of innovation management as a set of management functions and decision-making process at the management level. This concept is based on the principle of rational division of labor in the process of innovation management, the use of specialization at the level of management in order to optimize the adoption of each management decision. This approach is characterized by careful regulation of all procedural aspects of enterprise innovation management, based on special provisions on the functioning and powers of

departments and services, the development of clear job descriptions, in order to delegate managerial powers and division of responsibilities.

The system approach in innovation management is characterized by the consideration of an innovative enterprise from the standpoint of recognizing its complex organizational system, interdependent elements of which are management processes focused on achieving certain development goals, taking into account endogenous (internal) and exogenous (external) factors. The concept of a systems approach is designed to provide a dynamic account of all factors influencing management decisions, as well as consideration of their interrelationships with both external and internal current trends in the innovation environment in the economy.

The application of the situational approach makes it possible to analyze a significant number of external and internal factors, which allows you to succeed with innovative solutions, to systematize probable behaviors. This approach is based on the synthesis of optimal management decisions for the current situation. A significant contribution of this concept of management in innovation management is the availability of recommendations that allow the application of specific methods in the process of making managerial decisions in different situations.

For the manager, the application of the situational concept opens the possibility of creative potential for the use of various methods and tools developed in the scientific environment and applied in practice, but this imposes a great responsibility on the manager to choose adequate management tools. The current situation requires the activity of managers in the field of innovation to have creative potential, professionalism and intuition, which determines the decision-making process like art.

Based on the fact that innovation affects all areas of human activity, including economic processes, innovation is the object of management. We present modern aspects of the concept of innovation management in Fig. 1.2.

Innovation management in general is a complex mechanism of the management system, which should provide for the implementation of the innovation process and innovation activities the most favorable conditions and provide opportunities for development in order to achieve effective results.

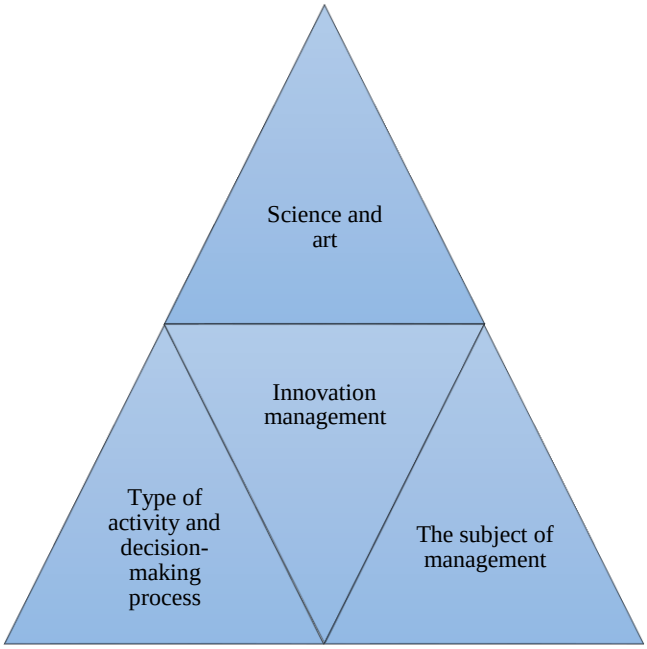

Figure 1.2 - Aspects of modern innovation management

Source: compiled by the author for [37, p. 16]

The criteria for the effectiveness of innovation processes in the enterprise include economic indicators, the use of which allows to determine the volume and growth rate of economic results in relation to the costs of the enterprise. It should be noted that the growth of profits and profitability of innovation is not the ultimate goal, but is an important condition and result of innovation management and activities, which are determined by the creation of new products, technologies, innovative services that affect living standards and well-being. .

Thus, all of the above allows us to determine the main objectives of innovation management:

1) ensuring long-term results of the functioning of innovation processes based on the use of effective organization of constituent elements and systems in the enterprise and in the economy as a whole;

2) creation of innovative products at the enterprise, which will be competitive in domestic and foreign markets, with the use of new technologies that provide the most efficient and optimal way of development.

Thus, the achievement of further economic development of Ukraine's economy, as well as the prospect of taking its rightful place in the community of European countries and in the world in general, depend primarily on the mastery of modern managers innovative model of economic development.

1.2. Analysis of the intensity of introduction of innovative technologies in energy in Ukraine and the world

The energy sector is one of the most important components of business development and the economy as a whole, both in Ukraine and in the world. In order to identify the leading countries that implement innovative technologies in the energy sector, it is necessary to conduct an analysis of country ratings, which is determined by the Global Innovation Energy Index (so-called Global innovation energy index), conducted by ITIF [51].

The definition of the global energy innovation index includes three composite indices, each of which shows the dimension of one of the functions of the innovation system, in particular: generation of options in the energy sector, increasing innovation (distribution) and use in industry, social legitimacy. The definition of these three indices, in turn, is based on 14 components, with varying importance. All components of indicators (Fig. 1.3) by their functional components, in general, determine the main

list of current trends in the general development of innovation in the energy sector, because they determine, in particular, a list of specific areas for investment in the industry.

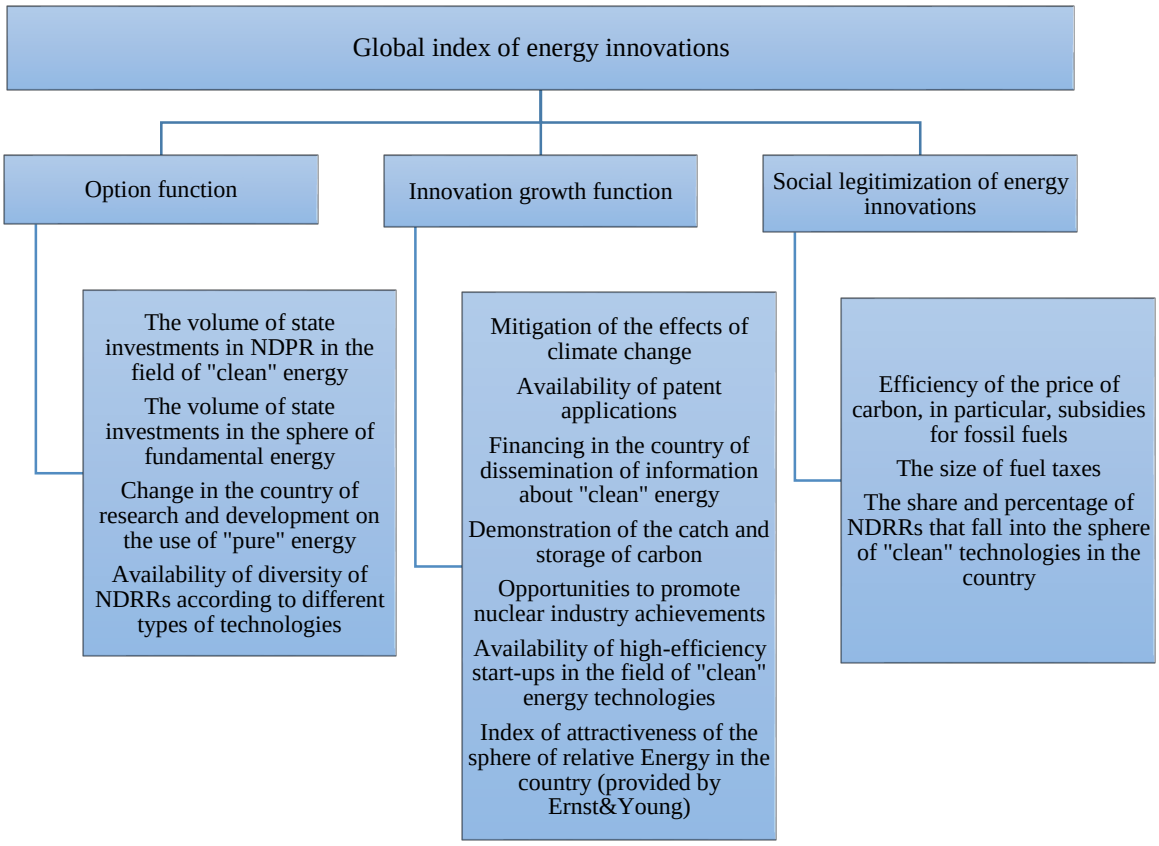

Figure 1.3 - System indicators that determine the global index of innovation in the energy sector

Source: compiled by the author based on [21]

The ITIF Global Energy Innovation Index is calculated for countries that have made a variety of significant contributions to energy innovation. Norway, Japan, Finland, the United States and France are among the top five countries in the overall ranking of energy innovation.

One of the main indicators of the efficiency of the country's economy is the growth of its GDP. In turn, the indicators of reducing the energy intensity of GDP are

one of the main indicators of the efficiency of the energy sector in the national economy, which justifies the need to introduce innovative technologies in the energy sector.

In fig. 1.4 shows the position of countries in relation to the overall assessment of their economies in the ranking of the world index of energy innovation and GDP per capita.

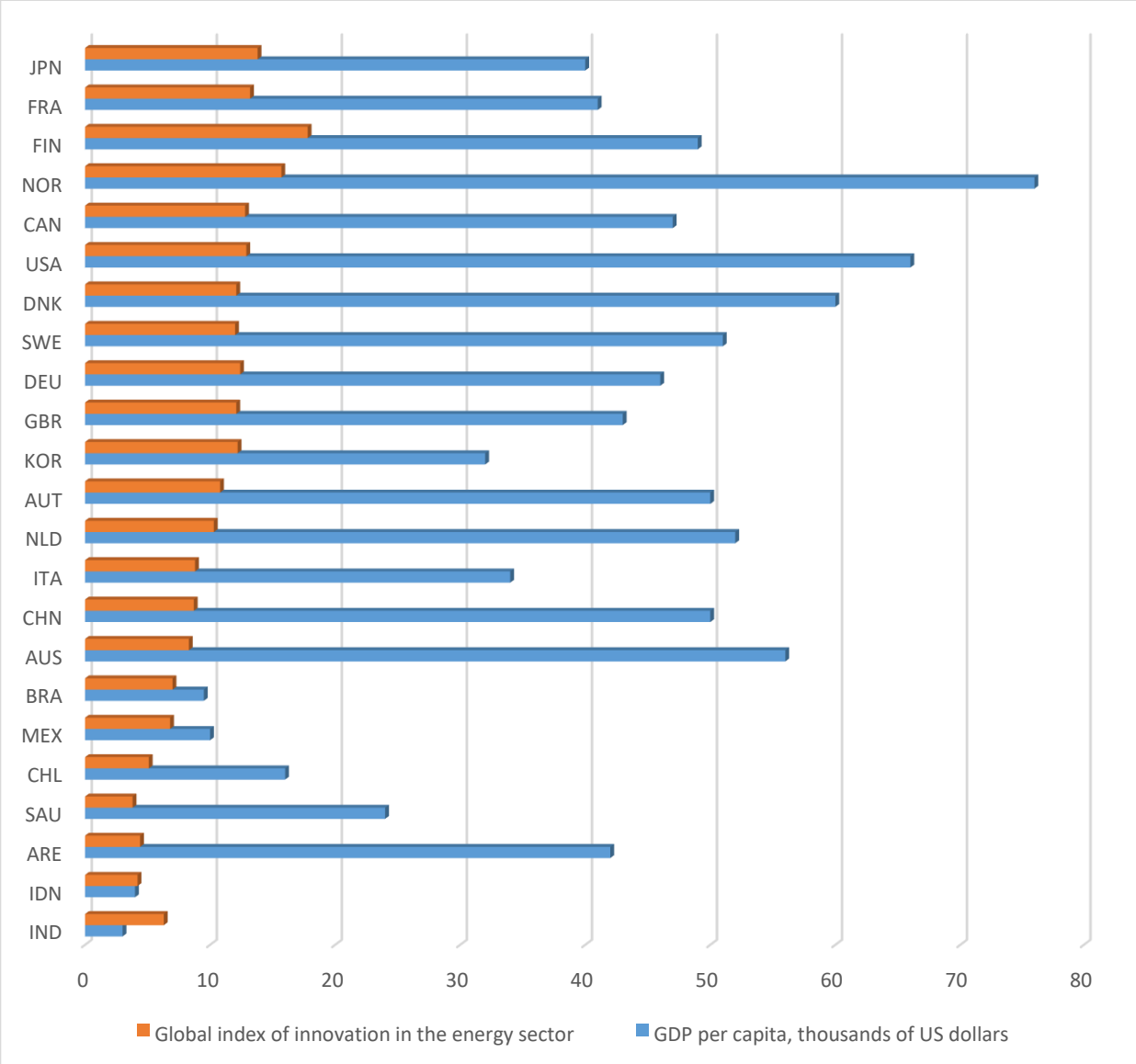

Figure 1.4 - Visual presentation of the ratio of the global index of innovation in the energy sector and GDP per capita as of 2021

Source: developed by the author on the basis of data [17; 23]

The data shown in the figure shows that the leading place among the countries in terms of innovation in the energy sector is Norway, the overall estimate of the index is 15.5, and the value of GDP per capita is 75,419.63 dollars. USA. The second place in the overall assessment of the index of innovation belongs to Finland, the value of the index is 14.8, and GDP per capita in 2021 was 48,782.8 dollars. USA. In third place - Japan, whose global index of innovation in the energy sector is estimated at 13.7 and the lowest GDP is 40,246.9 US dollars per capita.

Thus, based on country indicators, it can be concluded that there is no directly proportional relationship between GDP per capita and the index of global innovation in the energy sector. Such dependence can be observed only in some countries, in particular, in Norway, the USA, Denmark, the Netherlands, Austria, China. At the same time, it is obvious that high-tech countries are characterized by a high level of energy innovation index, as these countries invest in the development and dissemination of energy-efficient technologies in the country. This trend is typical for Finland, France, Japan, Germany, Canada, Great Britain, the GDP per capita of which is 40-50 thousand US dollars.

In Finland, for example, GDP per capita is 33% lower than in the United States, although the level of energy innovation in Finland is 10% higher than in the United States. This is evidence that technologically advanced countries are investing heavily in the energy sector, regardless of GDP per capita, to support the development of projects to achieve energy efficiency and clean energy production, to reduce energy consumption and reduce pollutant emissions.

At the same time, Saudi Arabia, Chile, Mexico, Indonesia, India, Brazil, with relatively low GDP per capita and raw material orientation of the economy, are characterized by the introduction of much less innovation in the energy sector. For example, for seven countries - China, Saudi Arabia, the UAE, Indonesia, India, Mexico and South Korea - subsidies for fossil fuel consumption amounted to 171 billion US

dollars as of 2021, and the cost of this was much higher than the total expenditures in the analyzed countries and the European Union on R&D investment in the field of "clean" energy production (in 2021 they amounted to 22.7 billion US dollars), which is a negative factor both to solve environmental problems and to ensure development of innovative energy.

It is important to consider the main measures taken by countries with a high global index of energy innovation.

For example, the Norwegian government has developed a strategy for carbon capture and storage (CCS), which aims to identify effective measures and technologies to reduce the country's cost of acquiring CCS [3]. The results of the report and the feasibility study of the project presented in 2016 proved the effectiveness of the fullscale CCS network in the country until 2022, and the costs will be relatively small. Much attention in the strategy is paid to the continued support of CLIMIT, the development of research centers in Norway in the field of climate energy production (so-called FME) and international research projects. The Norwegian government recognizes that investing in R&D in the energy sector is one of the country's top priorities.

For example, CLIMIT is a national program in the field of research, demonstration of developments and innovative CCS technologies, designed not only for power plants, but also for industrial enterprises. The program covers all processes - from the beginning of basic scientific and practical research to the implementation of innovative projects in practice and demonstration of the effectiveness of CCStechnologies.

For Finland, the share of renewable energy sources is about 40% of total final energy consumption. The Government has set a target set in the National Energy and Climate Strategy adopted by 2030 to increase the use of renewable energy resources, and has identified the need to reach more than 50% by 2020 [4].

For Japan, which has traditionally been highly dependent on fossil fuels, energy policy is characterized by future changes in order to provide resources in line with the global structure of energy supply and demand, which is becoming increasingly volatile. The Government of Japan has defined action plans and drafted optimal energy portfolio projects to ensure the stability and efficiency of resources through diversification of basic energy resources to reduce risks in the procurement of each resource and meet the needs of the economy through diversification of supply sources. improve relations with energy-supplying countries [5].

Ukraine has the potential to increase the share of innovation in the energy sector. Thus, in Fig. 1.5 presents the presence of Ukraine's significant technically achievable potential for the production of energy from various types of renewable energy sources, as well as the possibility of using alternative fuels, the amount of which is more than 98.0 million tons. item per year.

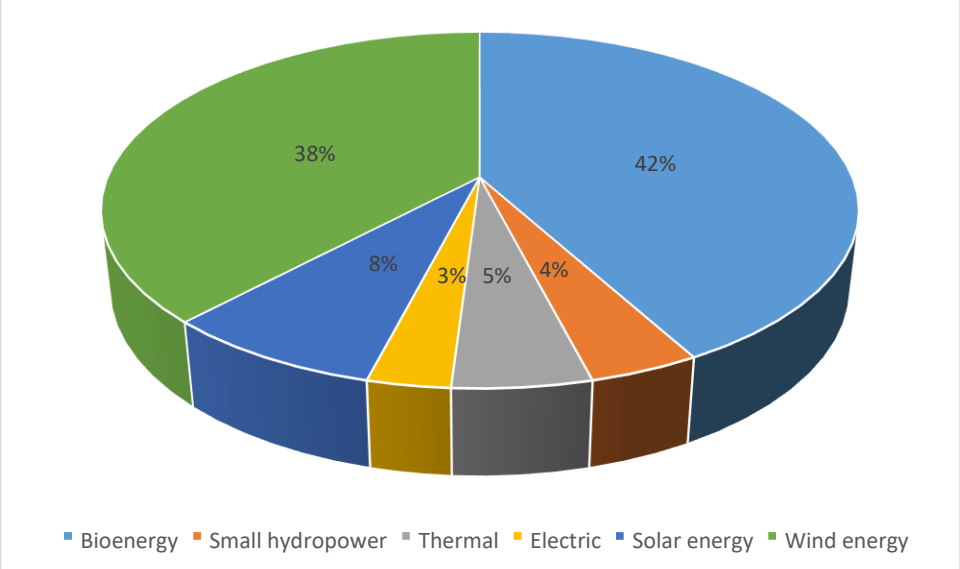

Figure 1.5 - Distribution of technically achievable potential of energy production in Ukraine with the use of renewable energy sources and various alternative fuels

Source: compiled by the author on the basis of data [27].

Thus, from the presented data we can state that the intensification of development and implementation of innovative projects in the energy sector will have a positive impact not only on improving the competitiveness of Ukrainian enterprises, but also improve the quality of life and well-being in the country. to build a socially oriented system of economy in Ukraine.

The main goal of the EU in setting the size of the share of renewable energy sources was to achieve 32% of the final energy consumption to be achieved by 2030. This goal has not been shared among the Member States of the European Union, but it has been determined that the share of renewable energy in the Member States should be at least at the same level as in 2020. This determines the importance of analyzing the successful experience of Ukraine in other countries in the field of energy innovation and the need for innovation in the energy sector, based on the effective use of existing potential of all alternative energy sources and external opportunities of the domestic economy.

1.3. Identification and systematization of factors influencing the intensity of the spread of innovative technologies in the energy sector

Energy innovation is a set of processes that lead to new or improved existing technologies that increase the diversity of energy resources used, increase the reliability of energy systems, and reduce economic, environmental and political costs associated with the production and distribution of electricity [18, p. 36]. Innovation in energy technologies is a process that affects the energy market and other factors related to the spread of new energy technologies. The process begins with the invention of technology and ends with its dissemination [18, p. 36]. The dissemination of energy innovation is one of the demonstration projects that play a vital role in the commercialization of

energy innovation. The level of novelty of technologies in the power industry plays a key role in their spread.

Innovation in the power sector is closely linked to changing technologies, but it should not be said that this is the only type of innovation possible in the industry. The electric power industry and electric power companies change with the introduction of organizational innovations due to changes in the market environment [28, p. 11] .

The study of the theoretical foundations of energy innovation requires additional classification, as technological innovation in energy has a dual nature. On the one hand, energy is a factor of production that has a certain value as a factor of production. On the other hand, energy transformation is part of the innovation process, the creation of disruptive innovations.

Speaking of electricity, we must take into account the peculiarity of electricity as a commodity: at any time must be produced an amount of electricity equal to its consumption. Although technology plays a significant role in the competitiveness and efficiency of an organization, it is not the only factor in success. The relationship between innovation and technology is obvious.

Depending on its capabilities and needs, the organization can use technological, operational, managerial and transactional innovations (Fig. 1.6).

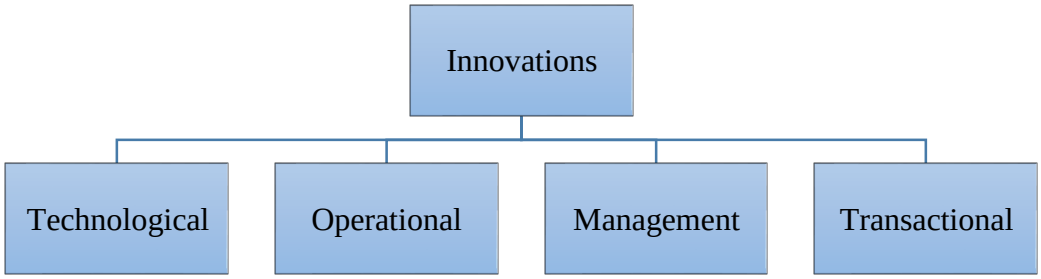

Figure 1.6 - Classification of innovations in the power industry *Source: developed by the author*

The innovation system of the industry can be described as a developed network intelligent structure that connects research and design organizations belonging to different sectors of the economy, it actively interacts with large corporations, government and university laboratories, small research firms, independent non-profit institutions. Characteristics of the network structure are the geographical, institutional and thematic distribution of its links, the diversity of connections within the system and its ability to quickly and flexibly change the configuration of these connections.

The main factors in the formation of such a structure was the presence in the field of powerful large global corporations competing with each other in the field of innovation, as well as the diversity of organizational forms of financing R & D, which has developed in our time.

The global presence of energy industry players opens up access to the world's best intellectual resources. Financial power allows corporations to actively use institutionally diverse forms of R&D (own research, academia, small business, private research institutes, public laboratories) to support a wide range of R&D topics (from alternative energy research to computing). modeling).

The need to compete aggressively in the field of innovation forces corporations to fight to accelerate the passage of innovation from the research stage to commercialization, increasing their competence in knowledge management and relying on it in the process of organizing the innovation process. The variety of organizational forms of R&D financing (financing of own R&D as cost centers, organization of own R&D in the form of profit centers, joint financing, strategic investment, venture capital, etc.) creates an opportunity for flexible and efficient configuration of R&D communications. as well as their efficiency and acceleration of commercialization processes.

The combination of the factors listed above creates the conditions for removing institutional, geographical, organizational, financial and thematic barriers to innovation

from the stage of exploratory research to commercialization. The global nature of the industry innovation system determines the effectiveness of the process of comparing and identifying best practices in research and development around the world. Its network characteristics allow corporations to quickly reach the most promising and interesting areas of R&D and integrate their results into their innovative growth. Investing in innovation with the connection of various investment and venture funds gives corporations the opportunity to go in search of innovations far beyond the competence of their own research units, while reducing potential risks.

The level of innovative development of enterprises in the energy sector can be explained by the presence of factors that affect the intensity of the spread of innovative technologies in the energy sector (Table 1.2).

Table 1.2 - Factors influencing the intensity of the spread of innovative technologies in the energy sector

Factor	Effect of influence
1. Development of infrastructure in the industry	Insufficient development leads to the rupture of links between research and development and the practical activities of enterprises.
2. Development of regulatory support (especially for the definition of intellectual property rights)	It has an impact on the innovation climate, which, on the one hand, consists of public funding and programs to support innovation projects, on the other - creating the necessary conditions for effective work of scientists and researchers, administrative and economic incentives.
3. Condition of material and technical base	Provides opportunities to use the latest technologies and mechanisms. Moral and physical deterioration of equipment and facilities of research institutes, landfills and laboratories does not allow to carry out or inhibits a number of experiments and tests in innovative projects.

4. Rational distribution of R&D costs	Irrational distribution slows down the development of innovation. In Ukraine, about 2/3 of the costs are for the purchase of equipment to replace the morally and physically obsolete, and not for research and development in promising areas. To create favorable conditions for
	innovation in the industry first of all you need to eliminate the problem of moral and physical deterioration
5. Structure of research works	Abroad, priority is given to the creation of energy and nature conservation technologies, the search for cheap energy sources, improving energy efficiency.
6. System of information support of innovative activity of enterprises	The absence or poorly developed system of information support of innovative activity of the enterprises of the complex complicates the already problematic establishment of connections between the participants of the innovation process, caused by the underdeveloped innovation infrastructure of the industry.
7. Focus on the results of many companies in the energy sector in the short term	Restrains investment in innovation, the proceeds of which are expected in the long run. Increases the negative impact of this fact and the procedure for accounting for costs of innovation and research
8. The level of demand for innovation	Low demand for the results of innovation - on the one hand it is an obstacle - a manifestation of lack of funding, on the other - the underdevelopment of innovation infrastructure.
9. Balance of marketing research and R&D	Marketing research does not always precede R&D. This leads to the creation of unclaimed innovative products and services.

10. The human factor	It is manifested in two aspects - staffing of innovation and the attitude of employees of energy sector enterprises to innovation. The specifics of the main and, as a consequence, innovation activities in the industries of the complex does not allow to attract specialists from other industries, which exacerbates the problem of lack of qualified personnel. To solve it, the programs of innovative development of enterprises in the energy sector provide for staff training in the field of innovation. Large companies carry out targeted training in universities, which is reflected in the reports on activities in the field of sustainable development.
11. Sufficient funding for the industry	Underdeveloped programs of state support for innovation projects, accounting policies, lack of venture funds, investment unattractiveness of the energy sector in general and innovation
	activities in particular limit the already insufficient funding of innovation projects in enterprises, as well as negatively affect the market of innovative products and services. its functioning.

Source: systematized by the author

Lack of experience in venture capital, technological complexity, imperfect legislation lead to a low level of development of innovative outsourcing and transfer of innovative ideas in the energy sector. Conversely, a high level of involvement of innovative ideas creates conditions for the development and implementation of innovative technologies.

The use of the potential for the positive impact of these factors should be the basis for transformations in the management of energy companies in Ukraine. The need for transformation is due to the presence of problems, eliminating which the state and society will receive a stable basis for the development of new technological systems.

2 METHODOLOGICAL PRINCIPLES OF FORMATION AND IMPLEMENTATION OF INNOVATIVE MANAGEMENT AT THE ENERGY SECTOR ENTERPRISE

2.1. Research of factor factor of innovative activity of energy enterprise

The innovative activity of the enterprise must be evaluated precisely because of its receptivity to the effective commercial use of innovations and the possibility of their timely introduction into the sphere of practical use. The results of changes in the innovative activity of the enterprise can be associated with increasing factors of competitiveness of the enterprise.

Barna S.S. identifies the following groups of factors:

1) quality component - technical and technological parameters of products, ergonomic, environmental parameters, as well as patent purity of goods;

2) marketing component - the characteristics of the firm in terms of the effectiveness of integrated marketing activities in the market;

3) the commercial component includes the experience of commercial activity of the enterprise, in particular the use of flexible pricing policy and the organization of after-sales service, the quality of business operations;

4) Goodville - the popularity of the company and its corporate brand, the degree of consumer loyalty to the company's products, the size and nature of intellectual property [1, p. 168].

Innovative activity of the enterprise is impossible without a significant amount of effort to ensure it. There are a number of processes related to ensuring innovation activity of the required level; including: technical and technological component, which at the level of the business entity is designed to provide technical and technological capabilities for the practical application of various innovations in favor of innovation; consulting component, designed to provide the organization with consulting services in the field of technology transfer and entrepreneurship; personnel component aimed at training, retraining and advanced training of personnel involved in the innovation process; information component, the decisive task of comprehensive information support of innovative business; sales component that ensures the commercialization of innovations,

There are several main approaches to the analysis and evaluation of innovation activity of the enterprise, which can be adapted to the enterprises of the energy sector: formal, resource, effective.

The formal approach determines the affiliation of the organization to the class of innovation-active, based on the number of implemented innovation projects and their scale, as well as on the basis of analysis of the species structure of innovation. The main task of analytics is to identify types of innovation, in connection with which this approach is a convenient tool for rapid assessment of innovation activity of the organization. When using a formal approach, you can calculate such quantitative indicators as: the number of types of innovation activities carried out by the

organization; the number of innovation projects that are being prepared within each type of activity and in total (the criterion characterizes the process of using innovation potential); number of innovative projects,

Resource (resource-cost) approach aims to analyze the amount of costs and the degree of use of material, informational, technological and other resources in the innovation process. This approach characterizes the resource component of the innovation potential of the organization, and the main task of analytics is to determine the types of resources and costs that are taken into account in the assessment. When assessing innovation activity, qualitative and quantitative indicators are calculated that reflect the use (consumption) of different resources at all stages of the innovation process in absolute and relative terms. The main indicators of the cost approach include the ratio of intellectual property (as the ratio of intellectual property in monetary terms to non-current assets), the ratio (share) of staff,

This approach also applies the criteria of resource and cost of innovation, such as: the share of the value of fixed assets operated in the process of innovation in the average value of fixed assets; the share of innovation costs in product revenue or in the value added created by the organization; innovation costs for one employee in the organization. The structure of costs for innovation allows to characterize the degree of participation of the enterprise in the development and implementation of innovations, so indicators of this type are actively used in many methods, including methods Polyakova SO, Doroshenko YA. and others.

A serious shortcoming of the previous two approaches is that the economic benefits of innovation remain undiscovered for the company. This shortcoming is overcome within the framework of an effective approach. The effective approach focuses on the analysis of the effectiveness and efficiency of innovation. The main task of the analyst is to identify and evaluate the effects of innovation in order to determine the ability of the organization to create and implement successful innovations. The main

indicators of the effective approach are the effects of cost savings and the effects of contribution to the market value of the business. The first include such indicators as: savings in production costs and sales for the period as a result of technical and technological innovations; saving transaction costs as a result of organizational and managerial innovations; saving tax payments on income tax; saving payments related to occupational injuries, occupational diseases, environmental fines as a result of social innovation.

The effects of the contribution to the market value of the business include: the contribution of tangible assets created as a result of product and technical and technological innovations; contribution of intangible assets; the contribution of unidentified elements of intellectual capital, which reflects the result of organizational, managerial and social innovations. As part of the results approach, North American managers evaluate the results of innovation using criteria such as impact on company revenue growth, customer satisfaction, revenue growth from new products, increased productivity, profit dynamics [4].

After analyzing the advantages and disadvantages of classical approaches, K.V. Starling offers an approach that defines the innovative activity of the organization as its competitive force. Here, too, the organization is perceived as a consumer as well as a provider of innovation, and analysts, first of all, evaluate innovation receptivity, resource availability, quality of organization and communication, innovation competence. The basis of the approach is to determine the impact of the organization and the competitive environment on innovation activity based on the calculation of qualitative indicators of innovation activity. Unlike previous approaches, the organization is proposed to be considered as an open system, which is a specific feature of the approach.

The nature of innovation also finds its imprint in the indicators of innovation activity proposed by OV Navoevoy. According to the author, innovation activity can

be characterized by such features as: the degree of mobilization of innovation potential; volume and share of investments in innovative development of the organization; structure of the received innovations (fundamentally new or improving, corresponding to the world, domestic level or concern only the separate organization); the degree of conformity of innovations to the needs of society; the contribution of innovation in ensuring competitive advantage [6, p. 18].

Proposed by VM Gunin's approach to assessing the innovative activity of the enterprise is to study its potential strength and aggressiveness of its strategy to attract real investment, mobilize capacity and resources, develop competitive maneuvers. He connects the concept of activity with the concept of aggressiveness of the company, which is understood as the scale, the level of use of potential force, as a willingness to act, to be active. In this definition, innovation is the ability to get closer to the goal. Indicators of innovation activity are the criteria of innovation "TAT" (turn-aroundtime), indicators of product renewal, updating technology and technological equipment, updating staff knowledge, updating organizational structures; they characterize the relationship of the result to the duration of the process.

As an integral quantitative indicator of innovation activity, a balanced summary of such private indicators as: quality of innovation strategy, level of mobilization of innovation potential, level of attracted investments, methods, culture, guidelines used in changes, compliance with the nature of the firm's competitive strategy) carrying out of strategic innovative changes, validity of the realized level of innovative technologies. It should be noted that the transition to the enterprise level requires revision and adaptation of certain activity factors used at the state level.

The dynamic nature of innovation activity is also reflected in the method of diagnosing innovation activity of the economic system, taking into account the study of time series of a number of indicators of innovation activity. This approach allows us to assess innovation activity as the intensity of the organization's actions across the

spectrum of innovation change, as a temporary development of innovation and build a dynamic model of activity.

Thus, certain factors can be systematized to build a factor model of innovation activity of the energy company.

Systematization of influencing factors is presented in Fig. 2.1.

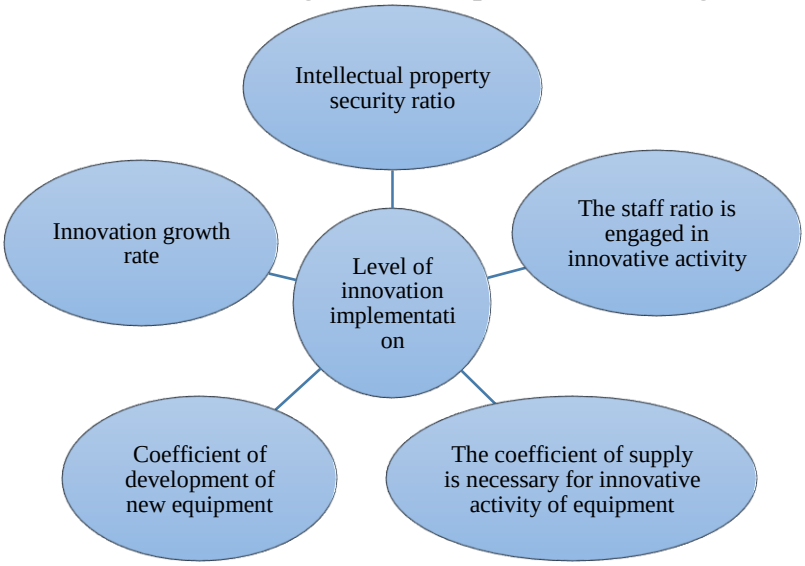

Figure 2.1 - Factors influencing the implementation of innovations by the energy industry

Source: systematized by the author on the basis of [50]

To determine the degree of use of innovation in the enterprise, Transparency International analysts proposed weight fractions of coefficients for enterprises that position themselves as innovation leaders and innovation followers and defined regulatory values (Table 2.1).

Table 2.1 - Normative values of coefficients of innovation activity of energy sector enterprises

Indicators	Calculation formula	Regulatory values		Weight
		Innovation follower strategy	Innovation leader strategy	

Coefficient of intellectual property (Kip)	Kip = Value of intellectual property rights / Value of other non-current assets	<0.1	> 0.1	0.1
Innovation ratio (Kper)	Kper = Employees engaged in innovation / Average number of employees	<0.2	> 0.2	0.2
Coefficient of provision of equipment necessary for innovation (Kep)	Kep = Cost of equipment related to innovation / Cost of production equipment	<0.25	> 0.25	0.25
Coefficient of development of new equipment (Kne)	Kne = Cost of fixed assets / Average annual cost of health	<0.35	> 0.35	0.35
Innovation Growth Ratio (Kigr)	Kigr = Volume of costs for innovation / Volume of total costs	<0.55	> 0.55	0.55

Source: systematized by the author on the basis of [50]

Thus, the factor model of innovation activity of the energy enterprise can be presented as follows:

$$Linnov = 0{,}1\ (Kip - 0{,}1) + 0{,}2\ (Kper - 0{,}2) + 0{,}25\ (Kep - 0{,}25) + 0{,}35\ (Kne - 0{,}35) + 0.55\ (Kigr - 0.55)$$

Thus, this model provides an opportunity to assess the level of influence of factors on innovation in order to promote innovation in the enterprise, because without it it is impossible to make progressive structural changes in the country, achieve significant renewal of the real sector and ensure sustainable socio-economic development.

2.2. Systematization of directions of formation of the effective mechanism of innovative management at the energy enterprises

Priority areas for the formation of an effective mechanism of innovation management in the energy enterprises of Ukraine in accordance with their programs of innovative development and technological platforms, are presented in Fig. 2.2.

Innovation can be the result of a complex process and depend on a set of opportunities that meet its strategic requirements. This set of opportunities forms an innovative ability, which is manifested in the fact that the firm is able to quickly implement new products and new processes that are crucial to compete with other firms.

The issue of managing these innovations and identifying the effects associated with a particular type of innovation is becoming relevant. In the electricity sector, technological innovations are making changes in the way electricity is produced as a commodity. Innovations are technologies that allow generating electricity from solar energy, wind and more. Technological innovations increase the potential of distributed generation, for example, the development of distributed cogeneration in Denmark has reduced electricity consumption by 11% and reduced CO2 emissions by 4.5 million tons per year [18, p. 14].

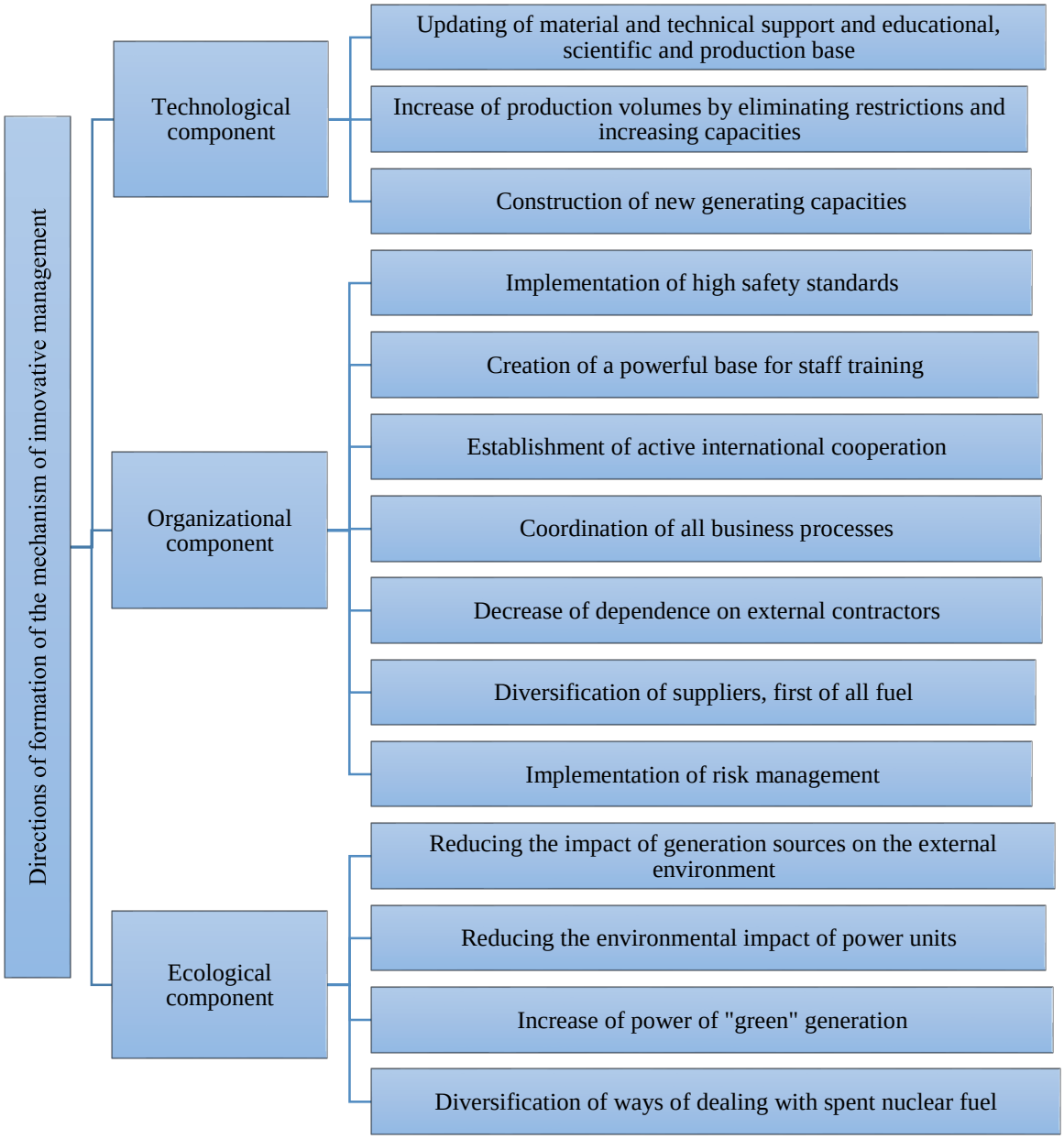

Figure 2.2 - Priority areas for the formation of an effective mechanism of innovation management in the energy enterprises of Ukraine

Source: systematized by the author

Process (technological) innovations improve the process of electricity supply. For example, "smart" meters can increase the transparency of calculations for electricity consumption, obtain information on the level of electricity consumption online, detect unaccounted for electricity consumption.

Management innovations are relevant for the electricity industry in connection with the formation of a new type of electricity consumers who are able to generate electricity themselves and sell surplus electricity to the market. Management innovations include demand management systems that encourage consumers to change their electricity consumption schedule relative to their normal consumption profile in response to incentive payments in order to reduce peak hours. Energy saving systems allow you to manage electricity consumption through the use of energy saving technologies in residential and office and industrial buildings.

Transaction innovations are designed to minimize the operating costs of relationships with suppliers and consumers. Thus, "smart" networks, using the opportunities of the above innovations, are the basis of a new model of the electricity market, which provides open interaction between different actors: consumers, manufacturers, network companies and more.

In the framework of the approaching change in technological systems and, accordingly, the key energy source, the development of such areas of innovative improvement as renewable energy sources and distributed energy becomes especially important. Due to geographical and climatic conditions, distributed energy is more important for Ukraine: many districts cannot be connected to a single energy system and therefore need autonomous energy sources, which are usually CHPs running on different types of hydrocarbons and similar technologies. The sources of generation in this case are hydropower plants and nuclear power plants, which are slow to implement innovations due to technological complexity, the need for significant investment and insufficient infrastructure development.

2.3. Organizational and economic characteristics of the enterprise NNEGC ‘Energoatom"

NNEGC “Energoatom” is one of the largest and leading energy companies in Ukraine, registered by the Ministry of Energy and Environmental Protection on December 20, 1996 by the Cabinet of Ministers of Ukraine on the basis of the property of existing nuclear power plants in Ukraine. Organizational and legal form NNEGC “Energoatom” is a state-owned enterprise that is part of the Ministry of Energy and Environmental Protection in Ukraine. The amount of the contribution to the statutory fund of the enterprise is 164875663910 UAH. [16].

The peculiarity of NNEGC “Energoatom” is its dual status, as it simultaneously performs the functions of the operator of nuclear installations at NPPs and is a centralized storage facility for spent nuclear fuel (CSNF), while carrying out activities related to the use of nuclear energy and as a sub. project of economic activity, the activity of which is to carry out activities in the field of heat and electricity production, as well as the implementation of other related activities and the provision of services. The main mission of the company, defined in the charter, is the implementation of safe production of electricity for the needs of the state and the population [16,35,36].

The company has sixteen separate divisions, one of which is located in Brussels. All divisions were established at different times in order to provide different goals for the company's activities.

The main activity of the enterprise is the production of electricity, but in order to ensure efficient operation, the company also transmits electricity; supplies steam, hot water and air conditioning; the company builds residential and non-residential premises, provides radio and television broadcasting services [36].

For a more detailed description of the company, it is necessary to consider the structure of NPPs, the main activity of which is the generation of electricity (Appendix B).

The construction of the organizational structure of the enterprise is due to its branching and separation by territorial location. For the effective management of the enterprise, management verticals have been established for the management of the main production, finance, human resources, procurement, departmental supervision and control systems due to the need to provide physical protection of the company's nuclear facilities. All relevant requirements for the activities of an enterprise that is an operator of nuclear facilities are regulated by regulations and the SNRCU in Ukraine.

To provide economic characteristics of the enterprise it is necessary to analyze the results of its production activities, for which we first consider the dynamics of electricity generated by the enterprise for the period 2019-2021. The information is presented in the form of table 2.2.

Table 2.2 Dynamics of energy production at NNEGC "Energoatom" for the period 2019-2021 (million kWh)

Source of electricity generation	2019	2020	2021	Deviation 2020 to 2019		Deviation 2021 to 2020	
				Absolute, million kW / h	Relative,%	Absolute, million kW / h	Relative,%
ZNPP	34500.8	35925	38437	1423,28	4.2	2513	7.2
KhNPP	13382.3	12594	7568	-787,423	-5.8	-5025	-39.8
RNPP	19792.8	17550.6	19118	-2242.44	-11.1	1568.7	8.8
YUNPP	17900.3	18328.6	17878.5	428,633	2.3	-450.2	-2.7
OlHES	28,138	33.7	31.2	5,462	19.3	-2.6	-7.5
THAES	180,812	194.6	194.7	13,888	7.6	-0.1	-0.1
Total	80502.3	84626.4	83002.8	4124.3	5.2	-1623.8	-1.8

Source: formed by the author from [3; 35].

Thus, the results of the analysis allow us to identify an increase in the company's production for the period 2019-2020, during this period in all divisions of the company, except KhNPP and RNPP, there was growth. During 2021, the company saw a decline in total electricity production, and the growth is observed only at ZNPP and RNPP. At the same time, despite the decrease in electricity production at the enterprise, the share of electricity production by the enterprise in the energy system of Ukraine showed an increase of 1%.

For a more detailed analysis it is necessary to consider a more structured structure of electricity generation by 2021 (Fig. 2.3)

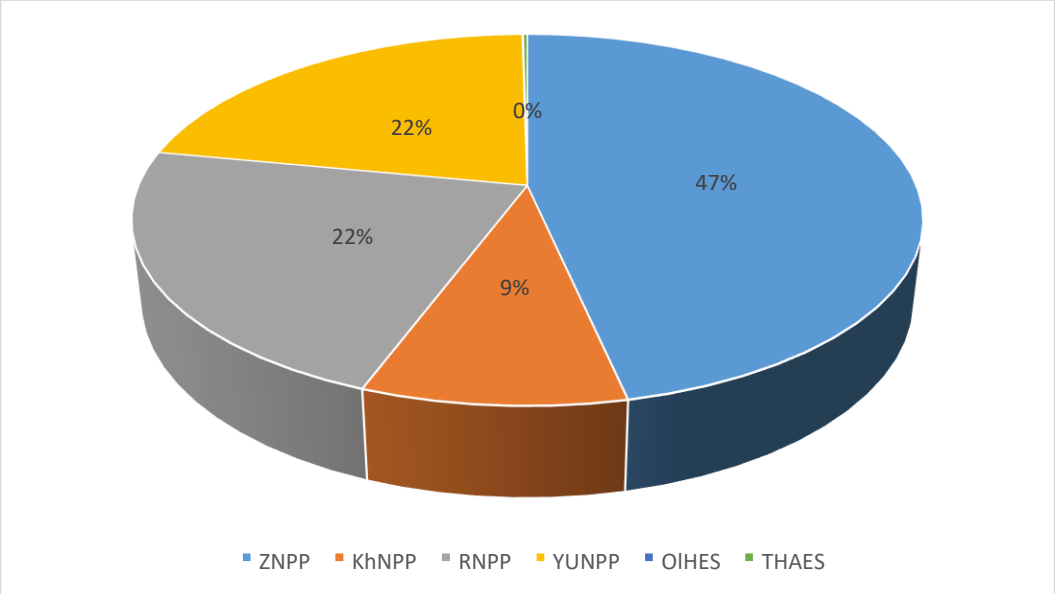

Figure 2.3 Structure of electricity production by NNEGC “Energoatom” in terms of generation sources for 2021,%

Source: built by the author on the basis of data [3; 41]

Thus, there is the fact that the leadership among all nuclear power plants belongs to the Zaporozhye NPP, while the share of energy generation of HPPs and PSPs is less than 1%.

In order to analyze the activities of the enterprise it is necessary to consider the dynamics of financial indicators (Table 2.3).

Table 2.3 Dynamics of NNEGC "Energoatom" financial indicators for the period 2019-2021.

Indicators	2019	2020	2021	Deviation 2021/2019	
				Absolutel, UAH million	Relative,%
The amount of net sales revenue	38487.8	44055.2	48846.5	10358.7	26.91
Cost of goods sold	31847.8	34706.8	37277.4	5429.6	17.05
The amount of operating income of the enterprise	4018.1	2545.7	4849.5	831.4	20.69
The amount of financial income of the enterprise	16.1	31.8	38.2	22.1	139.38
The amount of other income of the enterprise	630.1	63.9	91.6	-538.5	-85.48
The amount of net profit	3822.2	4631.9	3773.6	-48.6	-1.28
The amount of operating costs of the enterprise	2468.2	1837.2	5165.5	2697.3	109.28
The amount of financial costs	4136.4	4374.8	4754.2	617.8	14.93
The amount of other costs of the enterprise	14.8	113.3	1752.3	1737.5	11821.09
EBITDA indicator	17557.7	18219.5	15222.8	-2334.9	-13.3

Source: calculated by the author according to [44]

Thus, in 2021 we can see an increase in gross margin, which was an increase from 2.5% to 23.7%. The analysis shows the presence for the studied period of a significant increase in the cost of the enterprise, the most important is the growth of other costs of the enterprise, which during the analysis period amounted to 11821.09%.

Negative trends also include a decrease in EBITDA of 13.3% over three years, which characterizes the company's income from its core business, calculated before the deduction of interest, taxes and depreciation. It can also be seen that the company's other income decreased. For clarity, we reflect the dynamics of the main financial indicators in Fig. 2.4

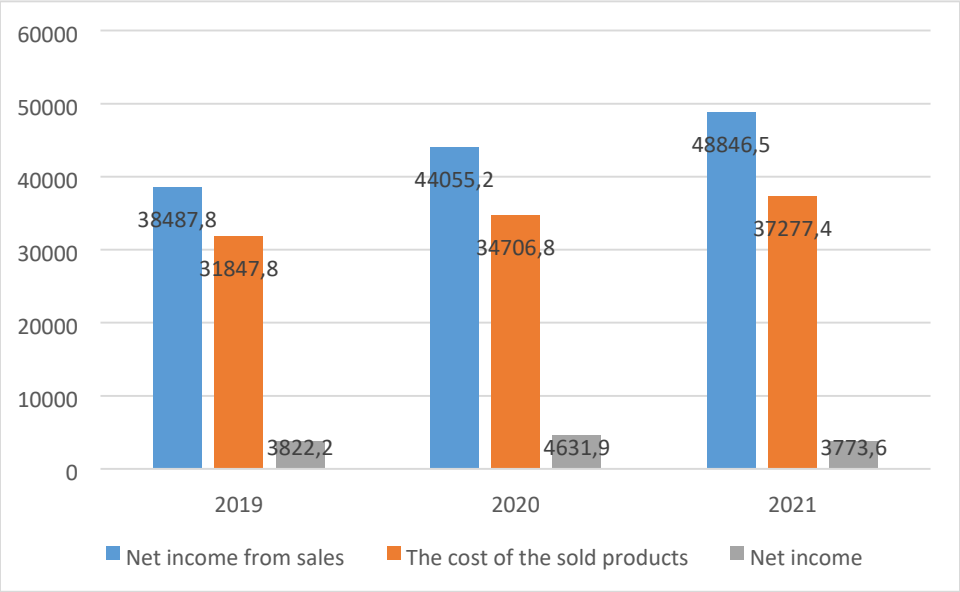

Figure 2.4 Dynamics of financial indicators of “NNEGC Energoatom" for 2019-2021.

Source: built by the author for [16; 44]

From the presented data it is observed that despite the growth of the company's net income from sales, which has more dynamic indicators compared to the increase in cost, the amount of net profit received during the study period decreased. For a more detailed analysis, consider the dynamics of the main indicators of profitability.

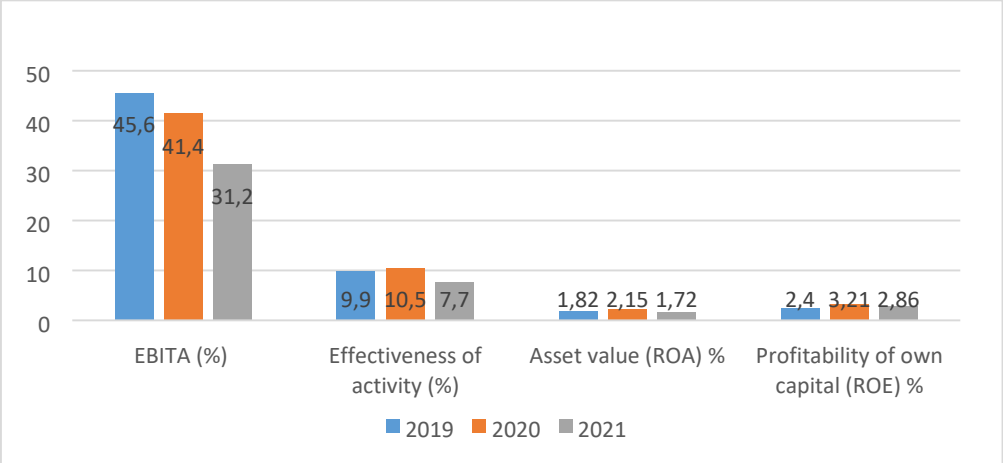

Figure 2.5 Dynamics of profitability indicators of NNEGC "Energoatom" for 2019-2021

Source: built by the author on the basis of [16; 44]

Thus, we see that in the study period, the company saw a decrease in the rate of return on its assets, which characterizes the rate of return obtained from the use of all types of assets by the company. There is a low level of the indicator throughout the study period, which shows the need to improve this indicator, even given that the company is traditionally very capital-intensive, because in 2020 this indicator increased, indicating the potential for the company to implement measures to improve it. The same dynamics in the indicator of profitability, despite the fact that its value in the enterprise is higher. During the analyzed period, the company achieved a slight increase in return on equity (by 0.46%),

In order to provide a more complete description of the enterprise, we will identify its strengths and weaknesses, for which we use SWOT-analysis (Appendix B).

From the above analysis we see that the state enterprise NNEGC "Energoatom" has a large number of strengths that determine the possibilities of its development, on which management should rely in the process of defining strategic goals of the enterprise and take into account when developing new innovative projects. Attention

should also be paid to eliminating or minimizing the negative impact of existing threats and weaknesses in order to achieve effective development of the company.

2.4. Identification of problems of innovation implementation and problems of innovation management

One of the most important tasks in the energy sector in modern conditions is to minimize the impact of enterprises on the environment, as well as effective response to climate change at the global level. The main task for this is defined as achieving the decarbonisation of the entire international energy system. However, it should be borne in mind that the volume of electricity generation must meet the global needs of enterprises and society for energy resources. In order to ensure the implementation of this task in our country, a strategy for the development of the energy sector until 2035 was developed and implemented. The key prerequisite for achieving Ukraine's economic growth is the need to provide affordable electricity.

In order to ensure the stable operation of energy enterprises, it is necessary to carry out careful planning and provide stable funding for innovative projects that have long implementation times. The internal policy of NNEGC “Energoatom” stipulates that in the course of its activity it needs considerable attention to extend the service life of all generating capacities of the enterprise and develop production, in order to introduce modern innovative technologies that can ensure safer operation of the enterprise and minimize its negative impact. activities on the state of the environment [38, p.45]. The company's investment policy is carried out by involving innovative technologies and systems, which is determined on the basis of development and implementation as short-term,

To characterize the innovative activity of the enterprise it is necessary to analyze its costs aimed at developing its innovative component. To do this, we compare the total costs of the enterprise and the costs aimed at implementing innovations at NNEGC "Energoatom" (Fig. 2.6).

From the results of the analysis we see that the level of enterprise spending on innovation is quite low, due primarily to the need to incur significant costs to ensure the required level of safety in the process of operation through the use of nuclear fuel.

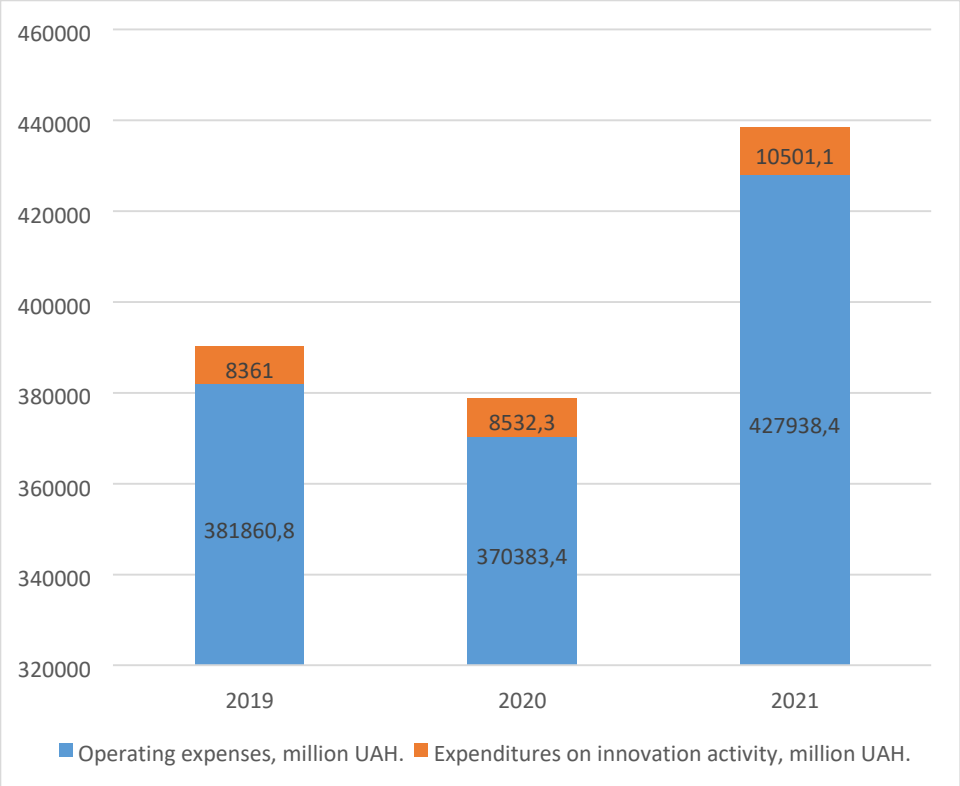

Figure 2.6 Dynamics of general expenses and expenses for innovation activity of NNEGC "Energoatom" for 2019-2021, UAH million

*Source: built by the author on*based on enterprise data

For a more detailed analysis, we will consider in detail the cost structure of NNEGC "Energoatom" for 2019-2021 for the implementation of innovative projects (Table 2.4).

The presented data show that the largest part of the investment costs of the enterprise is directed to the purchase of machinery, equipment and software, due to the significant cost of these resources intended for use in the energy sector of the country. Also, during the study period there is an increase in enterprise costs for R & D, which indicates an increase in the interest of the enterprise in the development of scientific and technical component. It should be noted that the low level of Energoatom's R&D expenditures is due to the company's need to constantly spend most of its own funds to achieve the required level of security in the process of using power units.

Table 2.4 Dynamics of the structure of NNEGC "Energoatom" expenditures on innovation activities for 2019-2021,

Indicators	2019	2020	2021	Relative deviation 2021/2019,%
Expenditures of the enterprise on R&D, UAH million	27.00	27.20	39.40	46.1
The company's costs for the acquisition of innovative technologies, UAH million	0.63	0.70	1.19	88.9
The share of internal costs of the enterprise for R & D and the acquisition of innovative technologies in the total costs of the enterprise for production,%	0.0072	0.0075	0.0095	31.2
The company's expenditures on the acquisition of intangible assets, staff training, UAH million	1.37	1.10	1.43	4.4
The share of costs for the acquisition of intangible assets and staff training in new technologies in the total costs of the enterprise for innovation,%	0.016	0.0129	0.0136	-16.9
The company's costs for the purchase of machinery, equipment and software, UAH million.	8332	8503.3	10459	25.5
The share of enterprise costs for the purchase of machinery, equipment and software in the total enterprise costs for innovation,%	99.65	99.66	99.6	-0.1

Source: calculated on the basis of enterprise data

In order to determine the strategy of development of innovation potential of the enterprise it is necessary to determine partial indices of innovation potential of NNEGC

“Energoatom” and to compare them with regulatory indicators (presented in paragraph 2.1).

According to the calculated coefficients presented in the table, it can be concluded that the indicators of NNEGC “Energoatom” correspond to the normative values of the innovation follower strategy.

Table 2.5 Coefficients of innovation activity of NNEGC “Energoatom” for 2021

Indicators	The result obtained for the company
Coefficient of intellectual property (Kiv)	0.06
Innovation ratio (Kper)	0.12
Coefficient of provision of equipment necessary for innovation (KZO)	0.12
Coefficient of development of new equipment (Knt)	0.05
Innovation Growth Ratio (Kiz)	0.025

Source: calculated on the basis of enterprise data

In order to confirm the final result, let's check the value of innovation activity according to the generalized indicator. For NNEGC “Energoatom”, the result was 0.44. So, due to the fact that the value of the coefficient for the company is less than zero, we can conclude that the company's management strategy of innovative follower, because the value of the calculated indicator is in the range from -0.91 to 0, and this range meets the standards of enterprise strategy as innovation. follower [50].

The results obtained in the process of analysis indicate a low level of innovation activity of NNEGC “Energoatom”, and the main reasons can be systematized as follows:

- imperfection of the regulatory framework in Ukraine, which ensures the effective implementation of innovative activities by enterprises;
- rather low level of confidence of investors and the population in the production of innovative products and services;
- insufficient and sometimes no stimulation of innovation by the state government;
- cooperation between enterprises and scientific and technical centers is at a low level;
- insufficient financial support of the enterprise.

The specific nature of innovative projects in the energy sector implies a high need to attract significant amounts of financial resources in the development and implementation of projects. “Energoatom” does not have enough of its own funds to implement strategically important innovative projects, which confirms the need to attract external funds during their implementation. To obtain sufficient funding, the company is actively cooperating internationally.

3 FORMATION OF THE MECHANISM OF INNOVATIVE MANAGEMENT OF ENERGY INDUSTRY ENTERPRISES (ON THE EXAMPLE OF NNEGC "ENERGOATOM")

3.1. Development of the mechanism of innovation management at the enterprise

The development of the mechanism of innovation management at the enterprise involves many components of the enterprise. In modern conditions, one of the main resources of the enterprise is information. Given the fact that "Energoatom" has a very complex organizational structure, the process of managing information flows at the enterprise is imperfect. It is often the case that the process of transferring information from a separate branch office located in another area to the central office is time consuming and takes several days and up to several weeks, despite the availability of electronic sources of information. This is the reason for the loss of a large amount of time in the process of processing the received documents and not very quick response of specialists to them. This problem can be solved by

The problem of time spent on information transfer between the organizational structure of the enterprise can be solved by installing an automated information system that can solve, in particular, the time of information transfer, and the company will be able to transfer information flows much faster from one division to another. process documentation [43].

Innovative computer programs such as CASE technologies can be used to effectively design an information system at the enterprise. In essence, CASEtechnologies are a set of tools and methods designed to ensure high quality programs used by the enterprise, avoid mistakes due to human influence, provide easy maintenance of software products in the enterprise, will use the achievements of software engineering engineering to design effective software providing the company.

CASE-technology is a set of methods and tools in the field of enterprise information system design, integrated with a variety of automated tools,

CASE-technology, as a method of modernization of the automated information system of the enterprise is created taking into account the specifics of a particular enterprise, it should be noted that there are many similarities in the structure of different enterprises, including energy, and similar types of connections between structural elements enterprises (functional, informational, external). This fact makes it possible to formulate the principles and basic ways necessary to build effective information systems in enterprise management.

For example, for the analyzed by NNEGC “Energoatom”, we can propose the introduction of an automated system for such individual areas of the enterprise as:

- energy production at the company's NPPs and operation of equipment;
- procurement process;
- management of investment activities;
- construction of models of the electricity market and sales processes;
- personnel management;
- carrying out repair work;
- financial management, their planning.

These directions are the most priority in the course of activity of the enterprise. In order to implement innovation management technology for each area of the enterprise, it is possible to propose the development of a separate project, which will highlight the main objectives of each project, determine the functional and organizational framework of the project, check the compliance of the possible limitations of the new project.

The purpose of the automated management system is to create a single organizational platform for combining work in all areas of the enterprise, which will reduce the company's costs for purchasing paper, increase productivity of economic,

financial, accounting and other departments of the company by reducing staff time. required for data processing. The implementation of the project is designed to improve the efficiency and quality of performance of employees' duties.

The CASE-technology program should provide transparency, controllability and controllability of the process of management of all automated processes, including document management (input and output documentation, internal correspondence, organizational and administrative documents, processing of applications from citizens, create an electronic archive of enterprise documents, etc.).

Implementation of the innovation management system should allow the company's management in a short time to automate the most critical functions, improve productivity of all employees, reduce deadlines and improve performance in the process of processing company documents, allow to involve related companies in the exchange of electronic documents.

The model of innovation management implementation at NNEGC “Energoatom” is presented in Fig. 3.1.

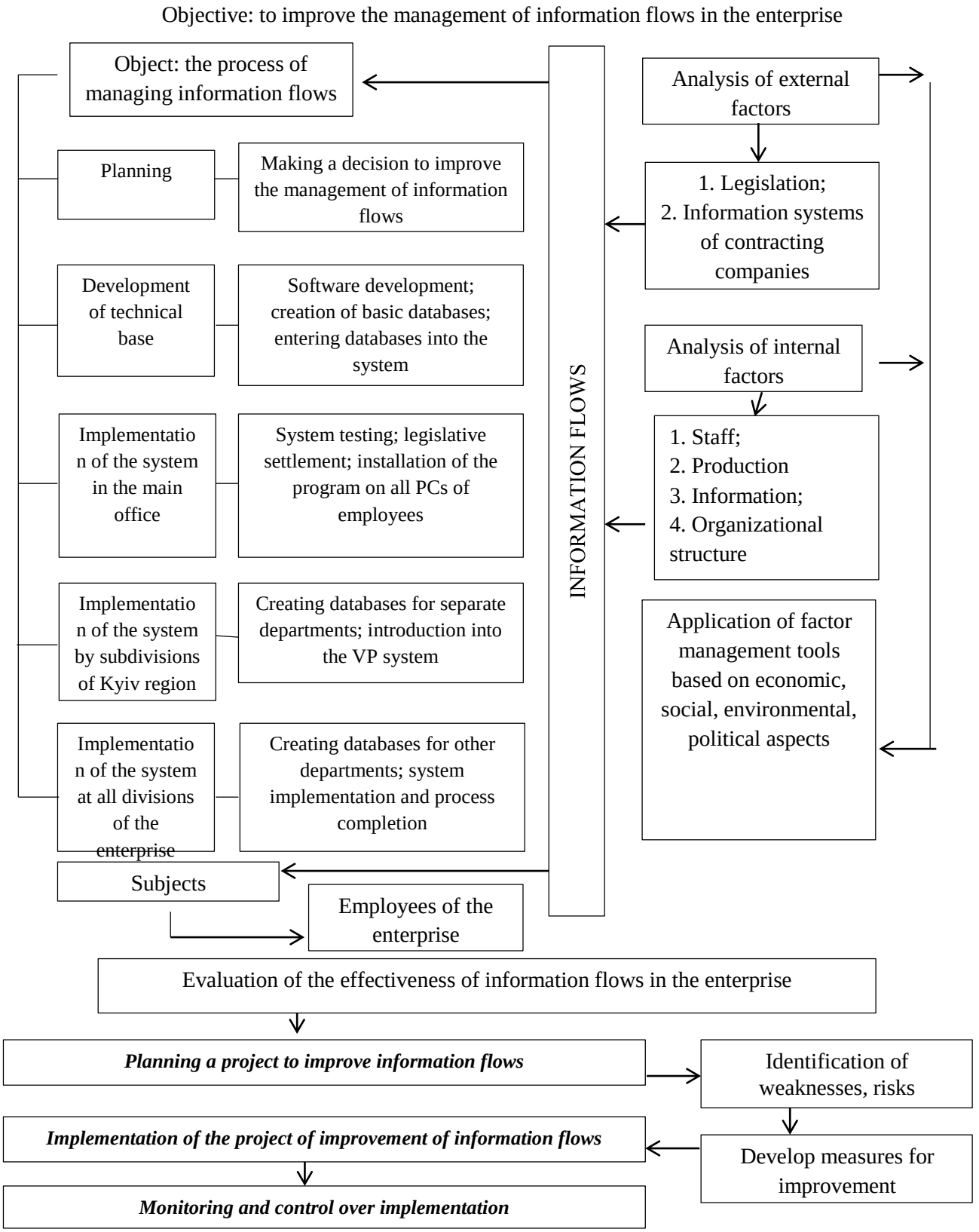

Figure 3.1 - Model of innovation management implementation at NNEGC

“Energoatom”

Source: developed by the author

For a more detailed consideration of each area, it is necessary to identify the main objectives of the implementation of innovation management (Appendix D).

The implementation of the project meets the strategic goals of “Energoatom”, namely:

- safe for employees and the environment production of electricity at the enterprise;
- increase of indicators of efficiency of work and efficiency;
- construction of new facilities;
- providing physical protection of NPPs;
- achieving increased safety at existing NPPs of the enterprise;
- increase the productivity of the company's staff and save employees their jobs;
- carrying out repair work in the planned time in the appropriate amount and quality.

The proposed project can be distributed not only in the central office, but in all separate divisions of NNEGC “Energoatom” in Ukraine.

Effective adaptation of technology to the activities of the enterprise will provide the following management functions in different areas of the enterprise:

- more efficient organization of document management at the enterprise (incoming, outgoing, internal documents and various administrative documents, taking into account the existing business processes and organizational relationships at the enterprise);
- control of executive discipline of employees;
- organization of automatic operational storage of all documentation (creation of archives);

- providing and automated updating of regulatory information;
- simplification of selection and search of necessary documents of the enterprise for any period of time.

Defining the main goals and functions that the project will perform is the primary task of the company, as it allows to determine the significance of the proposed project and identify potential risks, consider its weaknesses and analyze the benefits of the company from implementing the proposed technology.

3.2. Analysis of efficiency and quality indicators of implementation of the mechanism of innovation management at the enterprise

An important step in determining the effectiveness of the innovations offered at the enterprise is to assess the economic effect of the use of new information technologies. To do this, you need to calculate the following indicators: the amount of potential net present income from project implementation; index of profitability and return on investment; payback period of the project and the internal rate of return of the proposed project.

The calculation of net present income from implementation can be determined using the formula [46]:

$$NPV = \sum_{i=0}^{n} Pi - \frac{3i}{(1+p)^i} > 0, \quad (3.1)$$

where: NPV - the amount of net present income;

Pi - the results of the enterprise obtained during the i-th period of time;

Ci - the amount of costs received by the enterprise for the i-th period;

p - set discount rate; n - years of the project life cycle

The proposed project envisages a life cycle of the technology for five years, thereforeNPVwill be equal to 47.15.

The entire volume of pre-project investments is taken into account in the zero period of system implementation. The costs of the proposed project will include: the company's costs for the introduction of technology for existing and additional staff; costs in the process of using the system, such as maintenance costs, software upgrade costs.

The results of the introduction of information technology for the i-th period will be an increase in the company's revenues during the operation of the automated system by reducing the company's costs on paper and reducing staff time.

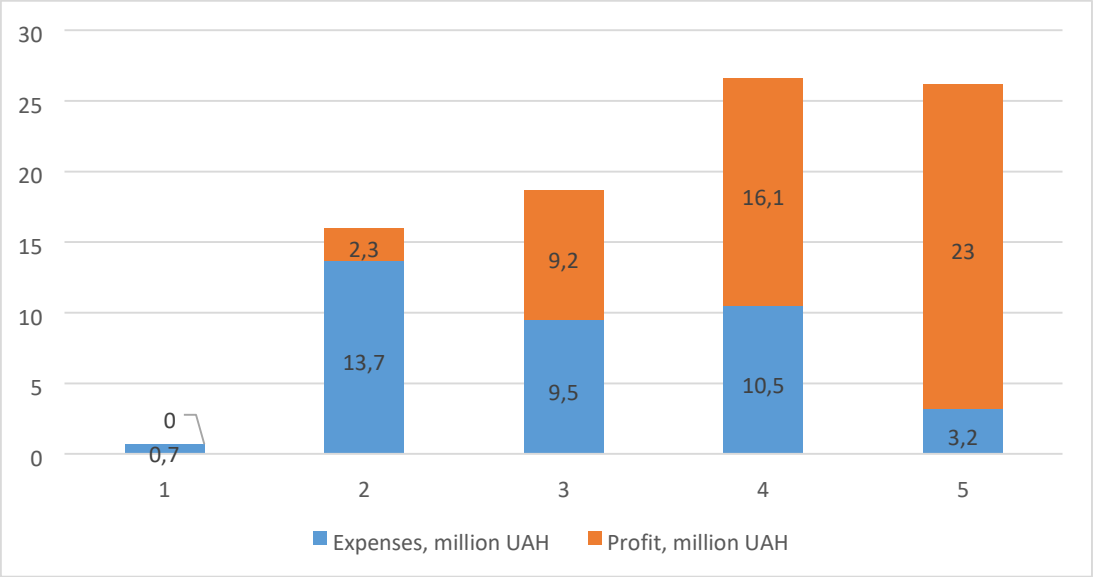

Figure 3.2 - The ratio of enterprise costs to the profit of NNEGC “Energoatom”

Source: created by the author

The calculation of the project profitability index (PI) can be determined by the ratio of the reduced project results to the reduced costs of the enterprise, which should be equal to or greater than one [46]:

$$\mathrm{PI} = \frac{\sum_{i=0}^{n} Pi(1+p)^{-1}}{\sum_{i=0}^{n} 3i\,(1+p)^{-1}} \geq 1 \quad (3.2)$$

An indicator for NNEGC “Energoatom” PIwill be equal to 9.86.

The internal rate of return (IRR) can be calculated as the interest rate at which the innovation project will be break-even. Determine that the rate must exceed the discount rate of the project [46]:

$$IRR = \frac{\sum_{i=0}^{n} Pi-3i}{(1+IRR)^{i}} (3.3)$$

With$y$= 1 / (1 +IRR), and IRR = (1 / y) - 1.

For NNEGC “Energoatom”, the IRR will be 30%.

The introduction of an innovative management system is expected to increase the profitability of the company by 5% and improve the efficiency of financial performance of the enterprise to 12%, if we start implementation in 2023 (Fig. 3.3).

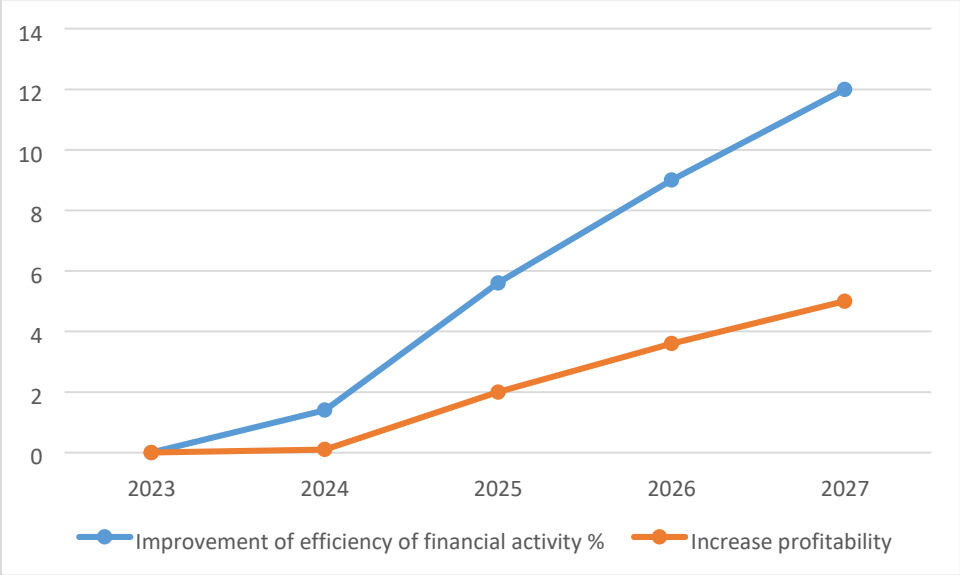

Figure 3.3 - Improving the performance of NNEGC “Energoatom” *Source: created by the author*

It is also possible to achieve a significant increase in the efficiency of the management system, which will also change (Table 3.1).

Table 3.1 - Indicators of management system efficiency after the implementation of the automated system at NNEGC “Energoatom”.

Indicator	Expected result
The load factor of computer hardware and software	It is expected that the number of software products at the company will decrease from 10 currently used to 6, due to the fact that it will be possible for employees to combine several functions in one new program.
The level of reliability of the processed information	Reducing the likelihood of new errors also due to a more accurate process of processing information by the program. Currently, the average number of errors of the economist at the company is about 7 per year. It is expected that in a year the number of errors will decrease to 4.
The average cost of computers and software	The cost of purchasing software will be reduced due to the lack of need to renew licenses for programs that require it, and will now be replaced by new technology.
Coefficient of reduction of cost expenses of the enterprise	It is calculated as: ΔB = Bo - Bj, where Bo is the existing (basic) amount of cost costs of the enterprise for information processing; Bj - the achieved amount of cost costs of the enterprise through the implementation of the project. For NNEGC "Energoatom": (2560 - 1205) / 1205 = 1.12.
Index of reduction of cost costs of the enterprise	Calculated as: FROM $=\frac{Bo}{Bj}$ For NNEGC "Energoatom": 2560/1205 = 2.12.
The total cost of owning a new information system	Calculated as the sum of direct costs of the enterprise, indirect costs of the first group (planned and non-standard period of incapacity of staff during the implementation of the program); and indirect costs of the second group (reduction of the employee's productive working time due to the necessary process of training and forced self-training of employees). For NNEGC "Energoatom": 440 +35 +0 = UAH 475 thousand.
Direct costs of the enterprise	Calculated as the sum of enterprise costs (capital costs; management costs; costs of providing technical support to hardware and software; the cost of the enterprise to develop the system by employees; the cost of the company for outsourcing services; travel costs; costs for communication services ; etc.). For NNEGC "Energoatom": 50 +300 +60 +120 +10 = UAH 440 thousand.

Source: created by the author

If the automated system is implemented, the coefficient of cost reduction at the enterprise during the year will be 1.12, and the value of the index of reduction of all cost costs of the enterprise will be 2.12. At the same time, the amount of direct costs for the implementation of innovation will be 440 thousand UAH, and the total cost of ownership of software and information system will be equal to 475 thousand UAH.

With the introduction of innovation management technology, it is possible to improve the economic side of the enterprise (Appendix D).

The introduction of innovative technology will achieve not only the economic benefits of the project, but also a number of non-financial improvements from the project:

- increase the accuracy and efficiency of data collected at the enterprise;
- automate reporting on all indicators;
- to increase the accuracy and efficiency of the processes of planning the work of employees and scheduling of departments of the enterprise;
- increase the level of transparency of all management processes in the enterprise, in particular in the field of production;
- increasing the level of timely execution of applications;
- provide support and automate the entire procurement process (from receipt of the application to payment and execution);
- reduce the procurement cycle;
- achieve transparency in procurement processes, in particular public tenders;
- reduce time spent in the process of investment management in the enterprise;
- increase the accuracy and, consequently, the efficiency of investment management processes;

- provide immediate reporting of the company at the moment in real time;
- normalize energy production schedules and equipment repairs;
- provide faster access of employees and managers to information in order to assess the costs of the enterprise;
- increase the level of participation of the company's staff in the process of selfservice of their working needs;

- monitor staff training, certification and level of qualification of employees;
- to control the load on staff;
- the use of new reporting tools will increase the degree of data reliability, which will allow pain to make effective management decisions by managers at different levels of government;
- standardize processes:
- reduce the cost of total time in the process of performing tasks;
- to systematize the reporting of the enterprise at a more detailed level.

Thus, the introduction of innovation management technologies is appropriate for both economic and social effects. That is, the introduction of automated management technology will significantly improve the efficiency of the enterprise and modernize the management system.

3.3. Organizational principles of implementation of the mechanism of innovation management at the enterprise

In order for the implementation of the mechanism of innovation management at the enterprise of NNEGC “Energoatom” to be effective, it is necessary to take into account all organizational principles of technology operation.

Given the complexity and diversification of the organizational structure of NNEGC “Energoatom” (production sites of the company are geographically distributed and located in different regions of Ukraine) and the large number of employees (both production and management staff), it becomes necessary to provide information

- exchange centralized and operational exchange documents, which provides for the following organizational aspects:

- the system should not require the installation of additional computers and software for users;

the technology should not require narrowly qualified administrators and software specialists to set up the program at production departments and sites remote from the main office;

- technology should not have high requirements for the hardware of the platform, which is installed in the workplace of employees (because this is not always possible in the production of energy companies);

- the system must provide updates of programs and regulatory requirements centrally and automatically for all users;

- The program should provide a high level of mobility and provide the opportunity to use it anywhere, provided the user has access to the Internet.

Implementation of the system of innovative technologies in the management of the enterprise will allow to achieve the following organizational advantages for SE NNEGC “Energoatom”:

- the system will create the preconditions for the transition of the enterprise to paperless document circulation, all documentary processes will be carried out using only electronic signatures and electronic documents;

- the technology will allow to ensure the implementation of the established by the company uniform standards and regulations for working with electronic documentation in all structurally separate units;

- the system will increase the level of quality, completeness and reliability of information flows while complying with the information security of the enterprise;

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- the project will reduce the costs of the enterprise, which are associated with paperwork and office processes;
- automated system will reduce the possibility of loss of paper documents, in particular, by reducing the human factor;
- technology will reduce the time that employees spend searching for and passing documentation between separate departments and divisions of the enterprise; technology will strengthen the process of control of executive discipline of

employees;

- the use of an automated system will be able to ensure compliance with one-time registration of documents at the enterprise;
- the system will increase the level of protection of internal information of the enterprise through the use of means to differentiate the rights of users to access certain types of information and security of its dissemination.

The advantages of implementing the system at NNEGC “Energoatom” include:

- increasing the level of attention of management and employees to safety;
- improvement of processes of constant innovative development of the enterprise in all areas of its activity;
- creation at the enterprise of more convenient and simpler system of management and management;
- achieving faster solutions to current problems and more mobile response to changes;
- increasing the level of involvement of the company's staff and personal responsibility of each employee.

The process of improving the information management of NNEGC “Energoatom” is planned to be carried out in all separate divisions of the company. However, the introduction of such large-scale changes at once in all structural units of

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the enterprise is impractical. First, you can offer management changes at the head office of NNEGC “Energoatom”, then analyze the speed of software installation, test the overall performance of the program (speed of information transfer, document quality), and then conduct a survey of employees to determine satisfaction with the new system , identify the advantages and disadvantages of working with the new program.

Thus, the introduction of an automated document management system in all departments will collect and archive data for analysis at any time, while reducing the cost of purchasing paper and stationery and save space in offices for storage. The

introduction of electronic journals will save time of employees during its completion and in the process of finding the necessary information.

CONCLUSIONS

The study allowed us to draw the following conclusions.

1. Innovation management in general is a complex mechanism of the management system, which should provide for the implementation of the innovation process and innovation activities the most favorable conditions and provide opportunities for development in order to achieve effective results.

Modern concepts of innovation management can be divided into four groups: factor approach, functional concept, system and situational approaches. From 2020 onwards, both modeling and forecasting the emergence of certain innovative products will become increasingly important. Organizations have to find a way to survive in an era of pandemic viruses, political sanctions and economic instability. Modeling and forecasting becomes a tool for making rational decisions

2. Speaking about the trends of innovation in the energy sector, we can trace the growth of the use of new technologies and methods of innovation management. The main goal of the EU in setting the size of the share of renewable energy sources was to achieve 32% of the final energy consumption to be achieved by 2030. This determines the importance of analyzing the successful experience of Ukraine in other countries in the field of energy innovation and the need for innovation in the energy sector, based on the effective use of existing potential of all alternative energy sources and external opportunities of the domestic economy.

3. Innovation in energy is a set of processes that lead to the emergence of new or improvement of existing technologies that increase the diversity of energy resources used, increase the reliability of energy systems, and reduce economic, environmental and political costs associated with production and distribution electricity

The main factors influencing the intensity of the spread of innovative technologies in the energy sector are: the development of infrastructure in the industry;

development of regulatory support (especially for the definition of intellectual property rights); condition of material and technical base; distribution of R&D costs; structure of research works; system of information support of innovative activity of enterprises; the focus of many energy sector companies on results in the short term; the level of demand for innovation; balance of marketing research and R&D; human factor; industry financing.

4. The factor model of the influence of factors on the implementation of innovations in the energy sector of the economy can be presented as the sum of the impact of the following indicators: the coefficient of intellectual property; the ratio of staff employed in innovation activities; the coefficient of provision of equipment necessary for innovation; the coefficient of development of new technology and the coefficient of innovative growth. This model provides an opportunity to assess the level of influence of factors on the implementation of innovations in order to promote the intensification of innovation activities of the enterprise.

5. Priority areas for the formation of an effective mechanism of innovation management in the energy enterprises of Ukraine can be divided into three groups: technological, organizational and environmental. Technological innovations are making changes in the way electricity is produced as a commodity. Innovations are technologies that allow to generate electricity from solar energy, wind, etc., improve the process of electricity supply. Management innovations include demand management systems that encourage consumers to change their electricity consumption schedule relative to their normal consumption profile in response to incentive payments in order to reduce peak hours. Transaction innovations are designed to minimize the operating costs of relationships with suppliers and consumers.

6. NNEGC “Energoatom” is one of the largest and leading enterprises in the energy sector in Ukraine. Organizational and legal form NNEGC “Energoatom” is a state-owned enterprise that is part of the Ministry of Energy and Environmental

Protection in Ukraine. The construction of the organizational structure of the enterprise is due to its branching and separation by territorial location. For the effective management of the enterprise, management verticals have been established for the management of the main production, finance, human resources, procurement, departmental supervision and control systems due to the need to provide physical protection of the company's nuclear facilities.

The analysis shows the presence for the studied period of a significant increase in the cost of the enterprise, the most important is the growth of other costs of the enterprise, which during the analysis period amounted to 11821.09%. Negative trends also include a decrease in EBITDA of 13.3% over three years, which characterizes the company's income from its core business, calculated before the deduction of interest, taxes and depreciation. It can also be seen that the company's other income decreased. From the above analysis we see that the state enterprise NNEGC “Energoatom” has a large number of strengths that determine the possibilities of its development, they should be relied on by management in the process of defining the strategic goals of the enterprise and taken into account when developing new innovative projects. Attention should also be paid to eliminating or minimizing the negative impact of existing threats and weaknesses in order to achieve effective development of the company.

7. The results obtained in the process of analysis indicate a low level of innovation activity of NNEGC “Energoatom”, and the main reasons can be systematized as follows: imperfection of the regulatory framework in Ukraine, which ensures the effective conduct of innovation activities by enterprises; rather low level of confidence of investors and the population in the production of innovative products and services; insufficient and sometimes no stimulation of innovation by the state government; cooperation between enterprises and scientific and technical centers is at a low level; insufficient financial support of the enterprise.

8. In order to improve the management of NNEGC “Energoatom”, the use of innovation management tools, namely CASE-technologies, is proposed. The purpose of the automated management system is to create a single organizational platform for combining work in all areas of the enterprise, which will reduce the company's costs for purchasing paper, increase productivity of economic, financial, accounting and other departments of the company by reducing staff time. required for data processing.

9. The company from the introduction of innovative management system is expected to increase the profitability of 5% and improve the efficiency of financial activities of the enterprise to 12%. Significant improvements can also be achieved in the management system and non-financial performance of NNEGC “Energoatom”. 10. Given the complexity and diversification of the organizational structure of NNEGC “Energoatom” (production sites of the enterprise are territorially distributed and located in different regions of Ukraine) and a large number of employees (both production and management staff), it becomes necessary to provide centralized and prompt exchange of documents, which provides for such organizational aspects as: ease of use and no need for additional equipment. It is planned to install the system in a trial mode, first in the main office of the company, and then gradually connect all the separate units.

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APPENDIX A

The concept and content of "Innovation Management" in various scientific sources

Author	Definition
S. Ilyinkova	Innovation management is a set of principles, methods and forms of management of the innovation process, innovation activities and personnel engaged in these activities.

PN Gerchikov	Innovation management is one of the areas of strategic management, which is carried out by the highest level of company management. Based on this, the main focus in innovation management should be on developing an innovation strategy and means of its implementation. The development and production of new products becomes a priority area of enterprise development ("firms, corporations"), as it determines all other areas of its development.
GD Kovalev	Innovation management is defined as a system of economic development management. At the same time, management covers not only economic and technical problems, but also problems of worldview, because the global trend is radical changes associated with the global explosion of innovation.
PN Zavlin	Considers innovation management in three aspects: as the science and art of innovation management, as an activity and as a subject of management
I. Balabanov	Innovation management studies the nature of innovation, innovation process, innovation activity and the mechanism of management of these processes.

Source: compiled by the author on the basis of [3, 9; 12,15, 27]

APPENDIX B

General characteristics of NNEGC “Energoatom”

Name of the separate division of the enterprise	General characteristics of the unit

Zaporizhzhya NPP	Construction began in 1979. Launch of the first power unit in 1984. The largest nuclear power plant in Europe, with an installed capacity of 6000 MW. WWER-1000 reactors are in operation. Location: Energodar, Zaporozhye region
Yuzhnoukrainsk NPP	The only power complex in Ukraine, located in the north of the Nikolaev area. Combines basic and maneuverable power. It consists of: **YUNPP:** Construction began in 1975, the first power unit was launched in 1982. The installed capacity is 3000 MW. WWER-1000 reactors are in operation. Location: Yuzhnoukrainsk, Mykolaiv region; **Oleksandrivska HPP:** It was put into commercial operation in 1999. Installed capacity - 11.5 MW. **Tashlyk PSP:** Beginning of construction in 1981, launch of the first hydraulic unit - 2006. Installed capacity: in pump mode - 433 MW; in the generator mode - 302 MW.
Rivne NPP	Construction began in 1973, the launch of the first power unit in 1980. Installed capacity 2835 MW. 1 power units with WWER-440 type reactor and 2 power units with WWER-1000 type reactor are in operation. Location: Varash, Rivne region.
Khmelnitsky NPP	Construction began in 1981, the first power unit was launched in 1987. The installed capacity is 2000 MW,
	WWER-1000 reactors are in operation. Location: Netishyn, Khmelnytsky region.

Source: [35]

APPENDIX C

SWOT analysis of NNEGC "Energoatom"

Strengths	***Weaknesses***
1. Significant share of nuclear generation in the electricity market; 2. High implemented safety standards; 3. Active international cooperation; 4. The presence of experience in the operation of generating capacity; 5. Powerful base for staff training; 6. The cost of energy released is low, compared to other sources of generation; 7. Relatively low impact of the generation of generation sources on the external environment; 8. High level of material and technical support and training, scientific and production base.	1. High level of wear of power units; 2. High level of bureaucracy; 3. Dependence on foreign suppliers; 4. Permanent debt for the supply of electricity to the company leads to an increase in accounts payable; 5. Problems of attracting investment through the organizational form of the state enterprise.
Opportunities	***Threats***
1. Increasing production volumes by removing restrictions and increasing capacity; 2. Start of electricity exports; 3. Diversification of spent nuclear fuel management; 4. Construction of new generating capacities; 5. Availability of natural resources for own fuel production. 6. Increasing the capacity of "green" generation; 7. Reducing the impact of power units on the environment.	1. Special obligations in the new electricity market; 2. Outflow of young staff; 3. Rejection of projects to continue the operation of generating capacity; 4. Unresolved issue of spent nuclear fuel management; 5. State control over tariffs for manufactured products; 6. Decrease in water in cooling reservoirs and increase in water temperature due to warming; 7. Lack of state support; 8. Instability of the national currency and rising inflation.

Source: compiled on the basis of enterprise data

APPENDIX D

Objectives of the project of implementation of innovation management at NNEGC “Energoatom” for each direction

Direction	Purposes
Production	1. increase the effectiveness of security measures; 2. faster recovery / improved management of station status; 3. improving production performance.
Purchases	1. creation of a single platform that provides a holistic procurement process; 2. increasing the level of provision of works and services purchased; 3. ensuring the transparency of the procurement process; 4. structuring and reducing the level of free stocks; 5. construction of an automated process "produce-to-pay" (from application to payment).
Investments	1. develop a unified system of planning, implementation, control and reporting on the investment process; 2. develop principles and procedures for effective investment management; 3. eliminate the shortcomings and problems of the current process; 4. increase the overall efficiency of the investment management process, maintaining compliance with the requirements of other parties (NNEGC management, the Ministry of others).
Electricity market model, sales	1. building a centralized system of sales management and customer relations; 2. construction of a centralized system of commercial dispatcher (market day ahead, intraday market, etc.); 3. construction of a centralized system for forecasting and optimizing the consumption and generation of electricity.
Personnel	1. building a centralized personnel management system, increasing transparency and openness, optimizing personnel management processes; 2. raising the level of management skills to improve safety culture; 3. motivation of staff to achieve the goals of the Company.

Repair	1. construction of a centralized fleet management system; 2. construction of a centralized system for accounting, analysis and development of measures in the field of downtime and losses; 3. construction of a centralized production management system.
Finance, planning	1. develop a single accounting system that covers all business processes and activities; 2. introduction of new reporting and analysis functions, increasing transparency and controllability in all departments;
	3. make data transparent and detailed at all levels.

Source: created by the author

APPENDIX E

Expected economic improvements from the project implementation

Direction	Benefits
Production	***Improving the efficiency of using the installed nuclear power of nuclear power plants***due to better data transparency, which will improve forecasting and planning.
	Reduction of overhead costs. Actual cost and deviations are recorded automatically, deviations are monitored. Key indicators are measured and monitored in real time. Immediate response to deviations.
	Improving planning efficiency. Ability to easily optimize schedules, dates, hours to improve resource utilization.
Purchases	***Optimization of indirect costs***. Apply several vendor search strategies and approaches. Monitoring of procurement by all structural units and analysis of costs, procurement prices.
	Automatic combination of received invoices with the orderfor procurement, receipt of material and contracts, to prevent overpayments and errors.
	Providing an online shopping systemand electronic approval of purchase applications.
	Improved planningand results of capital expenditures. Increasing the effectiveness of control over the use of budget funds.
	Reduce the duration of investment planning and increase their efficiency.
Electricity market model, sales	***Increase in income from participation in direct contracts with consumers***. Determining a cost-effective schedule for loading the unit, taking into account market and technical factors. Search and conclusion of agreements on the sale of electricity, taking into account all factors.
	Reduction of additional investment in the organization of the sales process, in the transition to new market conditions. Automation of forecasting functions for electricity consumption and production, optimization of production plan, customer search and conclusion of contracts.
Personnel	Increasing employee interest.
	Improving the efficiency of the personnel management process. Automated salary calculation functions, personnel reserve process.
Repair	***Reduction of unscheduled automatic stops***. Improving the reliability of equipment through analysis of technical condition.
	Reduction of costs for repairs and maintenance. Reduction of duration of repair works due to exact planning of works and resources, control of performance of works.
	Increasing profitability. Maintaining and obtaining planned data and accounting data according to uniform standards.

Finance, planning	***Reducing the duration of financial planning***. Use forecasting and simulation functions to select the best case scenario.
	Improving the efficiency of financial activities.Automation of the following functions: accounting, closing periods, financial transactions, risk management, etc.

Source: created by the author