

различным дисциплинам, которая обеспечивает возможность выполнения творческих заданий различной степени сложности.

Практическая значимость. Использование полученных результатов в практике ВУЗов позволяет повысить образовательный уровень студентов.

Ключевые слова: электронные экзамены и зачеты, электронный билет, автоматизированная система, итоговый контроль знаний

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ENCHANTMENT OF THE INFORMATION COMPONENT OF INNOVATION DEVELOPMENT OF INDUSTRY

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ПІДСИЛЕННЯ ІНФОРМАЦІЙНОЇ СКЛАДОВОЇ ІННОВАЦІЙНОГО РОЗВИТКУ ПРОМИСЛОВОСТІ

Purpose. Definition of the complex of formal and informal measures, the implementation of which requires enhancement of an information security mechanism for innovation processes, the application of which contributes to the development of intellectual capital of enterprises, improvement of employees knowledge, and activation of management processes.

Methodology. To achieve this goal we applied the theoretical generalization and systematization (for specification of enterprises' innovation investment pattern and significance of information security of innovation processes); theoretical and methodological analysis and expert assessment (for determination of the measures intended to enhance the information component of innovation and develop the mechanism on their basis); method of expert evaluations, induction and deduction, analysis and synthesis (for determination of the results expected from the implementation of a range of formal and informal activities).

Findings. Summarizing the role of the information security of the innovative processes at enterprises and determining the measures for its enhancement, which suit the current trends in the information support of the industry innovation processes and consider the motivational effect on the employees, the mechanism of strengthening the information component of innovation has been developed.

Originality. The mechanism of enhancement of the information component of innovative development has been substantiated. It takes into account the improvement trends for information support of industrial innovative development based on the use of investment resources.

Practical value. The mechanisms of enhancement of the information component of innovative development and the recommendations on the use of cloud platforms for information storage, software development and information systems, choice of reliable providers, formation of training programs for innovators, network expansion for Patent centres, integration of security and marketing teams for information-analytical work, insurance of career and education based on legislative changes complying with applicable laws and regulation requirements and standards of the EU, can be used in the enterprise management practice.

Keywords: *innovative development, mechanism, information security, investment, cloud platform, providers, motivation*

Introduction. To revitalize the innovation development, the process of attracting investments and their rational use are becoming of great importance. As it is known, every company has the right to attract and use investment resources. Whether the objectives of investment projects will be achieved, whether real and financial assets will develop, whether the innovative process will be supported etc. depends on the investment level. Nevertheless, the process of attracting investments becomes a priority for domestic enterprises; it has been studied in detail in the literature in terms

of the economy, the impact of crisis and other negative phenomena on it, virtual investment objects etc. Therefore, the process of using investment resources and search for ways of its improvement in terms of innovative development of the national economy should be carefully examined.

Analysis of the recent research and publications. The issues regarding innovative development have been thoroughly investigated and processed in the publications of domestic and foreign scientists. Among them are Ponomarenko V.S., Grinyova V.N., Lyubimov V.I., Petrovich J.M., Feier O.V. and others. In particular, the scientists studied areas of innovation development mechanism and uses of investment resources etc.

Works and studies in economics sometimes associate investments with their implementation (though certain publications have been devoted to the sale of investments as a whole innovation mechanism), and investment activities are regarded as investment resources (investment) and a set of practical actions to sell investment [1–10].

However, the functions of the state are divided into further functions to attract (developing the state policy to attract investment; participating in the international economic cooperation, the work of international economic and financial institutions to attract foreign investment, international agreements on foreign investment, identifying priority areas for structural and investment policies, priority guidelines for investment, accounting information on the investment sources, needs for their involvement, direction and efficiency, creating favourable conditions for investors in Ukraine, etc.) and to implement investments [2]. It does not allow confirming previous assumptions about the unity of investments and realization of investments.

Regarding the use of investments, at the state level they are stimulated towards the following: developing untapped scientific and technological potential as well as knowledge based industries; increasing export potential of enterprises; providing import substitution [2].

Companies, in turn, use the investment in capital construction, the expanded reproduction of fixed assets (technical renovation, reconstruction and expansion of existing businesses, new construction) and the development of social infrastructure. Investments in production help to improve and stabilize the financial condition of the company, to reequip its main production assets, to launch new conveyor production lines, to automate the enterprises, which in general will help to reach a new level of production and realize its innovative orientation.

If the company does not implement projects which require capital investment, one should deposit money (investment funds) in a reliable bank buy control of the promising company, so that they can have a direct impact on the performance of the company and guide its investments profitably. In this case, no attention is paid to the development of innovative enterprises as promising direct investment and its information support.

It is possible to consider the mechanism of investment applying a functional approach. In this case, it will provide a set of actions for planning, organizing, motivating, controlling and regulating investment activities carried out in the form of investment projects. As Petrovich J. M., Feier O. V. state: “The current planning system covers analysis, forecasting variants of socio-economic development, development and realization of their goals” [4]. The authors consider planning a two-pronged process (the management and prediction tool) in order to achieve the desired results of investment projects.

Unsolved aspects of the problems. Since the use of company investments (the mechanism, principles, features, lines etc.) is thoroughly investigated in the works by many national and foreign scientists and economists, with the purpose of reviving innovative development on this basis, let us turn our attention to meeting certain terms for fundamental and applied research, experimental work, in-

novation diffusion, etc. through information support of innovation of enterprises.

Objectives. In accordance with the problem to improve innovation processes, the article is to define measures and establish mechanisms to enhance information component of innovation through the use of investment resources.

The main material of the research. As we know, information security is a state of no threat to the national interests of Ukraine in the sphere of information, which does not allow injuring the person, the society, and the state through incomplete, untimely, unreliable information; unauthorized dissemination and use of information; negative information influence; negative effects of the information technology operation [5]. Within the support of industrial innovative development the information security warrants no threats to the information space.

In terms of innovation development, absence of threats to the organization’s information space is important for enterprises (information security of the company). It directly affects the performance of the enterprise’s innovation, since not only innovation, but the information on it must be protected thoroughly. Let us consider this more detail.

With the implementation of innovative processes even at the early stages there occurs dissemination of information on the nature of the innovative ideas to third parties, which is connected with the need to attract investors, to resolve a problem of industrial use of innovation, etc. Furthermore, within the innovation process disclosure of an invention, trade secrets, information dissemination through unprotected networks may occur, which inevitably leads to a loss of competitive advantage. As a result, one should expect lower economic turnover of intellectual property, underestimation of assets, and decline in reputation, which often causes bankruptcy.

Despite the fact that the legislation protects the rights for the innovation results, specific aspects (such as the primacy of the invention) are difficult to prove under the current law. In addition, as stated in [5]: “Ukrainian patents do not protect the interests of investors in the international market, especially in the case of disputes and illegal use of intellectual property.” There are several reasons for this: internal misregulation of some legislative acts in the field of innovation, their inconsistency with the EU legislation, the complexity of the process of obtaining patents, trademarks, and copyrights, unavailability of patent rights centres, etc. [6]

Thus, information innovation is carried out in two directions: legal protection of industrial and intellectual property in the creation (design) and implementation of innovative product (patenting, licensing, assessment, protection of draw-and-design documentation, technical designs, technological, operational documentation, technology utilization, etc.) and data protection (organizational, administrative, economic, etc. research and technical information), concerning the state of progress of innovative processes from its unauthorized (illegal) use [7].

Meanwhile, the innovation of the national industry is adversely affected by the lack of information on both innovation competition abroad and on possible markets for the domestic innovation. So, innovative security as a set of conditions conducive to an enterprise’s innovative development can be enhanced as a result of information

security of innovation. On the one hand, it is to protect information on innovation of the national enterprises (to protect innovative ideas); on the other hand, it is to ensure proper awareness of participants in the innovation process.

While developing directions and specific measures to improve information security of innovation, one should consider the following features of the information system of innovation:

- existing information systems which cover businesses, customers, suppliers are inefficient in terms of innovation, which leads to an increase in the number of contractors;
- the information system must cover all stages of innovation and provide information on the special protection of some of them (such as the stage of research);
- the information system in terms of innovation should provide sufficient information for the diffusion of innovation (to possess characteristics of the marketing information system);
- the use of the innovative information system should be adjusted to the processes of the enterprise's risk management [8].

At the state level, these processes are within the jurisdiction of the newly created Committee on Information, High and Information Technologies. Its competences involve the protection of personal data and information, electronic document management, and development of high technologies. The State Agency for Science, Innovation and Informatization of Ukraine (Ukraine SASII) with the relevant departments also operate in this sphere.

Measures to improve the information security innovation at the state level include the creation of the database of investment and innovative programs and projects, international investment and innovation project; their implementation involves national state-owned enterprises within the international innovation cooperation and relevant grants (No. 278–14696 dated from 12.04.2008.), providing state guarantees for innovation, etc.

To provide information protection in terms of innovation with the purpose of accelerating innovation and achieving the outlined objectives of information security of innovation development, the system of formal and informal protection has been suggested. The formal protection involves tangible expression of methods of information protection in the form of patents, copyrights, relevant contracts (such as nondisclosure agreements), computer programs, etc. Methods of the informal protection are based on restrictions of staff participation in competitive activities, work distribution and corresponding amounts of information between employees, protection of knowledge management systems, etc.

Thus, the formal protection may include the establishment of appropriate information systems. It should include the following components: the systems of document management, WEB-content, archive, digital data management and collaboration in communications [9]. The creation of Regional Innovation Information System of the information protection that provides information in the Internet incubators is a promising step in this direction.

In addition, the formal methods of protection should be strengthened by using 'cloud' computing industries. "Cloud" service is based on the third generation platform

and provides storage of almost unlimited amounts of data available online for personal and / or corporate use [10].

As part of the legislative modernization of the EU IT sphere, modernization is foreseen by implementing 'cloud' services, which is enshrined in the strategy "Unleashing the Potential of Cloud Computing in Europe". It was approved by the European Commission in September 2012 [10].

Within the national economy under the implementation of Ukraine's European integration processes, attention should be paid to the development of the 'cloud' industry and measures to protect personal data in its networks, involving primarily the choice of a reliable provider.

In the area of the formal information security management of innovation development, attention should also be paid to the development of centres of the Patent Office at the local level, for example, within industry associations, and support of establishing links between them. It is also necessary to organize more training programs for innovators in this field, for example, to teach them to conclude memorandums of understanding and agreements to avoid further disputes over intellectual property rights [6]. To improve the level of patent protection it is advisable to carry out reforms in legislation and harmonize it with the EU regulations.

To develop the informal methods for improving information security as part of security innovation development, it is required to consider the following. On the one hand, the information which is important for the company and innovator and is a trade secret should be protected from disclosure. On the other hand, the knowledge medium should be protected from barriers while transferring information and from noise communication process while implementing innovations, etc.

As to the first direction, within each innovatively active enterprise it is necessary to define the concepts of confidential information, a commercial, official secret. The latter differs in levels of inflicted loss as a result of the disclosure of information and the appropriate level of responsibility for such an act. Furthermore, enterprises define rules of dealing with the appropriate documents which contain important information and the circle of persons who will have access to it. Typically, legitimate customers of trade secrets of enterprise are government organizations (the tax offices, law enforcement, etc.) and service organizations (banks, accounting firms, etc.). At the same time it is necessary to develop a method of control of work with the documents. In the practice of insurance companies, these measures belong to the competences of the security services and marketing, which carry information and analytical work together.

Particular attention should be paid to employees who are prone to misuse of knowledge resources, violation of privacy, disclosure of trade secrets, industrial espionage, etc. In addition, workers should be protected as carriers of knowledge, which means considering the issue of information security while selecting the staff and in the course of their work, taking protective measures regarding their career, educational protection, etc. Examining the staff is associated with the study of their documents when applying for a job, checking the references and information in the summary, etc.

Career security provides promotion of the officer in the organization according to the level of their competence while educational protection provides effective threat prevention within training and self-learning of the staff.

Measures to reinforce the information component of innovation through the use of investment resources are shown in Fig. 1.

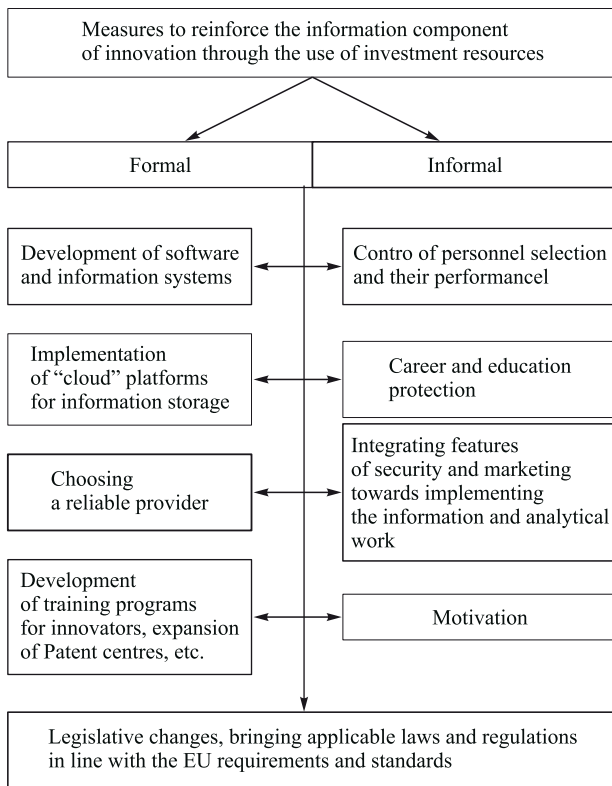


Fig. 1. Measures to reinforce the information component of innovation through the use of investment resources

As generalization of recommendations on strengthening the information component of innovation through the use of investment resources (Fig. 1), we should note that both formal and informal methods have their drawbacks. To enhance the innovative development based on them, one should make use of (combination) both first and second ones. The use of some of them belongs to the functions of the company (they can be provided by implementing technical and technological, economic, organizational, cultural events in the company), and others belong to competences of authorities (they were mentioned above). This identified the need to develop the mechanism of strengthening the information component of innovative development (Fig. 2). It contains three components: organizational, institutional and economic ones. The first component includes innovation coordinators (innovatively active enterprises, objects of innovation infrastructure (technopolises, technological parks, etc.), research organizations and educational institutions. It should be noted that the mechanism does not reflect the recommended measures implemented by businesses to strengthen the information component of innovative development (for example, integration of security functions and reliable marketing or choice of providers) (Fig. 2).

The institutional component of the strengthening mechanism for the information component of innovative development includes regulatory support in the field of innovation and state administrative bodies on investment activities (the Verkhovna Rada of Ukraine, the Cabinet of Ministers of Ukraine, state, local governments, etc.). The economic component of the mechanism provides the innovation development with the necessary resources and, thus, includes the following financial institutions: venture companies, investment funds and others. The interaction

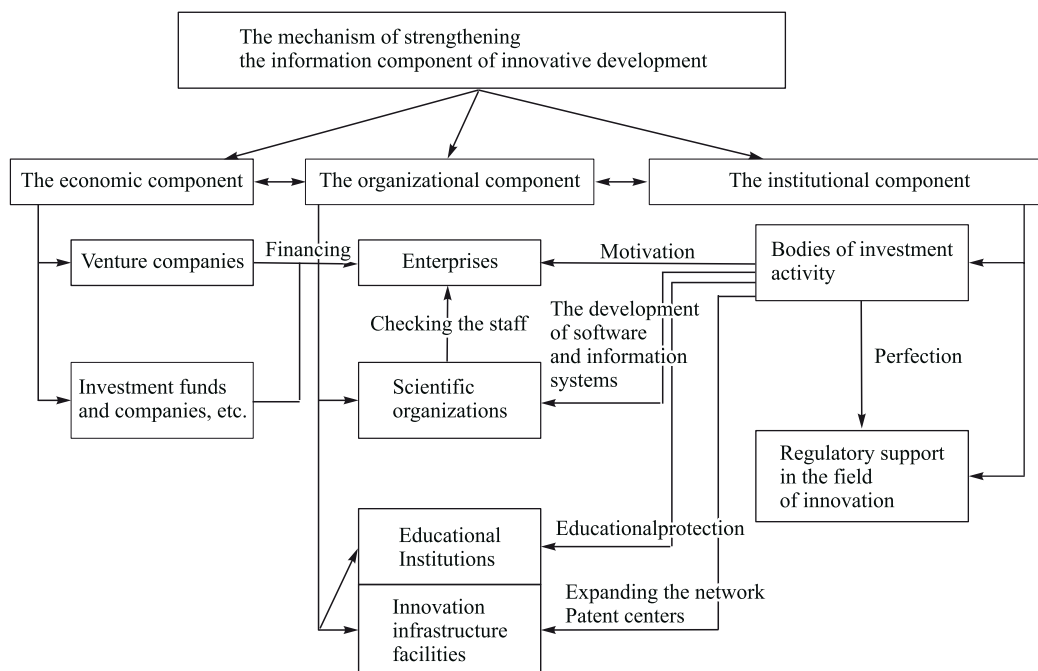


Fig. 2. The mechanism of strengthening the information component of innovative development – interaction within the innovation environment with the purpose of strengthening the information component of innovative development

of these components while implementing the mechanism and within the innovation area will ensure achieving the goal, i.e. strengthening the information component of innovative development (Fig. 2).

Conclusions and prospects of further development.

Thus, the attraction of necessary volume of investment resources is essential for innovative development of the national economy. However, the process of selecting investment funds (or investment in any other form) does not guarantee the effectiveness of their use. The effectiveness of this process is influenced by many factors, among which the proper information support for innovative processes is the leading one.

The innovation performance is significantly affected by the condition of absence of threats to the enterprise information space, which does not protect the innovations themselves, but the information on them from unauthorized use.

To strengthen the information component of innovation through the use of investment resources a set of formal and informal measures (Fig. 1) could be recommended; their implementation contributes to the intellectual capital, the increase in the level of knowledge on management processes, etc. and constitutes the mechanism structure (Fig. 2). The formal measures include: the development of software and information systems, the use of 'cloud' platforms for information storage, choice of reliable providers, formation of training programs for innovators, network expansion of Patent centres, etc. The informal measures are: verification of selection of personnel and their activities, career and education protection, integration of security and marketing functions towards the implementation of information-analytical work motivation.

In further studies of the problem, it can be appropriate to identify consideration of safe innovation development while determining prices for innovative products at the stage of defining its strategies and calculating the final price.

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Мета. Визначення комплексу формальних і неформальних заходів, для реалізації яких слід рекомендувати механізм підсилення інформаційної безпеки інноваційного процесу, що забезпечить розвиток інтелектуального капіталу підприємств, підвищення рівня знань працівників і поживлення управлінських процесів у цілому.

Методика. Для досягнення поставленої мети у роботі використане теоретичне узагальнення та систематизація (для уточнення напрямів використання підприємствами інвестицій в умовах інноваційного розвитку та значення інформаційної безпеки інноваційних процесів); теоретико-методологічний аналіз та експертне оцінювання (при формуванні заходів з посилення інформаційної складової інноваційного розвитку та розроблення на їх основі механізму); метод експертних оцінок, індукції та дедукції, аналізу й синтезу (для визначення очікуваних результатів від реалізації комплексу формальних і неформальних заходів).

Результати. На основі узагальнення ролі інформаційної безпеки у забезпеченні інноваційних процесів підприємства та формування групи заходів з її розвитку (окреслені з урахуванням сучасних тенденцій в інформаційному забезпеченні інноваційних процесів промислових підприємств та мотиваційного впливу на їх працівників), розроблено механізм підсилення інформаційної складової інноваційного розвитку.

Наукова новизна. Наукова новизна отриманих результатів полягає в обґрунтуванні механізму підсилення інформаційної складової інноваційного розвитку, що сформований з урахуванням напрямів удосконалення інформаційного забезпечення інноваційного розвитку промисловості на засадах використання інвестиційних ресурсів.

Практична значимість. У практиці управління підприємствами може бути використаний механізм підсилення інформаційної складової інноваційного розвитку, а також рекомендації із застосування „хмарних“ платформ для збереження інформації, розвитку програмного забезпечення та інформаційних систем, вибору надійних провайдерів, формування програм професійної підготовки інноваторів, розширення мережі Патентних центрів, інтеграції функцій служб безпеки та маркетингу в напрямі реалізації інформаційно-аналітичної роботи, захисту кар'єри та освітнього захисту на основі законодавчих змін, приведення у відповідність чинних законів і нормативних актів вимогам і нормативам ЄС.

Ключові слова: *інноваційний розвиток, механізм, інформаційна безпека, інвестиції, „хмарні“ платформи, провайдери, мотивування*

Цель. Определение комплекса формальных и неформальных мер, для реализации которых следует ре-

комендовать усилить механизм информационной безопасности инновационного процесса, что обеспечит развитие интеллектуального капитала предприятий, повышение уровня знаний работников и оживление управленческих процессов в целом.

Методика. Для достижения поставленной цели в работе использовано теоретическое обобщение и систематизация (для уточнения направлений использования предприятиями инвестиций в условиях инновационного развития и значение информационного развития, а также безопасности инновационных процессов); теоретико-методологический анализ и экспертная оценка (при формировании необходимых мер по усилению информационной составляющей инновационного развития и разработка на их основе механизма); метод экспертных оценок, индукции и дедукции, анализа и синтеза (для определения ожидаемых результатов от реализации комплекса формальных и неформальных мер).

Результаты. На основе обобщения роли информационной безопасности в обеспечении инновационных процессов предприятия и формирования группы мероприятий по ее развитию (очерченные с учетом современных тенденций в информационном обеспечении инновационных процессов промышленных предприятий и мотивационного воздействия на их работников), разработан механизм усиления информационной составляющей инновационного развития.

Научная новизна. Научная новизна полученных результатов заключается в обосновании механизма усиления информационной составляющей инновационного развития, который сформирован с учетом направлений совершенствования информационного обеспечения инновационного развития промышленности на основе использования инвестиционных ресурсов.

Практическая значимость. В практике управления предприятиями может быть использован механизм усиления информационной составляющей инновационного развития, а также рекомендации по применению „облачных“ платформ для хранения информации, развитию программного обеспечения и информационных систем, выбору надежных провайдеров, формированию программ профессиональной подготовки инноваторов, расширению сети Патентных центров, интеграции функций служб безопасности и маркетинга в направлении реализации информационно-аналитической работы, защиты карьеры и образовательной защиты на основе законодательных изменений, приведения в соответствие действующих законов и нормативных актов требованиям и нормативам ЕС.

Ключевые слова: *инновационное развитие, механизм, информационная безопасность, инвестиции, „облачные“ платформы, провайдеры, мотивация*

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