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INNOVATION AND INVESTMENT MONITORING AS A TOOL OF INFORMATION SUPPORT FOR ACTIVISATION OF THE INNOVATION AND INVESTMENT ACTIVITY OF AN ENTERPRISE

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Introduction. Information support for innovation and investment activity is an independent tool of its activisation and is a process of continuous purposeful selection of relevant integrated indicators, which are necessary for the coordination of planning, control, production and collecting information on all areas of innovation and investment activities. The main methodological tool of information support for innovative and investment activity should be a monitoring method, which is a component of the controlling system and allows a manager to control the implementation of innovation and investment strategy on the basis of the indicators monitoring.

Aim and tasks. The aim of this work is to provide methodological basis for organization of innovation and investment monitoring system at the enterprise as a tool of information support for activisation of its innovation and investment activity.

Research results. Innovation and investment monitoring should be considered as a system of monitoring, evaluation and forecasting of key changes in innovation and investment activity of an economic entity. The methodical basis of the innovation and investment controlling are the indicators of production and financial accounting, integrated into a single database based on the modern information and communication technologies. Innovation and investment monitoring includes three components: monitoring of the external environment of the investment projects, monitoring of the general results of the strategic investment plan, monitoring of the specific actions performance (monitoring of efforts and individual results).

The article considers the management support system building, which constitutes of subsystems for personal information, analysts, operational, middle and senior management level.

Conclusions. Information support for innovation and investment activities is an independent direction of its activation and is a process of continuous targeted selection of relevant integrated indicators. Monitoring method is considered as the main methodological tool of information support for the activation of innovation and investment activity. In order to build information and investment monitoring system it is proposed to use the suggested conceptual approach to the formation of innovation and investment controlling, system of indicators of innovation and investment monitoring, monitoring of legislative support of innovation and investment activities, the appropriate information systems in the enterprise.

Key words: enterprise, innovation, investment, controlling, monitoring, management information systems.

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ІННОВАЦІЙНО-ІНВЕСТИЦІЙНИЙ МОНІТОРИНГ ЯК ІНСТРУМЕНТ ІНФОРМАЦІЙНОГО ЗАБЕЗПЕЧЕННЯ АКТИВІЗАЦІЇ ІННОВАЦІЙНО-ІНВЕСТИЦІЙНОЇ ДІЯЛЬНОСТІ ПІДПРИЄМСТВА

Вступ. Інформаційне забезпечення інноваційної та інвестиційної діяльності є самостійним інструментом її активізації і являє собою процес безперервного цілеспрямованого добору відповідних інтегральних показників, необхідних для координації планування, контролю виробництва та збору інформації за всіма напрямками інноваційної та інвестиційної діяльності. Основним методологічним інструментом інформаційного забезпечення інноваційної та інвестиційної діяльності має стати метод моніторингу, який є складовою частиною системи контролінгу.

Мета і завдання. Метою даної роботи є забезпечення методологічного базису організації системи інноваційно-інвестиційного моніторингу на підприємстві як інструменту інформаційного забезпечення активізації його інноваційно-інвестиційної діяльності.

Наукові результати. Інноваційно-інвестиційний моніторинг слід розглядати як систему моніторингу, оцінки та прогнозування ключових змін в інноваційно-інвестиційній діяльності господарюючого суб'єкта. Методичною основою інноваційного та інвестиційного контролінгу є показники виробничого й фінансового обліку, інтегровані в єдину базу даних на основі сучасних інформаційно-комунікаційних технологій. Інноваційно-інвестиційний моніторинг включає в себе три компоненти: моніторинг зовнішнього середовища інвестиційних проектів, моніторинг загальних результатів стратегічного інвестиційного плану, моніторинг виконання конкретних дій (моніторинг зусиль та індивідуальних результатів). У статті розглядається побудова системи управлінської підтримки, що складається з підсистем для персональної інформації, аналітиків, операційної, середньої та вищої ланки управління.

Висновки. Метод моніторингу розглядається як основний методичний інструмент інформаційного забезпечення активізації інноваційної та інвестиційної діяльності. В цілях побудови інформаційно-інвестиційної системи моніторингу пропонується використовувати запропонований концептуальний підхід до формування інноваційно-інвестиційного контролінгу, систему показників інноваційно-інвестиційного моніторингу, моніторинг законодавчого забезпечення інноваційної та інвестиційної діяльності, відповідні інформаційні системи на підприємстві.

Ключові слова: підприємство, інновації, інвестиції, контролінг, моніторинг, інформаційні системи управління.

Introduction. Information support for innovation and investment activity is an independent tool of its activisation and is a process of continuous purposeful selection of relevant integrated indicators – thresholds, which are necessary for the coordination of planning, control, production and collecting information on all areas of innovation and investment activities [1; 2].

The main methodological tool of information support for innovative and investment activity should be a monitoring method, which allows a manager to transform the control over the implementation of innovation and investment strategy into a generalized and targeted process, based on the indicators monitoring, allowing tracking the measurement of external and internal factors, formation and adjustment of the amendments to the innovation and investment plan of the enterprise in terms of goals, tasks and methods [3; 4].

The urgency of the problem of building a monitoring system at industrial enterprises is determined not only by economic circumstances, but also by legal circumstances, in reference to an economic entity and the main link of innovation and investment potential of the territory. These circumstances are also considered as the main objectives of innovation and investment activities as improving the competitiveness of the enterprise, distribution of markets, strengthening of public-private partnership, the implementation of social partnership in the framework of the interests of the territory**.**

Analysis of recent researches and publications. Issues of information support for innovation and investment activity have been investigated by such scientists as Pysarenko T.V., Kvasha T.K. [5], Herasymenko I. O. [6], Tolbatov V.A., Tolbatov A.V. Smoliarov, Yu.H. Smoliarov, H.A. [7; 8], Stadnyk, V. [9]. The problem of contolling and monitoring methods application in innovation and investment management has been addressed by Pylypenko A. A., Lytvynenko A.O. [10], Filyppova, S.V. [11], Selivanova, N.M. [12], Pilevych D. S [13], Koval V. [16, 18].

Previously unsettled problem constituent. Despite the interest to the controlling method as a tool for information support in innovation and investment decision-making, the problem of organization and implementation of innovation and investment monitoring as a separate instrument remains unclear.

Main purpose of the article. The aim of this work is to provide methodological basis for organization of innovation and investment monitoring system at the enterprise as a tool of information support for activisation of its innovation and investment activity.

Results and discussions. The concept of "monitoring" comes from the Latin «monitor», one that watches, and is defined as the set of observations and research [14, p. 505].

The notion of "controlling" is defined as accounting control of the enterprise [14, p. 393].

As can be seen, dictionary definitions do not provide a satisfactory definition of the concepts under study. In the author's opinion, innovation and investment monitoring should be considered as a system of monitoring, evaluation and forecasting of key changes in innovation and investment activity of an economic entity.

Innovation and investment monitoring is a component of the controlling system (in our case, innovation and investment), the theoretical concept of which began to develop in the 1970s in the United States and Germany. The main differences between the American and German concepts of controlling relate to the structure of the components of the controlling system – for example, external accounting (taxes, insurance, audit, information and communication interaction). The American concept of controlling provides for the inclusion of external accounting, and the German does not provide, since external accounting in German enterprises is allocated to a separate unit.

Thus, the concept of controlling can be defined as a set of goals, objectives, mechanisms and tools, organizational structures, integration of which allows for

building a system of accounting and control at the enterprise.

The purpose of controlling the innovation and investment activity of the enterprise is determined by the objectives of its innovation and investment strategy (including the general objectives). Thus, the innovation and investment controlling contributes to the achievement of the main financial goal of the enterprise-to increase the value of the enterprise through the optimization of the financial result, profit maximization with guaranteed liquidity [12; 13; 15].

The main task of the innovation and investment controlling is to provide information for the planning processes of innovation and investment activity, focused on the final result, for regulation and monitoring of innovation and investment activities of the industrial enterprise.

The special tasks of the innovation and investment controlling should include such as planning and control of indicators of innovation and investment attractiveness, including indicators of financial stability, efficiency of innovation and investment proposals; risk assessment and assessment of the market value of the enterprise as an economic entity; preparation and transmission of information; formation of the organizational structure of controlling over investments into innovation, and methodological support for this system. The special tasks of the innovation and investment controlling also include the formation and application of the system of planning and control of innovation and investment activity, provision of the necessary information to potential investors, innovators, shareholders, owners of the enterprise. Thus, the main content of the special tasks of the innovation and investment controlling is to provide information support for management in strategic innovation and investment decisions, coordination, response and adaptation to changing internal and external conditions for the attainment of innovation and investment goals.

The methodical basis of the innovation and investment controlling are the indicators of production and financial accounting, integrated into a single database based on the modern information and communication technologies. Conceptual approaches to the formation of the innovation and investment controlling at an industrial enterprise, taking into account its main and special tasks are presented in Fig. 1.

The main object of the innovation and investment controlling is an investment plan, which is usually developed as a result of the processes of investment and financial decision-making. The main importance of the investment plan to the business entity is to solve questions about the size of possible funds for investment and the mechanism of their distribution between competing investment needs.

The main goal of innovation and investment controlling introduction requires application of indicators for selection of synchronous model with the establishment of an integral indicator of the stability of the economic conditions on the basis of synthesis of systems of indicators of financial condition, investment process and production activities.

Synchronous planning models allow identification of the relationship between different innovative objects, as well as between the investment environment and other areas of the enterprise.

Such models require an information system that is properly organized on the basis of production, financial accounting and automated data processing, i.e. modern information and communication technologies.

Currently, in the context of globalization of global competition, the growing system of the innovation and investment controlling should respond quickly and provide relevant information, focused on the performance result and liquidity of the enterprise, which provides effective investment decision-making. At the same time, the innovation and investment controlling tools should be sufficiently accurate and flexible.

The main function of the innovation and investment controlling is to coordinate the whole management system to ensure focused management of investment processes. The subject of coordination is the system of planning the investment activity of the enterprise, performance, information and control.

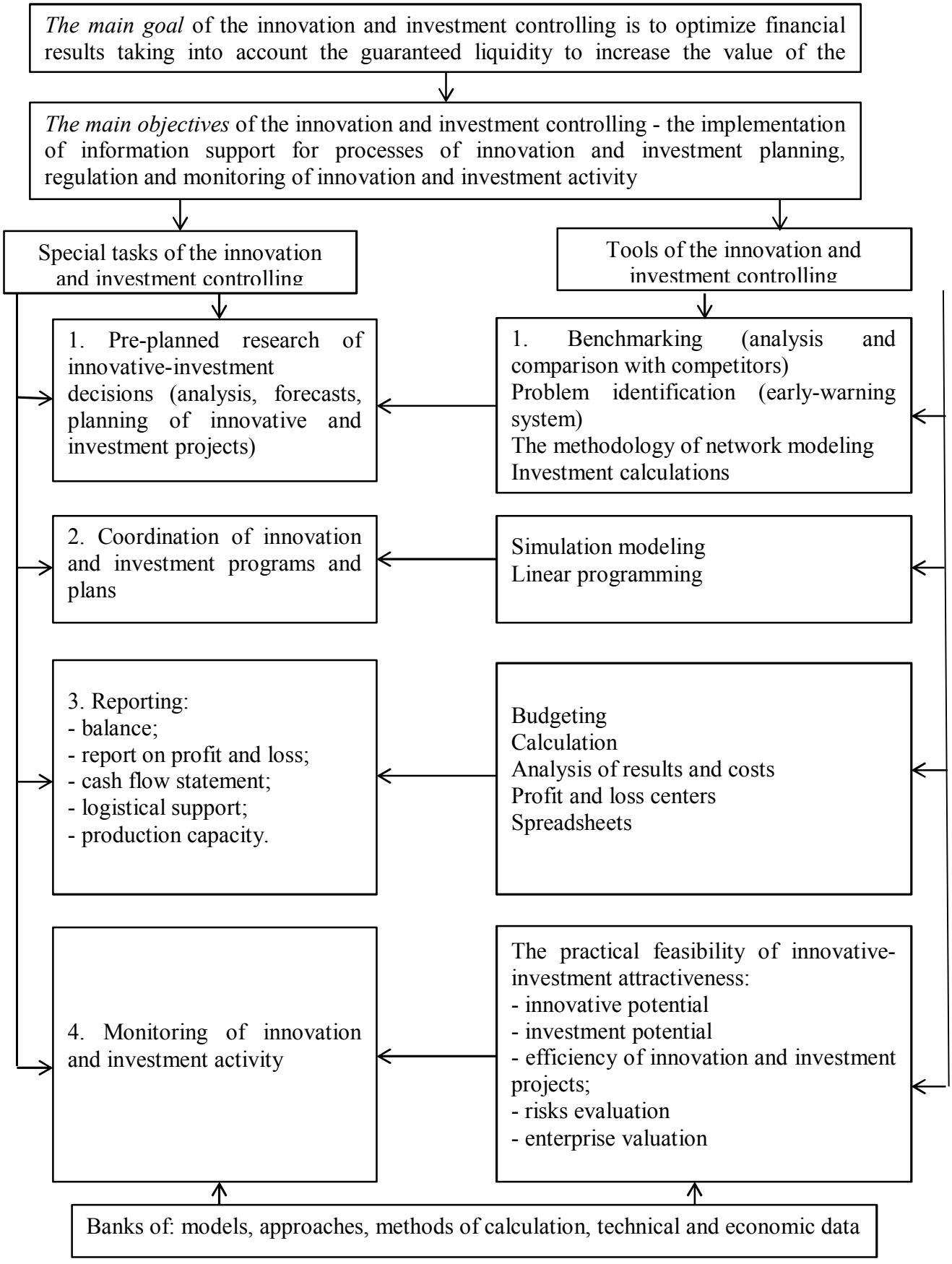

Fig.1. A conceptual approach to the formation of the innovation and investment controlling

Thus, the main functions of the innovation and investment controlling are:

- the formation and supervision of systems of innovation and investment planning, control and information support;
- coordination of innovation and investment planning system with the general strategy of the enterprise development;
- advising top management on the implementation and adoption of innovative investment decisions.

The strategic investment decision making is based on reliable and complete information about the production and economic activities of the business entity, the state of the environment, the forecast of investments, information and many other things. It is possible to obtain such information with the help of innovation and investment monitoring, the principles of which are discussed in detail in [11; 12].

Innovation and investment monitoring is the main tool of IIC, namely information and methodological support for coordination and assistance to investment planning systems, control of investment activities and its information transparency. The main purpose of innovation and investment monitoring is to provide information to investors and managers of the company regarding the investment processes that take place at the enterprise, since the main condition for the activation of investment activity is primarily the implementation, not only the feasibility study of business plans, calculations of the expected economic efficiency and obtaining investments and loans as evidenced by numerous facts of Ukrainian reality.

In accordance with the purpose of the organization of innovation and investment monitoring its main tasks should be the following: regular monitoring of the investment object state with a limited number of indicators that are of interest from the perspective of evaluation of the innovation and investment activity of the enterprise; diagnosis of the state of investment processes; forecasting trends in the investment activities and development of recommendations to address problems occurring during the investment projects with the evaluation of investment resources necessary for these purposes.

Innovation and investment monitoring includes three components:

a) monitoring of the external environment of the investment projects (state regulation of investment activities, taxation of investment activities, import duties, scientific and technical developments, environmental requirements);

b) monitoring of the general results of the strategic investment plan, the progress level of the main goal accomplishment in the selected strategic directions is based on the analysis of statistics and a limited number of selected integrated indicators. Monitoring is carried out by a group of investment analysts. The results of the monitoring are summarized in the analytical reports of the fixed structure, with conclusions about the degree of the goals achievement and the need for adjustments in the strategic plan.

c) monitoring of the specific actions performance (monitoring of efforts and individual results) is based on the working groups reporting on the implementation of the strategic plan by three components: a) the course of action; b) the effect of the actions; c) the activity of the working group.

During the development of the system of indicators of innovation and investment monitoring the question arises as to the structure of indicators, which reflect the innovation and investment activity of the enterprise. In this regard, it is proposed to identify the following structural components of investment monitoring:

- regulatory and legal support;
- monitoring of production and economic activities;
- monitoring of financial capacity;
- monitoring of fixed assets;
- analysis of scientific and technological reserve;
- monitoring of investment activities;
- monitoring of the development of corporate management (as the potential for development and transformation of the enterprise).

The information basis for the innovation and investment monitoring can be the data of the state statistical service and the materials of

surveys at the enterprise, investment programs and projects. Information databases of innovation and investment monitoring should contain systematized data on innovation and investment activities of the enterprise, which reflect its various aspects, the regulatory framework governing the investments into innovations, information and analytical materials on changes in the external environment, entered into the information databases of innovation and investment monitoring [17].

In order to accumulate and exchange the data during the implementation of the strategic innovation and investment plan it is expedient to create a database hosted on the Internet server. This allows each working group to independently enter information on accomplishment level in their areas of responsibility. Analytical reports on the implementation of the innovation and investment strategic plan and information on amendments to it can be published on the same server, which ensures compliance with the principle of information transparency in the implementation of the plan.

The results of the innovation and investment monitoring for the three areas are combined in a summary report, which serves as a source for the conclusion about the relevance and adequacy of the investment according to the innovation and investment strategy, and for decision-making on its adjustment. This ensures constant updating of the strategic innovation and investment plan and stimulates its implementation.

One of the important structural components of innovation and investment monitoring is the monitoring of legislative support. State regulation of innovative-investment activity includes state laws, decrees of the President of Ukraine, decrees of the Cabinet of Ministers of Ukraine, the orders of the Cabinet of Ministers of Ukraine, legal acts, concepts, programs, strategies of innovative-investment development.

The study of changes in such a large set of documents that govern investment into innovations is necessary in order to establish:

- direct state regulation of innovation and investment activities;
- different ways of financing and providing different tax regimes;
- tax incentives for enterprises in terms of tax reduction on condition that they accomplish innovation and investment projects;
- availability and provision of guarantees by the state to create a stable tax climate for investors and the possibility of unhindered export of non-resident funds received as a result of innovation and investment activities.

In the process of pre-planned research it is necessary to organize the monitoring of legislative support for innovation and investment activities (table. 1).

According to the results of the study of the legislative framework of state regulation of innovation and investment activity the following conclusions were made:

- conditions have been created for technological renewal and modernization of equipment (high-tech equipment is exempt from payment of value added tax when it becomes a part of the authorized capital, and there are a number of benefits for the payment of import duties);
- it is possible to ensure a quick payback of innovation and investment projects that are urgently needed by the state due to:

(a) accelerated depreciation;

b) income tax benefits for funds that accumulate for the improvement of fixed assets, including the payment of interest on loans that were provided for these purposes;

- additional guarantees of preservation of the tax climate that are provided to foreign investors infringe the rights of domestic investors and create conditions for capital outflow abroad;
- preferential mode of depreciation is created for business groups, small businesses, as well as significant innovation and investment projects in the extractive industries.

Table 1. Scheme of legislative support for innovation and investment activity in Ukraine

Legislative acts	A common legal framework	Guarantees to the investor	Tax benefits	Depreciation methods	Investment
The Civil Code of Ukraine Tax Code of Ukraine	+		+		+
Act «On the Priority Directions of Innovation Activity in Ukraine»	+				
Act «On Investment Activity»	+				
Act «On Innovation Activity»	+				
Act «On Protection of Foreign Investments in Ukraine»	+	+			
Act «On Protection of Economic Competition»	+				
Act «On State Regulation of Activity in the Sphere of Transfer of Technologies»		+	+		
Act «On State Special Programs»	+				
Act «On the Regime of Foreign Investments»	+	+			
Act «On Business Associations»	+				
Act «On Scientific and Technical Information»	+				
Act «On customs tariff of Ukraine»					+
Act «On Development and State Support of Small and Medium Business in Ukraine»			+	+	
Act «On Special Regime of Investment and Innovation Activity of Technological Parks»	+	+	+		
Decree of Cabinet of Ministers «On system of currency regulation and currency control»		+	+		+
Accounting Standards 7 «Fixed Assets», 8 «Intangible Assets»				+	

In general, the legislation regulating the innovation and investment activity is aimed at strengthening the licensing role of the executive authorities and stimulating all types of innovation and investment activities.

In accordance with the properties of specific monitoring objects, it is necessary to form a system of algorithms for data collection, ordering them into system and analysis. Specific methodological tools are developed according to the nature of the analytical data.

The use of different monitoring methods makes it necessary to form its information base on the basis of a differentiated approach.

The solution of the specified tasks assumes the need for creation of the corresponding information system which includes use of the forward-looking computer processing of information, which reflects the purpose of informatization, and has to cover all spheres of activity, its stages, sequence, terms, need for hardware and software, staffing, costs of its creation and operation. This system acts therefore as a management information system for the implementation of innovation and investment strategies and consists of interconnected information subsystems, which meet the needs of users, of the appropriate level and structure.

Employees that work at various levels of management service corresponding information systems: systems of operational level (Information Infrastructure and TPS), designed to control the transactions; personal information system (Office Automation and Communication Systems) for personal work automation; information systems (MIS) for operators and line managers (Operational Systems); information systems (DSS) for middle level managers (Managerial Systems); information systems (AI) for analysts (Support Staff); information system (EIS, OLAP) for senior management – top managers (Strategic Systems) (Fig. 2).

Thus, the DMSS includes DSS and MIS and is designed to solve poorly structured problems, has a developed human-machine interface and is based on expert systems.

Expert systems (ES) are a branch of artificial intelligence (AI) and are used in DMSS to improve the performance and quality of the decisions being made. The expert system in the DMSS has the following functions: recognition of the current situation, its analysis, diagnosis and formulation of immediate goals in order to return the enterprise to its desired development path; building ways to achieve these goals, taking into account the reserves of the enterprise; expanding the knowledge base; providing a user-friendly interface.

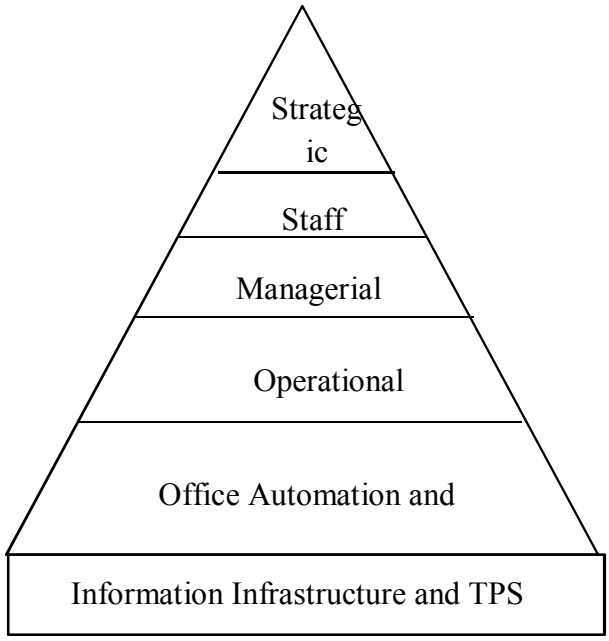

Fig. 2. Types of enterprise information systems (compiled on the basis of [2; 6])

Decision-making support system (DMSS) is an individual computerized information system for support and assistance to the person that makes management decisions at a linear, functional or top-management level, and is situated directly at his/her workplace.

One of the characteristic features of DMSS systems is that these systems solve partial problems, that is, they exercise partial functions and are part of the stages of the management decision-making process. In this sense, many different DMSS can coexist, built on different bases (methodological principles), for example, for different: stages of the decision-making process for a task; tasks within a function; tasks of the division within the structure of the enterprise.

In such a situation, it becomes necessary to integrate DMSS at different levels (or at least to ensure communication between them). The result of the integration is creation of the Executive Support System (ESS), which supports and provides assistance at different stages or for different functions at the same workplace. It is this class of systems that represents the real purpose of forming such a tool of computer support for management decision-making, for which Data Support and DMSS systems are only "building blocks" that are used for its construction. In turn, the ESS system is a component for the Management Support System (MSS) – a system of support for administrative and managerial personnel or Online Analytical Processing (OLAP).

Such a system should, at a minimum, integrate a large-format table, a statistical analysis package, presentation graphics, and a powerful interface for relational DBMS, which supports exchanges with many files. Sometimes the OLAP includes a geographic information system (GIS).

On the other hand, a computer-based decision support system should not only facilitate the selection of the optimal solution, but also facilitate its implementation.

Conclusions and further researches directions. Information support for innovation and investment activities is an independent direction of its activation and is a process of continuous targeted selection of relevant integrated indicators. Monitoring method is considered as the main methodological tool of information support for the activation of innovation and investment activity. Innovation and investment monitoring is one of the components of the controlling system.

In order to build information and investment monitoring system it is proposed to use the suggested conceptual approach to the formation of innovation and investment controlling, system of indicators of innovation and investment monitoring, monitoring of legislative support of innovation and investment activities, the appropriate information systems in the enterprise.

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ЛІТЕРАТУРА

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