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DEVELOPMENT AREAS OF REENGINEERING PROCESSES OF MANAGEMENT SYSTEMS IN THE CONTEXT OF INNOVATIVE ECONOMY

НАПРЯМКИ РОЗВИТКУ ПРОЦЕСІВ РЕІНЖИНІРИНГУ СИСТЕМ УПРАВЛІННЯ В УМОВАХ ІННОВАЦІЙНОЇ ЕКОНОМІКИ

The authors considered anti-evolutionary, institutional, entrepreneurial and integration models of management systems in the context of studying the transformational cycle of economic processes development. This made it possible to prove that the effectiveness of the application of a specific approach to the organization of the structure of the management system depends on the degree of its implementation at a specific economic asset, and the transition to another structure is necessary in the case of the limitations of the existing one. It has been proven that one of the most promising mechanisms is the reengineering of business processes, which provides process orientation and an inductive approach to the use of modern information technologies, allowing flexible adaptation of the management system to changes in external and internal environments. The use of an object-oriented approach to the analysis, design and synthesis of applied software is proposed. It will allow the use of an iterative method of project development, which increases the efficiency, quality and speed of performing all types of work, as well as the possibility of forming multi-option solutions for the development of production and economic systems.

Keywords: reengineering, business processes, information technology, management system, economic asset, financial resources, economic efficiency, innovative economy.

Технологічна модернізація економіки України й перехід на інноваційний шлях розвитку вимагає необхідність зміни існуючих підходів до управління. У зв'язку з цим, на сьогодні актуальним є вивчення напрямків розвитку процесів реінжинірингу систем управління в умовах інноваційної економіки, що дозволить визначити важливість його проведення й пріоритети прецедентів для перепроєктування економічних об'єктів.

У статті проведено систематизацію і узагальнення існуючих моделей систем управління. Доведено, що одним з найбільш перспективних механізмів є реінжиніринг бізнес-процесів, який передбачає процесну орієнтацію та індуктивний підхід щодо використання сучасних інформаційних технологій, що допускає гнучку адаптацію системи управління до змін зовнішнього й внутрішнього середовища.

Запропоновано й обґрунтовано використання об'єктно-орієнтованого підходу до аналізу, проектування і синтезу прикладного програмного забезпечення, що дозволить застосовувати ітеративний метод розробки проєктів, який підвищить ефективність, якість і швидкість виконання всіх видів робіт, а також надасть можливість формування багатоваріантних рішень щодо розвитку виробничо-економічних систем.

Вирішено завдання ідентифікації умов успішної реалізації запропонованої моделі реінжинірингу бізнес-процесів, а саме: координація цілей проєкту реінжинірингу із

стратегічними цілями економічного об'єкту; мотивація проєкту реінжинірингу; зацікавленість і компетентність керівництва; готовність економічного об'єкту в цілому і кадрових ресурсів, зокрема, до змін; ефективне управління змінами.

Запропонована в роботі процесно-орієнтована концепція стратегічного управління розвитком економічного об'єкту реального сектора економіки на основі реінжинірингу бізнес-процесів інтегрує в собі положення системного, синергетичного, процесного й стратегічного підходів, що доповнюють один одного і формують нове розуміння про управління підприємствами в довгостроковій перспективі. Практичне застосування реінжинірингу процесів системи управління економічного об'єкту надасть можливість адаптуватися до мінливих умов зовнішнього середовища.

Ключові слова: реінжиніринг, бізнес-процеси, інформаційні технології, система управління, економічний об'єкт, фінансові ресурси, економічна ефективність, інноваційна економіка.

JEL Classification: O32, M11

Formulation of the problem. The modern paradigm of social and economic development of Ukraine defines the transition to an innovative model aimed at ensuring the competitiveness of enterprises in the domestic and world markets as a priority task. The formation of a new innovative model for the development of social production is associated with the emergence of a new technological order based on the formation of high-tech resources in the real sector of the economy, the implementation of modern management systems and the effective involvement of innovative developments in the economic turnover. This approach allows for economic growth in a new economy.

Despite significant changes in production and technological processes, active use of information technologies in management, large number of business entities continue to apply approaches of the past to management, regardless of the scale of activities, tasks and development prospects. However, without changing the existing approaches in management, technological modernization of the economy and the transition to an innovative path of development are impossible, and it is managerial innovations that should become the main factor in increasing the competitiveness of the national economy in the world market.

It should be noted that managerial innovations are any innovations in the field of management, first applied at a particular enterprise. In business practice, the process of improved budgeting, the balanced scorecard (BSC), the process calculation method (ABC - costing) or target costs (Target - costing), etc., are actively used as such innovations.

Analysis of recent research and publications. The works of well-known scientists-economists in the field of management systems and technologies to date have also formed a powerful methodological basis in the field of management innovative technologies. At the same time, the reengineering of business processes is singled out and considered as one of the leading technologies in the works of domestic and foreign scientists. Its theoretical foundations were studied in detail in the works of Akoff R. [1], Anufrieva N. N. [2], Ouchi W. [15], Karenov R.S. [7], Prodius O.I. [10], Davenport T.H. [4], Didukh V.V. [5], Bondar-Pidhurska O.V. [3], where the role and place of reengineering of business processes in the management system of enterprises and corporations are determined, its definitions are given, the implementation mechanism and conditions for effective use in business practice are described.

Organization issues and practical recommendations on the use of business process reengineering in order to increase the efficiency of financial and economic activities of both individual economic assets and their structural units are considered in the works of Hammer M., Champi Dzh. [17], Robson M., Ulpah F. [16], Taraniuk L.M. [14], Sakun L.M., Sukhomlyn L.V., Ryznichenko L.V., Vielkin B.O. [13], Kryvokon M.O. [9], Kozachenko A.V. [8], Ippolitova I.Ya. [6] and others. However, despite the availability of fundamental research in this area, the issues of the methodology of reengineering of business processes in the real sector of the economy in the context of the formation of an innovative model of the country's development, improvement of the theoretical foundations of

reengineering in the field of the genesis of management systems of economic objects, modeling of the stages of its implementation, and determined the direction of this scientific research.

Formulation of the article objectives. The purpose of the article is to study, on the basis of a systematic approach, the development areas of the reengineering processes of management systems in the context of innovative economy, which will determine the need for its implementation and the priorities of precedents for the redesign of economic assets.

Presentation of the main research material. The current stage of the national economy development, called the transformation cycle, is defined as transitional one from centralized to market economy, which has significantly changed the conditions for the functioning of economic assets. Changes in their economic environment have led to aggravation of the problems facing management in the sale of finished products and services provided; improvement of organizational management structures and the establishment of clear function lines between responsible persons and structural divisions; marketing research and the formation of a strategic program; effective management of monetary resources and others. These problems require an adequate reform of the management systems of economic assets.

In a market economy, most economic assets are forced to use the anti-evolutionary model of the "theory of survival" in their organization. This is due to the fact that our country, like all post-socialist countries, during the transition from a planned economy to a market economy, experienced a deep economic recession. This phenomenon differs from the cyclical fluctuations in production, typical of advanced economy, and is directly related to the process of transition from one type of economic system to another.

At the beginning of the transformation cycle, there was also a sharp increase in the number of economic assets using the institutional concept in their activities. These are, first of all, the so-called small enterprises, formed by small groups of initiative people with high professional knowledge and seeking to establish commercial activities.

The entrepreneurial model (and its variant, the agency model) was also widely used at the initial stage of the transformation cycle. In contrast to the institutional concept, this concept is also typical for many modern economic assets. It mainly reflects the interests of either an individual owner or a group of management personnel of an economic asset. Therefore, it is still untimely to assess the merits of such a model at the present stage of the transformation cycle.

Only an insignificant part of economic assets based their functioning on the integration model. These are mainly economic assets – the flagships of the industry, which have not lost their importance not only in the economic activity of the country, but also successfully entered the world market with their products. Such economic objects are characterized by a stable financial position, which allows for large-scale marketing research, implementation of innovative developments, and making balanced strategic and tactical decisions.

Thus, in order to overcome the crisis phenomena and increase the rate of production and sales, economic assets must regularly define (clarify) the concept, develop and improve the strategy and mechanisms for adaptation to external and internal changes, the use of which determines the flexibility of their management systems and ensures effective functioning in a modern unstable economic environment.

The management system of an economic asset is determined, first of all, by the organizational structure, which is understood as a set of management links located in strict subordination and providing the relationship between the management and managed systems. It includes the composition and nomenclature of management bodies and positions; distribution of power (management function) and responsibility between them; information communications and relationships between departments and positions.

Analysis of the ideas about the management system that have developed in economic science allows us to assert that the rational management structure of an economic asset presupposes the distribution of all management functions between the corresponding links with the minimization of the number of such links and the observance of certain managing ability standards that provide a real opportunity for each functional link to participate in a single management process, excluding duplication of functions and minimizing the number of sources of "reception" and "output" of

commands for each control link. It is impossible to form a rational management structure of an economic asset without use of business process reengineering technologies.

A generalization of the various definitions of reengineering of business processes existing in the scientific literature makes it possible to systematize them taking into account the modern view of the features of managing an economic asset and to consider reengineering as a systemic restructuring (transformation) of business processes for the rapid achievement of sustainable development of the activity of an economic asset or its structural divisions, directions. At the same time, reengineering is based on the need for cardinal changes in the internal structure of management and overcoming systemic contradictions within an economic asset. That is, the main task of reengineering is to create such a business architecture that will be able to interact evolutionarily with constantly changing external factors, the main of which are the factors of innovative development and innovative activity.

The object of reengineering of management systems of an economic asset is the business processes occurring in them, which should be understood as a structured set of actions passing from one specialist to another or from one department to another (depending on the level of their consideration), as a result of which a product or service is created used by external clients of the business. Despite the fact that the concept of "reengineering of business processes" originated in 1990 and has been actively studied since then, there is no standard list of business processes. Therefore, each economic asset, similarly to the development of a management system, must determine its own list of basic business processes. Moreover, when the situation in which an economic asset is located, it is described in terms of business processes, and this contributes to a deeper understanding of it.

Most often, reengineering occurs in the following areas of production and economic activities of an economic asset: purchasing and sales activities, financial and economic activities, new product development, logistics, marketing research. Therefore, of all the concepts of management based on processes, the most effective is the concept of reengineering of business processes, which should be transformed to certain conditions for the development of the economy, science, technology, society, and the country.

Analysis of the technologies used in the reengineering processes shows that they are based on a wide range of ideas that make it possible to form various reengineering models as changes in the direction, structure, dynamics of business processes and the final indicators of their performance (economic, social, industrial, scientific and technical, environmental etc.).

The need to develop new approaches to implement the concept of reengineering business processes at domestic economic assets is primarily due to the focus on the innovative path of development, and in fact determines the following situation:

- separation of economic assets as economic entities;
- complication of the structure of economic assets, the formation of multiproduct holdings, financial and industrial groups and production and trade networks, territorial distribution of subsidiaries that are not necessarily located in the same region;
- increased market dynamics and the emergence of competition, as a rule, with imported products;
- mastering the latest highly efficient imported technologies;
- low innovative activity and the effectiveness of innovative activity in comparison with the developed countries of the world;
- intensive development and implementation of modern high-performance information technologies into management practice.

The implementation of business process reengineering in relation to the situation described above involves the intensive use of such reengineering models as conceptual, target, system, network, which are knowledge-oriented.

The main task of the business process of reengineering is to transform the art of managing an economic asset, which is mastered by the most talented or experienced managers, into an engineering discipline by building adequate, understandable models, the changes of which could be analyzed not only by system analysts and programmers, but also by managers of different management levels. Therefore, the reengineering of the management system of an economic asset in general form represents a variety of techniques used to design a management system that meets the specified goals.

These methods include: step-by-step procedures for designing a management system, a notational system (language) that describes the design, methods for evaluating solutions to measure the degree of compliance of the designed management system with specified goals.

The model for reengineering the business processes of an economic asset includes the conditions and principles for the implementation of reengineering, as well as a diagram of the stages of its implementation with a certain sequence of actions, which allows it to act as a managerial innovation (Fig. 1).

Initially, a reengineering strategy is determined, which involves defining the goals and objectives of reengineering based on the overall strategy of an economic asset and defining a balanced scorecard to achieve reengineering goals. At the same time, the main principles for implementing the technology for improving the management system should be: strategic management, recognition of the value of activity processes (business processes), a process approach, focus on customer needs, fact-based decision making, personnel involvement, administration leadership, decision culture tasks, synthesis of the concept of reengineering of business processes and risk management.

At the second stage, the analysis and construction of the existing business model of an economic asset is envisaged, which will ensure the transparency of the process, identify weaknesses and development potential, form a strategy for the transition to a new improved situation, get a detailed idea from employees about the existing problems of the enterprise, the main relationships and their role in the general processes of an economic asset, to train project participants in the methods of the process approach. At this stage, it is advisable to use functional-cost analysis, and the result of this stage is the creation of models of existing processes of the management system of an economic asset with an assessment of their effectiveness.

The task of the third stage is to project goals, as a result of which long-term plans and a balanced scorecard should be developed for each business unit, compatible with the indicators of the economic asset. The goals of the structural divisions are consistently formed, the achievement of which will contribute to the implementation of the enterprise development strategy. In this case, the goals are formed in the areas: finance, customers, suppliers, personnel, etc.

At the fourth stage, a new business model of the enterprise is built, which describes in detail the optimized business processes and includes the development of accounting policies, technical and job regulations, information exchange schemes, etc.

Based on the developed indicators, with the help of which the level of achievement of goals for each business unit is measured, and an analysis of the existing model of an economic asset is developed a set of measures with the help of which it is planned to achieve the goals, the budget, implementation deadlines and specific executors are determined.

The main conditions for the successful implementation of the proposed model of business process reengineering are:

- coordination of the goals of the reengineering project with the strategic goals of the economic asset;
- motivation of the reengineering project, interest and competence of the management;
- the readiness of the economic asset in general and human resources, in particular, for changes;
- effective change management;
- technological support (methods, tools) and consulting support;
- consideration of environmental factors;
- sufficient funding for a business process reengineering project.

Reengineering is carried out by specialists of two profiles – professionals in the field of the reconstructed business and developers of information systems. There are problems of finding compromises between these specialists when developing reengineering models. The solution to this problem is carried out through the use of integrated tools indicated on the right side of Fig. 1: dynamic expert systems, object-oriented approach, CASE - tools, simulation tools and "active" graphics.

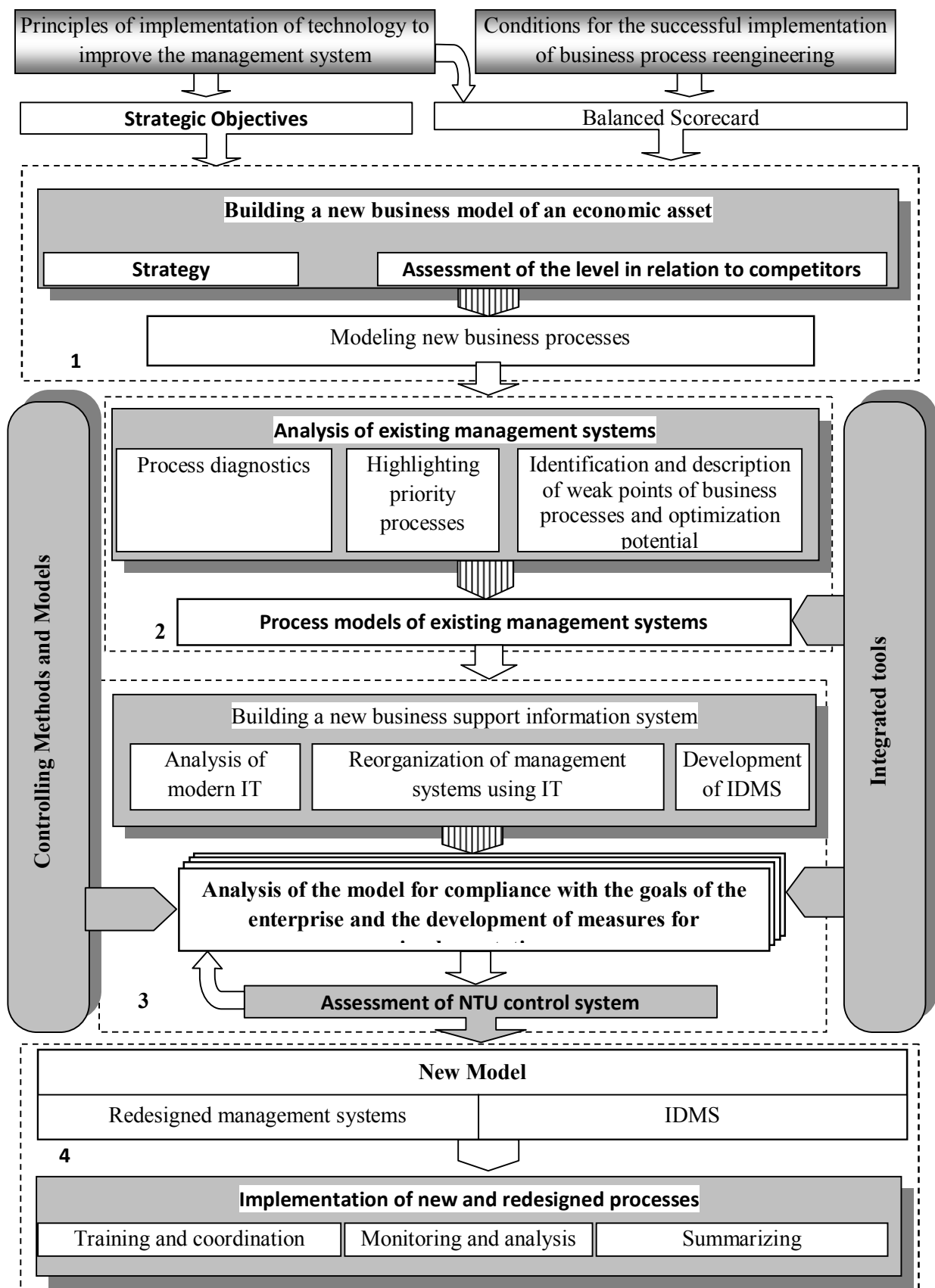


Fig. 1. Reengineering model of the management system of an economic asset.
 Source: developed by the author

When reengineering business processes of the management system of an economic asset, an object-oriented approach should be used to develop and implement a project management system, which, in contrast to structural approaches (SA / SD, IDEF, SADT), implements an iterative process of developing software for an information system, a system management of an economic asset.

The solution to the problem of the complexity of the management system is achieved through object-by-object decomposition, as opposed to functional decomposition with structural approaches.

Object-by-object decomposition:

- firstly, it allows you to reduce labor costs when changes occur in the project by making adjustments only to a part of the objects from the total set of objects. With functional decomposition, most of the project (if not all) is usually subject to change;

- secondly, parallel independent execution of work on the analysis, design and implementation of project parts is allowed. With functional decomposition, the sequence of work is strictly regulated, and often the project becomes obsolete faster than the deadline for its implementation.

Conclusions. The conducted research allows us to draw the following conclusions:

1. To overcome the crisis phenomena in the recession phase and increase the efficiency of functioning in the recovery phase of the transformation cycle, an economic asset must constantly seek mechanisms for adapting and transforming the management system to external and internal changes. One of the most promising such mechanisms is the reengineering of business processes, which provides for process orientation and an inductive approach to the use of modern information technologies, allowing flexible adaptation of the management system to changes in the external and internal environments.

2. The use of an object-oriented approach to the analysis, design and synthesis of applied software allows the use of an iterative method of project development, which increases the efficiency, quality and speed of all types of work, as well as the possibility of forming multi-option solutions.

3. Reengineering of the processes of the management system of an economic asset allows solving the problems of inflationary losses and competitiveness, and also makes it possible to adapt to external changes. When reengineering business processes, it is envisaged to use economic mechanisms in the controlling system. An obligatory component of the controlling system is the budgeting subsystem. The priority areas of reengineering are determined using functional value analysis.

4. The proposed process-oriented concept of strategic management of an economic asset development of the real economy sector based on the reengineering of business processes integrates the provisions of the systemic, synergistic, process and strategic approaches that complement each other and form a new understanding of enterprise management in the long term.

The development of the methodological base for reengineering of business processes should be considered as directions for further scientific research, namely: the development of methods, models and tools for strategic, tactical and operational management of economic assets; development of models for reengineering business processes aimed at personnel management, financial and economic activities, procurement and marketing activities and other activities.

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