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FEATURES AND CHALLENGES OF THE PROCESS APPROACH APPLICATION AT ENTERPRISES

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ОСОБЕННОСТИ ПРИМЕНЕНИЯ ПРОЦЕССНОГО ПОДХОДА В УПРАВЛЕНИИ ПРЕДПРИЯТИЕМ

The process approach and the question of how to use it at an enterprise is still topical because, so far, there is no straightforward answer about its usefulness in all the business cases. In this article, the authors attempt to analyze the typical situations when it is necessary to use the process approach and when it is absolutely unacceptable.

PROCESS APPROACH. ENTERPRISE. BUSINESS PROCESS. FUNCTIONAL APPROACH. MANAGEMENT.

Вопрос о том, как применить процессный подход на предприятии по-прежнему актуален и регулярно поднимается при управлении предприятием. Это связано с отсутствием конкретного ответа на вопрос о повсеместной применимости данного подхода. В данной статье авторы пытаются проанализировать типичные ситуации, когда применение процессного подхода необходимо и когда оно недопустимо.

ПРОЦЕССНЫЙ ПОДХОД. ПРЕДПРИЯТИЕ. БИЗНЕС-ПРОЦЕСС. ФУНКЦИОНАЛЬНЫЙ ПОДХОД. УПРАВЛЕНИЕ.

Concept of managerial efficiency evaluation: subject, main issues

The analysis of the efficiency of the company's management is one of the most important everyday issues for corporate executives and external consultants worldwide. The need to evaluate the efficiency is faced in a variety of situations. The objective pursued while evaluating efficiency is very simple: each owner or a third-party investor tends to make all the settings of the enterprise (resources, technology, finance, personnel, etc.) promote the achievement of the main goal. The highest level of this goal is to increase the company's profit. Difficulty in evaluating the *managerial efficiency* often includes a variety of factors, like the following: a possibility of only expert evaluation of any business processes; volatile market conditions; an excess — or vice versa — a lack of sufficient information for evaluation.

For the operational and strategic management, the tools to evaluate the company's performance should be applied regularly, using examples of many companies. Methods for efficiency evaluation must be constantly improved and adapted to the industry in which the company operates, as well as for specific business processes under investigation.

In order to give a clear definition of 'efficiency evaluation' and, accordingly, to propose options for evaluating the efficiency using the process approach in management, the key terms of the issue shall be considered.

Efficiency is defined as an achievement of any specific results at the lowest possible cost and the achievement of the maximum possible production volume using a given amount of resources [1]. The concept of efficiency is often associated with the principle of Pareto optimality, which states that the optimality is a state in which it is impossible to make any one indicator characterizing the system better off without making at least one indicator worse off [2]. In the words of V. Pareto, «Any change which brings no loss to anybody, and benefit to some people (by their own estimation), is an improvement» [3]. Efficiency indicator (relative) is defined as the quotient of the potential impact by the resource intensity of any operation, project, and process [4].

Having defined the efficiency concept, it is necessary to clarify the question: what is the subject of the analysis? What kind of efficiency are we talking about?

In English, the concept of efficiency in the management is expressed by two key terms:

managerial effectiveness ('system' efficiency) and management efficiency ('operational' efficiency). Managerial effectiveness depends on the efficiency of the organization of the management, i. e. the composition and quantity of links, their subordination, and distribution of functions. In other words, effectiveness of the management system depends on the quality of the organizational structure, management processes, but does not depend on the qualities of any managers. Management efficiency, i. e. ratio of performance of management and overall effort, in contrast, is primarily determined by business qualities of managers, as well as by rational use of their potential [5]. Both parts of the study are important for the evaluation of efficiency within the process approach. However, it is managerial effectiveness which is the major subject of this study.

An efficiency indicator is a key element in making managerial decisions based not only on the specific numbers, but also on the expert method. Consequently, the main challenges of the matter are as follows: what data should be correctly reflected in the formulas to derive this indicator, how can the error of the indicator be reduced, and what administrative levers are required for the growth of this indicator. But the most important question is how to derive this indicator.

An aim of any company's activities is to maximize profits and reduce costs. These indicators are quantitative, and can be expressed in monetary terms. The achievement of these indicators relates to the operational management, and constitutes an important part of management. However, quantitative indicators are inseparable from quality indicators. It is worth giving a simple example: if a product is not in accordance with ISO or any other standards, obtaining marginal profit is impossible. The same approach can be applied to the business process of creating this product. That is, the concept of quality can refer both to a specific product and the system of processes of its manufacturing. The process approach, being analyzed in this study, aims at improving the performance of certain business processes or the whole system. The application of the process approach is known to be recommended in various series of ISO international standards. So, it is assumed that quality improvement through the use of the process approach affects the

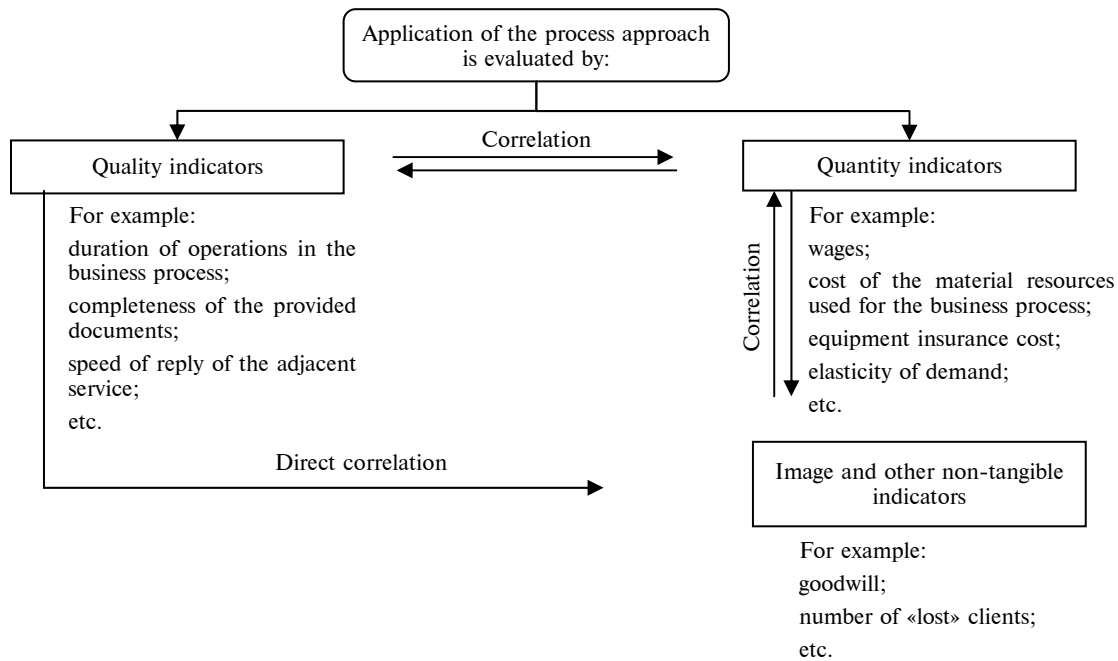
quantitative indicators of the company, as well as various intangible assets, such as goodwill.

As it was mentioned before, efficiency is the ratio of the effect (including profit) from any activities, and the cost of such activities, thus, it is necessary to emphasize the importance of the latter in this formula. Costs are expenses of enterprises, entrepreneurs, and private producers of production, sales and marketing expressed in monetary terms [6]. In other words, costs are the volume of the resources used in the process of economic activity during a certain time period. Management decisions are characterized by both costs of quantity and quality of the manufactured products; an improvement of production chains; reengineering activities of business directions of the company. Consequently, making a management decision does not require an aggregated efficiency indicator but an indicator, derived with maximum clarity, showing quantity and justifying costs, both qualitative and quantitative; and this is an important issue of this study.

The issue of quality costs has always caused a lot of argument. A process of figuring out, whether there are costs of quality and how they can be separated from the quantity costs, is still on. ISO 9000:2000 standards specify mandatory activities to improve the efficiency and performance of the processes and the whole quality management system. However, a practical implementation of such activities is more complicated, multifaceted, and laborious.

Effectiveness is determined by ISO 9000:2000 as a degree of the implementation of planned activities and the achievement of the planned results [7]. Furthermore, effectiveness can include enforcement, achievement (completeness degree), and accomplishment, conduction (degree of execution) of a command, responsibility (obligation), assignment (objective), and promise. According to ISO 9000:2000, efficiency is the ratio of the results achieved and the resources used. Therefore, defining the efficiency indicator is not possible without using quality costs, quantity and cost of the process. Hence we obtain the isolated task: we need to evaluate the efficiency of the process approach, for which we need to know criteria of economic efficiency and effectiveness (in monetary terms), but, first, we need to calculate quality costs of the process.

Graphically, the above can be reflected as follows:



Thus, the evaluation of the process approach efficiency, in general, is the analysis of three main areas: economic effect of the process approach application expressed as an aggregate in monetary terms; the quality of the internal organization of business processes; goodwill.

Significance of key performance indicators for the process approach evaluation in management

In each of these three areas, in order to assess the process approach efficiency, the key metrics should be defined, which are used for the calculation of general efficiency indicator.

In this study, the metric refers to a criterion of a process, stage, state which gives a qualitative characteristic in clear quantitative terms. The definition of the metric, in most cases, does not require a complex formula because the logic of the process approach implies the understanding that each stage in the process has its own input and output. Input includes resources and requirements to the stage. Output is a result used by the following link, and compliance of the result obtained with previously stated requirements.

In a broader sense, the process approach application requires the development of a system of key performance indicators (KPI). KPI is an evaluation system that helps organizations to determine the achievement of strategic and tactical (operational) objectives [8].

The translation of the words *key* (main, characterizing a degree of achievement of a goal,

essential for the work of one of activity directions of the company) and *indicator* (indicator) in to Russian is easy, but the word *performance* can not be interpreted unambiguously. ISO 9000:2008 provides the right interpretation of this word. It divides *performance* into two terms: effectiveness and efficiency, as it has been said before. Once again, effectiveness is a degree of achievement of the planned results (the company's ability to focus on results), and efficiency is a ratio of the results achieved and the resources invested (the company's ability to achieve their goals and plans with a specified quality level, expressed specific requirements – time, cost, a degree of achievement). Thus, the correct translation of the KPI in Russian is «ключевой показатель результата деятельности» (key indicator of the activity's result), as the activity's result includes both the degree of achievement, and the costs of achievement of the result.

What is the difference between KPI and the stages' metrics then? In this study, similar to the common practice in Western companies, metric refers to a smaller criterion unit, located at the junction of the stages within one process. KPI, in its turn, covers either the whole process or the network of processes, being a measuring instrument for the set goals.

The most important rules for creating a KPI in the process approach are as follows [9]:

1. 10/80/10 Rule: The company must have about 10 key performance indicators, up to 80 operational indicators, and 10 key efficiency indicators.

Stages' metrics	KPI
<p>Set of documents provided from unit A and unit B, must contain document no. 1, document no. 2, document no. 3.</p> <p>Written report shall be provided by the Department A to the Directorate B in two days.</p> <p>Approval of project documentation by unit A and unit B shall be made within a week.</p> <p>Waiting time to apply for the conclusion of a power supply agreement in the Customer Center A shall not take more than 5 minutes.</p> <p>After the first phase of the investment program the Directorate A shall select and provide to the Directorate B not less than 100 agreements with the most favorable construction works</p>	<p>Preparation and approval of technical conditions within 10 days.</p> <p>Responding to the applicants not later than 3 days after the application's registration.</p> <p>Technological losses during transmission in Lodejnopolsk region shall be not more than 1MVA per 1 year</p>

2. Management ability and control ability principle: The persons responsible for any KPI have all required resources for its enforcement, it can be controlled.

3. Integration of the process of evaluating of indicators, accountability and productivity improvement: it is necessary to create and constantly improve integrated circuit of efficiency evaluation, reporting, etc.

Large Western companies and domestic corporations with a wide geography, large market, two or more core directions can provide a lot of good examples of KPI and metrics. In this study, we take a network distribution company X, specializing in electric power. The examples are taken from all three groups of indicators.

In summary, in order to find out, whether the process approach is effective:

1. Evaluation of three main groups of indicators (qualitative, quantitative, goodwill)

1.1. availability and optimality of KPI of the processes as a whole,

1.2. availability and optimality of the stages' metrics,

1.3. definition of costs of applying the concept of the process approach for the conditional period of time;

2. Comparison of economic indicators before and after the implementation of the process approach, in the main business directions of the company (where the approach has been implemented)

3. The conclusion, based on the above, about the possibility of the calculation of an integral indicator of the efficiency of the process approach application

It should be noted that the result of this analysis provides the answers to two questions: *What was the efficiency of the process approach application? And Is the process approach application efficient for a particular direction of the company under study?*

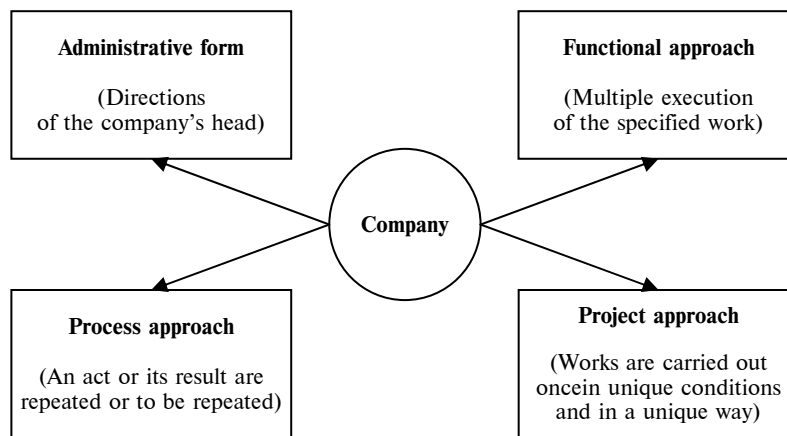
Definition of areas where the process approach application can be considered ineffective

Modern management in a market economy aims to react as flexibly as possible to all changes that are dictated by the market or carried out by the organization itself. Depending on the specific industry of a company, and its functions in the market, the question of the appropriateness of the process approach application should be raised.

When choosing an approach for the management of the organization's activities, it should be assumed that one organization may have multiple management approaches. In both theory and practice of management three major approaches to management have dominated: in 1960–1980 entrepreneurs sought to establish a clear organizational structure, in which each division and a separate unit understood the limits of their liability. A proper distinction of functions and persons responsible for them became a key success factor for many organizations. The apex of this approach was the development of the international standards ISO 9000 version 1994.

Further, the process approach was developed, resulting in the creation of ISO 9000 version 2000 [10, 11, 13]. However, despite the widespread desire to apply the process approach with its clearly structured inputs and outputs, there were organizations engaged in the construction of unique objects, or producing a limited number of units for special requirements¹¹. In such organizations, the project approach is dominant when the project has a beginning and an end, resources are limited, and each project is done once, using a given sequence of actions in unique environments. The developers of ISO 9000 tried to solve this problem and include the project activity in the standards of quality management by calling the project a special case of the process. In this study, it is implied that the project is a completely different activity.

Thus, the overall structure of various management approaches might look as follows [12]:



These types of management approaches are used most frequently. Administrative approach is characterized by direct instructions given by a person in authority to other persons in the form of commands, directions and demands. But in any case, the scope of application of this form is a relatively short-term task, with a more or less clear solution. For example, the instruction ‘to connect to a representative of the supplier’.

The functional approach is applicable and effective when people need to repeatedly perform a specific job, but the way of work execution is not defined or not known in advance. Moreover, there may be different ways to do this work in different situations (subject to variable conditions), and none of them is preferred in advance. In such cases, the personnel is said to be entrusted with a function. For example, function ‘to connect to the representatives of the suppliers’. In cases where the actions and their results are repeated or should be repeated (especially if it concerns the product’s or service’s characteristics, etc.), i. e. must be reproducible, for example, if it concerns the part’s characteristics, conduction of internal audits, etc., activities should be organized as a process.

For the process approach reproducibility is a key distinctive feature. It is its expectation that requires the reproducibility of the process of input, as well as actions in the process and the conditions of its occurrence (execution). For example, we want to receive quarterly information on our customers, which we contact on many issues. We regularly want to know their opinion about our products and services. This kind of activity can and should be organized as a process. In this case, it is necessary to identify the owner of the process who is to call the same people with a list of questions each quarter in order to get a report of a definite structure, which will be submitted for the analysis.

The project approach is for such activities which are performed once in unique circumstances and in a unique way. A good example is the management of the current construction of a nuclear power plant. A nuclear power plant construction elsewhere will be fulfilled according to a completely different project. It may have processes inside, say, supply of bricks for the construction of the administrative building. But in general it will be a project.

The foregoing description can be presented in a table [12].

Forms of management of different activities in organizations and relevant types of relationships		
Classification criteria	Activities not suggesting specific planning	Activities involving special planning
Single activity (has a start date and an end date)	Management form – administrative Relationship form – superior–subordinate	Management form – project Relationship form – customer – contractor
Continuous activity (repeated on a constant basis)	Management form – functional Relationship form – periodic reporting	Management form – process Relationship form – customer – supplier

It should be concluded that the application of any single approach for the whole enterprise is impossible. The more diversified the company is, the more it is likely to use two or more management approach. It should be noted that it is the number of different internal and external areas of work which is significant in this case, not the number of the company's personnel.

Example of mixing management approaches at the enterprise

Let's consider an energy company which core business is to work with consumers in the sphere of energy consumption data monitoring; to enter these data in the specialized information systems for the subsequent listing of energy consumption balances by consumer groups and by regions; to define the level of electricity losses in transmission.

The following general company information is available:

Number of personnel working in the office	43
Number of personnel involved in the «field» work	50
Organizational structure	Director-General, 5 Deputy General Directors, 8 heads of departments/sectors, line personnel
Activity 1	Conduction of energy audits in order to create programs for energy conservation and efficiency
Activity 2	Preparation and implementation of programs for energy conservation and energy efficiency
Activity 3	Installation/maintenance/replacement of meters at the balance borders of the networks' owner and the consumer
Activity 4	Carrying out checks of the performance control of measurement systems used
Activity 5	Surveys and preparation of control readings certificates
Activity 6	Regular tripping of the objects belonging to the consumers illegally connected to the grids
Supporting activities	Accounting, legal, administrative and economic activity

In order to decide which form of organization of activities should be chosen according to the objectives set within the activity, it is necessary to carry out decomposition steps in order to achieve these objectives.

For example, let's consider the form of activities involving making up the balance of electrical energy. The electrical energy balance is inextricably linked to the electric power balance – balance of the consumers' maximum load and generating capacity subject to the rational amount of the reserve, MW. The purpose of this area of work is to ensure balancing through the following basic steps:

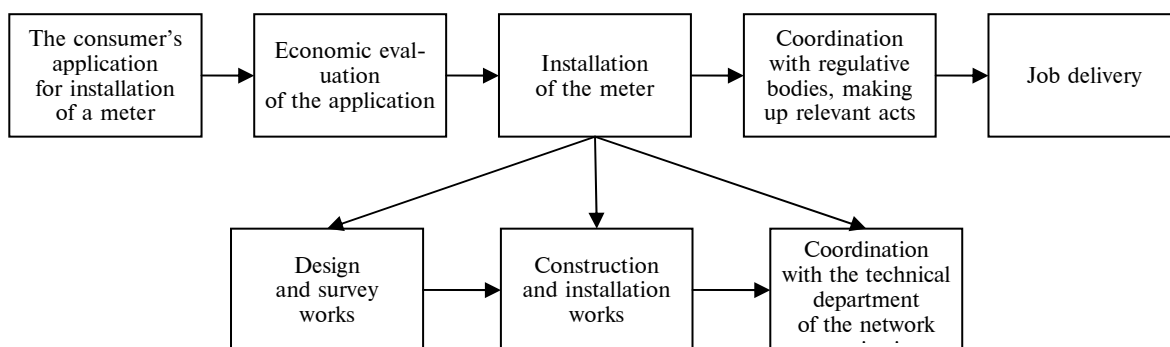
1. Installation of intelligence metering systems;
2. Reading of the measurement systems of the consumers not yet equipped with intelligence systems;
3. Settlements on consumption standards depending on the seasonality of the consumers not included in the group mentioned in paragraphs 1 and 2;
4. Entering the data obtained in the information system;
5. Consideration of issues of legal validity of the meters replacement, procedure of reflection of updated information of the meters in the information system;
6. Planning of repeated survey of the same facilities once in a month;

Preparation of financial and other reports, providing information to the network organization for the subsequent separation of data on the circuit of electric power balance.

Among the above sub-steps, even at first glance, sub-steps of paragraphs 1, 2, 4 look like processes. Let's consider, for example, the top level of paragraph 1.

In general, the sub-process is as follows (see Fig.).

Each of these blocks can be decomposed several times and described. This scheme shows that, in general, activity associated with the installation of metering units, is a process in its nature: each separate unit is localized, input and output parameters are well-defined. The result is also obvious – the sealed meter at the consumer's. However, despite the process approach and the KPI system applied to this sub-process, there are some blocks which are associated with functional features. They include



primarily all kinds of activities connected with the consideration and coordination with the legal services – within the company and upon coordination with the network organization, due to the fact that legal departments often perceive the problem beyond the process and its features, including rigid time limits under which similar work is usually conducted. The same approach can be applied to the making up of the accounts, which is the final stage of the work with the consumer.

The mixing of approaches in the organization of work cannot be unambiguously considered only negative. Hypothetically, the integration of all participants in the process is possible. However, for persons working only with meters and conducting planning of this activity, it is easier to carry out their activity as a mechanical automatic operation rather than by diversified units supporting functions of the processes.

Thus, the more specified are the tasks of the unit, the faster and more efficient is the

implementation of the process approach in management. It should also be noted that the units responsible for the compliance of the company's activities with all required standards, in most cases, remain in the zone of functional organization, since the issues considered can be addressed deep enough down the internal hierarchy of the units.

The mixing of management approaches is the most common phenomenon in management nowadays. There is no thesis which would uniquely state that there is a universal approach or tool. The mixing of approaches may not apply only to the task itself and to the process of solving certain issue but also in cases when on the contrary, inside a unit, certain tasks are carried out using the project approach, and some of the tasks are carried out by the rules of the functional organization of activities. That is why, when choosing a particular approach and setting goals, inputs, outputs and key performance indicators, a thorough audit of the current work order is to be conducted.

RERERENCES

1. Economy. Definition Dictionary. Moscow, Infra-M, Publising House «Ves Mir». J. Black. General ed. I.M. Osadchaya. Moscow, Infra-M, Vec' mir, 2000.
2. **Podinovski V.V., Nogin V.D.** Pareto optimality solutions of multicriterion problems. Moscow, Nauka, 1982. 254 p.
3. **Positselskaya L.N.** Equilibrium and Pareto-optimality in noisy discrete duels with an arbitrary number of actions, Fundamental and Applied Mathematics. St. Petersburg, BHV-Peterburg, 2012, pp. 147–155.
4. **Lutsenko I.A.** Mathematica ldefinition of resource intensity of manufacturing operations. *Eastern-European Journal of Enterprise Technologies*, 2006, no. 3/3(21), pp. 58–60.
5. **Rumyantseva Z.P.** General enterprise management. Theory and practice: Textbook. Moscow, Infra-M, 2001. 198 p.
6. **Raizberg B.A., Lozovskiy L.S., Starodubtseva E.B.** Modern economy dictionary. 2nd ed. Moscow, Infra-M. 1999. 479 p.
7. GOST ISO 9000:2000. Regional Standard. Quality management systems. Fundamentals and vocabulary. Intr. 2003-10-1. Moscow, Standartinform, 2007. 29 p.
8. **Panov M.M.** Performance evaluation and management system using KPI/MM. Moscow, Infra-M, 2012. 255 p.
9. **David Parmenter.** Key Performance Indicators: Developing, Implementing and Using Winning KPI's. New Jersey, USA: John Wiley & Sons, inc., 2007. 334 p. GOSTRISO9000-2008 «Quality management systems –

Fundamentals and vocabulary». ISO 9000:2005 Quality management systems – Fundamentals and vocabulary (IDT).

10. **Glazunov V.** All activities may be considered as processes... But they shouldn't. *Quality Management Methods*, 2010, no. 1.

11. **Glazunov V.** Conversations of a consultant and a company's head. To the top management about the process approach. N. Novgorod: SMC Prioritet, 2005. 112 p. (Conversations of a consultant; Book 4).

12. **Kolbachev E.B., Kolbacheva T.A.** The essence of the space of the parameters and economic borders of the modern industrial system. *St. Petersburg State Polytechnical University Journal. Economics*. 2012, no. 4 (151), pp. 73–83. (rus)

13. **Michalenko D.G.** Approach to an estimation of efficiency of managerial processes by changes in economic systems. *St. Petersburg State Polytechnical University Journal. Economics*. 2012, no. 5(156), pp. 85–91. (rus)

СПИСОК ЛИТЕРАТУРЫ

1. Экономика. Толковый словарь. М.: Инфра-М, Весь Мир. / Дж. Блэк; общ. ред. Осадчая И.М. М.: Инфра-М, Весь мир, 2000.

2. **Подinovский В.В., Ногин В.Д.** Парето-оптимальные решения многокритериальных задач. М.: Наука, 1982. 254 с.

3. **Посищельская Л.Н.** Равновесие и оптимальность по Парето в шумных дискретных дуэлях с произвольным количеством действий. *Фундамент. и прикл. матем.* СПб.: БХВ-Петербург, 2012. С. 147–155.

4. **Луценко И.А.** Математическое определение показателя ресурсоемкости технологической операции // *Восточно-европейский журнал передовых технологий*. 2006. № 3/3(21). С. 58–60.

5. **Румянцев З.П.** Общее управление организацией. Теория и практика: учебник. М.: Инфра-М, 2001. 198 с.

6. **Райзберг Б.А., Лозовский Л.Ш., Стародубцева Е.Б.** Современный экономический словарь. 2-е изд. М.: Инфра-М. 1999. 479 с.

7. ГОСТ ISO 9000:2000. Межгосударственный стандарт. Системы менеджмента качества. Основные положения и словарь. Введ. 2003-10-1. М.: Стандартинформ, 2007. 29 с.

8. **Панов М.М.** Оценка деятельности и систе-

ма управления компанией на основе KPI. М.: Инфра-М, 2012. 255 с.

9. **David Parmenter.** Key Performance Indicators: Developing, Implementing and Using Winning KPI's. New Jersey, USA: John Wiley & Sons, inc., 2007. 334 с.

10. **Глазунов А.В.** Любую деятельность можно рассматривать как процесс... Но не нужно // *Методы менеджмента качества*. 2010. № 1.

11. **Глазунов А.В.** Диалоги консультанта с руководителем компании. Высшему руководству о процессном подходе. Н. Новгород: СМЦ «Приоритет», 2005. 112 с. (Диалоги консультанта; Кн. 4).

12. **Колбачев Е.Б., Колбачева Т.А.** Сущность, пространство параметров и экономические границы современной производственной системы // *Научно-технические ведомости Санкт-Петербургского государственного политехнического университета*. Экономические науки. 2012. № 4(151). С. 73–83.

13. **Михаленко Д.Г.** Подходы к оценке эффективности управления изменениями в экономических системах // *Научно-технические ведомости Санкт-Петербургского государственного политехнического университета*. Экономические науки. 2012. № 5(156). С. 85–91.

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