

УПРАВЛІННЯ ПІДПРИЄМСТВОМ

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STRUCTURAL INDICATORS OF ASSESSMENT OF BUSINESS PROCESSES STRATEGIC CONTRIBUTION TO THE ENTERPRISE SYSTEM

СТРУКТУРНІ ПОКАЗНИКИ ОЦІНКИ СТРАТЕГІЧНОГО ВНЕСКУ БІЗНЕС-ПРОЦЕСІВ В СИСТЕМУ ПІДПРИЄМСТВА

Urgency of the research. Increasing the efficiency of an enterprise as a set of business processes is possible only if accuracy of the assessment of all the system components improves. This factor determines relevance of the research carried out, which deals with improvement of the methodological principles of business processes quantitative assessment.

Target setting. A large number of indicators for assessing business processes in accordance with different characteristics have been proposed by researchers in this field of science, but insufficient attention is paid to the issue of quantitative assessment of importance of a particular business process in the enterprise system.

Actual scientific researches and issues analysis. The scientists who made the greatest contribution to the study of the assessment indicators of enterprise business process are V. G. Yeliferov, V. V. Repin, K. K. Chuprov, L. A., Kozherod, S. V. Kovalyova, V. M. Kovalyov.

Uninvestigated parts of general matters defining. Assessment of the business processes importance for the enterprise is considered in the works of D. V. Khlebnikov, A. Ye. Makhmetova, but only the methods of expert estimation are used in the process of measurement. This approach significantly reduces objectivity and reliability of the research results.

The research objective. The purpose of the article is to form methodical principles of quantitative assessment of the business processes importance in the enterprise system.

The statement of basic materials. The methodical principles of determination of structural indicators of the business processes importance in accordance with their contribution to the added value are suggested in the article. The structural importance of the business process can be determined by the reverse method, particularly by the difference between the value of resources and the price of the business process product in case of its purchase at the market. Also, the article gives an example of application of the proposed approach to the machine-building enterprise.

Conclusions. Structural indicators of the business processes importance can be used to optimize the enterprise business system, for instance, to make strategic decisions about integrating a particular process into the system, or vice versa, extracting a process from the system on the basis of outsourcing.

Keywords: business process; business process importance; structural indicators; added value.

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Актуальність теми дослідження. Підвищення ефективності діяльності підприємства як сукупності бізнес-процесів можливо лише за умов збільшення точності оцінки усіх складових системи. Цей фактор зумовлює своєчасність проведених досліджень, які присвячені удосконаленню методичних засад кількісної оцінки бізнес-процесів.

Постановка проблеми. Вченими у галузі бізнес-процесів запропоновано велику кількість показників їхнього оцінювання відповідно до різних характеристик, проте недостатньо уваги приділяється питанню кількісного оцінювання важливості певного бізнес-процесу в системі підприємства.

Аналіз останніх досліджень і публікацій. До вчених, які зробили найбільший внесок у вивчення показників оцінки бізнес-процесів підприємства можна віднести Єліферова В. Г., Рєпіна В. В., Чупрова К. К., Козєрод Л. А., Ковальова С. М., Ковальова В. М.

Виділення недосліджених частин загальної проблеми. Оцінювання важливості бізнес-процесів для підприємства розглянуто у роботах Хлебнікова Д. В., Махметової А. Є., проте у процесі вимірювання використовуються лише методи експертних оцінок, що суттєво зменшує об'єктивність та достовірність результатів дослідження.

Постановка завдання. Метою статті є формування методичних засад кількісного оцінювання важливості бізнес-процесів в системі підприємства.

Виклад основного матеріалу. У статті запропоновано методичні засади визначення структурних показників важливості бізнес-процесів відповідно до їхнього внеску у додану вартість. Структурна важливість бізнес-процесу може бути визначена зворотним методом, а саме різницею між вартістю ресурсів та ціною продукту бізнес-процесу в разі покупки його на ринку. Також у статті наводиться приклад застосування запропонованого підходу на машинобудівному підприємстві.

Висновки. Структурні показники важливості бізнес-процесів можуть бути використані при оптимізації бізнес-системи підприємства, наприклад, для прийняття стратегічних рішень стосовно інтеграції певного процесу в систему, чи навпаки, вилучення процесу з системи зокрема на засадах аутсорсингу.

Ключові слова: бізнес-процес; важливість бізнес-процесу; структурні показники; додана вартість.

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Urgency of the research. The modern interpretation of the system approach to management and the analysis of the enterprise as a set of business processes (hereinafter BP) define the unsolved directions of research. One of these areas is a quantitative evaluation of the BP, which will allow obtaining not only a qualitative characteristic, but also a comparative assessment of the investigated BPs, which, in its turn, will increase the validity of assessment of efficiency of both the individual BP and of the company as a whole.

Target setting. Improvement of the business system consists both in formation of a certain structure and internal links between individual BPs, and in improvement of certain BP. Under the conditions of resources constraints, choice of a particular BP as an object for improvement, reorganization, expansion or vice versa, reductions can increase the efficiency of the enterprise and its competitiveness.

Actual scientific researches and issues analysis. In our opinion, the works of the following authors, being researchers of the enterprise BP indicators assessment, deserves our greatest attention. V. G. Yelifero and V. V. Repin [1] distinguish the financial, technical and time indicators; express method of K. K. Chuprov [2] defines indicators of complexity, processability, controllability, resource intensity, regulation; L. A. Kozerod determines the economic efficiency of business processes by cost, time and quality; O. Kochnev and the specialists of iTeam [4], according to the quantitative approach, propose a classification of business process indicators with the allocation of four main groups, such as: performance, efficiency, productivity and quality; S. M. Kovalyova and V. M. Kovalyov [5] distinguish the performance, cost, time, quality and fragmentation indicators; the SADT methodology [6] defines such groups of indicators as complexity, processability, controllability, resource intensity and regulation.

Uninvestigated parts of general matters defining. It should be noted that quantification of the importance of a particular BP for the enterprise in fact remains out of sight of the scientific community. Determining the strategic importance of BP for a company may be necessary for a wide range of managerial decisions. For example, D. Khlebnikov [7] in his work suggests using importance of BP as one of the axes in the construction of the matrix of outsourcing, but the measurement of importance of the BP only by expert evaluation and the lack of mathematical justification significantly reduce validity and reliability of the results. A. Ye. Mahmetova [8] also suggests using expert assessment of the BP importance. S. M. Kovalyova and V. M. Kovalyov also pay attention to necessity of determination of importance of a particular BP, since such assessment is a prerequisite for choosing the BP that needs to be optimized. These authors [5] note that importance of BP characterizes contribution to the company's strategic objectives, but does not propose methods for its quantitative assessment.

The research objective. The purpose of the article is to form methodical principles of quantitative assessment of the business processes importance in the enterprise system.

The statement of basic materials. Summarizing the studies of the above-mentioned authors, we highlight the possible directions of the BP assessment (Fig. 1), while noting that we ignore the indicators that characterize not the BP itself, but the system of its management (e.g., complexity, controllability and regulation), which are beyond this study. Since indicators of significance characterize exactly contribution to the overall success of an enterprise, we suggest that such indicators should be called Structural Indicators of Importance.

As noted above, most authors focus on indicators of the first group or, in other words, on the indicators of the BP's external competitiveness. These indicators are calculated in order to understand how well we manage BP, they are conditionally independent; evaluation of one BP may be carried out in isolation from other BP. The basis for comparison (interpretation of the indicator) is a similar BP at other enterprises or BP indicator's reference value.

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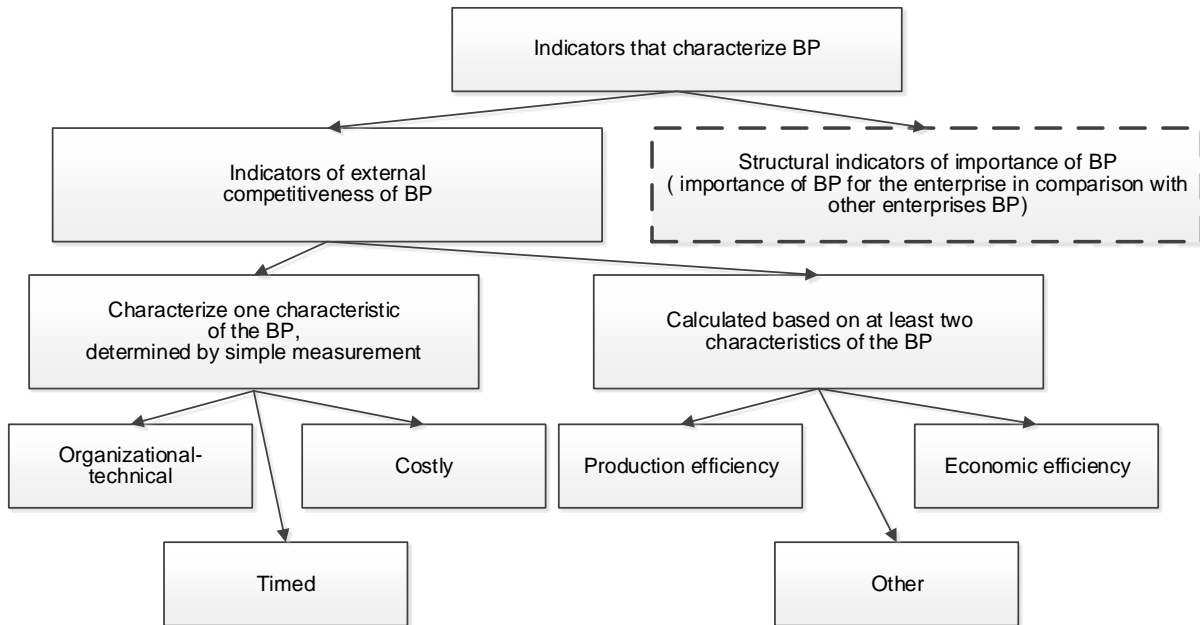


Fig. 1. Grouping of indicators of the business process assessment [Developed by authors]

Structural indicators of the BP importance will be fundamentally different by their nature from those of the first group. They are designed to understand importance of BP in implementation of the enterprise's strategy; evaluation of all BPs can only take place together; the basis for comparison is another BP of the analyzed enterprise. The differences between these groups are shown in the Tab. 1 and Fig. 2.

Table 1

Comparative characteristics of groups of business process assessments [Developed by authors]

Indicators of BP external competitiveness	Structural indicators of the BP importance
Basis for comparison (interpretation of the indicator)	
Similar BP at other enterprises BP indicator's reference value	Other BP of the analyzed enterprise
Characteristics of comparable business processes	
Similar BP	Absolutely different BP
Purpose of evaluation	
Understanding how well we manage BP	Understanding importance of BP in implementation of the strategy
Can the value of the indicator be "good" or "bad"?	
Yes	No
Interdependence of indicators of different BPs,	
Relatively independent, may have different values (they all can be better than the ones of the competitors or they all can be worse, or some of them can be better and some worse)	Depend on each other; by all means there are more important and less important BPs (there is only a theoretical potential that they will be absolutely identical)
Is it necessary to evaluate other BP of the enterprise?	
No, the evaluation of one BP can be carried out in isolation from other BP	Yes, evaluation of all BPs can only take place together
Objectivity of the assessment results	
The assessment is objective in meso-level and indicates the efficiency of the BP's management within the industry	The assessment is objective only for the enterprise, the results are important only for the analyzed enterprise

Sharing the opinion of the founders of Balanced Scorecard, D. Norton and R. Kaplan [9], the authors believe that importance of a particular BP depends on its contribution to the strategic goals of the

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enterprise. As a basis for assessing the BP's importance, we suggest applying the approach used by I. B. Nemirovsky and based on the added value of the business-process. The BP's added value is calculated according to the formula:

$$AV = Va - Vb,$$

where: Va means the value of the business process output (or product after processing);
 Vb means the value of the business process input (or product before processing).

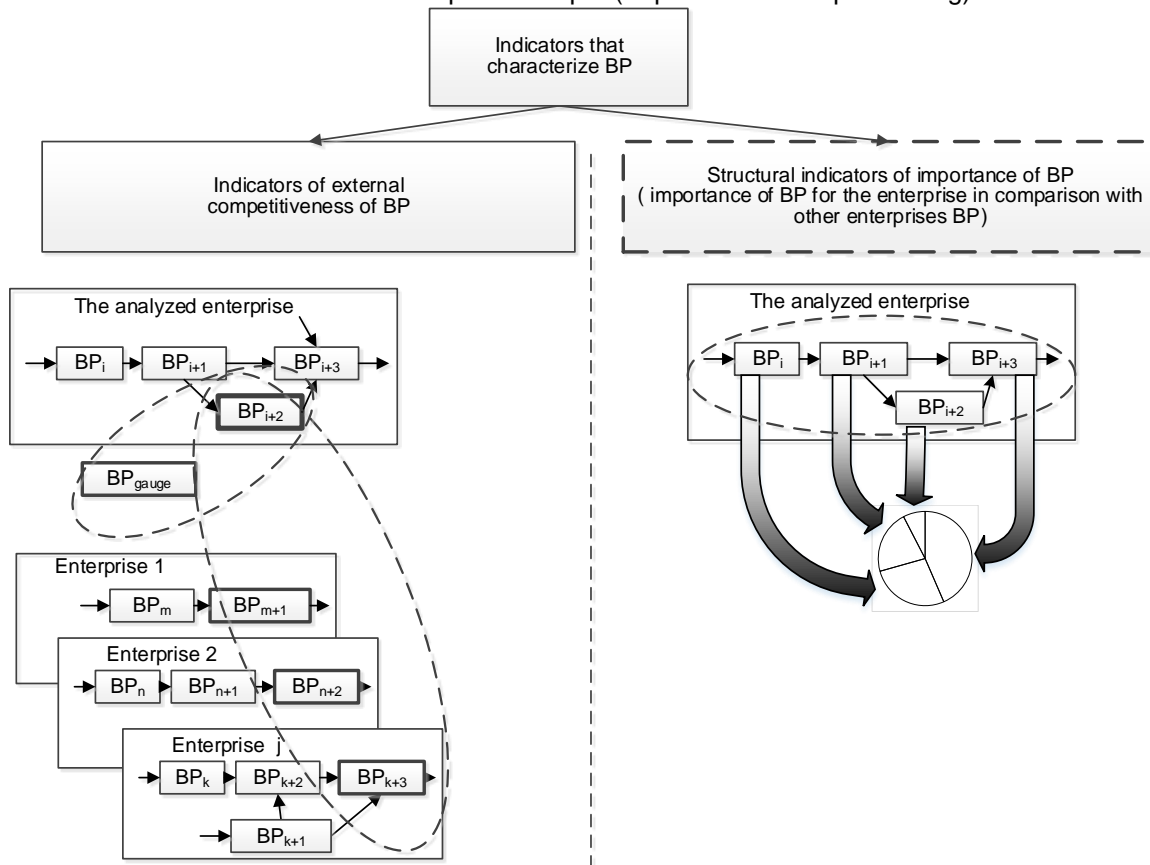


Fig. 2. Comparison of groups of the business process assessments [Developed by authors]

Thus, if we consider the enterprise on the basis of the system approach as a converter of resources into the finished products (services), we can conclude that importance of each BP will be proportional to its added value (Fig. 3). It should be noted that discrepancy between the BP's added value contribution and structural importance of BP is theoretically potential. Such discrepancy will occur when the key factor of the enterprise's success can easily be reproduced by its competitors. Under market conditions, this discrepancy will be very short-term and will be quickly corrected by the market mechanism.

Unfortunately, use of such methodical approach in its pure form is almost impossible in practice because there is a large number of supporting business-processes. The proportional transfer of the supporting business processes value to the core ones is rather complicated.

To solve this task, we suggest using the following methodological approach. Let's start determining the structural importance of the last BP. Suppose that an enterprise consists of only one BP, and everything else is bought in the open market. In that case, the enterprises, for which our intermediate product is final, have already taken into account all the supporting processes in the price of the product. Then, the relative structural importance of the last BP will be proportional to the difference be-

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tween the price of the finished product and the value of resources of the analyzed enterprise. In the second step, we determine the added value of the second BP, and so for all the BPs of the analyzed enterprise (Fig. 4).

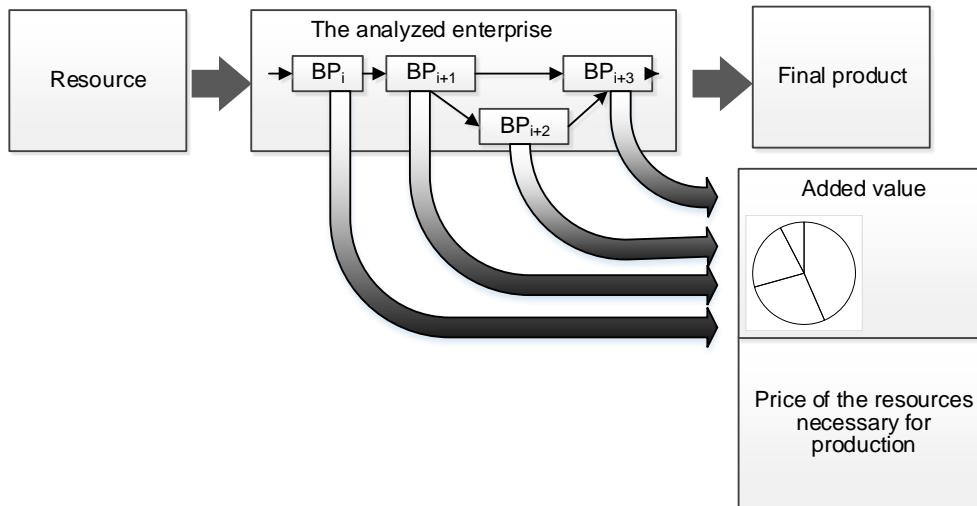


Fig. 3. Determination of the structural indicators of BP importance according to their contribution to the added value [Developed by authors]

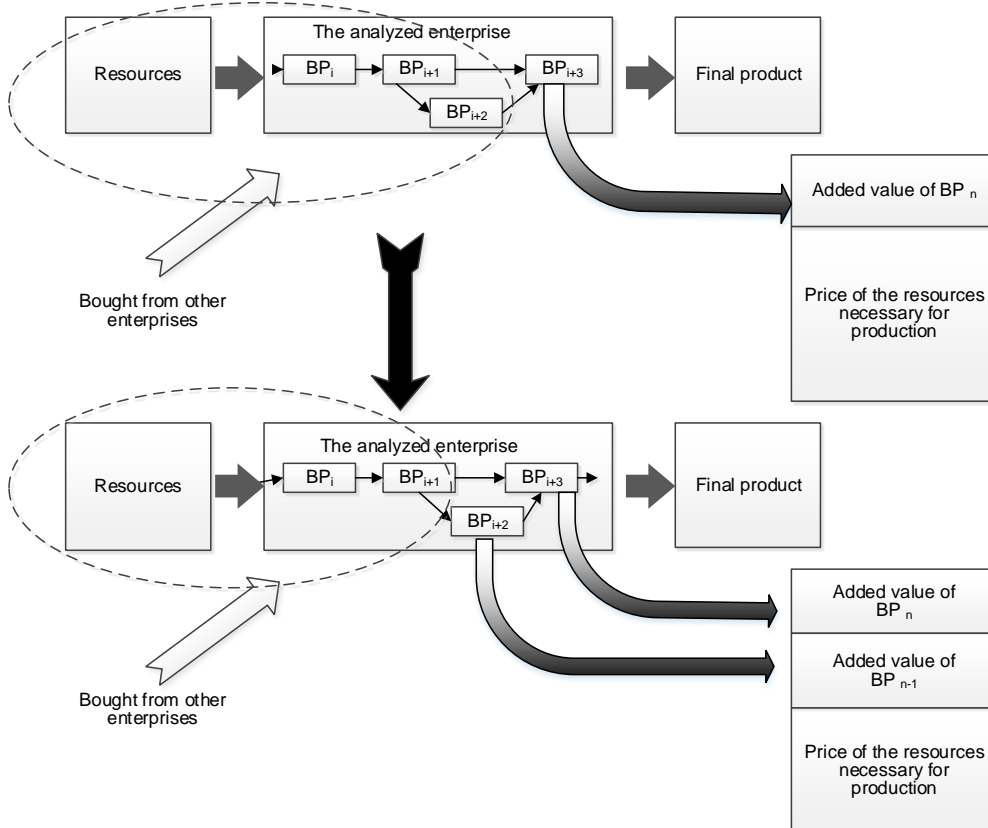


Fig. 4. Determination of the structural indicators of the importance of BP according to their contribution to the added value by the reverse method [Developed by authors]

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It should be noted that this concept of evaluation will work only under certain constraints, in particular upon presence of the results of all the BPs at the open market.

Using the proposed methodological principles, the authors have determined the strategic importance of the business processes at XTZ, PJSC. The object of research at XTZ, PJSC has been the process of manufacturing copper-brass radiators, presented schematically on Fig. 5. In general, the business process of manufacturing a radiator consists of the following three main sub-processes: 1) production of tanks (Пр_Б), 2) production of the radiator's core (Пр_С); 3) assembly of the radiator (Пр_З).

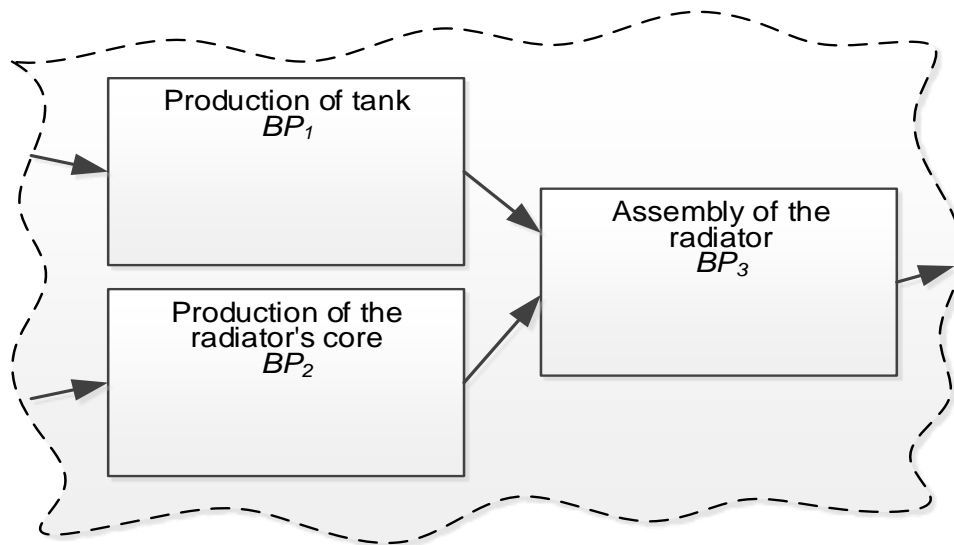


Fig. 5. Diagram of the processes to manufacture radiators [Developed by authors]

In order to evaluate the sub-process structure in the system, the value-added shares have been calculated subject to the cost of the process, i.e., the self-cost (upon internal production) or subject to the price (in case of supply) of the product or semi-finished product (Tab. 2).

Table 2

Determination of indicators of the business processes importance for manufacturing of radiators

BP indicators	BP1	BP2	BP3	Total
Costs, thousand hryvnas, incl. by manufacturers:				
Promtechmachproject	235.00	3200.00	4850.00	8285.00
Orenburgsky Radiator (RF)	220.00	3700.00	4440.00	8360.00
RS "ShAAZ" (RF)	240.00	3650.00	4350.00	8240.00
LTD Company "New Era"	260.00	3750.00	4995.00	9005.00
Kronid (Ukr)	280.00	3680.00	4750.00	8710.00
Average value	247.00	3596.00	4677.00	8520.00
Share of each sub-process in the added value	0.03	0.42	0.55	1.00
Rank of sub-process importance	3	2	1	-

According to the Tab. 2, the largest share in the added value of the processes belongs to the sub-process of the radiator's assembly. It means that this sub-process is the most important, being the one that provides performance of the whole system. So it should be considered as the first object when improving the system.

Conclusions. One of the important indicators of the business processes is their importance for achieving the strategic goals of the enterprise. The authors propose methodological principles for determining the structural importance of the BP on the basis of determining the added value of each BP. Such data are the basis, for example, for making strategic decisions regarding integration of a particu-

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lar process into the system, or, on the contrary, extraction of a process from the system on the basis of outsourcing.

References

1. Repin, V. V., Yelifirov, V. G. (2004). *Protsessnyy podkhod k upravleniyu. Modelirovaniye biznes-protsessov. [The process approach to management. Business process modeling]*. Moscow: RIA «Standarty i kachestvo» [in Russian].
2. Chuprov, K. K. (2005). Ekspress-metod diagnostiki biznes-protsessov kompanii [Express-method for diagnosing business processes of the company]. *Konsultant direktora – Ddirektor's Consultant*, 20. Retrieved from: <http://www.cfin.ru/management/controlling/lsa/express.shtml> [in Russian].
3. Kozherod, L. A. (2009). Metodika otsenki ekonomicheskoy effektivnosti biznes-protsessov predpriyatiya [Methodology for assessing the economic efficiency of business processes of the enterprise] *Vestnik NGU. Seriya: Sotsialno-ekonomicheskkiye nauki – Bulletin of NSU. Series: Socio-economic sciences*, 1, 83-90 [in Russian].
4. Kochnev, A. (n.d.). Prakticheskoye rukovodstvo po vnedreniyu protsessnogo podkhoda k upravleniyu kompaniyey. [Practical guidance on the implementation of the process approach to the management of the company]. *iteam.ru*. Retrieved from: http://iteam.ru/literature/processes/process_approach_book [in Russian].
5. Kovalev, S. M., Kovalev, V. M. (n.d.). Vybore biznes-protsessov dlya optimizatsii [Selection of business processes for optimization]. *www.betec.ru*. Retrieved from: <http://www.betec.ru/index.php?id=6&sid=43> [in Russian].
6. Anfilatov, V. S., Emelyanov, A. A., Kukushkin, A. A. (2002). *Sistemnyy analiz v upravlenii [System Analysis in Management]*. A. A. Emelyanov (Ed.). Moscow: Finansy i statistika [in Russian].
7. Khlebnikov, D. V. (2005). Matritsa outsorsinga [Matrix of outsourcing]. *Strategii – Strategies*, 11. Retrieved from: <http://www.strategy.com.ua/Articles/Content?id=539> [in Russian].
8. Makhmetova, A. E. (2013). Otsenka kriteriyev ranzhirovaniya biznes-protsessov predpriyatiy promyshlennosti [Assessment of criteria for ranking business processes of industrial enterprises]. *Vestnik saratovskogo gosudarstvennogo sotsialno-ekonomicheskogo universiteta – Bulletin of the Saratov State Social and Economic University*, 5(49), 82-85 [in Russian].
9. Kaplan, R. S., & Norton, D. P. (2005). The balanced scorecard: measures that drive performance. *Harvard business review*, 83 (7), 172 [in English].
10. Nemirovskiy, I. B. (n.d.). Pokazateli effektivnosti biznes-protsessov [Indicators of business process efficiency]. *www.elitarium.ru*. Retrieved from: <http://www.elitarium.ru/biznes-process-pokazatel-deyatelnost-resursy-produkt-jeffektivnost-analiz-proizvoditelnost/> [in Russian].

Література

1. Репин, В. В. Процессный подход к управлению. Моделирование бизнес-процессов / В. В. Репин, В. Г. Елиферов. – М. : РИА «Стандарты и качество», 2004. – 408 с.
2. Чупров, К. К. Экспресс-метод диагностики бизнес-процессов компании [Электронный ресурс] / К. К. Чупров // Консультант директора. – 2005. – № 20. – Режим доступа: <http://www.cfin.ru/management/controlling/lsa/express.shtml>.
3. Козерод, Л. А. Методика оценки экономической эффективности бизнес-процессов предприятия / Л. А. Козерод // Вестник НГУ. Серия : Социально-экономические науки. – 2009. – Т. 9. – Вып. 1. – С. 83–90.
4. Кочнев, А. Практическое руководство по внедрению процессного подхода к управлению компанией. [Электронный ресурс] / А. Кочнев. – Режим доступа: http://iteam.ru/literature/processes/process_approach_book.
5. Ковалев, С. М. Выбор бизнес-процессов для оптимизации [Электронный ресурс] / С. М. Ковалев, В. М. Ковалев. – Режим доступа: <http://www.betec.ru/index.php?id=6&sid=43>.
6. Анфилатов, В. С., Емельянов А. А., Кукушкин А. А. Системный анализ в управлении: учеб. пособие / В. С. Анфилатов, А. А. Емельянов, А. А. Кукушкин ; под ред. А. А. Емельянова. – М. : Финансы и статистика, 2002. – 368 с.
7. Хлебников, Д. В. Матрица аутсорсинга [Электронный ресурс] / Д. В. Хлебников // Стратегии. – 2005. – № 11. – Режим доступа: <http://www.strategy.com.ua/Articles/Content?id=539>.
8. Махметова, А. Е. Оценка критериев ранжирования бизнес-процессов предприятий промышленности / А. Е. Махметова // Вестник саратовского государственного социально-экономического университета. – 2013. – № 5 (49) – С. 82-85.
9. Kaplan, R. S., & Norton, D. P. (2005). The balanced scorecard: measures that drive performance. *Harvard business review*, 83 (7), 172.
10. Немировский, И. Б. Показатели эффективности бизнес-процессов [Электронный ресурс] / И. Б. Немировский – Режим доступа: <http://www.elitarium.ru/biznes-process-pokazatel-deyatelnost-resursy-produkt-jeffektivnost-analiz-proizvoditelnost/>.

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