



Strategic Contribution of a Business Process to Company's Performance

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Abstract

The study is aimed at assessing the strategic importance of a business processes for achieving sustainable competitive advantage, therefore, in this article the theoretical approach for measuring the strategic contribution of a business process to an enterprise's business system is presented. For evaluating of a business process strategic importance the study proposes the system of economic and managerial indicators, which includes the process' contribution to the added value, its compliance to critical success factors, and its organizational involvement. Combining these three indicators into one integral allows it to be used in different types of matrix analysis to make decisions on improving of a company's business system.

Keywords: Business Processes' Significance; Strategic Contribution, Organizational Involvement, Added Value, Critical Success Factors, Assets.

Introduction

Economic development of the enterprise is determined by progress of information technologies, emergence of innovative management forms, uneven development of various activities, new principles of the labour division, etc. The process approach to managing an organization has become widespread in recent decades. According to this approach, the enterprise is considered as a business system, i.e. a set of business processes (BP), contacting with each other, and everyone contributes to performance of the enterprise. Nowadays leading companies focus on identifying and regulating BP, defining key performance indicators (KPI) to measure and monitor processes performance, and implement tools to continually improve both individual processes and the system as a whole.

The researches in this area can be divided into two following directions:

1. Business processes management (BPM) in the context of overall organizations' management includes company-wide programs that aim to create a holistic view of the company development process (e.g., innovative projects, cultural development);
2. Current assessment and prioritization of BP and making primary decisions about certain BP within the enterprise business system. BPM decision making is usually determined by considerations of effectiveness, although many of these considerations are not explained and some may even be subconsciously addressed. Such decisions include the selection of processes required to support the corporate strategy; which of the existing processes needs improvement; which technological solutions are technically feasible.

It can be mentioned that the first direction is aimed at substantiating the principles of evaluation and establishing the evaluation criteria, while the second direction is aimed at improving the identification of the existing situation.

There is an interdependence between these areas: the improvement of methods for determining the strategic direction of development makes it possible to define more appropriate evaluation criteria, and the improvement of methods of evaluation gives more specificity to the diagnosis of the business system, the results of which allow to adjust the chosen strategy (Figure 1).

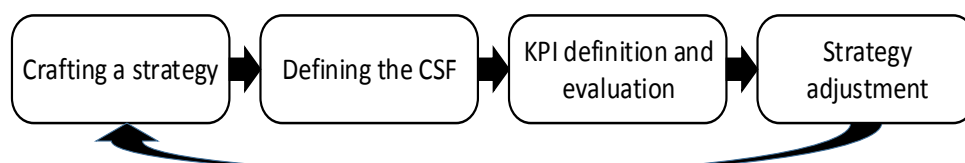


Figure 1. The Cyclical Nature of Strategy Crafting based on Business Processes Evaluations

Materials and Methods: Background of Business Processes Assessment

Target setting

One of the areas to improve the business system is managerial decision-making concerning reorganization, expansion, or, on the contrary, reduction of a particular business process, for instance, by concentrating or outsourcing, which makes it possible to increase efficiency and competitiveness of the enterprise. By examining the methods for assessing business processes, the authors conclude that the indicators can be divided into two groups (Figure 2). The first group characterizes success of the business process implementation (process performance) and usually represents certain technical or financial characteristics of the business process itself or its result (output). In a number of researches, such indicators are also referred to as the indicators of the "degree of problem", but in our opinion, it will be more precise to call this group as the indicators of "external competitiveness", since the relative indicators of this group most often represent comparison with a similar business process in other enterprises or with a certain standard.

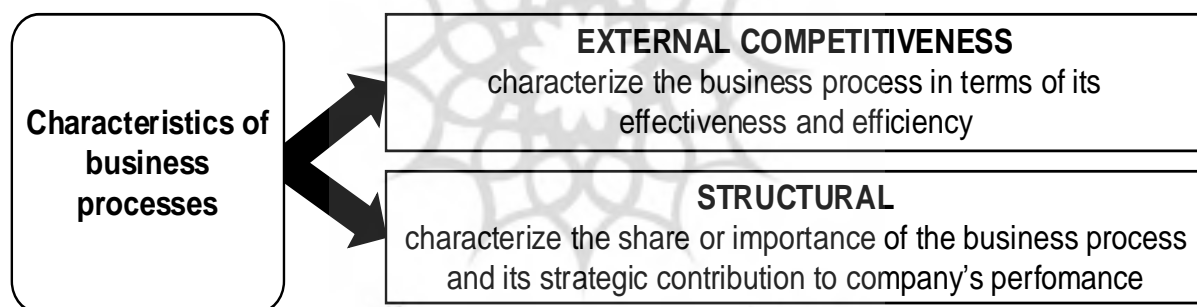


Figure 2. Groups of Characteristics of Business Processes

The second group describes location of the process in the general system, its significance, its share, its strategic importance, its contribution to the result of activities, and so we consider it appropriate to name this group as "structural indicators".

Structural indicators of business processes evaluating are often used when ranking business processes in different matrix decision-making models. Despite the importance of such indicators, as a rule, they are determined not quantitatively, but qualitatively, usually by the method of expert assessments, and that reduces the validity of the managerial decisions.

Based on the mentioned the purpose of the study is to develop a theoretical approach for the quantitative determination of structural indicators for assessing business processes.

Literature Review

Theoretical Background of BPM

BPM issues are addressed by a number of studies. Thus, in the BPM context, situational factors related to the measurement of goals, processes, organizations, and environment are considered. “For each contextual factor within each dimension, one or more characteristics can be identified that describe a specific situation or context” (vom Brocke, et al., 2016). Rosemann et al. (2015) suggest the following six core elements of BPM: strategic alignment, governance, methods, information technology, people, and culture, and more closely considers the role of culture as a critical determinant of BPM success. Dumas et al. (2013) consider BPM as “concepts, methods, techniques, and tools that cover all aspects of managing a process – plan, organize, monitor, control – as well as its actual execution” and substantiate BPM based on lifecycle containing process identification, discovery, analysis, redesign, implementation, monitoring and controlling. The evaluation of BP by different criteria is at the stages of “identification” and “analysis” and should be reviewed on “monitoring and controlling” phase.

A number of studies (Polančič et al., 2019) consider BPM in the context of the concept of maturity of BP (BPMM). So, Fisher (2004) describes different models of BPMM and evaluates these models by different methods (AHP, Delphi, etc.); Brin & Prokhorenko (2014) discuss the degree of integration of an enterprise's business system. According to the research of Curtis & Alden (2006), the first two stages of the BPMM are connected with data collecting and processing. Thus, the collection of data on the characteristics of BP can be considered as the first stage of the BPM, and the second stage is connected with evaluating and primary decision making. This approach is in line with our cyclical model, ie the definition of strategy depends on the estimates obtained. Furthermore, there is an associate research that understated the element on different parts of CRM and how an association can hold their current client and draw in new ones Memon F.A el al., (2018).

Evaluating of BP

The evaluation of BP by different authors is mainly concentrated around different KPIs, which describe the effectiveness of the process performed, usually with cost, time and quality. Thus, based on the research of Van Looy & Shafagatova (2016), which presents a broad literature review, it is possible to identify 11 groups of KPIs, 5 of which can be used for evaluating certain processes, the remaining 6 for evaluating different aspects of an organization as a whole. The most applicable indicators from mentioned are the time-related indicators (12 KPIs are found in 16 sources), 7 indicators describe general performance of BP, 5 ones characterize the quality of process execution, 4 indicators are cost-related and 1 indicator characterize flexibility). Kataev et al. (2016) argue that the main factors of

assessment should be collected in 4 groups: consumer resources, costs, duration, and information constraints.

To select the most appropriate KPIs, it is quite common for authors to use ranking of business processes based on a analytic hierarchy process (AHP). Masood et al. (2013) attempt to determine the relative importance of certain BPs in the system. Dumas et al. (2013) propose the following criteria for steer BP evaluation: importance as a strategic relevance of each process; dysfunction to determine the deepest trouble process; and feasibility to determine if changes are possible.

As a principle of prioritization Bolsinger et al. (2011), Buhl et al. (2011), vom Brocke et al. (2015) use the value proposition of business processes, which may be the cost of BP; cultural values; value in measuring quality, time and cost; or values in environmental, social and other areas.

Thus, the indicators called "structural" in this study represent criteria for prioritizing BP. The concept of "structural indicators" is found as "evaluations of formal and structural process characteristics, economic evaluations of processes, and value-oriented BPM" (Modrák, 2004). However, by structural characteristics Modrák (2004) as well as Petro & Gardiner (2015) mean process design, while in this study it means something different, namely the share of a separate BP in the business system of an enterprise.

Researchers call the indicators, which can be attributed to structural, in a different way. These are, for example, strategic importance, degree of priority, business process input, significance, etc. The most common approach to determine the business system's structure and, accordingly, the status of the business process in the system is the division of business processes into core and support ones. The basis for the division is the added value, which represents the difference between the values of the product after and before the process. According to Porter (1990), the formation of a new value occurs by adding or gradually transferring the cost of the corresponding parts of the enterprise assets spent on the final product. It completely depends on: processes occurring in the enterprise; used materials, components and services received from the outside; human resources of the enterprise; applied technologies at each stage of production process; enterprise infrastructure.

Vom Brocke et al. (2015) discuss the definition of value and the nature of its creation, as well as the problem of determining of the value created by a particular business process: "Although it is not possible for a process or activity to add value to a thing, it may be possible in a process to improve the customer's perceptions of products and services. Therefore, value is not added to something but is a value perception (of something) *increased* by a certain *driver* that is worth specifying." Nadarajah et al. (2016) combine the concept of process strategic alignment, and process improvement initiative (PII) as an approach for BP

managing. In our view, the concept of SA is about adding value, while PII is a direction of process performance evaluation. In general, the added value contribution is one of the most common characteristics used as a criteria for the significance of BP. However, the authors do not consider in details the possibility of numerical assessment of structural indicators, i.e. involvement of the process into the system; or focus on expert evaluation by different stakeholders.

Value-added analysis is the basis for dividing an organization's business processes into Core and Supporting ones, although some authors also identify Management processes as a separate group. Dunn (2009) distinguished business processes according to their purpose in Exploitation and Exploration, which role in value addition is also different (Figure 3).

Type of BP	Participation in value	Output	Consumer	Example
Core (Exploitation)	Add value to consumers	Input to other processes or final product	Another business process or final product	Production Transportation
Core (Exploration)	Create value to consumer and add value to product. The amounts of these values are not equal	Resource for other processes	Other business processes	R&D Experimental production
Support	Add value to a product and don't create a consumer value	Resource for other processes	Other business processes	Internal audit Security
Management	Add value to a product and don't create a consumer value	Results of the company's activity	Owners and other stakeholders	Crafting a strategy

Figure 3. Classification of Business Processes

Evaluation of business processes with the added value leads to the conclusion that the core processes are the widely involved in the system and most strategically important ones. The support processes and management processes are less involved and, accordingly, less strategically important.

Another way of assessing the significance of BP in the system is to evaluate the contribution to the achievement of Critical Success Factors (CSF). Of all the organizational goals, it is necessary to choose the eight most important ones, which are called the critical success factors. Importance of the process is determined by the degree of its contribution to achieving the enterprise's strategic goals. Therefore, the more critical success factors are supported by the considered business process, the more important it is. (Figure 4).

According to this principle, the importance of the same BP in different organizations will differ depending on the set of initial CSFs, which in turn are determined by the position of the organization (proactive or reactive, traditional or innovative, etc.) and described by

Robson (1996), but in this way subordination of lower levels of decision making concerning the business system to a higher strategic level arises.

A large group of authors consider CSF as criteria for decision making in BMP. Thus, Trkman (2010) describes a theoretical framework with the utilization of three theories: contingency, dynamic capabilities and task-technology fit, and emphasizes, that the basis for CSFs identification should be the strategic alignment of BP. A number of CSFs for different fields of activity are justified by Ariyachandra & Frolick (2008). Zamecnik & Rajnoha (2015) identify major KPIs to support CSF associated with risk, that is, CSFs should be identified on the basis of existing risks and their assessment.

		Critical Success Factors								Importance (number of CSF)
		1	2	3	4	5	6	7	8	
Business-processes	P1			X		X		X	X	4
	P2	g	X		X	X	X	X	X	7
	P3	X	X	X	X	X		X	X	7
	P...	X		X		X		X	X	5
	Pn		X		X		X		X	4

Figure 4. Matrix for Comparing of Business Processes and Critical Success Factors

Ohlsson et al. (2017) propose prioritization based on stakeholder assessments of contextual factors and identifies the need for this as a basis for improving organizational structure. Accordingly, the importance (significance, weight) of BP is determined by stakeholder ratings. As a consequence of prioritization Havur et al. (2016) indicate the allocation of resources between BPs in the system. This confirms the thesis about the dependence of the structure of the business system on the degree of business processes importance.

In our opinion, the next (third) measure of BP's significance in the system may also be the cost of transformation in the case of relevante strategic changes. Such idea is also reflected in Weske (2012): "Since process improvement is about effort, the resources required to produce its result also have to be taken into account... ..each such option, the effect on the overall cost of the process can be estimated". Making changes in a particular process may be inappropriate due to a high cost of possible undesirable consequences or barriers from the financial field, i.e. expenditures of the enterprise in the current period, or possible investments in new technological facilities; or personnel area, consists of the costs to overcome opposition from the employees. Having identified the major barriers for each designated business

process, one should calculate the total amount of force of all the barriers impeding such change therein. The value obtained is called the Degree of opportunity for changes in the business process and is calculated using relative indicators of the structure.

Results and discussion

Fundamentals

Summarizing the views of the above authors and subject to our own research, we suppose that the system for evaluating structural indicators of business processes should be based on the following positions.

Status of a particular process in the business system or its significance is determined (Figure 5):



Figure 5. Components of the Strategic Contribution of Business Processes

- Firstly, by its importance, i.e., the role it plays in the company, or by contribution to the final result. A role can be of a determinative nature for the final performance of the whole company and for the end consumer, or only for individual business units. It is possible to evaluate the contribution of each business process to the results of the organizations' activity on the basis of comparison of certain result indicators of the business process and the enterprise as a whole;
- Secondly, by degree of organizational involvement of the business process into the system. A number of authors call it as "organizational fragmentariness", being the degree of interconnection between a certain process and other processes in the entity A similar approach to assessing the involvement of BP in the system is classification,

where BP is divided into Elementary process (EP), Integrated process (IP) and Unified enterprise process (UEP), depending on the number of tasks and external (for processes) connections.

These two components can be described by different indicators.

Strategic Importance: Value-added Contribution

The most correct and justifiable indicator determining importance of the business process, at the first glance, seems to be involvement of the process in the added value. The added value includes wages, rent (or depreciation assignments) and profit. Determining the share of profit for each particular business process is virtually impossible, since the share of profit is the very value that matters for the consumer.

Therefore, in order to determine the status of the process by the value-added, we propose to use only the "expenditure" part of it:

- payment for labour of the employees, who are engaged in this process, in terms social deductions;
- depreciation of the assets used in this process.

Thus, the added value created by a certain business process will be as follows:

$$V_i^{ad} = WF_i + A_i \quad (1)$$

where V_i^{ad} means the added value of the i -th business process; WF_i means the payroll budget of employees of the i -th process (with social deductions); A_i means depreciation of the assets used in i -th process.

Application of this indicator has certain limitations. Firstly, the said indicator reflects involvement of the core processes in the added value, expense for which can be attributed to the self-cost of products, works, services. Expenses for the support processes are related to administrative or selling expenses, and the accurate determining thereof for support processes required special efforts for calculation. For industrial enterprises, the value of assets used in support processes is usually much lower than the assets used in the core processes. Hence, it is logical that the value of this indicator for the support processes will be predominantly low. Thus, use of this indicator is reasonable in terms of quantitative measurement, but initially it provides for lower values to the support processes, and, what is most important, to the management processes. Therefore, use of this indicator will be more informative for comparing business processes within the same group.

It is possible to remove the above disadvantage by using the method of evaluating involvement of the process in CSF as described above.

Strategic Importance: Compliance with Critical Success Factors

The number of CSF affected by this process is a rating of its strategic importance:

$$V_i^{CSF} = N_i^{CSF} \quad (2)$$

where V_i^{CSF} means the rank of i-th business-process; N_i^{CSF} means the number of CSF affected by i-th process

Apparently that Management business processes, such as financial planning, product development, etc., are influential on a larger number of CSF than a number of core business processes generating the added value. A provisional disadvantage of this method lies in the need for additional efforts to create an expert commission for assessing compliance of CSF, processing of results, as well as a certain subjectivity of estimations.

Organizational Involvement

In our opinion, the organizational involvement of the business process into the system, or, in other words, the fragmentation of the business process is characterized by the possibility and costs of making changes in the areas of "Assets" and "Personnel" of the business process. The costs of that type include: costs of purchasing a new or, on the contrary, disassembly and utilization of the obsolete equipment; costs of acquiring a new or adjusting the old technology; costs of changing the organizational structure, i.e. employment or dismissal of certain professionals; expenses for retraining of staff, etc.

Measurement of this indicator lies in determination of the amount of costs that may incur in case of refusal from or reorganization of the business process.

$$V_i^{ch} = V_i^{as} + V_i^{st} \quad (3)$$

where: V_i^{ch} means the organizational involvement; V_i^{as} means the cost of making changes in the enterprise assets used in the i-th process; V_i^{st} means the cost of making changes pertaining to the staff involved in the i-th process.

The quantitative measurement of this indicator is as usual not complicated, but, like many others, it requires special efforts for calculations.

Table 1. Indicators of Significance of the Business Process in the System

Indicator	Formula	Advantages	Limitations
Business process added value	$V_i^{ad} = WF_i + A_i$	Easy-to-measure in numbers, ensuring impartiality of assessment.	It cannot always be used correctly for comparing the core and support processes, but only within one group
Importance of the business process for CSF	$V_i^{CSF} = N_i^{CSF}$	Universal for any group of business processes	Subjectivity of assessments of both the conformity of CSF processes and of CSF themselves
Cost of the changes in the business process	$V_i^{ch} = V_i^{as} + V_i^{st}$	Easy-to-measure in numbers, ensuring impartiality of assessment.	Additional efforts are necessary to predict future changes

Thus, significance of the business process in the system can be characterized by three indicators (Table 1): added value of the business process; value of the process for the critical success factors, and cost of making changes.

The common provisional disadvantage of these indicators is that they cannot be calculated on the basis of standard traditional reporting forms, but require special efforts. Advantage of the first of them, in our opinion, is a greater degree of impartiality; meanwhile a certain subjectivity may be inherent to the second and third ones. At the same time, the first indicator is more accurately applied to the core business processes, when individual units or even business process operations are evaluated and compared; application of the second and third indicators is suitable for all the groups of business processes.

Justification of Quantification Methods

The greater significance each indicator has, the more strength is given to the business process. To assess the business system's structure, one should use a complex indicator, which is, in our opinion, a more comprehensive and correct approach.

For implementing the above approach, it is necessary to reduce the indicators to the common units of measurement. The best option is to use the relative indexes of the structure, i.e., a share of resulting value in the sum of values:

$$k_{x_i} = \frac{x_i}{\sum_{i=1}^n x_i} \quad (4)$$

Accordingly, the following appears as indicators of significance of the business process in the system:

- share of the added value, measured as a ratio between the added value of the business process and the added value of the enterprise (net of profit);

$$N_i^{ad} = \frac{V_i^{ad}}{V^{ad}} = \frac{WF_i + A_i}{WF + A} \quad (5)$$

- share of contribution into the key success factors, being a ratio between the number of CSF corresponding to the said business process and the CSF amount corresponding to all the selected processes;

$$N_i^{CSF} = \frac{V_i^{CSF}}{N^{CSF}} = \frac{N_i^{CSF}}{\sum_{i=1}^n N_i^{CSF}} \quad (6)$$

- share of cost of transformations of the business process in the total cost of transformations. Some explanations are required to specify the latter.

In our view, the enterprise value can be used as a cost of transformation. Conventionally, there are three main approaches used in the world business practice for the comprehensive evaluation of the enterprise: income (profit), cost (property), comparative (market); as well as the integrated one, which combines several approaches. There are several methods within each of them. Consideration of the advantages, limitations and conditions for using any of the above approaches goes beyond the scope of this paper, and therefore we will not dwell on these issues in detail. In essence, the total cost of transformations, to the fullest extent possible, corresponds to the enterprise value as calculated by the property (cost) method.

The arguments in favour of this approach are as follows. In accordance with the provisions of the National Standard for Evaluation No. 1, "General Principles of Appraisal of Property and Property Rights," the cost approach means a set of valuation methods based on determination of necessary expenses for reproduction or replacement of the item under evaluation, taking into account the value of its depreciation. Pursuant to that definition it represents the total cost of transformations. In practice of assessing the enterprise value within that approach, the most widely used methods include: net book value, adjusted value, estimation of the net market value of tangible assets, replacement value and liquidation value.

A particular disadvantage of using that method to evaluate the enterprise as the basis for determining the organizational involvement is that the enterprise value, calculated by the property method, disregards the costs associated with the organizational transformation of staff, since the personnel value is not taken into account by the current financial accounting

standards as the asset value. Subject to the applicable accounting rules, the personnel value is not capitalized, but is recorded in the current expenses.

Thus, the use of the enterprise value specified by the cost method as the basis for determining the organizational involvement has some drawbacks and should be supplemented by personnel value as an asset of the enterprise. This addition is especially relevant for service enterprises and research institutions, where human capital indeed has much more importance than the property one. For industrial enterprises, especially in the core business processes, the cost of property is significantly higher, so we consider it possible to use this method.

Accordingly, the degree of organizational involvement of the business process will be as follows:

$$N_i^{ch} = \frac{V_i^{ch}}{\sum_{i=1}^n V_i^{ch}} = \frac{V_i^{as} + V_i^{st}}{NA} \quad (7)$$

Where *NA* means the Net Assets.

A set of the given relative indicators for assessing the business-process significance in the system can be shape as follows (Table 2).

In order to determine the final estimation, it is expedient to use the mean arithmetic value, whereas, subject to the above-described limitations per indicator, they have approximate equal shares and are relatively independent parameters of significance of the business process on the system. The high value of any indicator testifies to a high importance.

Table 2. Relative Indicators of Assessment of the Business Process Significance in the System

Relative indicator	Formula for calculation
Share of the business process in added value	$N_i^{ad} = \frac{WF_i + A_i}{WF + A}$
Share of contribution of the business process into CSF	$N_i^{CSF} = \frac{N_i^{CSF}}{\sum_{i=1}^n N_i^{CSF}}$
Degree of organizational involvement of the business process	$N_i^{ch} = \frac{V_i^{as} + V_i^{st}}{NA}$
Final estimation of strategic contribution of a business process	$N_i = \frac{\sum_{i=1}^3 N_i^j}{3} = \frac{N_i^{ad} + N_i^{CSF} + N_i^{ch}}{3}$

Case Study: the Empirical Investigation of Strategic Contribution of Business Processes at ARIS Ltd

Findings of the research have been practically applied for evaluation of the business system of ARIS Limited Liability Company, focused on production of polymer containers: three-layer materials based on aluminium, craft paper and specialized composite laminates for aggressive environment. The company provides a range of services for production of packaging and packages, production of roll packaging from multilayer materials with or without printing. Structural estimation of the company's business processes through the aforesaid approach can be shaped as follows (Table 3), and is illustratively shown in Figure 6. The figure clearly demonstrates that there is an evident division of the business processes of the company under examination by structural indicators into 3 groups. The business processes of marketing and administration, warehousing and production of laminates have the least share in the system. The next group by significance includes the processes of servicing export-import operations, printing and supply.

Table 3. Strategic contribution of the business processes at ARIS Limited Liability Company, 2019

Business process	Leg.	V_i^{ad}	V_i^{CSF}	V_i^{ch}	N_i^{ad}	N_i^{CSF}	N_i^{ch}	N_i	Rank
Production of packages	Pac	1570	3	349	0,192	0,073	0,0080	0,0911	3
Production of laminates	Lam	208	3	285	0,026	0,073	0,0065	0,0351	8
Printing	Pr	599	3	272	0,073	0,073	0,0063	0,0510	6
Maintenance of production processes	Ser	1111	4	1230	0,136	0,098	0,0282	0,0873	2
Storage of raw materials and goods	St	311	2	80	0,038	0,049	0,0018	0,0296	9
Purchase of raw materials	Pur	191	6	24	0,023	0,146	0,0006	0,0568	5
Export and import service	ExIm	72	6	85	0,009	0,146	0,0020	0,0524	7
Sales	Sal	1407	5	246	0,172	0,122	0,0056	0,1000	1
Marketing and advertising	MA	41	2	188	0,005	0,049	0,0043	0,0194	10
Administration	Adm	639	7	417	0,078	0,171	0,0096	0,0862	4

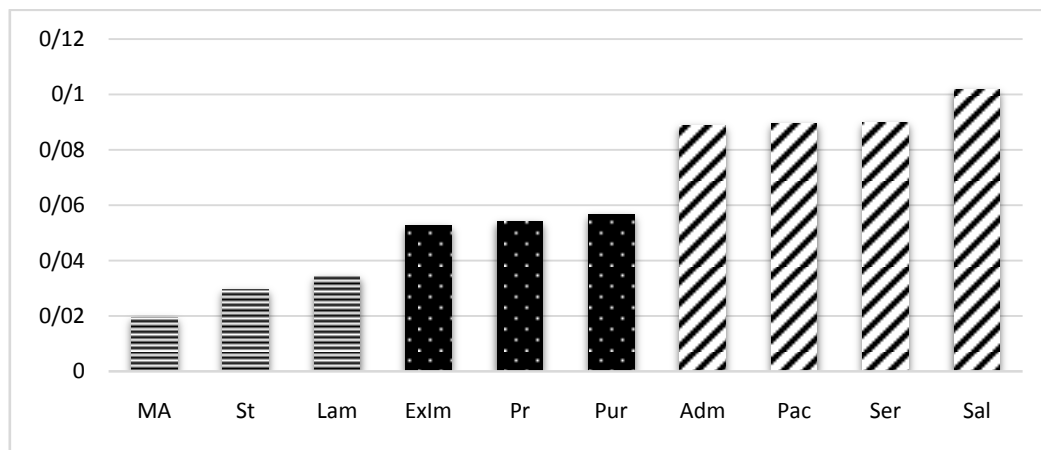


Figure 6. Strategic contribution of the business processes at ARIS Limited Liability Company

Processes of sales, maintenance of production processes, production of packages and administration are the most important in the structure of the business system. This is due to the active market position of the company in terms of conquering the market, whereunder the company maintains rather a large number of the sale personnel. Production of packages is the major production process of the company, and maintenance of production processes ensures quality of the output products.

Conclusion

One of the most important characteristics of the business process is its strategic contribution to a company's performance, which in turn is characterized by three indicators: added value of the business process; share of the process for CSF, cost of the made changes. The proposed comprehensive indicator can be used for the matrix analysis of the enterprise's business processes, such as the McKinsey model or others, underlying the process of managerial decision-making in respect of reorganization of the business system.

The results obtained explain the current structure of the business system of the enterprise, and are formed in accordance with the current strategy and current CSF. The implementation of the next stages of the business process management cycle requires setting of KPIs and evaluating of existing business processes according to the selected KPIs.

The value of KPIs for the selected processes will allow to form a matrix and will become the basis for making primary decisions about resource allocation. Apparently, if the score of "St" or "MA" process performance is high, it can be the basis for diversification or for providing additional services as an outsourcer for other organizations. In the case of low process performance depending on the depth of the problem, either outsourcing or any reduction of these processes may be considered. Such decisions are aimed primarily at determining the priority of resource allocation and optimizing the structure of BP. The

redesign of the business structure according to the life cycle will remain the relevance for a certain period, after which, due to either the proactive position of the company or the reaction to the change of external environment, the strategic priorities may change. Accordingly, CSF and target values of KPIs will change and the cycle will be repeated.

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Bibliographic information of this paper for citing:

Brin, P., Prokhorenko, O., Nehme, M., & Trabulsi, H. (2020). Strategic Contribution of a Business Process to Company's Performance. *Journal of Information Technology Management*, 12(3), 82-99.

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