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A methodology for analysis and assessment of business processes of Ukrainian enterprises

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C H R O N I C L E

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A B S T R A C T

The article presents a methodological tool for analysis and evaluation of business processes of Ukrainian enterprises. The proposed methodology is provided for the identification of "problem" areas of certain business processes by calculating average weighted, integral and generic indicators of efficiency and effectiveness. It allows to evaluate the status of both certain business processes of enterprises and their totality, and to set the priorities of management actions for their improvements. The proposed methodology is examined on the example of a specific enterprise of the construction industry. In the framework of the proposed criteria (financial-economic, resource-production, external integration, organizational), a list of indicators, taking into account the specifics of the enterprise are formed. Assessment of the efficiency and effectiveness of business processes by the specified criteria and indicators allows one to monitor the current activity of the enterprise and evaluate the effectiveness of its operations at every moment of time.

1. Introduction

Modern enterprises need to have deliberate and efficient management system of their activities to build sustainable advantages against their competitors, which can be used based on certain methodological approaches. Management system of an enterprise should be aimed at increasing the efficiency of the functioning, i.e., a performance and decision-making analysing system is required to be created. That will help to distinguish and eliminate causes of existing discrepancies, and also determine their possible occurrence. Process approach is an effective and relevant means of achieving competitive advantages as it focuses the activity of the enterprise on business processes, and orients the enterprise management system on the management of each business process individually and their totality in the enterprise as a whole and / or in the framework of certain projects that are implemented by the enterprise (Plebani et al., 2017; Trkman et al., 2015).

2. Literature review

The problem of implementation of business processes in enterprises is urgent for countries with different levels of economic development. In particular, Nam et al. (2019) developed an integrative business process implementation model and conducted testing with 170 Korean firms. The analysis confirmed the feasibility of implementing business processes at all stages of enterprise management.

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Marrella et al. (2019) in their studies proposed a model of Case Management and Notation, where the basis is a quantitative assessment of the distance between the model of the decision process and the full achievement of the level of stability. Antunes and Mourão (2011) developed a framework of sustainability based on two criteria: control, which can be mixed or discretionary, and responses, given planned and unplanned actions. The authors developed a set of services that integrate sustainability support in business process management (BPM) systems, including detection, diagnosis, recovery and escalation. Marrella et al. (2017) proposed SmartPM – a model and prototype of a process control system containing a set of methods to support the automated adaptation of knowledge-intensive processes during execution. Another proof that businesses processe are associated with an important management object. Abdelkafi and Täuscher (2016) proposed a business model of sustainable development (BMfS) aimed at creating value for different stakeholders parties and the natural environment. This model is based on the creation of an enhanced feedback loop between customer value, firm value, and value for the environment. Chapman et al. (2003) argued in their work that business processes play an important role in innovative service-based logistics services, based on service, transformed from a business concept of transportation into the service for all logistics needs of customers. Scientists from Latvia, Bikse et al. (2018), conducted a research on creation of innovative enterprises and introduction of business processes into their activities. They considered the implementation of startups and linked the concept of a startup with business incubation, which indicates the prospects for the development of innovative infrastructure in the country. The work of Fomina and Makolski (2017) analyzes the innovative cooperation between universities and high-tech enterprises in Russia. It was established that the level of innovative development of Russia was one of the lowest in the world and a new model of business partnership between educational institutions and high-tech companies was proposed, based on the introduction of effective business processes management. Burukhina et al. (2019) developed a modern concept of introducing business processes into the activities of construction firms, in particular the "MultiComfort House Student Contest" held by Sen-Goben ISOVER. Kinash et al. (2019) proposed a method of economic assessment of the development of tourism enterprises in Ukraine, which confirms that business processes should be implemented at all levels of the management system. Scientists presented a methodology for assessing the competitiveness of enterprises, where they proved that the introduction of new business processes in the management system is rather urgent (Dovgal et al., 2017; Lederer et al., 2017; Trkman et al., 2015). Ayuso et al. (2011) argued that a process approach requires from enterprise management to take action to adapt to change and, consequently, to improve business processes. In other studies (Andrusiv & Galtsova, 2017; Kratzer et al., 2019), the authors proposed a methodical approach for assessing the level of innovation activity of enterprises in the construction industry, where the main focus was on implementing business processes at all levels of enterprise management. Cherchata (2016) emphasized the separation of economic categories of "performance" and "efficiency" in the process of evaluating business processes, because efficiency and effectiveness determine different aspects of their functioning. It is suggested to use the Balanced Scorecard (BSC) concept when designing a business process measurement methodology. Cherchata and Andrusiv (2018) examined the main issues related to process-oriented enterprise management and developed a process for selecting business processes to be reengineered (BPR – business-process reengineering) for improvement of these business processes. Process-oriented management is defined as one of the effective tools of enterprise management in the works of many scientists, but they have insufficiently formed the information and analytical basis of business process management. The purpose model of this paper develops a set of information-analytical, methodological and practical aspects of substantiation of the stage-by-stage approach of identification and management of business processes in the enterprise and create a mechanism for evaluating the implementation of the process approach, which involves the formation of evaluation indicators of business processes of the enterprise.

3. Results and discussion

It is necessary to monitor and evaluate business processes condition to make an effective management. As any changes in conditions or results of business processes can be determined only when appropriate criteria and methods for measuring them are being existed. In this case, finding weak points (bottlenecks) of business processes through specific indicators are of great importance. As a result, the primary task in this aspect is to create performance and efficiency indicators system of business processes, taking into account the specifics of an enterprise. On the basis of measurement and analysis of existing business processes' performance and efficiency, actions to improve them are being developed by using the appropriate mechanisms and tools. Authors developed a methodology for evaluating business processes of an enterprise to identify business processes that require changes (Fig. 1). It is based on the idea of well-known Balanced Scorecard (BSC) by Kaplan and Norton (1992). The core of the methodology is as follows: performance and efficiency of business processes is determined on the basis of the found indicators' values in the context of proposed criteria. In case, values of performance and efficiency of business processes are lower than the allowable rate according to the proposed scale, it is suggested to improve them. Calculations for evaluation of business processes of an enterprise are recommended to be carried out at the following stages.

Stage 1. Formation of performance and efficiency indicators of business processes on the basis of BSC concept. Selection of performance and efficiency criteria is important in the performance and efficiency of business processes estimation. A criterion is a qualitative attribute, due to which the performance and/or efficiency, classification (of the research object) and quantitative measurement are held.

A performance is a measure of achieving the goal as such, and an efficiency is a measure of optimizing the cost of its achievement, which characterizes ratio of the resulting economic effect (result) to the cost of resources that ensure achievement of this result.

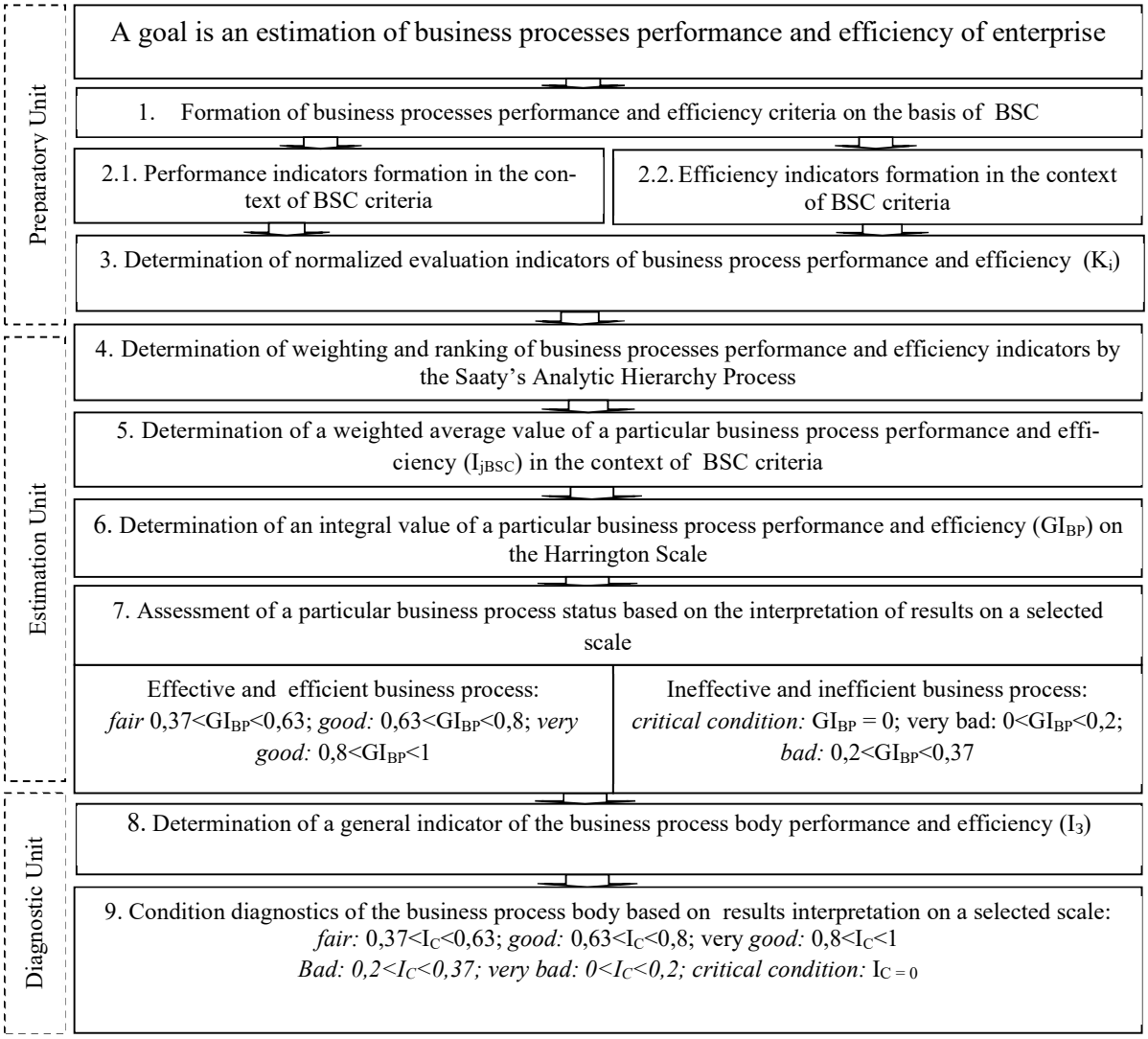

Fig. 1. Methodological approach in an enterprise's business processes estimation

Source: proposed by the authors

Stage 2. Performance and efficiency indicators formation in the context of BSC criteria. A criterion is a sign of a phenomenon that allows identification of its parameters. An Indicator is a quantitative description of the phenomenon. The point of the criterion reflects qualitative side of a measured feature, and the indicator shows its quantitative value.

Stage 3. Determination of normalized estimates of business process efficiency (K_i). The ratio between actual and planned values for each indicator is calculated by Eq. (1) as follows,

$$K_i = \frac{X_n}{Y_n} \tag{1}$$

where

(1)

K_i is a relative unit *i*th indicator of the process; X_n is an actual value of the indicator and Y_n is a planned value of the indicator. At the same time, planned values for each indicator are set at the beginning of a reporting period. Actual values are determined on the results at the end of a period. Periods of performance and efficiency evaluation depend on the specifics of a business process and may be monthly, quarterly, semi-annual, or annual. Properly selected evaluation period (using comparison of actual and planned values of indicators) allows not only to detect mismatches in the business process on time, but also to prevent their occurrence.

Stage 4. Business processes performance and efficiency indicators weighting and ranking by the Saaty's Analytic Hierarchy Process. Since certain indicators, that are a display of certain factors influence on an enterprise's business processes condition, have different effects on the enterprise's strategic goals achievement. So, they should be ranked according to the degree of importance. For this purpose, the Saaty's Analytic Hierarchy Process (Kitsios & Kamariotou, 2019) is used by authors. It is based on paired-comparison indicators characterizing the status of certain business processes in a nine-point scale. This method belongs to the criteria class and takes a special place due to the fact that it allows to reduce the degree of subjectivity of expert scores.

Stage 5. Determination of weighted average performance and efficiency indicator of a particular operational business process (I_{jBSC}) within the BSC criteria. After normalized indices of the business process state have been determined (according to the first stage criteria) and weight coefficients of these indicators are established, we determine a weighted average indicator of performance and efficiency of the business process with fixed values in each proposed criterion of the BSC by a weighted sum of estimates method:

$$I_{jBSC} = \sum_{i=1}^{n} K_i \times w_i, \tag{2}$$

where I_{jBSC} is a weighted average performance and efficiency indicator of a particular operational business process within a framework of the BSC jth criterion; K_i is a normalised estimate ith indicator of a business-process; Wi_i is a indicator's weight coefficient and N is an amount of indicators.

Stage 6. Determination of integral performance and effectiveness indicators of a particular operational business process (GI_{BP}) on the Harrington scale. An integral indicator of operational business process performance and efficiency as a whole represents the sum of weighted average performance and efficiency indicators across all selected BSC criteria and it is calculated by the formula:

$$GI_{BP} = \sum_{j=1}^{m} I_{jBSC}\ , \tag{3}$$

where GI_{BP} is an integral indicator of operational business process performance and efficiency; I_{jBSC} is a weighted average performance and efficiency indicator of an investigated operational business process within a framework of the BSC jth criterion and m is an amount of BSC criteria, that are being estimated.

Stage 7. Estimation of the business process status based on the results interpretation on a selected scale. Calculated by the formula (3), integral performance and efficiency indicators of the investigated business processes GI_{BP} are values ranged from 0 to 1. So they should be interpreted qualitatively to determine managerial actions on business processes. In this regard, a serial scale is required, as the basis for interpreting the indicators. It should be represented as a set of symbols, a relationship between which reflects the relationship between objects of the empirical system. Interpretation of the performance and efficiency level of an enterprise's business process is proposed to make using the Harrington scale: fair: $0.37<I_C<0.63$; good: $0.63<I_C<0.8$; very good: $0.8<I_C<1$; bad: $0.2<I_C<0.37$; very bad: $0<I_C<0.2$.

Stage 8. Determination of a general indicator of operational business processes body performance and efficiency (I_C). After integral performance and efficiency indicators of each investigated building company's business-processes are determined, the general indicator of an enterprise's business processes body is calculated by Eq. (4) as follows,

$$I_C = \sum_{i=1}^{k} GI_{BP} / k, \tag{4}$$

where I_C is a general indicator of business processes body performance and efficiency; GI_{BP} is an integral indicator of business-processes performance and efficiency and K is an amount of investigated business-processes.

Stage 9. Condition diagnostics of business process body based on results interpretation on a selected scale:

After calculating a value of the general indicator of total business processes effectiveness and efficiency of an enterprise, the level of aggregate operational business processes condition of an enterprise is determined at the 7th stage of the Harrington scale. Thus, after estimating performance and efficiency indicators of business processes the level of business processes performance and efficiency is being identified in accordance with the given scale. Also, there are proposed actions to a certain business process and the company's business processes body, depending on the degree of received quantitative score's bias of a business process (processes) from certain limits on the Harrington scale. Besides, the analysis of performance and efficiency integral indicators change of investigated business-processes in dynamics should be conducted. It will allow to

formulate grounded conclusions about factors and managerial actions that affect on company's activity and its development way. Approbation of the proposed methodology is carried out on the example of a building company. Information about planned indicators of the criteria was taken from enterprises and units' planned actions. Implementation of the methodology in practical activity of a building company is realized as follows:

Stages 1-6. Estimation of business processes performance and efficiency of enterprise. These stages stipulate planned values setting, actual values determination and significance of each indicator within business processes detection. According to this methodology, a list of indicators and criteria of a building company is formed. In addition, business processes related to the main (operational) activity of a building company is emphasised. Manufacturing, resources supply, material and technical resources' storage and transport supply business-processes are highlighted with the aim to make management influence on them. Business processes performance and efficiency for each BSC criterion (IjBSC) is calculated by the formula (2). K_i, is calculated by the formula (1). It should be noted, that a separate performance and efficiency indicators are direct, i.e. their value increases with an enterprise's activity improvement. And reverse, which value decreases with an enterprise's activity improvement. So it is suggested to use an improved formula to calculate normalised estimate indicator K_i for specific indicators: For indicators whose decrease leads to better results:

$$K_i = 1 - \frac{X_n}{Y_n}, \tag{5}$$

where K_i is a normalised estimate ith indicator of the process; X_n is an actual value of the indicator; Y_n is a planned value of the indicator. For indicators whose decrease leads to worse results:

$$K_i = \frac{X_n}{Y_n}. \tag{6}$$

For indicators whose increase leads to better results:

$$K_i = 1 - \frac{Y_n}{X_n} \tag{7}$$

For indicators whose increase leads to worse results:

$$K_i = \frac{Y_n}{X_n} \tag{8}$$

According to Kendall's Concordance Coefficient (0.81), the degree of certainty of conducted expertise for each aspect of the BSC indicators' system was confirmed. The received data are in Table 1 to Table 5. Integral performance and efficiency indicator of operational business processes of a building enterprise under each BSC criterion is calculated.

Table 1
Determination of performance and efficiency indicators of manufacturing business-processes execution of a building company (M)

The Performance and Efficiency Indicators Denomination	Actual Indicator'S Value	Planned Indicator'S Value	Calculation Formula of Relative Unit Indicator K_i	Value K_i	Indicator's Weight Coefficient, w_i	Note (change dynamics characteristic)
1. Financial-Economic Criterion (Cfe)						
Specific weight of products sold cost in the total amount of expenses, % *(M_1)*	88,1	91	C_{M1} = 1-(Actual/Planed)	0.032	0,17	Actual < Planned→ «good»
Operational activity profit growth rate,% to the previous period *(M_2)*	5,4	6,5	C_{M2}= Actual/Planed	0,83	0,07	Actual < Planned→ «bad»
Main activity profitability, % *(M_3)*	5,6	6	C_{M3}= Actual/Planed	0,93	0,06	Actual < Planned→ «bad»
$I_{Mfe}=\sum(K_i*w_i)$ = *0,12*						
2. Manufacturing (Resource) Criterion (Cmr)						
Work-in-process percentage, % *(M_4)*	0,7	5	C_{M4}= 1-(Actual/Planed)	0,86	0,06	Actual < Planned→ «good»
The production process automation level, % *(M_5)*	42	40	C_{M5}= 1-(Planed/Actual)	0,05	0,06	Actual > Planned→ «good»
The fixed assets depreciation level, % *(M_6)*	17,9	46,5	C_{M6} = 1-(Actual/Planed)	0,61	0,15	Actual < Planned→ «good»
Resource productivity *(M_7)*	0,13	0,58	C_{M7}= Actual/Planed	0,22	0,04	Actual < Planned→ «bad»
Capital productivity *(M_8)*	9,7	3,9	C_{M8}= 1-(Planed/Actual)	0,6	0,03	Actual > Planned→ «good»

Table 1

Determination of performance and efficiency indicators of manufacturing business-processes execution of a building company (M) (Cont.)

The Performance and Efficiency Indicators Denomination	Actual Indicator'S Value	Planned Indicator'S Value	Calculation Formula of Relative Unit Indicator K_i	Value K_i	Indicator's Weight Coefficient, w_i	Note (change dynamics characteristic)
$I_{Mmr}=\sum(K_i*w_i) = 0,17$						
3. External Integration Criterion (Cei)						
Revenue growth rate (% to the previous period) *(M_9)*	7,5	5,8	C_{M9}= 1-(Planed/Actual)	0,23	0,08	Actual > Planned→ «good»
Ratio of new to constant subcontractors number over the analysed time period, % *(M_{10})*	23	12	C_{M10}=Planned/Actual	0,52	0,08	Actual > Planned→ «bad»
$I_{Mei}=\sum(K_i*w_i) = 0,06$						
4. Organizational Criterion (Co)						
Funding security (thousands of UAH) *(M_{11})*	1500,6	2500	C_{M11}= Actual/Planed	0,6	0,02	Actual < Planned→ «bad»
Specific weight of orders executed in time, in the total number of orders, % *(M_{12})*	90	95	C_{M12}= Actual/Planed	0,95	0,02	Actual < Planned→ «bad»
Quality of construction works execution *(M_{13})*	27	10	C_{M13}=Actual/Planned	0,37	0,09	Actual > Planned→ «bad»
Labour productivity of manufacturing personnel), thousands oh UAH/person *(M_{14})*	3690,6	4500	C_{M14}= Actual/Planed	0,82	0,03	Actual < Planned→ «bad»
Manufacturing personnel profitability, % *(M_{15})*	3,2	4	C_{M15}= Actual/Planed	0,80	0,06	Actual < Planned→ «bad»
$I_{Mo}=\sum(K_i*w_i) = 0,14$						
$GI_{MBP} = I_{Cfe}+ I_{Mmr}+ I_{Mei}+I_{Mo} =0,12+0,17+0,06+0,14 = 0,49$						

Source: calculated by the authors

Table 2

Determination of performance and efficiency indicators of resources supply business-processes execution of a building production (RS)

The Performance and Efficiency Indicators Denomination	Actual Indicator'S Value	Planned Indicator'S Value	Calculation Formula of Relative Unit Indicator K_i	Value K_i	Indicator's Weight Coefficient, w_i	Note (change dynamics characteristic)
1. Financial-Economic Criterion (Cfe)						
Specific weight of overdue accounts payable to suppliers in the accounts payable total amount, % *(RS_1)*	1,7	2	RS_1= 1-(Actual/Planed)	0,15	0,12	Actual < Planned→ «good»
Specific weight of material costs in the cost value, % *(RS_2)*	86	88	RS_2= 1-(Actual/Planed)	0,02	0,17	Actual < Planned→ «good»
The ratio of production growth rates and material costs, % *(RS_3)*	55	110	$P3_3$=Actual/Planed	0,5	0,18	Actual < Planned→ «bad»
$I_{RSfe}=\sum(K_i*w_i) = 0,11$						
2. Manufacturing (Resource) Criterion (Cmr)						
Smooth Supply Ratio, % *(RS_4)*	43	100	RS_4=Actual/Planed	0,43	0,18	Actual < Planned→ «bad»
$I_{RSmr}=\sum(K_i*w_i) = 0,08$						
3. External Integration Criterion (Cei)						
Specific weight of claims regarding the supplied resources quality in the total number of purchases, % *(RS_5)*	19	5	RS_5=Planed/Actual	0,26	0,08	Actual > Planned→ «bad»
Factory materials and constructions percentage in the total amount of material and technical resources % *(RS_6)*	15	25	RS_6= Actual/Planed	0,6	0,04	Actual < Planned→ «bad»
Specific weight of contracts for resources procurement executed without dereliction of obligations in the total number of contracts, % *(RS_7)*	37	100	RS_7=Actual/Planed	0,37	0,03	Actual < Planned→ «bad»
Supply Relationships Constancy Ratio *(RS_8)*	0,15	0,9	RS_8= Actual/Planed	0,17	0,06	Actual < Planned→ «bad»
$I_{RSei}=\sum(K_i*w_i) = 0,06$						
4. Organizational Criterion (Co)						
Procurement plan execution percentage, % *(RS_9)*	63	100	RS_9=Actual/Planed	0,63	0,08	Actual < Planned→ «bad»
Specific weight of supplies that met a schedule, % *(RS_{10})*	39	100	RS_7=Actual/Planed	0,39	0,06	Actual < Planned→ «bad»
$I_{RSo}=\sum(K_i*w_i) = 0,07$						
$GI_{RS} = I_{RSfe}+ I_{RSmr}+ I_{RSei}+I_{RSo} =0,11+0,08+0,06+0,07 = 0,32$						

Source: calculated by the authors

Table 3
Determination of performance and efficiency indicators of material and technical resources storage business processes execution of a building production (SR)

The Performance and Efficiency Indicators Denomination	Actual Indicator'S Value	Planned Indicator'S Value	Calculation Formula of Relative Unit Indicator K_i	Value K_i	Indicator's Weight Coefficient, w_i	Note (change dynamics characteristic)
1. Financial-Economic Criterion (Cfe)						
Specific weight of resources in current assets *(SR_1)*	0,39	0,1	SR_1= Planed/Actual	0,26	0,21	Actual > Planned→ «bad»
Specific weight of store keeping costs in the total amount of expenses *(SR_2)*	0,35	0,05	SR_2= Planed/Actual	0,14	0,14	Actual > Planned→ «bad»
Current Ratio *(SR_3)*	1,73	1,5	RS_3= 1-(Planed/Actual)	0,13	0,09	Actual > Planned→ «good»
Inventory Turnover Ratio *(SR_4)*	12,1	8,9	RS_4= 1-(Planed/Actual)	0,26	0,12	Actual > Planned→ «good»
Inventories profitability *(SR_5)*	0,85	1	RS_5=Actual/Planed	0,85	0,10	Actual < Planned→ «bad»
$I_{RSfe}=\sum(K_i*w_i) = 0,2$						
2. Manufacturing (Resource) Criterion (Cmr)						
Material integrity during warehousing, % *(SR_6)*	4	5	SR_6= 1-(Actual/Planed)	0,2	0,09	Actual < Planned→ «good»
Storage space loading level *(SR_7)*	85	100	SR_7=Actual/Planed	0,85	0,12	Actual < Planned→ «bad»
$I_{SRmr}=\sum(K_i*w_i) = 0,12$						
3. External Integration Criterion (Cei)						
Stock maintenance costs of rent warehouses *(SR_8)*	1000	700	SR_8= Planed/Actual	0,7	0,06	Actual > Planned→ «bad»
$I_{SRei}=\sum(K_i*w_i) = 0,04$						
4. Organizational Criterion (Co)						
Warehouse Operation Irregularity Ratio *(SR_9)*	0,85	1	SR_9=Actual/Planed	0,85	0,05	Actual < Planned→ «bad»
$I_{SRo}=\sum(K_i*w_i) = 0,043$						
$GI_{SR} = I_{SRfe}+ I_{SRmr}+ I_{SRei}+I_{SRo} =0,2+0,12+0,04+0,043 = \underline{0,4}$						

Source: calculated by the authors

Stages 7-9. Diagnostics of the business process and business process body status based on the interpretation results on a selected scale. Generalised calculations are in Table 1 to Table 4. The influence of performance and efficiency partial indicators on the integral score is given in Table 5, in order to identify the bottlenecks of the investigated business processes.

Table 4
Determination of performance and efficiency indicators of transport supply business processes execution of a building production (TS)

The Performance and Efficiency Indicators Denomination	Actual Indicator'S Value	Planned Indicator'S Value	Calculation Formula of Relative Unit Indicator K_i	Value K_i	Indicator's Weight Coefficient, w_i	Note (change dynamics characteristic)
1. Financial-Economic Criterion (Cfe)						
Specific weight of transportation costs in the total amount of expenses *(TS_1)*	0,04	0,05	TS_1= 1-(Actual/Planed)	0,2	0,21	Actual < Planned→ «good»
$I_{TSfe}=\sum(K_i*w_i) = 0,04$						
2. Manufacturing (Resource) Criterion (Cmr)						
Maintenance costs level of own vehicles in the revenue, % *(TS_2)*	1,7	2	TS_2= 1-(Actual/Planed)	0,15	0,13	Actual < Planned→ «good»
Profitability of transfer operations by own vehicles *(TS_3)*	0,55	0,7	TS_3=Actual/Planed	0,79	0,11	Actual < Planned→ «bad»
Own Vehicles Employment Ratio *(TS_4)*	0,85	1	TS_4=Actual/Planed	0,85	0,16	Actual < Planned→ «bad»
Material integrity during transporting *(SR_5)*	0,02	0,05	TS_5= 1-(Actual/Planed)	0,4	0,20	Actual < Planned→ «good»
$I_{TSmr}=\sum(K_i*w_i) = 0,33$						

Table 4
Determination of performance and efficiency indicators of transport supply business processes execution of a building production (TS) (Cont.)

The Performance and Efficiency Indicators Denomination	Actual Indicator'S Value	Planned Indicator'S Value	Calculation Formula of Relative Unit Indicator K_i	Value K_i	Indicator's Weight Coefficient, w_i	Note (change dynamics characteristic)
3. External Integration Criterion (Cei)						
Specific weight of constant companions (transport companies), % *(TS_6)*	71	100	TS_6= Actual/Planed	0,71	0,09	Actual < Planned→ «bad»
Profitability of outsourcing transfer operations *(TS_7)*	17	20	TS_7=Actual/Planed	0,85	0,06	Actual < Planned→ «bad»
$I_{TSei}=\sum(K_i*w_i) = 0,11$						
4. Organizational Criterion (Co)						
Specific weight of route schedules fulfilment,% *(TS_8)*	65	100	TS_8=Actual/Planed	0,65	0,05	Actual < Planned→ «bad»
$I_{TSo}=\sum(K_i*w_i) = 0,03$						
$GI_{TS} = I_{TSfe}+ I_{TSmr}+ I_{TSei}+I_{TSo} =0,04+0,33+0,11+0,03 = 0,51$						

Source: calculated by the authors

Table 5
Estimated indicators matrix of operational business processes' performance and efficiency of a building company

Business	Criteria: Financial-Economic (fe)	Manufacturing (Resource) (mr)	External Integration (ei)	Organizational (o)	Integral Score of Business Processes' Performance and Efficiency (GI_{BP})	Rank
Manufacturing (M)	I_{M-fe} 0,12	I_{M-mr} *0,17*	I_{M-ei} *0,06*	I_{M-o} *0,14*	*0,49*	III
Resources supply of building production (RS)	I_{RS-fe} *0,11*	I_{RS-mr} *0,08*	I_{RS-ei} *0,06*	I_{RS-o} *0,07*	*0,32*	I
Storage of material and technical resources (SR)	I_{SR-fe} *0,2*	I_{SR-mr} *0,12*	I_{SR-ei} *0,04*	I_{SR-o} *0,043*	*0,4*	II
Transport supply (TS)	I_{TS-fe} *0,04*	I_{TS-mr} *0,33*	I_{TS-ei} *0,11*	I_{TS-o} *0,03*	*0,51*	IV
General indicator of operational business processes (I_g)					I_G =0,43	

Source: calculated by the authors

Thus, an indicators' certain groups impact on each BSC criterion was estimated and an integral assessment of effectiveness and efficiency of the investigated business processes was performed. Calculations have shown that the operational business processes majority of the investigated building company are performed at average level of performance and efficiency. However, the resources supply business process of construction process has low performance and efficiency level and needs to be improved. The obtained value of general indicator of performance and efficiency of operational business processes body of the construction company shows average performance and efficiency level. The body functions efficiently, but it is necessary to develop compensate measures. The priority of improving operational business processes and the priority of managerial actions on improving certain indicators within each criterion are determined by ranking. The first rank (I) is assigned to a business process with the minimum value of performance and efficiency integral indicator. The highest rank (IV) is assigned to business process with the maximum value of this indicator. Among investigated operational business processes, the business process of resources supply (RS) has the least value of performance and efficiency integral indicator. Therefore, it is assigned a rank I, i.e. its condition is the worst.

4. Conclusion

The process-oriented management of enterprises is based on business processes. The process approach includes not only the description of business as an interrelated business processes network, but also continuous monitoring, management and improvement of business processes. In essence, enterprise management is a detection of external and internal events influencing on business processes parameters and a purposeful regulation of these parameters to achieve the desire goals. Correspondingly, company's performance indicators are estimated criteria of the managerial influence effect on business processes. Correct identification and rational organization, timely research and evaluation of business processes allow to identify problem areas and make effective managerial decisions. In this regard, the methodology that allows to analyse and evaluate an enterprise's business processes performance is proposed by the authors. Calculation of performance and efficiency of individual business processes and its body allows to receive and aggregate the data on the goals achieving level of both individual business processes and synergistic goals of the business processes body. Information on business process performance and efficiency execution is the basis for managerial decision-making. In addition, it is used for operational control of business processes, analysis and improvement of an enterprise's activity.

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