Adam Kolinski
Poznan School of Logistics
Estkowskiego Street 6,
61-755 Poznan, Poland
adam.kolinski@wsl.com.pl
Phone: +48618504791

Boguslaw Sliwczynski
Institute of Logistics
and Warehousing
Estkowskiego Street 6,
61-755 Poznan, Poland
boguslaw.sliwczynski@ilim.poznan.pl
Phone: +48618504956

UDK: 658.7
Preliminary communication

Received: October 21, 2016
Accepted for publishing: November 7, 2016

IMPACT OF TRANSPOSING THE STRATEGIC OBJECTIVES ON SUPPLY EFFICIENCY

Abstract

Performance measurement is the basis of management with regard to controlling activities of an enterprise. Development of appropriate indicators and measurement techniques lead to many problems. The majority of enterprises begin to evaluate the efficiency, by the implementation of financial indicators that are practically incalculable. Only at a later stage, are measures used that are related to the specific problems and priorities of the process at the operational level. As a result, in most cases there is an inconsistency or it is almost impossible to manage the measurement system, which can lead to the opposite of the desired effect, and hence to a deterioration of efficiency. In order to create a coherent system of performance measures, the cause and effect at different levels of business management need to be linked. Controlling activities which are aimed at ensuring enterprise efficiency in terms of assumed goals can be helpful. The close link between strategic and operational levels enables deviation analysis of individual values of the plan at the tactical level and operational level. The compatibility of activities is evaluated on the basis of identifying strategic objectives that need to be transposed to the operational level. This article presents the problem of transposing the strategic objectives of the supply process to performance measures at the operational level and proposal of an indicator system of supply efficiency at the operational level. The main research problem of this article is to propose and develop a system of indicators and metrics of evaluation efficiency in the supply process.

Keywords: Efficiency, operational controlling, supply efficiency, performance measurement

1. *Introduction*

Economic activity focused on supplying materials and manufacturing products for sale is one of the basic processes in the logistics supply chain. The specificity of supply processes requires concentration on the material delivery factors in terms of both business practice and in relation to the source literature, which are crucial for the continuity of the material flow. A significant impact of supply processes on the financial result of the company affects the costs, revenues, rotation of assets and working capital cycle, so it is the main reason to focus the logistics management on the ways to improve the process efficiency for both the internal and external supply chain, and continuous supervision and evaluation of the results obtained (Kolinski et al., 2016: 129).

The results of research in Polish companies carried out in 2014-2016 and the results of literature studies indicate an unsatisfactory use of efficiency analyses in the management of supply processes related to supply chains (Kolinski, Kolinska, 2016). They were the basis for selection and compilation of factors to evaluate the supply process efficiency in economic and operating aspects. Based on the results and observations, the Authors developed an indicator system of supply process efficiency, which will make it possible for the Authors to transpose the strategic objectives of the supply process for operating activities at later stages of research.

The main research problem of this article is to propose and develop a system of indicators and metrics of evaluation efficiency in the supply process. The paper contributes to the analysis of the supply processes efficiency, which is of the utmost importance due to its direct impact on financial results.

2. Review of previous research

Supply can be defined as an entire system, including the self-supply, external suppliers and their relationships (logistics system approach), as the delivery, or as the set of activities leading to the delivery of goods to the place at the right time, in the right quantity and condition. The definition of supply is often considered as a synonymous concept of procurement (Table 1). In this context, supply is the process of acquiring the business of goods and services (intake process, procurement) or a range of supply operations, including the step acquisition - aspect of the transaction and the physical flow of products - transportation, receipt and storage of intermediate materials, as well as other actions necessary to accomplish everyday business functions in the area of goods acquisition and services. The subject of supply logistics are goods (raw materials, support materials and consumables, parts purchasing and goods purchased in the trade) that should be made available to an enterprise in accordance with its needs (Kolinski, Kolinska, 2016: 11-12). Strategic decisions in the supply logistics include:

– make or buy,

– rules for the selection and evaluation of suppliers,

– the selection of material inventory control principles,

– the area of computerization of supply processes.

A key aspect of the supply sphere are decisions in purchasing and delivery of materials and raw materials. These instruments of procurement policy include: product policy, contracting policy, communication policy and purchasing policies.

Table 1 The differences between supply logistics and procurement

Supply logistics	Procurement
ensuring optimal quality of products	determining the type of purchase
minimizing the total cost	determining the necessary level of investment
acquisition and maintenance of reliable and competitive suppliers	implementation of the procurement process
minimum inventory level and smooth flow of raw materials	evaluation of procurement process efficiency
cooperation and integration with other areas of enterprise	

Source: Own study adapted from (Domanski et al., 2012: 12)

Supply is aimed to ensure continuity of deliveries and the efficiency and reliability of logistics processes, for:

– production (e.g. Supply of materials, parts, components, tools),

– sales (supply of goods),

– maintenance and repairs - supply of machine parts and equipment,

– an enterprise - office supplies, components of investment, etc.

Carrying out a detailed analysis requires a look at the process of material management using the reference methodology of the SCOR [1] process approach and take into consideration the following components (Sliwczynski, Kolinski, 2012: 300):

– Sales & Operations Planning - makes it possible to plan operations in a supply chain including transposing the needs of sales into the level of planning the stream of goods from the production process,

– material requirements planning – including material structure of a product, which is necessary for the material count, technologies and production itineraries, necessary for scheduling material needs, and store states;

simulation is carried out with the net values of material needs,

- the procedure of commission- making it possible to simulate individual variants according to estimated net material needs,
- the generator of real consumption and the algorithm of updating prognoses, which should be treated as auxiliary simulation models of real consumption for examined material indices; they are necessary for simulating the real environment of material supplies realization, transport processes and supplies availability at the stage of verifying the commission models
- commission procedure verification – facilitating the multi-criteria analysis and choice of satisfactory models according to the value of criteria,
- the transport system and the model of verifying that system including the model solution for a multi-criteria load and routes planning as well as means straining and transit scheduling,
- the warehouse process, which is also an auxiliary model necessary for defining the capability of receiving and servicing transport processes and maintaining supplies.

Efficiency analysis supports planning and organizing the supply process, control of results and correcting deviations, by (Sliwczynski, Kolinski, 2016):

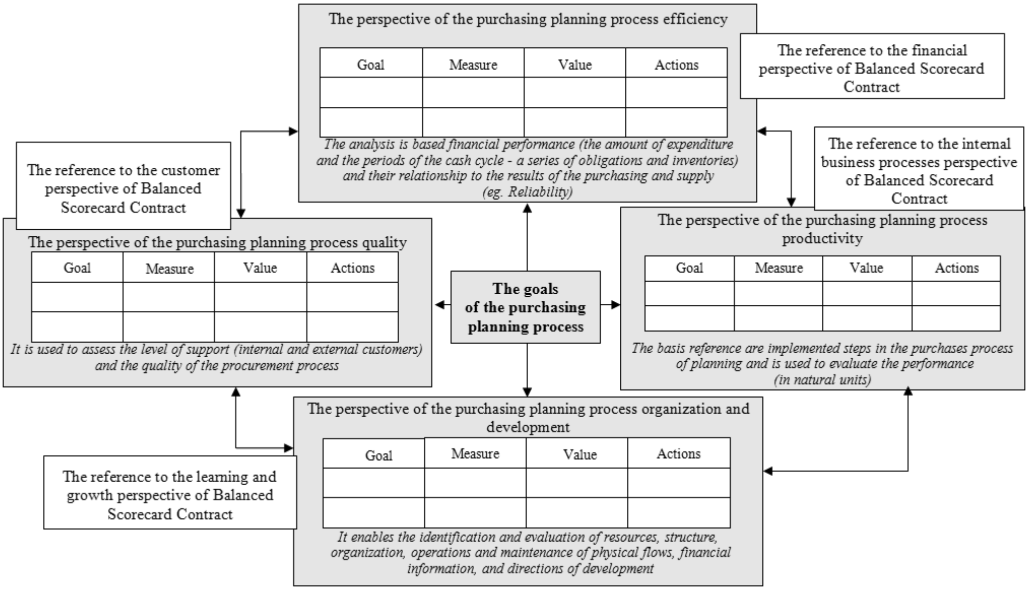
- mapping client needs regarding materials in the final product to the requirements of the supply process (e.g. scope and methods of material quality control),
- current ABC/XYZ classification of materials, suppliers, supply channels and the selection of methods and algorithms for supply management in classification groups,
- support in determining the methods and procedures of steering and operational norms - for purchase, orders, deliveries and inventories,
- support in developing effective and safe methods of qualifying suppliers and coordinating periodic control of suppliers (technological, financial, trade, logistics, qualitative),
- support and coordination to conclude purchase contracts, negotiate terms of cooperation, payment and execution of deliveries,
- controlling and steering the process of ordering, monitoring deliveries, integration with the warehousing process for efficient support of delivery acceptance, information exchange and support of complaints and returns,
- support of planning material needs and controlling the conversion formulas and scheduling of the MRP system (Material Requirement Planning),
- analysis of working capital - commitments cycle and inventory cycle,
- control of delivery parameters - timeliness, completeness, quality compliance of materials,
- developing the map of material safety covering rational scenarios and variants of deliveries, and analysis of supply risk, downtime and changes in production plans, sales shortages,
- integration of supply plans, production, transportation, warehousing, sales (Adamczak et al., 2016),
- account of supply costs and material management,
- setting and controlling the limits of valuable purchase,
- developing and controlling the budget of purchase and supply, analysis of deviations and implementing corrections and budgets conversions,
- supply reporting and materials management process.

3. Research methodology

3.1 The role of supply efficiency in enterprises

The indicator system of the purchase planning process should be in coherence with measures used at the level of the whole contract (due to the inferiority of the purchasing planning process and requirements of achieving targets set for the contract). Aims and measures of the purchasing planning process should be cascaded from the contract (or purchasing process), balanced in 4 perspectives - financial, customer, internal business processes, and learning and growth. The values of indicators, according to the requirements of consistency and integration of all processes under the contract (e.g. the process: implementation, budget) should be consistent with measures designated for other logistics processes.

Figure 1 The structure of the scorecard to balance the goals and indicators of the purchasing planning process



Source: Own study adapted from (Sliwczynski, 2011)

Table 2 Measures of the purchase planning process summarized by the logic of the scorecard

The measures of organization and development of the purchasing planning process	The measures of efficiency of the purchasing planning process
– the number of ordered services or materials (e.g. the period, the employee) – the number and value of purchased services or materi-als (e.g. the period, the employee) – the number of suppliers and terms (including payment terms and payment arrears to suppliers) – purchase amount (broken down into stages of imple-mentation of the contract (including purchases planned and ad hoc - affecting the fluctuation of the budget) – the structure of orders (by materials suppliers, value thresholds) – the number of materials on request or on delivery, – ABC classification by indices of purchased materials / services, suppliers / contractors. – the number of supported purchase documents, – the number of employees purchasing department, – the total cost of purchasing for the period, employee, contract – the total cost of purchasing execution of the contract.	– acquisition efficiency (planned budget / budget used) x 100%; planning costs of purchase / procurement costs; the cost of purchase / contract costs; – the costs of bidding, qualification, order processing, billing, etc. / maintenance purchase costs, – reduction of purchase costs (e.g. linking shopping oc-casions) / budget shopping – level of the purchase costs growth due to unplanned purchasing (e.g. the service / supply emergency, ad-ditional services due to incompetent analysis of the determinants) – inventory costs and operating storage / procurement costs – the share of purchase in the value of the contract, – the cost of handling complaints and returns, – the cost of planning and administrative purchase (e.g. maintenance of databases contractors, descriptions, indexes, document management system, complete the information on the card materials, analysis of stocks),

The measures of productivity of the purchasing planning process	The measures of quality of the purchasing planning process
– the number of developed shopping lists, plans, specifications procurement bidding, etc. for a period, – the time to develop the above mentioned documents (e.g. on the contract, a service employee) – the time to complete the process of planning purchasing, – the number of services / materials to the employee for the period or on contract – the number of completed purchasing for the period, – the number of accepted delivery of services / materials for a period	– the value and number of incorrect services / deliveries (including - overdue, incomplete, poor quality, error ranges, documentation errors, errors in labelling) – the value and number of complaints, – the value and the number of returns, – the average time again (supplementary) purchase (and for individual suppliers or index services / materials) – the number of deficiencies services / deliveries to contract – the number of changes in the plans of implementation of the contract caused by lack of or incorrect delivery of services / materials.

Source: Own study

The goals and indicator system are focused on the analysis and evaluation of the purchase planning process for the execution of the contract with regard to the efficient and flexible resource planning, operations and cash flow.

The operating results summary of activities related to expenditures (incurred costs), enables the evaluation of the purchase planning process efficiency. Detailed efficiency analysis requires the cost calculation on fixed carrier costs, the use of allocation keys use (consumption) of resources and incurred costs for activities. A balanced evaluation enables reference of quality and productivity results for the incurred costs to evaluate the efficiency of methods, procedures and tools in purchase planning.

The purpose of collecting data for monitoring and controlling the supply process is the possibility of a comprehensive and multivariate analysis of the efficiency in operational controlling. This article presents various data (both input and output), which are necessary to determine the most important indicators of the supply process evaluation. It should be noted that the analysis is not only based on the data necessary to determine the number of indicators presented below. In order to conduct a thorough analysis of the supply process, essential basic data, which are the starting point for the evaluation of various sized, are also used in the further stages in the form of aggregated results of the indicators.

The basic data that are necessary to monitor the implementation of the contract include:

– geographical location of the target warehouse implementing orders,
– geographical location of suppliers, which includes:
  • the distance from the target warehouse,
  • the availability of various modes of transport (road, rail, sea, inland waterways, air),
– the number of suppliers subjected to further analysis, e.g. suppliers who meet certain evaluation criteria in economic terms,
– geographical location of competing warehouses on a local and global character,
– decision on execution of the personal transportation indent or using the services of transportation enterprises,
– availability of vehicles, enabling the transport of a clearly defined cargo.

The data presented above do not cover the full scope of the basic data. However, they can provide the foundation for further, more detailed analysis, based on evaluation of process efficiency. Before defining the efficiency indicators, all the processes of logistics activities, which must meet the following conditions, should be systemized (Twarog, 2005: 133):

– defining and systematizing the logistics process, both in the direction of the material flow, as well as the management structure, which is perpendicular to the direction of the material flow,

- establishing procedures for measuring and transmitting information at regular intervals to enable the collection of data necessary to calculate efficiency indicators,
- defining the efficiency indicators determining the deviation from the standards,
- establishing quantitative standards and corresponding limits,
- selecting people with adequate experience to make decisions, allowing them to conduct a proper diagnosis based on different variables,
- providing management tools for responsible managers to enable the effective integration of logistics processes.

Presentation of data which is only important for the management process in the enterprise and supply chain is not a sufficient factor that will allow the calculation of efficiency indicators. Therefore, the efficiency evaluation should be based on information about the process, defined and generated according to the assumptions and including a reference to accepted standards or norms.

According to van der Meulen, the most important efficiency indicators of order processing, are (Van Der Meulen, 1989):

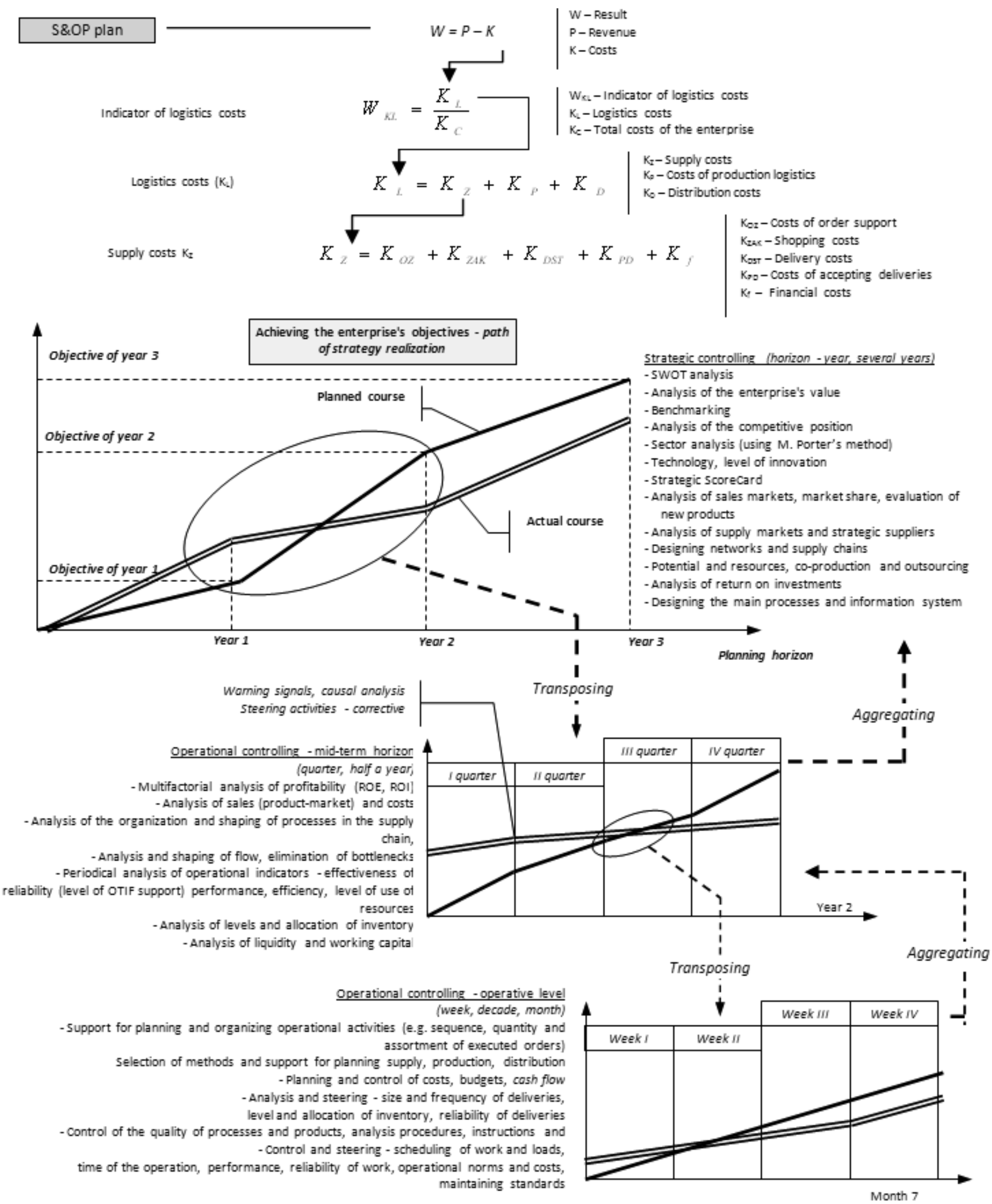
- reliability of deliveries or vendor,
- the length of development cycle,
- production flexibility,
- inventory in the enterprise, including:
  - of raw materials,
  - the work in progress,
  - of finished products,
- the execution time of transport,
- level of customer service,
- order period time.

The efficiency indicators require a number of additional data necessary for their determination and further evaluation. In the next section, making detailed analysis and evaluation of the supply process in terms of delivery control, is proposed as a system of indicators and metrics of evaluation efficiency, including the transposing data necessary for their determination according to the delivery control.

3.2 Transposing the strategic objectives for the operational activities of the supply process

The instruments of operational controlling used in the mid- and short-term planning for transposing the strategic objectives to the operative level and aggregating the results for the needs of long-term assessment of the realization "path" of the enterprise's strategy are shown in Figure 3. They enable the dynamic response and implementation of strategies in a changing market environment - this is especially important in terms of the increasing speed of changes in the environment and decreasing predictability of results and internal changes in the enterprise's activities (Kaplan, Norton, 1996: 8). Figure 2 shows a transposing example of the enterprise's performance to costs of supply.

Figure 2 Transposing (disaggregating) the enterprise's strategies on the level of operational management and aggregation of data for the purposes of controlling the realization "path" of strategies



Source: Own study (Sliwczynski, Kolinski, 2016)

A very important aspect of the supply process is the delivery analysis that has been implemented in the context of the realized process. By defining the delivery as an operation to deliver the goods at the agreed place with the customer and within the agreed lead time (Coyle et al., 2003) the following basic data should be adopted:

- shipment size, including:
  - the number of purchased parts, materials or raw materials,
  - the weight of incoming shipments,
  - the number of orders in a given period of time (e.g. a month),
- the place of delivery,
- delivery time.

4. Results and discussion

This system of indicators has been developed on the basis of the Author's work in the framework of the research projects and observation of business practice. The most commonly used measures of delivery control should include:

- the average execution time of orders is defined as the arithmetic average of the different durations of delivery. Simply put, it is the ratio of the total time of the contract to the total number of completed orders. Analysing the definition of the indicator could be developed following the calculation formula:

$$T_Z = \frac{\sum_{i=1}^{n} t_{z_i}}{n_z} \quad (1)$$

where:
T_Z – the average execution time of orders,
t_{zi} – the execution time of a single order,
n_z – number of completed orders

- the average delivery time is determined in an analogous manner to the calculation formula of the average execution time of orders. It is the ratio of the total time of delivery to the total number of completed deliveries. Analysing the definition of the indicator could be developed following the calculation formula:

$$T_D = \frac{\sum_{i=1}^{n} t_{d_i}}{n_d} \quad (2)$$

where:
T_D – the average delivery time,
t_{di} – time of single delivery,
n_d – the total number of completed deliveries

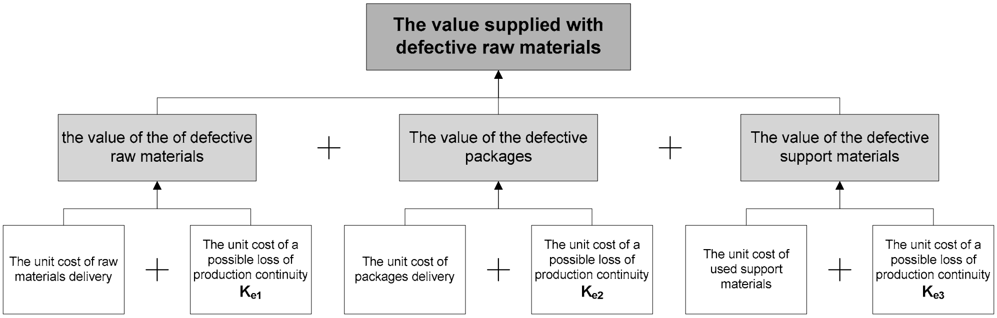
- the value supplied with defective raw materials, is defined as the sum of all defective components included in the finished product, i.e. the raw materials, packaging and support materials. Therefore, making the analysis of calculation formula must extract the following data:
  - the value of the of defective raw materials,
  - the value of the defective packages,
  - the value of the defective support materials.

It should be noted that the data presented are the sum resulting from costs incurred in the delivery of individual elements (raw materials, packaging, and support materials). Therefore, the basic data necessary to determine value supplied with defective raw materials, are:

- the unit cost of raw materials delivery (in terms of unit or packaging),
- the unit cost of packages delivery,
- the unit cost of used support materials (in terms of unit or packaging),
- the unit cost of a possible loss of production continuity due to the delivery of defective raw materials – K_{e1},
- the unit cost of a possible loss of production continuity due to the delivery defective packages – K_{e2} ,
- the unit cost of a possible loss of production continuity due to the lack of sufficient support materials – K_{e3},
- the unit cost of a possible delivery of support materials.

Regardless of whether the supplied raw material or packaging is defective or not, the enterprise shall bear the delivery cost. In the case of complaints of defective raw materials and packaging it was considered that the cost of delivery of the complaint shall be borne by the supplier. The above assumptions and data are contained in the form of a scheme in accordance with Du Pont analysis, in Figure 3.

Figure 3 The calculated diagram of the value supplied with defective raw materials



Source: Own study

– the rate of complaints and returns, is defined as the relation of the number of complaints or returns, to the total number of completed deliveries of materials and raw materials in a given period of time (e.g. in terms of monthly, quarterly or yearly). The analysed index is a continuation of the analysis of the defective raw materials supplied. The above relationship can be written as the following calculation formula:

$$W_{RiZ} = \frac{L_{RiZ}}{n_d} \quad (3)$$

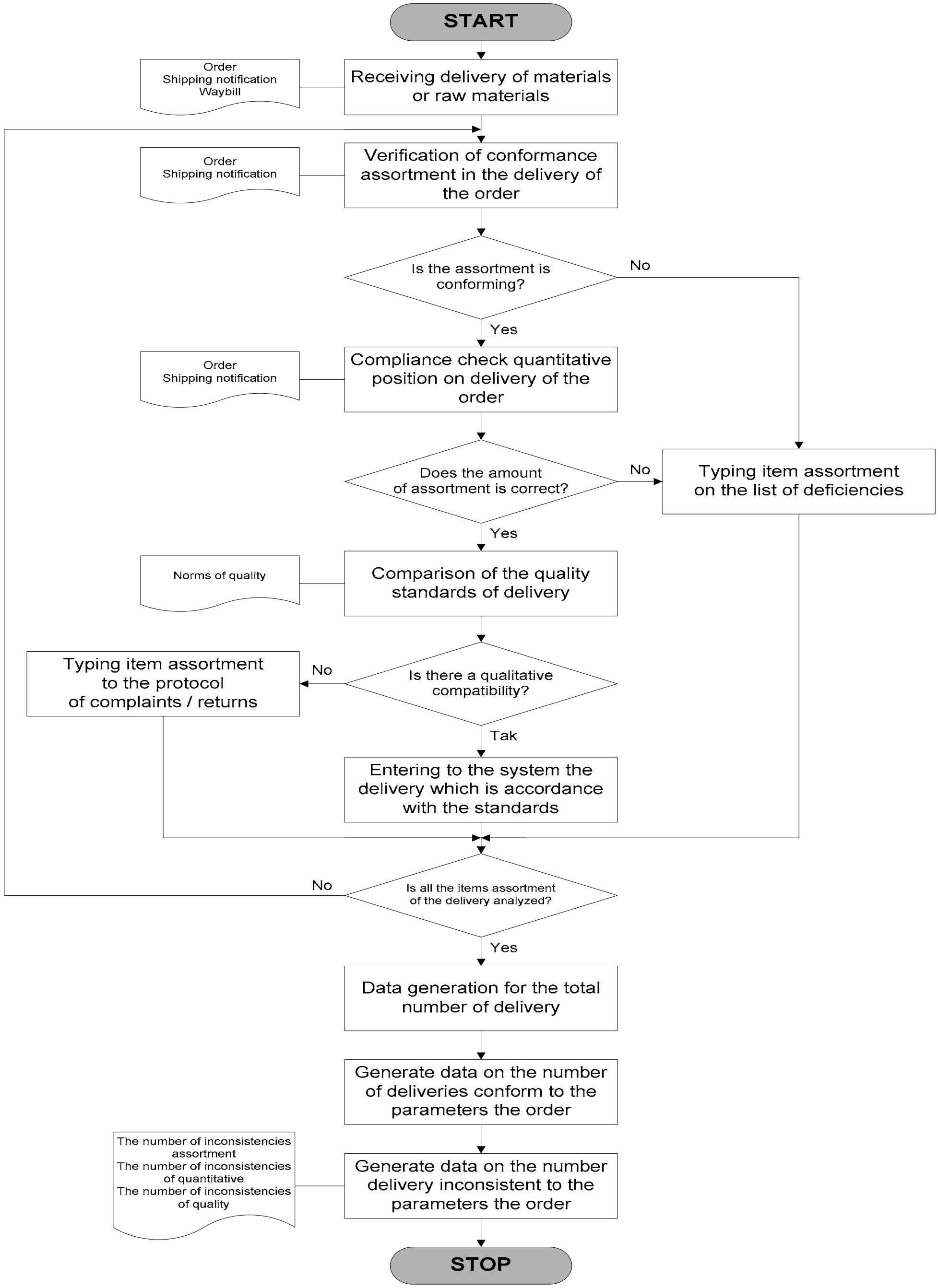
where:

W_{RiZ} – the rate of complaints and returns,

L_{RiZ} – the number of complaints or returns,

n_d – the total number of completed deliveries

Figure 4 Algorithm of analysis of compliance with the delivery by establishing parameters of the normative

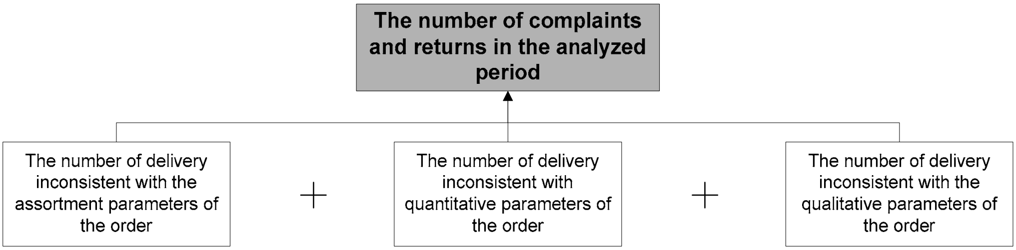


Source: Own study

In the case presented above, it should also be taken into account the relevant norms under which it must be assessed whether the delivery will be classified as defective or as a correct. Figure 4 shows a proposal algorithm of analysis of compliance with the delivery by establishing parameters of the normative.

The algorithm shown in Figure 4 should be treated as a general procedure to generate the data for the supply of defective deliveries and deliveries that are compatible with the specifications of the order, which are necessary to determine the rate of complaints and returns. Note, however, that the present process relates only to the control of delivery compliance with the order and quality standards, without taking into account actions related for e.g. to the transfer of materials or raw materials to and from the warehouse in order to carry out further control stages. The algorithm underlying assumptions specifying the number of defective deliveries, contained in the Du Pont diagram, is shown in Figure 5.

Figure 5 The calculated diagram of the number of defective deliveries



Source: Own study

Analysing Figure 5 it should be noted that the effective determination of the number of complaints and returns during the analysed period, forcing the use of not only the quantity and assortment parameters of orders, but also the already mentioned norms of quality.

Therefore, it is concluded that the input data, which are necessary to determine this indicator are consistent with the data required to calculate the rate of complaints and returns. Also, in the case of this ratio, the developed algorithm, shown in Figure 4, can be helpful.

– the ratio of delivery reliability, is defined as the relation of deliveries, which conform parameters of the order, to the total number of completed deliveries of materials and raw materials during the period of time (e.g. in terms of monthly, quarterly or yearly). The analysed indicator is a variation of the meter complaints and returns, showing the level of effective delivery. The above relationship can be written as the following calculation formula:

$$W_{ND} = \frac{L_{DZ}}{n_d} \quad (4)$$

where:

W_{ND} – the ratio of delivery reliability,

L_{DZ} – the number of deliveries, which conform to the parameters of the order,

n_d – the total number of completed deliveries

– the ratio of delivery timeliness is defined as the relation of on-time deliveries (in line with the advice of delivery time), to the total number of deliveries of materials and raw materials in a defined period of time (monthly, quarterly, yearly). Analysing the above definition can be presented by this ratio in the following calculation formula:

$$W_{TD} = \frac{L_{DT}}{n_d} \quad (5)$$

where:

W_{TD} – the ratio of delivery timeliness,

L_{DT} – the number of on-time deliveries,

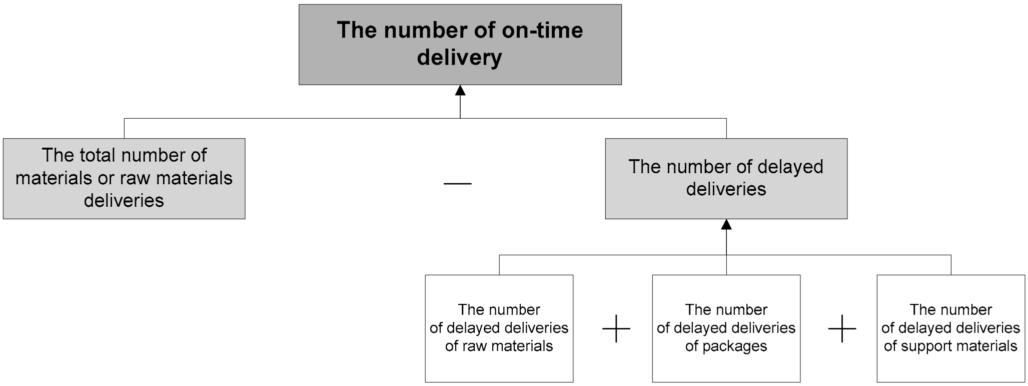
n_d – the total number of completed deliveries.

The number of deliveries in accordance with the deadline can be analysed using a Du Pont diagram, which will enable the generation of the next basic data needed for further analysis of the supply process efficiency. The calculated diagram of number of deliveries futures is shown in Figure 6.

Analysing Figure 6 it should be noted that the detailed determination of the number of on-time deliveries in the period considered imposes the use of the following basic data that are necessary to determine the ratio of delivery timeliness, which include:

- the number of delayed deliveries of raw materials,
- the number of delayed deliveries of packages,
- the number of delayed deliveries of support materials.

Figure 6 The calculated diagram of the number of future deliveries



Source: Own study

– the ratio of flexible deliveries is calculated as the relation of the number of deliveries that meet the special requirements for the total number of deliveries of materials and raw materials in the analysed period (monthly, quarterly, yearly). The specificity of this indicator can be determined using the following calculation formula:

$$W_{ED} = \frac{L_{DS}}{n_d} \quad (6)$$

where:

W_{ED} – the ratio of flexible deliveries,

L_{DS} – the number of deliveries that meet the special requirements,

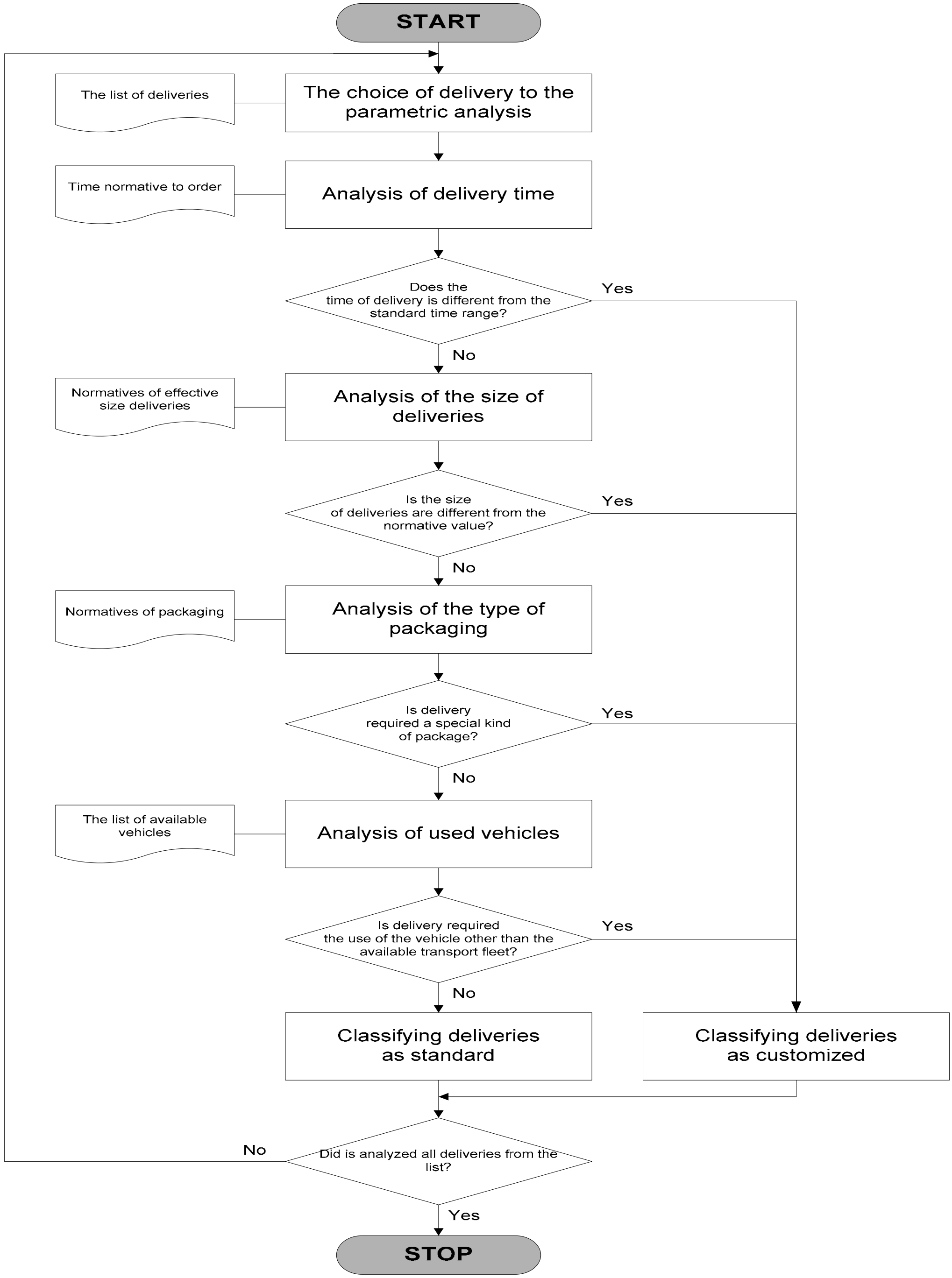
n_d – the total number of completed deliveries.

The main factor determining the calculation of this ratio is to determine the number of deliveries that meet the special requirements. Therefore, it is necessary to determine the procedure to examine whether the delivery can be classified as a special delivery. Figure 7 shows the proposal for an algorithm to classify special requirements.

Analysing Figure 7 it should be noted that the purpose of a comprehensive analysis of the flexibility of deliveries is the necessary additional information:

- the list of deliveries,
- the time normative to order,
- normatives of effective size deliveries,
- normatives of packaging,
- the list of available vehicles.

Figure 7 Algorithm to classify special requirements



Source: Own study

– the ratio of average order value is defined as the relation of completed orders to the number of completed orders. This relationship can be observed in the analysis using the following calculation formula:

$$SWZ = \frac{\sum_{i=1}^{n} w_{zi}}{n_z} \quad (7)$$

where:

SWZ – the ratio of average order value,

w_{zi} – the value of a single order,

n_d – the total number of completed deliveries.

5. Conclusions and further research

Managing the efficiency of processes taking place in a company is a complex issue. Controlling and assuming the decision support of processes should be treated as a useful tool for improving an enterprise's efficiency. Considering the complexity of processes taking place in an enterprise it is necessary to concentrate on one of the basic processes so as to have the possibility to analyse it in a complex way.

The problem of transposing the strategic objectives on an operational level is an extremely important element in the analysis of the logistics processes' efficiency, due to the direct impact on the financial result. The process of transposing not only allows detailed indicators of logistics efficiency processes in the transfer of strategic objectives at the operational level, but also to identify key actions to improve the financial performance. During the methods analysis of activities focused on the resulting efficiency improvements one should pay particular attention to the risk of disturbance of the continuity of the logistics process.

In this article the authors focus on the role of transposing strategic objectives of the supply process to develop a system of indicators, methods and techniques of their determination. The presented system of indicators is the result of many years of research and observation of the authors in business practice. It should be noted, that other methods for measuring efficiency in terms of supply chain can also be found in the literature (Van Hoek, 1998; Beamon, 1999; Walters, 2006; Shepherd, Günter, 2006; Danese, Romano, 2011; Lopes de Sousa Jabbour et al., 2011; Sillanpää, 2015). According to the authors, the indicator systems presented in the literature do not provide a comprehensive efficiency analysis of the economic and operational aspect. Directions for further research suggest creating a system of indicators for the entire supply chain, including the economic and operational aspect. Joint development of a set of indicators within the supply chain would enable a mutual comparison of the results obtained, which could have a direct impact on improving the efficiency of decisions - not only those affecting individual processes carried out within the company, but also throughout the supply chain.

References

1. Adamczak, M., Domanski, R., Hadas, L., Cyplik, P. (2016), “The integration between production-logistics system and its task environment - chosen aspects”, IFAC-PapersOnLine, Vol. 49, No. 12, pp. 656-661.
2. Beamon, B. M. (1999), “Measuring supply chain performance”, International Journal of Operations & Production Management, Vol. 19, No. 3, pp. 275-292.
3. Coyle, J. J., Bardi, E. J., Langley, C. J. Jr. (2003). The management of business logistics: A supply chain perspective. Mason, OH: South-Western.
4. Danese, P., Romano, P. (2011), “Supply chain integration and efficiency performance: A study on the interactions between customer and supplier integration”, Supply Chain Management: An International Journal, Vol. 16, No. 4, pp. 220-230.
5. Domanski, R., Adamczak, M., Cyplik, P. (2012), “Material flow planning models in supply in SCOR model approach”, Materials Management & Logistics, No. 2, pp. 11-19.
6. Kaplan, R. S., Norton, D. (1996). The balanced scorecard: translating strategy into action. Harvard: Harvard Business Press.
7. Kolinski, A., Kolinska, K. (2016), “Influence of supply process on the business management efficiency”, in Kolinski, A. (Ed.), Logistics Management – modern development trends, Poznan School of Logistics Press, Poznan, pp. 11-25.
8. Kolinski, A., Sliwczynski, B., Golinska-Dawson, P. (2016), “Evaluation model for production process economic efficiency”, LogForum, Vol. 12, No. 2, pp. 129-145.
9. Lopes de Sousa Jabbour, A. B., Gomes Alves Filho, A., Backx Noronha Viana, A., José Chiappetta Jabbour, C. (2011), “Measuring supply chain management practices”, Measuring Business Excellence, Vol. 15, No. 2, pp. 18-31.
10. Shepherd, C., Günter, H. (2006), “Measuring supply chain performance: Current research and future directions”, International Journal of Productivity and Performance Management, Vol. 55, No. 3/4, pp. 242-258.
11. Sillanpää, I. (2015), “Empirical study of measuring supply chain performance”, Benchmarking: An International Journal, Vol. 22, No. 2, pp. 290-308.
12. Sliwczynski, B. (2011), “Operational controlling – a tool of translating strategy into action”, LogForum, Vol. 7, No. 1, pp. 45-59.
13. Sliwczynski, B., Kolinski, A. (2012), “Efficiency analysis system of material management”, LogForum, Vol. 8, No. 4, pp. 297-310.
14. Sliwczynski, B., Kolinski, A. (2016). Controlling Supply Chains: Theory and Practice. New York: Nova Science Publishers.
15. Twarog, J. (2005). Measuring and indicators of logistics. Poznan: Publishing House of Institute of Logistics and Warehousing.
16. Van Der Meulen, P. R. H. (1989). Performance Indicators in Logistics. Berlin: Springer-Verlag.
17. Van Hoek, R. I. (1998), “Measuring the unmeasurable – measuring and improving performance in the supply chain”, Supply Chain Management: An International Journal, Vol. 3, No. 4, pp. 187-192.
18. Walters, D. (2006), “Demand chain effectiveness – supply chain efficiencies”, Journal of Enterprise Information Management, Vol. 19, No. 3, pp. 246-261.

(Endnotes)

1 SCOR – *Supply Chain Operations Reference Model* – Model Overview Version 9.0. – a referential model of supply chain operations integrating five basic processes– planning, supplies, realisation, distribution and service of the turning streams, developed by managers and academics associated in a global organisation Supply-Chain Council. The model consists of representative methods of describing supply chain processes, a set of standards for the assessment of processes and their results as well as the best practical actions of managing processes in a supply chain.

Adam Kolinski
Boguslaw Sliwczynski

UTJECAJ PREMJEŠTANJA STRATEŠKIH CILJEVA NA UČINKOVITOST OPSKRBE

Sažetak

Mjerenje rezultata predstavlja osnovu upravljanja u pogledu kontrolnih aktivnosti nekoga poduzeća. Izrada odgovarajućih indikatora i mjernih tehnika povezani su s mnogim problemima. Većina poduzeća počinje vrednovati učinkovitost putem primjene financijskih indikatora koje je praktično nemoguće izračunati. Tek u kasnijoj fazi se koriste mjere koje se odnose na konkretne probleme i prioritete procesa na operativnoj razini. Kao rezultat, u većini slučajeva, postoji nedosljednost ili je gotovo nemoguće upravljati sustavom mjerenja, što može dovesti do učinka suprotnoga od željenog te time do smanjenja učinkovitosti. Kako bi se stvorio koherentni sustav mjera rezultata, moraju se povezati uzroci i posljedice na različitim razinama poslovnoga upravljanja. Pritom mogu biti korisne kontrolne aktivnosti kojima je cilj osigurati učinkovitost poduzeća u smislu utvrđenih ciljeva. Uska veza između strateške i operativne razine omogućuje analizu devijacije individualnih vrijednosti plana na taktičkoj i operativnoj razini. Kompatibilnost aktivnosti vrednuje se na temelju definiranja strateških ciljeva koje je potrebno prenijeti na operativnu razinu. U ovom se članku predstavlja problem preslikavanja strateškog cilja opskrbnog procesa na mjere rezultata na operativnoj razini te prijedlog sustava indikatora za učinkovitost opskrbe na operativnoj razini. Glavni istraživački problem ovoga rada je predložiti i izraditi sustav indikatora i metriku vrednovanja učinkovitosti u opskrbnom procesu.

Ključne riječi: učinkovitost, operativna kontrola, učinkovitost opskrbe, mjerenje rezultata