EVALUATION OF SUPPLY CHAIN MANAGEMENT PROCESSES OF THE SERVICE SECTOR COMPANY

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Annotation

The article presents the evaluation of the supply chain management of the service sector company using the expert evaluation methodology. The study identified seven strategic and operational supply chain processes in line with the model approved by the Global Supply Chain Forum. The gaps in supply chain processes between the intended and the actual state of management allowed to identify service disruptions and provide opportunities for processes improvement.

Keywords: processes, sub-processes, strategic level, operational level, supply chain, gap.

Introduction

Promoting a more resource-efficient, competitive and high value-added economy is one of the European Union's key priorities for sustainable, smart and inclusive growth. In order to achieve the goals of this priority companies are paying more and more attention to business process management, planning and implementation of efficient supply chains. A supply chain is a network of all individuals, organizations, resources, activities and technologies involved in the development and sale of products or services from the supply of raw materials from the supplier to its final delivery to the customer. The management of this whole chain combines the supervision of materials, information and finances as they operate in the process from the supplier of raw materials to the consumer. This structure consists of a number of possible business combinations and solutions that achieve the overriding goal of operating cost savings. The supply chain management mechanism becomes one of the most relevant factors determining the productivity and efficiency of the company's operations in the business system or company. The implementation of a supply chain management system or the renewal of an existing one requires an assessment of the company's business processes, which makes it possible to determine the state of supply chain management, the rational use of company resources (staff, equipment, time, raw materials, information, etc.). Supply chain management enables business leaders to make more rational decisions, to check whether decisions made in the past were accurate; to base decisions made now or in the future, to obtain the greatest mutual benefits between the actors in the supply chain. Supply chain and business process assessment methodologies developed by Lithuanian and foreign researchers can be applied in conducting research in this field. The scientific literature on these issues focuses on analysing the supply chain itself or assessing its flexibility. There have also been a number of studies examining one or more supply chain management processes, but there is a lack of research to assess the effectiveness of individual companies in managing the entire supply chain. In particular, there is a lack of research on the evaluation of the business process supply chain efficiency of service companies.

The aim of the research is to perform an evaluation of the supply chain management of a service sector company using the expert evaluation method and to provide recommendations for the improvement of business process management.

Research methods: analysis and synthesis of scientific literature, grouping, comparison, generalization of statistical data. Performance research and expert survey, expert compatibility assessment in calculating Kendall concordance coefficient, application of statistical weighted average method. Data ranking, graphical analysis, calculation and evaluation of coefficient gaps. MS Office and SPSS software packages were used to process the data obtained during the study.

Research on Supply Chain Process Management

The company's supply chain is characterized by activities that link the different divisions of the organization which contribute to the development of products and services, production and supply processes (Yusuf at all, 2004). Supply chain management is a complex sequence of organizational processes based on modern technologies which must ensure the smooth

operation of the supply chain and meet customer needs (Slone, Mentzer ir Dittmann, 2007). As Halme (2010) argues, supply chain efficiency assessment is a very important factor for organizations to be competitive. They must measure the performance of the entire supply chain, analyse and evaluate each individual process in order to operate successfully in a competitive business environment.

Supply chain processes, their management, efficiency assessment and improvement opportunities were extensively analysed not only by foreign, but also by Lithuanian researchers. Of great importance in supply chain analysis are the research papers of M. Lambert, S. Rogers, Y. A. Bolumole, K. L. Croxton, who conducted research and singled out supply chain management processes in line with the model approved by the Global Supply Chain Forum (GSCF). This framework is built on eighth key business processes that are both cross-functional and cross-company in nature. Each process is managed by a cross-functional team, including representatives from logistics, designing, manufacturing, purchasing, finance, marketing and product development. While each process will interface with key customers and suppliers, the customer relationship management and supplier relationship management processes form the critical linkages in the supply chain.

V. Darškuvienė and A. Cibulskytė (2007) analysed the relationship between supply chain management efficiency and the value of listed companies in Lithuania. The study of I.Beniušienė and J. Stankevičienė (2007) was performed to determine the role of logistics in the supply chain. The efficiency of individual supply chain process management in Lithuanian manufacturing companies was studied by A. Rakickas, S. Skunčikienė (2007), V. Lembutis (2009), A. Rakickas, R. Čiegis, S. Skunčikienė (2009). R. Jasinavičius and N. Jasinavičius (2011) analysed the possibilities of strengthening the competitiveness of textile companies by synchronizing the supply chain. In her research, J. U. Ventienė (2012) paid more attention to risk management in the supply chain. E. Stonkutė (2012) identified the supply chain management challenges faced by Lithuanian small and medium-sized enterprises and the operational strategies they choose to overcome them. V. Skulskis and V. Girgždienė (2016) examined the development of the supply chain of organic dairy products in Lithuania. Among foreign researchers, there are also many authors who have analysed the supply chain in business or its management processes: Rogers, Knemeyer, Lambert (2004), Sengupta, Heiser, Cook (2006), Mollenkopf, Russo, Frankel (2007), Snow, Fjeldstad, Lettl, Miles (2011), Shaffer, Dalton (2012), Scholten, K., Schilder, S. (2015), Nikfarjam, H., Rostamy-Malkhalifeh, M., Mamizadeh-Chatghayeh, S. (2015), Soheilirad, S., Govindan, K., Mardani, A., Zavadskas, E., K., Nilashi, M., Zakuan, N. (2018).

The role of supply chain process management in service sector companies in achieving competitive advantage is discussed in the scientific literature, but due to the lack of reliable assessment tools there is not much empirical research. This study was conducted under the key assumption that the supply chain is a system of services provided to each other by actors in the supply chain. The production process and the result it produces can affect the whole system, but other processes (supplier and customer relations, demand management, product development and commercialization, etc.) also affect the production process and the whole supply chain, so the study of these processes in the company non-engaging production is meaningful and relevant.

Research Methodology

In order to evaluate the supply chain processes an activity survey was conducted in the largest (in terms of annual revenue turnover) company in this service sector in Northern Lithuania, operating since 2000. The quality management system according to EN ISO 9001: 2008 has been implemented and is constantly being improved in the company, but as the volume of services grows every year, it becomes more and more difficult to coordinate service provision processes, operational efficiency decreases and possible irrational use of company resources. Periodic analysis of the company's individual business processes does not show the state of the entire supply chain, so the evaluation of many key processes using the process performance evaluation methodology provides an opportunity to identify service disruptions and opportunities for improvement.

A supply chain expert evaluation questionnaire was used for the study (Croxton et al., 2001; Lambert, 2008; adapted in Lithuania by Rakickas (2010) which evaluated seven supply chain processes of the company:

- Customer relationship process which consists of 5 strategic level and 7 operational level sub-processes.
- Customer service process which consists of 4 strategic level and 4 operational level sub-processes.

– Order fulfillment process which consists of 5 strategic level and 7 operational level sub-processes.

– Demand management process which consists of 6 strategic level and 5 operational level sub-processes.

– Product development and commercialization process which consists of 6 strategic levels and 8 operational level subprocesses.

– Supplier relations process which consists of 5 strategic level and 7 operational level sub-processes.

– The return process which consists of 6 strategic level and 6 operational level sub-processes.

The questionnaire consisted of two main blocks of questions related to the management of supply chain processes: (1) the demographic and occupational data block (gender, age, occupation, position, job seniority, nature of work), (2) supply chain process (sub-process) management research questions block. Supply chain sub-processes in the questionnaire are reflected in the blocks of evaluation indicators (statements). The evaluation indicators are chosen so that they reflect not only the management status of a particular process (sub-process), but also the links with other processes (sub-processes).

Most of the questions were of the closed or semi-closed type. The Likert criteria scale was used for the expert opinion survey when the subjects evaluate the statements characterizing the process or sub-process by choosing the attribute most in line with the expert opinion from “strongly disagree” to “strongly agree”. These scales were transformed into a ranking scale (1 to 5) for a clearer interpretation of the survey results. Nominal and interval scales were used in the demographic data part of the respondents. The study involved 7 experts - employees of various management departments of the company who were selected in accordance with two conditions of the expert survey:

1) managerial work experience, work experience in the company, existing competencies in the fields of strategic and operational management, perception of the supply chain as a whole;

2) direct close contact of the researcher with the experts was ensured: each expert had the opportunity to know individually the purpose of the research and its tasks, to receive answers to all questions related to the research.

All experts have been working for the company for more than 10 years and have managerial experience in managing individual processes (4 experts) or the entire supply chain (3 experts). The consistency of the expert assessment was checked by determining the Kendall concordance coefficient, which was determined to be 0.76, which confirms the reliability of the study results.

The experts noted in the questionnaire statements that show the actual and intended state of a particular sub-process of the company. After transforming the experts' choices into a ranking scale, the survey results were transferred from the completed questionnaires to a gap calculation matrix consisting of two parts:

1) weighted average assessments of the actual state of strategic and operational sub-processes by each expert and all experts;

2) weighted average assessments of the intended state of strategic and operational sub-processes for each expert and all experts.

The determination of the difference between the intended state and the actual state of the supply chain processes (sub-processes) was performed by calculating the difference between the estimates of these states. D. M. Lambert's (2008) supply chain process evaluation scale and recommended management actions were used to interpret the research results:

	[-4; -3] ir [3; 5] – it is necessary to react immediately;
	(-3; -2] ir [2; 3) – it is necessary to react;
	(-2; -1] ir [1; 2) – it is recommended to react;
	(-1; 1) – it is not necessary to react;
	– it is necessary to identify the expert and find out the reasons for ignorance.

Research Results

1. The customer relationship process.

The customer relationship process consists of five strategic-level and seven operational-level sub-processes, which were assessed against 39 strategic-level and 42 operational-level statements (see Figure 1). The gaps in the sub-processes at the strategic level of the customer relationship process are small, so it can be said that they are managed efficiently enough. Most experts indicated that the company has a marketing strategy, but no one analyses how it affects the customer relationship process.

The assessment of sub-processes at the operational level of the customer relationship process is very uneven. The biggest gap between the intended and the actual state was found in the question sk_o6 (execution of the contract for the provision of products and services). This shows that the managers of this sub-process focus their efforts on the execution of individual business operations and the resolution of unexpected situations. Sometimes, on the basis of already concluded contracts for the provision of products and services, projects for the improvement of the provision of services are prepared and implemented, taking into account the current situation. It is recommended to monitor the terms and conditions of the concluded contracts for the provision of products and services together with the customers, to hold periodic meetings, to discuss and jointly make decisions on their improvement.

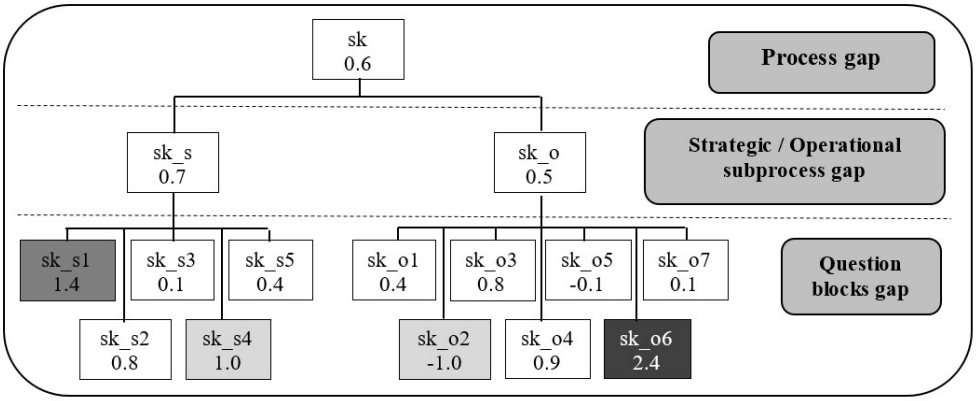

Fig. 1. Gaps between the intended and actual state at the strategic (sk_s) and operational (sk_o) levels of the customer relationship management process.

The results of the study also show that more attention is paid to managing the two sub-processes of this process (working with a client or customer segment team and concluding a contract for the provision of products and services) than the experts deem necessary. This is shown by the negative gaps in these sub-processes. In order to balance the management of these sub-processes, managers should differentiate clients according to importance and other relevant criteria and accordingly allocate human resources to work with clients more rationally.

2. The process of customer service.

The customer service process consists of four strategic-level and four operational-level sub-processes, which were evaluated based on 51 strategic-level and 54 operational-level statements (see Figure 2).

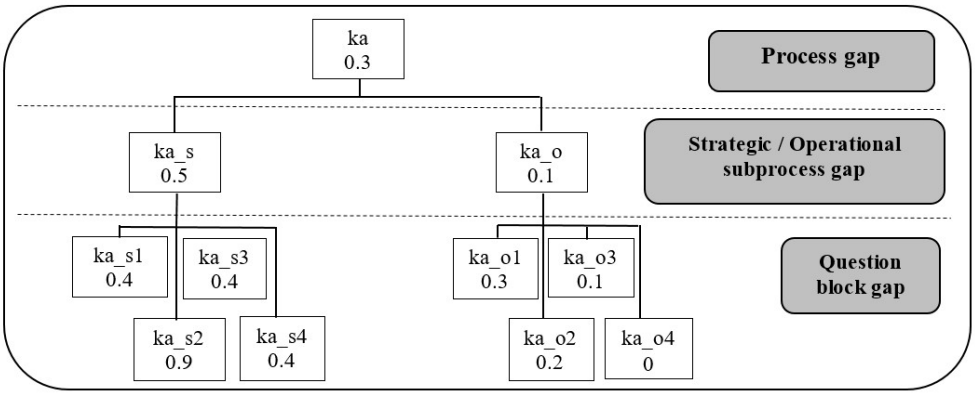

Fig. 2. The gap between the intended and actual state of strategic (ka_s) and operational (ka_o) levels of the customer service management process.

The assessment of the sub-processes at the strategic and operational level of the customer service process did not reveal significant gaps between the intended and actual state. The strongest components of this process in assessing the actual situation at the strategic level are the ability of the company's employees to obtain data on customer service problems both within the organization and from suppliers and customers. The company also has mechanisms in place to identify and respond to some customer service issues before they reach customers.

The strongest component at the operational level is the company's ability to coordinate alternative actions across all functional units to address customer service failures in response to customer service issues. The company is very successful in coordinating actions with the company's shareholders or heads of functional departments.

The company does not have a customer service assessment system in place and does not systematically monitor the development of customer service. It can be stated that the most important factor and guarantor of quality customer service in the company is the competence of the company's employees, their work experience and loyalty to the organization.

3. The process of order fulfillment

The order fulfillment process consists of five strategic-level and seven operational-level sub-processes, which were evaluated based on 45 strategic-level and 63 operational-level statements.

The biggest gap in the sub-processes at the strategic level (see Figure 3) was found in the sub-process "Review of the organization's general and marketing strategies". The results show that the company does not have general and marketing strategies and this is not a management aspiration, therefore the activity (execution of orders) is not planned for more than one year. Thus, the marketing and overall strategies of the company are not reviewed either. When evaluating the order fulfillment logistics structure, managers use standard models ("minimum distance", "least cost", "maximum order", etc.), but the general direction of sub-process management is current period orders or execution of orders under long-term contracts. It is important to note that the organization's employees are only occasionally introduced to customer service goals set by relevant customer segments. Post-order activities are not inspected and evaluated. This indicates that the company's management does not receive feedback on the quality of orders fulfilled. However, the gap in sub-processes is not significantly large, i. y. experts do not provide much importance to feedback.

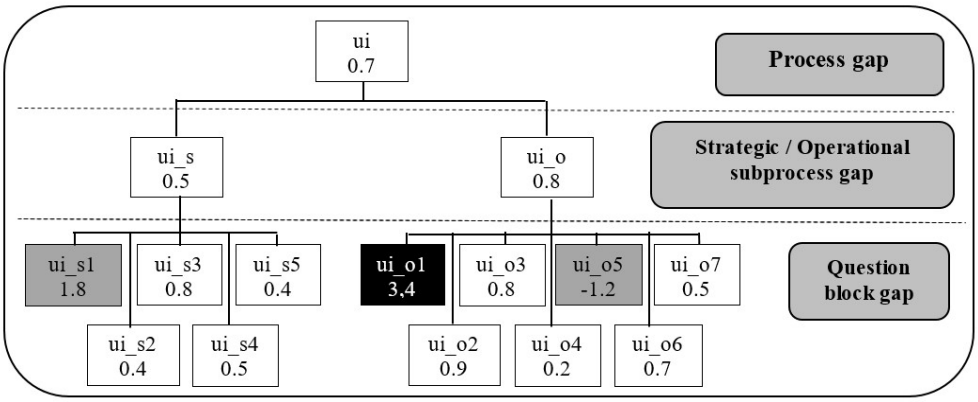

Fig. 3. The gap between the intended and actual state of strategic (ui_s) and operational (ui_o) levels of the order fulfillment management process.

The results of the research show that the biggest gap in the order execution process is at the operational level ui_o1 (order acceptance and its transmitting). Most orders from customers are received by fax or telephone or placed by sales staff. In practice, the possibilities of receiving orders from customers electronically or using an electronic data transmission system are very underused. This shows that order acceptance is still slow and no new improved tools are being put in place to speed up order acceptance and transfer. The ordering rules in the company depend on the customer - the organization itself shows little initiative in this process and may not use its potential as a competent specific service provider.

Company managers should take urgent action to improve the sub-processes of order acceptance and transfer execution. It is recommended to standardize and implement computerized programs that can be used to register customer inquiries and manage actions with customers and their orders. This would make it easier to place orders with existing customers, but would also help attract new users of the company's services.

4. The process of demand management.

The demand management process consists of six strategic-level and five operational-level sub-processes, which were evaluated according to 60 strategic-level and 57 operational-level statements (see Figure 4).

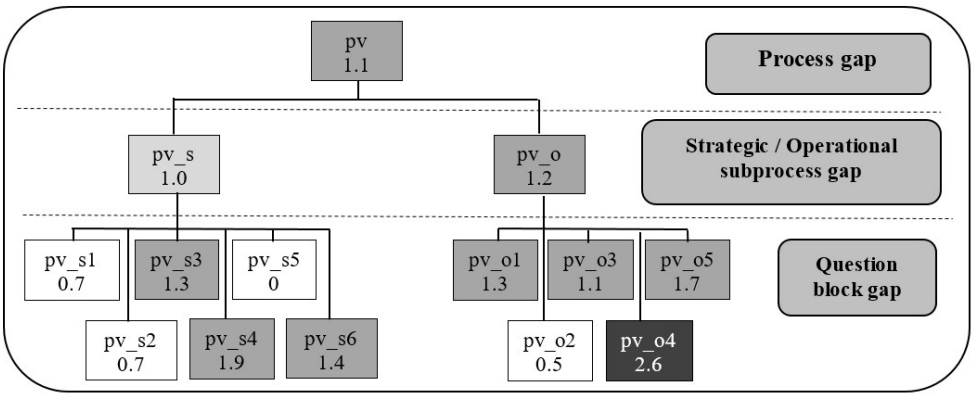

Fig. 4. The gap between the intended and actual state of strategic (pv_s) and operational (pv_o) levels of the demand management process.

At the strategic level even three sub-processes are characterized by significant gaps. It was found that the company has no formal procedures that would allow to align supply with demand. The most significant gap in the operational level subprocess is pv_o4 (reducing volatility and increasing flexibility) which shows that the company adheres to the provision that the demand for services in the market is constantly changing. There are no means to influence it in any way, so there are constant difficulties when it comes to responding to unforeseen changes in demand. To improve the management of this process supply chain managers should:

1) to consider how to create a system for collecting data for demand forecasting from internal and external sources which would ensure the sharing of collected information within the organization;

2) to establish consistent procedures for synchronization of demand and supply which would ensure the involvement of all functional units in improving demand management;

3) to set goals of the organization and functional units related to demand management and to acquaint employees, customers and suppliers with them.

The 3 sub-processes at the operational level also have significant gaps, the analysis of which allowed to clarify the process management problems identified at the strategic level. The large (2,6) gap in the pv_o4 subprocess indicates that the company does not cooperate sufficiently with its key customers to control demand volatility and respond flexibly to changes in demand. Also, in the company data collection is a less formalized and non-systematic process often making informal information based on demand management decisions which sometimes causes problems with the accuracy and timeliness of data.

5. The process of product development and commercialization.

The product development and commercialization process consist of six strategic level and eight operational level subprocess which have been assessed according to 81 strategic and operational level of 105 statements (see. Fig. 5).

There are no significant gaps in strategic-level of sub-processes. This shows that the organization does not have provisions in place to address how suppliers and customers should be involved in the product development and commercialization process and, as assessments of intended status by all experts show this is not important to the company. The company has not analysed the processes of product development and commercialization and has not prepared plans for the need for new products, therefore it can be assumed that the company does not sufficiently use the opportunities provided by this process.

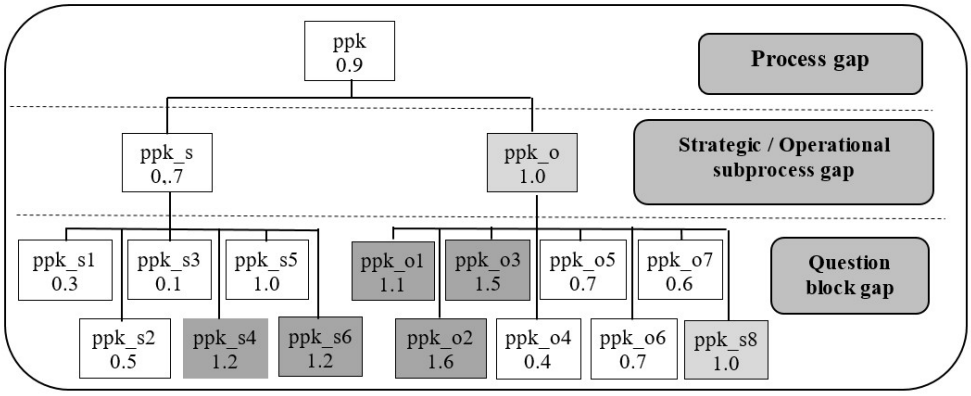

Fig. 5. The gap between the intended and actual state of strategic (ppk_s) and operational (ppk_o) levels of the product development and commercialization process.

The results of the research show that the company does not develop new services and is not interested in developing them. There is also no need to expand and commercialize existing services. The company does not perform analyses of new service markets, does not look for the characteristics of weak and strong service distribution channels. This approach may be due to the relatively stable financial situation of the company and the limited capacity to provide technical services. The specificity of customers can also have an impact - the company's largest customers are budgetary and public institutions whose requirements for services are relatively unchanged. The company's executives say that the company could provide more diverse services, but the largest customers do not want them, so the development of services is not necessary.

6. The process of relationships with suppliers

The supplier relationship process consists of five strategic-level and seven operational-level sub-processes which have been assessed according to 45 strategic-level and 42 operational-level statements (see Figure 6).

The biggest gap in the supplier relationship process is st_s5 (benefit from process improvement sharing with suppliers). The company does not share the benefits of improving the process and this is not a very important aspect as the experts have pointed out. There are no product and service contract criteria for supply workers which can be adjusted according to the supplier's needs. Based on the results of the research, it can be stated that the company does not work closely with its suppliers and does not share the service improvements received or observed, which means that it is not important for it to ensure a smooth relationship between the supplier and the company. Company executives do not take into account the fact that sharing the benefits with suppliers through service improvements could bring even greater benefits to both parties (for the company and suppliers) and thus to customers.

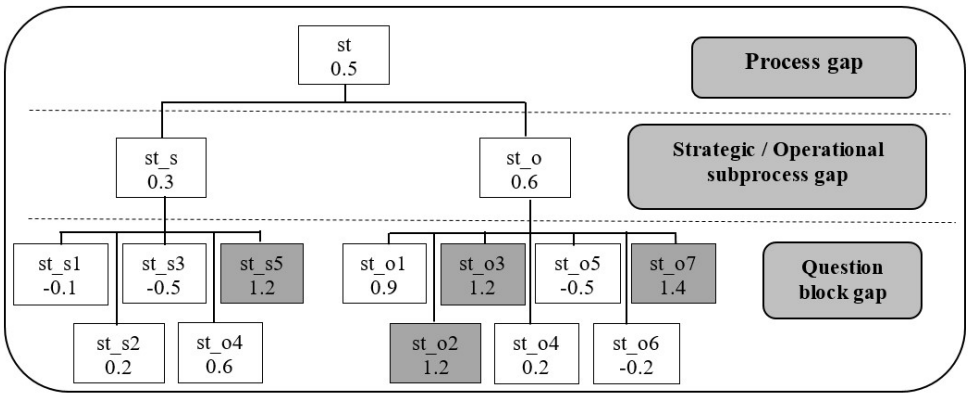

Fig. 6. The gap between the intended and actual state of strategic (st_s) and operational (st_o) levels of the relationships with supplier's process.

An analysis of the gap between the intended and the actual state at the operational level has shown that there is no urgency to review and manage the relationship with suppliers, but

improvements are possible to ensure smoother, faster and more accurate cooperation with existing and possibly future suppliers. It is recommended that the company periodically prepare a separate profitability report for each supplier indicating the balance of income and expenses. It is also necessary to inform employees, customers and suppliers about the results and achievements of supplier relationship management. In this way, the company would gain a competitive advantage in the market for similar services currently provided.

Comparing the assessments of the intended state of customer relationships, customer service and relationships with suppliers, it is clear that the company also pays much more attention to customers more important than suppliers. This orientation is typical for many service companies, but in this company the importance of relations with suppliers was pointed out by experts as low - 1 - 2 points.

7. The process of return

The return process consists of six strategic-level and six operational-level sub-processes which were evaluated against 63 strategic-level and 45 operational-level statements (see Figure 7).

The return process in service companies is specific and usually understood as the re-performance of a malfunctioning service by eliminating discrepancies identified by the customer and / or service provider. The data on returns are used to make improvements to the services and the processes. Return process analysis might result in feedback to the customer relationship management, supplier relationship management or product development and commercialization processes (Croxton at all, 2001).

The company rarely provides such recurring services - they make up about 1.2 percent from the scope of all services provided. The biggest gaps in the strategic sub-processes of the return process are related to the setting of return targets for goods / services and the development of a strategy and the establishment of return procedures. Experts said that such a low volume of repetitive services suggests that this process is not significant and its management should not be given much attention. The company has not identified the types of returns, does not look for opportunities to avoid them and does not analyse the reasons for their occurrence.

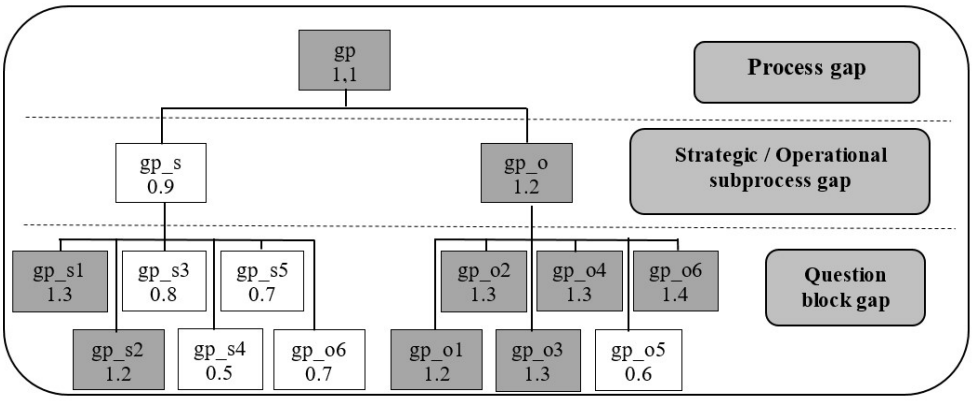

Fig. 7. The gap between the intended and actual state of strategic (gp_s) and operational (gp_o) levels of the return process.

Small gaps between the intended and actual condition were found in all operational subprocesses except gp_o5 (customer and supplier crediting). Customers know how to apply for a return, but the process is very complicated and inconvenient. So, it is difficult to determine the reasons for a service that has not been performed properly. It has been found that the re-performance of services is sometimes done on the basis of the reasons for the return, but this process takes place as a functional activity, during which the information obtained is considered worthless. The management of this process is usually based on such stereotypical assessments as "it is impossible to install modern equipment in an old building" or "using cheap materials will not provide quality services" and so on. Information on the results and achievements of the return of goods / services management in the organization is not made public.

Conclusions

The assessment of supply chain management using a model approved by the Global Supply Chain Forum is usually performed in manufacturing companies. There are not many such empirical research in the companies of the service sector, although the growing demand for services and the number of companies providing services in Lithuania and in the world stimulate interest in the efficiency of such companies.

In this study, after eliminating the production flow management process from the evaluation model, the gaps between the other seven supply chain processes and sub-processes between the intended and the actual state in the service sector company were identified and evaluated. The most effectively managed processes of the company are related to customers - customer relationship and customer service processes. The weakest links are in product development and commercialization, supplier relationships and the return processes. The company's management does not spend much time and efforts to strengthen them, as it considers that this is of little relevance to the service company. Demand management and order fulfillment processes also have shortcomings, but management is not looking for ways to manage them. Insufficient cooperation with suppliers prevents them from gaining a competitive advantage over competitors and entrench in the market for this type of service not only as the oldest but also as the most competent company. In order to improve the efficiency of the company's supply chain processes and sub-processes, it is recommended:

1) it is necessary to monitor the terms of contracts for the provision of products and services concluded with customers, to hold periodic meetings, to discuss and jointly make decisions regarding their improvement;

2) to differentiate customers according to importance, profitability, etc. criteria and in this context to allocate human resources to work with clients more rationally;

3) the company's services are sufficiently unified to be able to implement standardized procedures for some business processes – order submission, recording, transfer to employees – and to implement computerized programs that can be used to register customers and their inquiries, manage actions with customers and their orders;

4) to consider how a system for collecting data for demand forecasting from internal and external sources could be set up to ensure the sharing of information collected within the organization;

5) to establish consistent procedures for synchronization of demand and supply, which would ensure the involvement of all functional units in improving demand management;

6) to set the goals of the organization and functional units related to demand management and to acquaint employees, customers and suppliers with them;

7) together with customers consider the possibility of developing new or improving existing services in order to acquire new competencies and ensure customer support;

8) review relationships with suppliers and involve them in decision-making related to service quality.

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Received: 8 March 2021
Accepted: 31 May 2021