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Streamlining business processes based on logistics concepts of improvement.

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Abstract— **The article proposes process of improving logistics business processes by integrating various available methods and tools, such as Kaizen, Just-in-Time, 5S and others. Answers to the question "When and how best to implement the Kaizen system" are given. Methods of analysis that are inherent in economic production, and in particular Kaizen, are being explored to find opportunities to eliminate threats in the logistics chain through partnerships. Stages of identifying spheres and approaches to restructuring logistic business processes are suggested. An integrated management concept has been developed to improve flow management in the supply chain.**

Index Terms— restructuring, partnership, Kaizen, reengineering, business processes

I. INTRODUCTION

Effective methods for changing and coordinating business processes should be used to improve the supply chain. Companies operating in a competitive environment will orient their strategy and development programs based on their own experience, ideas, goals or best practices on the market. Companies in the supply chain focus on information technologies, energy-efficient warehouse solutions, economic vehicles, specialists in the field of specialization and analytical thinking, and direct their activities to expand the scope of services, their quality, work on improving the logistics index, performance, etc.

In the process of improving business processes in the field of logistics, enterprises often use the concept of economic production in general and the variety of available methods and tools, namely: indicators of shaping the flow of value creation; Kaizen is like a philosophy of continuous improvement; card system - Kanban; 5S system for the development and implementation of effective working conditions; extraction logistics processes; JIT approach (Just-In-Time); SMED approach - quick adaptation of the system to the requirements; TPM (Total Productive Maintenance) - hardware maintenance process; visualization of business processes

II. KAIZEN AS A TOOL FOR RESTRUCTURING BUSINESS PROCESSES.

Kaizen can be described as a continuous approach to creating a more efficient business processes designed to transfer the system to a new level, including also in the logistics sector. The key elements of the Kaizen system are: an order to perform tasks; discipline, especially regarding the timetable for implementing specific areas of change; establishing and ensuring the process of informing company employees about the introduction of relevant changes in the enterprise; an explanation of why these or other changes are intended; clear definition of employee obligations with appropriate reporting; improving the quality of business processes while reducing costs (Internationaloutsourcingcommunity).

Despite the high level of effectiveness of the implementation of Kaizen in a logistics company, before using it, company should familiarize itself with the main questions that logistics companies usually have to answer.

One of the main questions that companies in the supply chain should ask is: when exactly should Kaizen be implemented? Because enterprises that do not meet this philosophy may face significant problems related to the resistance or misunderstanding of employees of both their own enterprise and enterprises - partners of the logistics business process, and thus efficiency, time and ease of implementation may deteriorate. Therefore, before introducing the Kaizen philosophy, it is advisable to conduct trainings, justify the causality of changes, and provide adequate motivation for those involved in the process. Since Kaizen is a process of continuous improvement, its tools often require changing paradigms of understanding business process development. It is difficult to ensure continuity of continuous improvement without adopting

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this philosophy as optimal for an enterprise in appropriate market conditions. After the introduction of Kaizen, the company should feel changes in the approach to employees' work, changes in communication processes, motivation of employees, etc. The Kaizen process in the supply chains motivates them to cooperate closely, develop a unified strategy and unify internal business processes to typical for partners. This approach reduces the risk of partners rejecting changes, and also increases the level of initiative and trust between logistic business process entities.

In addition to indicating the time to implement Kaizen in the enterprise, it is advisable to take into account the lack of willingness of employees to perform tasks in non-standard, often uncomfortable cases when it is necessary to acquire new knowledge, change attitudes or attitudes towards known processes, spend more time on operations that have occurred at reflex level. Because some employees, even if they are not conservative in the style of perception of new, will not be ready to innovate in their daily activities due to the heavy workload, in the case of Kaizen in the supply chain it would be advisable to analyze the structure of the working day and working hours of an average employee of a given enterprise. The structure of specialist's working hours should be balanced, and in addition to professional duties, the specialist should be interested and develop in the field of his profession, learn languages, coordinate his activities with other departments, perform administrative work (if it is specified in the position), etc. heavy workload in the performance of official duties, there is a clear

justification for a negative response to the management's request to implement kaizen in the enterprise. Considering this fact, it would be advisable to carry out a structural analysis of employees' working time and to adapt it immediately in the event of inappropriate priority setting of employees.

Figure 1 shows elements of Kaizen theory in the process of restructuring business processes in the supply chain. As shown in the figure, in the logistics department the restructuring of supply chain business processes will include eight elements. It is necessary to highlight a rather complicated process of liquidation of operations that do not generate added value for the enterprise. It is reasonable to consider that the added value that can be generated in the logistic business process should be assessed not only from the point of view of the company, but also from the position of consumers who can more accurately determine the direction of development.

The application of Kaizen in the restructuring of business processes related to logistics should take place at two structural stages: Total Productive Maintenance (TPM) (control of equipment or other tools in internal logistics); Total Flow Management (TFM).

Given that the TPM is a process of improving the internal logistics company, which is less correlated with the production of other partners (at least inside industrial movement of the products, intermediates, raw materials, and tools, control of production processes, etc.), TFM are processes that involve more coordination because some of them are directly in the company and some go beyond product delivery, coordination of activities etc. As a result, TFM processes play a more key role in controlling, coordinating and evaluating results, because a large part of the business process will depend on the partner and his understanding of the chosen strategy in Kaizen.

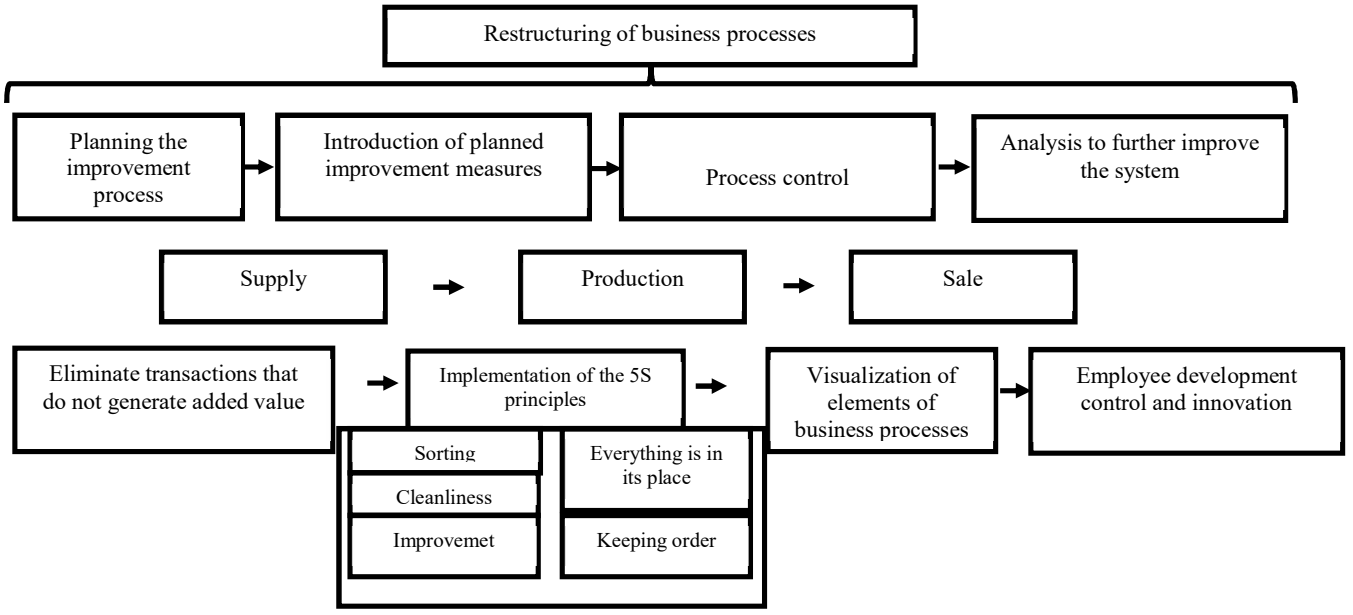


FIGURE 1. ELEMENTS OF KAIZEN THEORY IN THE PROCESS OF RESTRUCTURING BUSINESS PROCESSES IN THE SUPPLY CHAIN

Source: author's own elaboration

The transformation of supply chain partnerships should be done before any changes are made as part of the adjustment in Kaizen. Removing low-value partnerships from logistics flows, inefficient management decision-making procedures, raising delivery standards, service quality and the logistics index to a consistent level will help increase the effectiveness of

implemented changes.

III. THE WAY TO STREAMLINE BUSINESS PROCESSES IN THE VALUE CHAIN.

The activity of a modern enterprise and its management is a complex process, a complex system with a specific hierarchy and standards, which requires a clear division of duties and rights among participants in logistic business processes, compliance with the order, subordination and ensuring adequate means and working conditions. The effectiveness of management depends to a large extent on the macro environment, the company's ability to predict its impact, and on the internal environment, which should certainly be controlled and, if necessary, adapted to prevent problems in achieving the company's objectives.

According to the business process restructuring algorithm, one of the important elements without which it is not possible to increase the efficiency of processes is to identify key areas of losses, which include any activity that is not rational, does not use effectively available resources, and therefore creates a value incompatible with costs for the company and / or the consumer. Threats that de facto provide stable results below expectations, especially in supply chains or in warehouse operations, should be immediately identified and designed to address relevant constraints (Krykavskyy&Dovhun, 2017, pp. 67- 75).

The analysis and division of typical losses for logistics business processes have allowed them to be systematized and divided into: production area: overproduction or insufficient production; expectations regarding the following business process: because of delay and, consequently, unwillingness to process the relevant order, or because of unreasonable economic, technological, organizational or other factors, the immediate execution of the relevant business process; movement of some inventory in the supply chain: routes that do not optimally take into account time, economy, safety etc. are not optimally calculated; additional operational activities for the finished product, intermediate or raw material: actions to be taken due to poor processing, non-compliance with control procedures, etc.; the presence of an optimal amount of stock in the warehouse, in production, on the road and in other points of the supply chain; human flows: losses due to non-ergonomics of the workplace, no assignments to a specific topic - a specific place, lack of employees' knowledge in production processes, a significant level of bureaucracy, which leads to unnecessary transfer of personnel, etc. high level of defects (over 1-3%): despite high-quality production, in order to ensure a stable competitive position on the market, the company must achieve quality control systems, statistical methods of quality management, etc., the expected level of quality, which means no defects and compliance of the product with consumer expectations; motivation of employees: marriage, lack of willingness to innovate, unwillingness to cooperate, unwillingness to learn new technologies, processes, approaches, dissatisfaction with wages, working conditions, team etc. All this creates an important market to the deterioration of the results of Kaizen or reengineering.

In order to identify the cause of the emergence of threats, and thus look for the possibility of eliminating them, it is necessary to use methods of analysis inherent in economic production in general, and in particular the philosophy of Kaizen.

Therefore, given the simplified, phased division of logistics into the supply, production and marketing activities of an enterprise or network, value chain analysis includes both visual control in the form of the Andon production tool and direct monitoring of the supply chain, gathering all relevant information, analysis flows occurring in relevant business processes (Figure 2) (Manuel&Mascell). In addition, it should be noted that both reverse flows and recycling play an extremely important role both in providing an adequate level of service and in identifying bottlenecks and / or problems in the business processes under investigation.

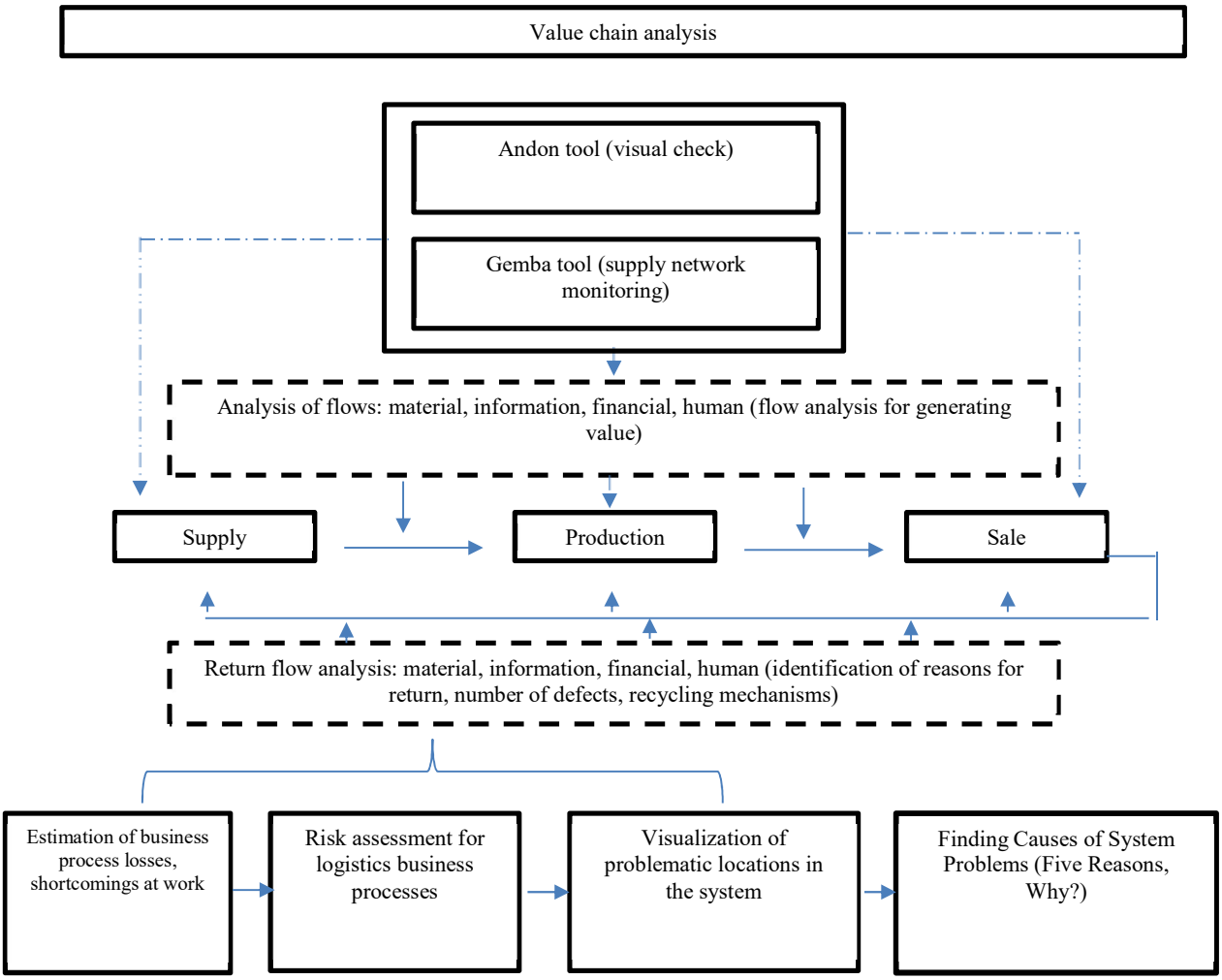
The analysis process is based directly on the following stages: estimation of business process losses and determination of the level of economic importance of applying appropriate changes, selection of optimal scenarios regarding the company's capabilities; assessment of threats in logistic business processes, which provides a detailed analysis of the phase elements of logistics, as well as an analysis of partner logistics processes in order to create comprehensive cause-and-effect relationships; visualization of problematic places in the system by marking them with red labels. This approach allows us to visualize problems, engage partners in discussions, discover original ways of solving problems; the use of visualization simplifies the understanding of the situation and allows to attract not only specialists in this field, but also employees who have experience in effective solutions in other fields; with the causes of problems with the system or a five-fold production tool. Asking questions in a hierarchical order from the most difficult to the simplest allows you to divide the problem into sub-problems and gradually eliminate threats without cardinal reengineering methods.

Identifying the underlying causes of losses does not answer the question of which approaches should be used to implement restructuring: the kaizen concept or more radical reengineering methods? Taking this into account, Figure 3 shows the stages of identifying areas and approaches to restructuring logistic business processes.

As mentioned, Kaizen and reengineering are designed to change, but the key difference visible in the retrospective of logistics business processes is the scale of change and their frequency in the relevant supply chains. One of the first steps in choosing the right restructuring approach is to directly identify the nature of the problem, which may relate to: a small but systemic loss to the enterprise; threats that, in addition to not receiving corporate profits through them, prevent quality assurance as regards the performance of relevant logistic business processes; lack of competitive advantages that contribute to widening the gap between enterprise performance and strategic goals of logistic business processes in the supply chain [Oliveira A., Gimeno A., 2014, pp. 45-50].

The next step to simplify the selection of the right method for restructuring business processes is to identify and select the element that needs to be changed or improved.

FIGURE 2. ECONOMICAL APPROACH TO PRODUCTION IN THE PROCESS OF IMPROVING BUSINESS PROCESSES IN LOGISTICS



Source: Author's own elaboration

Identify logistic business processes that generate value for the company and the final consumer in the supply chain; business processes related to the supply chain segment, which may include relevant business units involving multiple partners and include greater change-oriented integration; business processes at the strategic level, the analysis of which is carried out to identify the potential of the system, as well as to distinguish between supply chain entities, key competences and capabilities of a particular enterprise or department.

After identifying the subject of changes, it is recommended to specify the main goal of restructuring, depending on the scale of needs identified. The main goals include: reducing costs by improving the quality of business processes, which means gradual, continuous improvement; increase in the operational capacity of the supply chain, which assesses the supply network as a single aggregate business process with inbound and outbound flows, internal logistics of a specific enterprise and integration between enterprises, and defines market needs and opportunities; providing the network with a significant competitive advantage leads to the introduction of certain know-how, innovative solutions that are not specific to the region of operation, the possibility of entering new markets, etc.

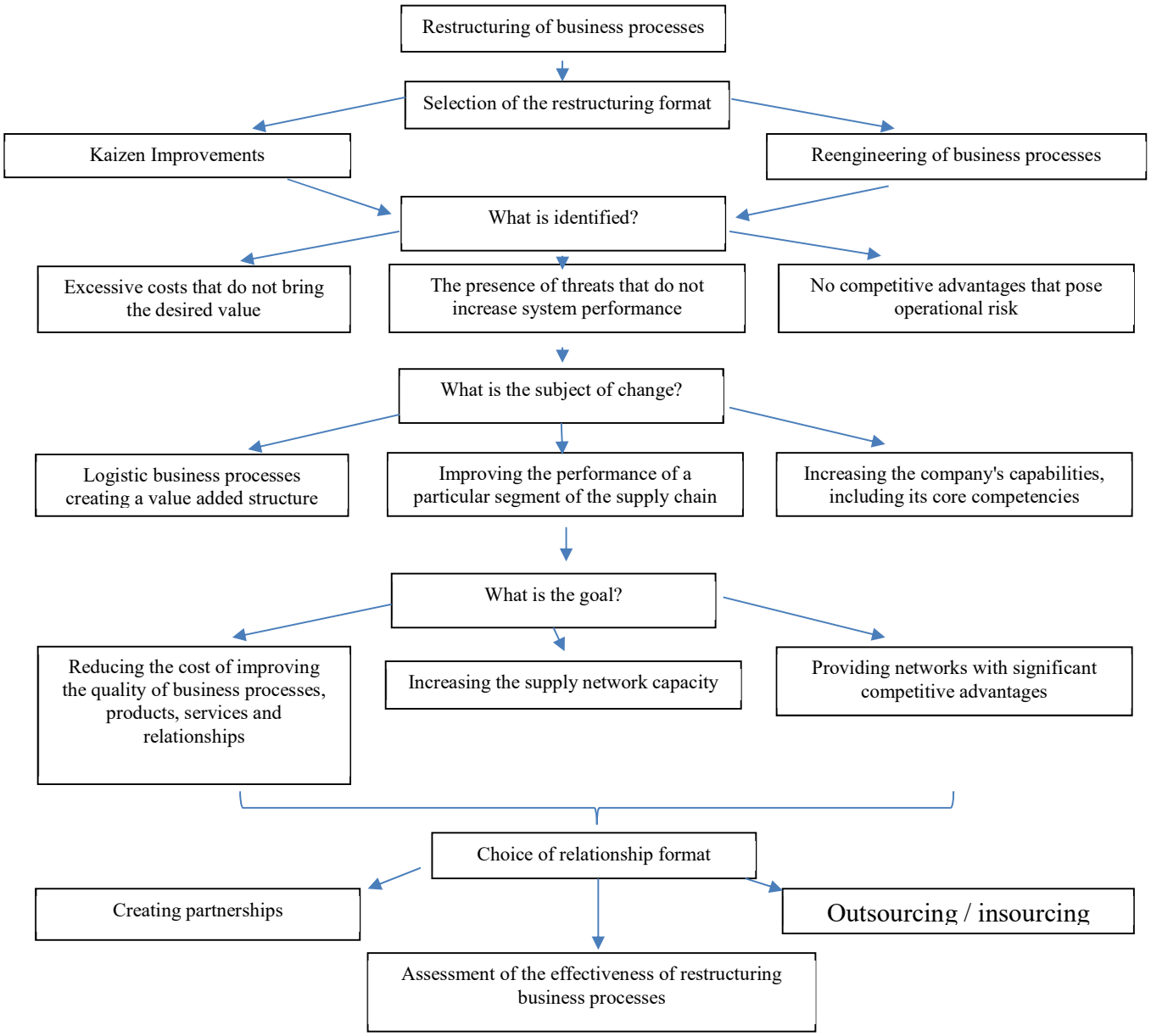
The last step is to choose the format for establishing relationships between participants in the supply chain or other logistic business processes. Therefore, one of the relationship options may be a partnership format that requires close cooperation and faster synergy if all partners are ready for such a transformation; outsourcing or insourcing, which leads to integration based on specialization and experience, can be the second variant of relationships.

Relationships in this format may have a faster economic effect, but in these conditions the activity is clearly regulated by contracts and the level of trust is much lower than in the case of partnership. After choosing the relationship format, the efficiency of business processes as a result of restructuring is assessed and appropriate adjustments are made (Liam J. Bannon).

Therefore, the proposed stages of identifying areas and approaches to restructuring logistic business processes will allow for a more effective selection of various directions of

implementing changes in the enterprise and in the supply chain.

FIGURE 3. THE IDENTIFICATION STEPS OF SPHERES AND APPROACHES TO RESTRICT LOGISTICS BUSINESS PROCESSES



Source: Author's own elaboration

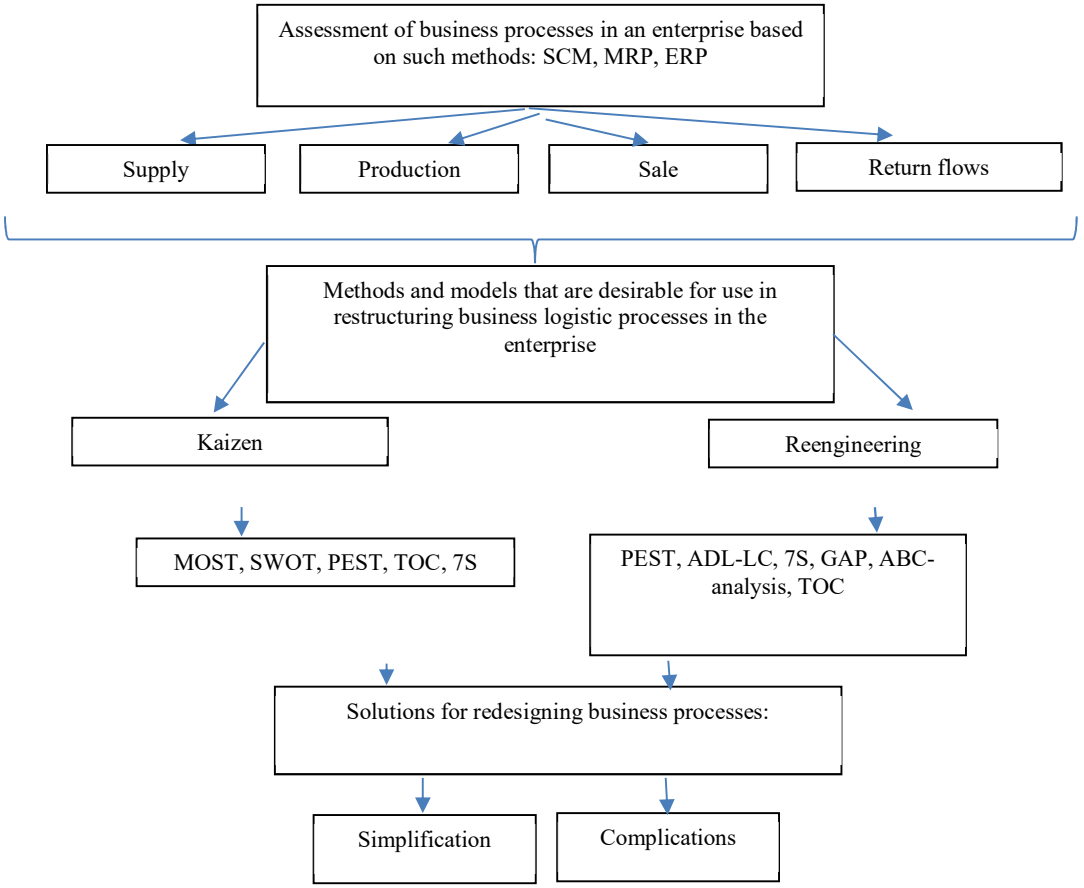
IV. INTEGRATION OF MANAGEMENT CONCEPTS IN LOGISTICS CHAIN.

Integrated solutions, as mechanisms strengthening the synergistic effects of cooperation within the analyzed business processes, help to solve both the most critical problems and areas in which the changes are aimed at achieving a more significant competitive position of the enterprise (Gray,Skowronski, Esenduran., Rungtusanatham 2013, pp. 27-33).

The management concept integration process uses a combination of different tools, both Kaizen approaches and reengineering, to improve flow management in the supply chain (Figure 4). In particular, using the Kaizen method, MOST, SWOT, PEST, TOC, and 7S analyzes can be used. For example, SWOT analysis allows to identify weaknesses and strengths of an enterprise, its opportunities and threats in the process of functioning on the market; and PEST analysis focuses on macro factors that must be predicted and which are virtually impossible to influence; TOC helps reduce quantitative system threats and effectively build alternative models of logistic business processes with greater efficiency. The MOST

approach is based on a gradual transition to change planning processes (from M - mission; O - goals; S - strategy; T - tactics); The 7S model envisages streamlining business processes based on the following stages: strategies, skills, values, organizational structures, systems, style and staff.

FIGURE 4. INTEGRATION OF MANAGEMENT CONCEPTS TO IMPROVE FLOW MANAGEMENT IN THE SUPPLY CHAIN



Source: Author own elaboration based on: (Petryk I., 2017, pp. 189-198; Petryk I., 2016, pp. 53-68)

In the context of reengineering, the following tools can be used: PEST, ADL-LC, 7S, GAP, ABC analysis, TOC analyzes. In the case of PEST, 7S and TOC, engineering tests assume the same sequence as in Kaizen processes, but the rate of change is much faster and more radical. ADL-LC is a matrix used for multivariate analysis and selection of appropriate strategic decisions; GAP - analysis aimed at reducing the level of differences between the plan and the fact of introducing changes in the enterprise; ABC analysis based on Pareto rule that identifies the key 20% of all the changes that can make a positive change in the company's business processes 80% of all potential results of the implementation. The proposed integrated solutions will facilitate the transition to advanced or newly created logistics processes.

V. CONCLUSION

The implementation of integrated logistics systems is aimed at: effective supply chain management and integrated flow of logistics services; analysis, regulation and optimization of logistic business processes; the possibility of introducing modern methods of managing logistic business processes ("economic production", "six sigma", "comprehensive quality management", statistical process management, etc.), integrated on the basis of information technologies; improvement of logistics service standards based on the definition of quality parameters and the time of logistics services implementation, customer segmentation according to their requirements, assessment of services provided in the context of the given parameters; monitoring the efficiency of logistics services; outsourcing of inefficient or non-basic enterprise services; shortening the duration of the logistics cycle; optimization of stocks of all kinds of resources and finished products; improving the efficiency of streaming processes; supply chain optimization.

The redesign includes the search for unmodified variants of the existing state and a radically modified process that will provide the company with real, tangible development.

All logistics engineering programs combine four common features. First, the goal is to increase the level of integration of

some or all aspects of the activity under consideration. The analytical basis of integration are the principles of system analysis. Secondly, a key element of the reorganization is a critical comparison of the existing system with best practices and the adoption of best practices. Thirdly, to achieve the desired integration effect, it is necessary to spread the appropriate actions. This requires an assessment of performance and cost of operation. Finally, redesigning requires constant work on improving quality.

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