

## METHODOLOGICAL PRINCIPLES OF INTERACTION OF REGIONAL TRANSPORT AND LOGISTICS SYSTEMS IN THE PROCESS OF SPATIAL TRANSFORMATION CHANGES IN THE ECONOMY

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*The formation and development of the distribution system at almost all production and sales enterprises and in trade and intermediary organizations belong to the category of strategic tasks that ensure the success of their progressive development in market conditions of functioning. To date, the number of scientific and special studies to study the distribution of products and services is sufficient. However, certain inconsistencies in the conceptual apparatus of the distribution system require an in-depth theoretical study. In particular, the elements of the logistics system, the process of their formation in the distribution system, and the issues of rational organization and management of sales at different levels of product distribution require more detail. The concept of the entire life cycle of the process is defined, and when comparing the latter's features with a one-time project, the need to allocate more time for the implementation of the planning stage is revealed. A review of the existing procedures made it possible to classify them according to the nature (content) of the functions performed, the degree of formalization, the degree of complexity, the nature of the combination in time, and the degree of repetition. The quality management system (QMS) is considered. It is determined that the QMS documentation following the ISO 9000 series standards contains the implementation of a specific list of mandatory procedures and a description of the logic of their interaction; at the same time, the regulatory standards are advisory and do not strictly limit the ways of carrying out the organization's activities, which allows the latter to develop the necessary system of documents depending on its parameters.*

*The similarity of the logic of constructing methods of modeling business processes and their application allows us to consider them as a single group of modeling tools and necessitates the creation of universal tools. The results of theoretical and methodological studies and methodical developments could contribute to developing a distribution system of final finished products produced by domestic manufacturers operating in conditions of fierce competition.*

*Keywords: transport and logistics system; Documenting; documented procedures; procedural approach.*

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### INTRODUCTION AND STATEMENT OF THE PROBLEM

The development of organizations in an environment that ensures progressive economic development encourages them to turn to existing management approaches and rethink them, focusing on the procedural representation of the process, which allows for developing, optimizing, and implementing complex dynamic sequences of events that cover all types and forms of organization.

The progressive development of this approach is based on the ever-growing need for selection and representation, positioning, and interaction of process elements in their presentation and use in typical programming procedures. This is due to the complication of the organization's management systems, the need to meet the requirements for ensuring the formalization and transparency of processes, the development of software products implemented on a logical and procedural basis, and their widespread adaptation and implementation.

Despite these problems in the description of processes, and mainly due to them, the critical aspect of modeling is the need to deepen the systematic and integrated approaches to representing the interaction of the processes of the organization's functioning. This is particularly important in managing a transport and logistics organization, which covers all areas of its activities and is designed to ensure flexibility, modularity, and the possibility of changes, research, and procedures for developing any processes.

Thus, in the management, scientific research, and scientific and technical development of CLW, the input and output parameters must be sufficiently defined and require in-depth research due to the diversity due to numerous cycles, the need to comply with different conditions, etc.

In such situations, of particular importance is the formation of an approach to the construction and organization of processes, in which it is possible not only to organize the activities of enterprises optimally but also to prevent even insignificant and unlikely changes in the course of processes with a high probability; An organizational opportunity to reduce or eliminate the negative consequences of transport processes is envisaged.

The following scientists were interested in the issues of interregional interaction of transport and logistics systems: E. Krykavsky, T. Larina, L. Myrotyn, O. Mytko, Y. Nerush, G. Razumova, and others. Analyzing professional research in transformational economic shifts allows us to identify a wide range of problems that remain unnoticed by scientists.

**The article aims** to substantiate the essence of the interaction of transport and logistics systems at the interregional level and to determine the aspects of the procedural approach to their modeling.

### PRESENTATION OF THE PRIMARY MATERIAL OF THE RESEARCH

The whole life cycle of a process is understood as a period during which the process goes through successive stages of its development from the moment of occurrence, due to the need for its creation, to the moment of its completion, accompanied by the preparation of documentation, fulfillment of obligations under the process, as well as the elimination of the most dangerous residual consequences. The life cycle of the process implementation is defined by the period from the start of the implementation of a new process, helpful use,

creation of documentation on the actual course of the project before obsolescence and complete cessation of its use [1].

The main stages of the formation process of regional transport and logistics systems (CLW) are presented in Fig. 1.

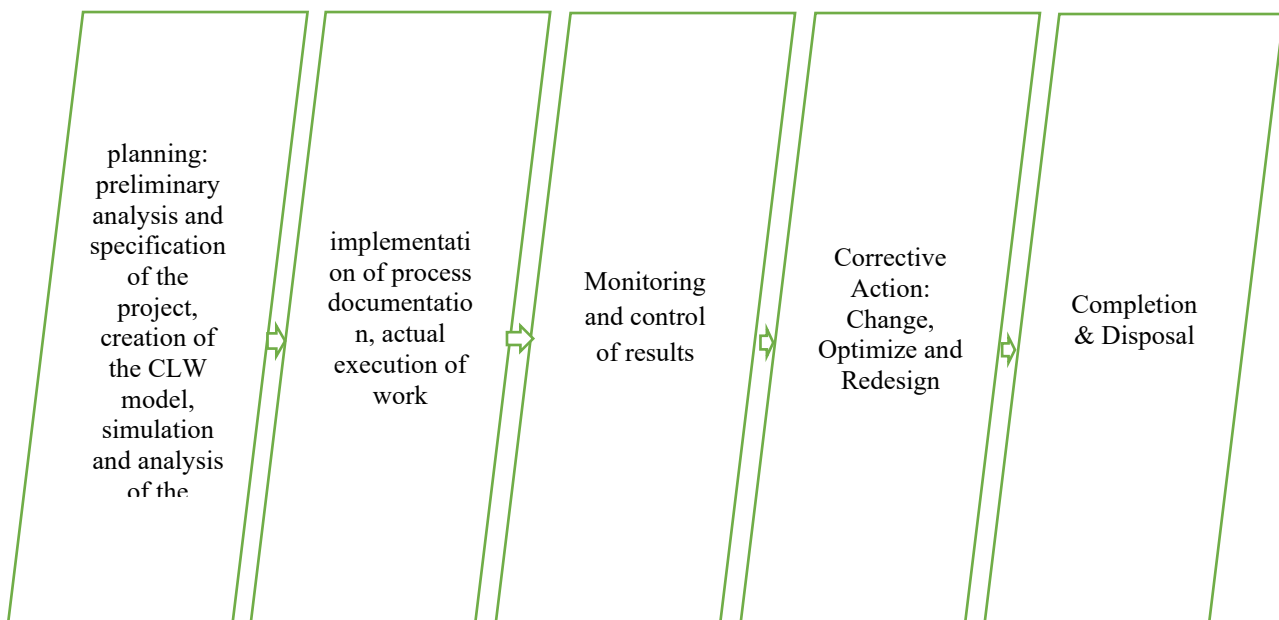


Fig.1. The main stages of the process of formation of regional transport and logistics systems

When comparing the life cycles of a frequently implemented process and a one-time project, the need to increase the duration of the planning stage is identified, which will increase the efficiency of their implementation.

The procedure is understood as the established documented method of ensuring the implementation of the process, which regulates the procedure for actions aimed at ensuring the implementation of work on forming a regional CLW, as well as the forms and methods of monitoring the results. The main structural components of the procedure include the initiation of the event as an impetus for the creation and/or implementation of the procedure, task, Status (status identification), Operation, Condition, direction, and Transition. It can be noted that the formation of procedures (CLW model) precedes the implementation of the process, having compared the life cycle of the process and procedures in terms of composition. Based on this, the following dependence can be distinguished: models of the possible course of the process appear before the emergence of the real process, change and improve as new conditions and new technologies arise, are the subject of analysis before and after the beginning of the real process, can be the constructive basis for the development and implementation of a new process.

A review of the existing classifications of procedures is carried out by the nature (content) of the functions performed, the degree of formalization, the degree of complexity, the nature of the combination

in time, and the degree of repetition [2, 3]. Of particular importance is the allocation based on the 9001:2000 standard of "six mandatory documented procedures" (document management, records management, internal audit, management of non-conforming products, corrective actions, preventive actions) as a "preliminary classification", separation of areas of use of sets of procedures for different purposes, subsequently combined into standard procedural modules. Studies give reason to predict the need to work out the components and determine the mechanism for constructing models of CLW processes, which can flexibly adjust the process in each case.

To analyze the procedural interaction, it is worth highlighting the following methods and standards for describing the models of the organization's processes: the organization's quality management system, functionally oriented models (for example, DFD – data flow diagrams and the IDEF family of standards), object-oriented models (for example UML language, ARIS technology, integration of modeling tools using BPMN notation), the method of calendar-grid planning [2].

In our opinion, special attention should be paid to such aspects as the logic of procedural interaction and reflection of the controlling influence, the reflection of the boundaries of functionality, levels of modeling (decomposition of the model, the essence of decomposition levels), the possibility of expanding the model; the presence and reflection of procedural elements in the standard (state, operation, transition, condition, direction); reflection by the model of different points of view on the process from the standpoint of different categories of participants in the process (users of the model); creation of initial databases on processes and storage of process results; Can be combined with other methods.

Considering the quality management system (QMS) [2, 4], which is a textual description of the organization's processes, it should be noted that the QMS documentation, following ISO 9000 standards, contains the implementation of a specific list of mandatory procedures and a description of the logic of their interaction; the standards governing the QMS are advisory and are not a strict restriction on the ways of carrying out the organization's activities, allowing you to build a system of documents depending on the parameters of the organization.

As for the available graphical modeling tools (DFD – diagrams, IDEF standards, object-oriented models (UML language, ARIS technology, BPMN notation), designed to describe and implement business processes using the software used by the organization, it should be noted their existing limitations, which are both a property of the modeling tools themselves and the software that implements these tools, as well as the conditions accepted by the user for a specific use. Often, constraints are subjective and depend not only on the specifics of the activity but also on the experience of the people who design and implement the system [5].

Typical disadvantages of modeling tools are the following:

1) the need to impose certain contextual constraints on the model (adaptation of the model following the situation user requirements). Before use, methods require imposition. In some cases, such a refinement is envisaged by the modeling tools themselves (for example, language profiles in UML); when using models, an additional textual description is required in terms of aspects not provided by the selected modeling tools or the use of additional methods;

2) impossibility of displaying the time aspect in the model (do not allow to analyze the course of the process in "real-time");

3) the software created based on modeling standards inherits the above properties of models, supports well-structured routine procedures (for example, document management, accounting, and inventory accounting), and can support procedures typical for a particular organization, but there is no unified procedural apparatus. On the other hand, it allows you to make them flexible for specific needs.

Presentation and evaluation of the general characteristics of methods for modeling business processes allow us to conclude that, despite the differences in the practical implementation of the listed technologies, the undoubted similarity of the logic of their construction and application allows us to consider these methods as a single group of modeling tools and leads to the need to create universal tools.

The characteristic of calendar and network planning systems, which do not implement in their methodological support an adequate configuration of the system for a particular user, is one of the examples of the need to apply a procedural approach and actualize the task of its development. These procedures will make it possible to determine not only the content of the models (organizational structure, composition and calendars of work and resources, composition and characteristics of connections) but also the differentiation of access and capabilities of users, the sequence of data entry, the sequence and frequency of changes, uniform formats for providing information, and other parameters. This is especially true for large CLW projects, where many employees use such a resource to obtain information about the project [6].

The decision in substantiation and application of the procedural approach, the main provisions of which are: establishment of a matrix relationship between the procedures and processes of the organization; allocation of basic procedures, which are the basis for the development of a variety of procedural structures; ensuring and purposefully using the advantage of the number and variety of procedures over the number and variety of processes; organization of the beginning of the life cycle of procedures before the start of the life cycle of a process/project and its continuation after the end of the life cycle of the process/project; setting the procedure as a basis for organizing and conducting control; implementation of procedural modeling in the format of constraints on the safe/economic course of the process.

The classification of procedures reflects and is determined by the following parameters:

- the functional purpose of the composition of the elements included in these procedures
- the presence of sets of admissible options for interaction, reflecting the limitations of the joint implementation of elements
- the complexity of the combination and the order of functioning of the sequence of structural elements

Based on the parameters, the content of a single set of procedural classifications and possible connections between its elements are determined.

Therefore, synthesis procedures are vital in developing and implementing all procedures. This implies the need to prioritize the entire procedural approach towards them. The allocated significance of the synthesis procedures (establishment of connections) is because, with their help, various types of connections between objects are established, the subordination of objects, the direction of the controlling influence, and the direction of information flows are determined.

Despite the commonality of the considered mechanism for constructing procedural models for various transport and logistics processes, it is possible to identify some features of modeling that reflect the advantages of the use of a particular set of procedures and the links between them, depending on several factors that should be taken into account when organizing CLW.

Here, applying the series-parallel and feedback (cyclic) mechanism in procedures is necessary. The existence of all possible connections, including feedback, is not necessarily economically or organizationally justified and depends on various factors. However, the specified combination of connections can be carried out in full.

In order to study and evaluate the formation of features of the composition and application of procedures at different stages of the process of formation of CLW, various models of procedural organization of the process can be considered, macro procedures that ensure inter-process interaction are allocated, the factors that determine the functional composition of a particular stage of the process of creating CLW should be studied, the influence of the organizational structure should be disclosed [7].

## CONCLUSIONS

The current state of affairs and the harsh conditions of competition of domestic producers require the search for new ways to increase the competitiveness of both enterprises and their products. One of these ways, along with marketing activities, is using logistical approaches to product distribution management.

It should be noted that logistics costs play an essential role in the implementation of the process of movement of goods, especially in the regions of our country. The solution of problems should be carried out through the optimization and rationalization of sales processes and depends primarily on the manufacturer's activities of the final finished product and the state of the intermediary environment of a particular commodity market. At the same time, along with the price factor, market entities' geographical location significantly impacts distribution processes. Therefore, to solve the problems of production distribution, it is necessary to use marketing and logistics tools jointly.

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## МЕТОДОЛОГІЧНІ ЗАСАДИ ВЗАЄМОДІЇ РЕГІОНАЛЬНИХ ТРАНСПОРТНО-ЛОГІСТИЧНИХ СИСТЕМ В ПРОЦЕСІ ПРОСТОРОВИХ ТРАНСФОРМАЦІЙНИХ ЗМІН В ЕКОНОМІЦІ

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*Формування, становлення й розвиток системи розподілу практично на всіх виробничо-збутових підприємствах і в торговельно-посередницьких організаціях належать до розряду стратегічних завдань, що забезпечують успіх їх поступального розвитку в ринкових умовах функціонування. До теперішнього часу кількість наукових і спеціальних досліджень, спрямованих на вивчення розподілу продукції й послуг, цілком достатні. Однак певні неузгодженості в понятійному апараті системи розподілу вимагають поглибленого теоретичного дослідження. Зокрема, потребують більшої деталізації елементи логістичної системи й процес їх формування в розподільній системі, а також питання раціональної організації й управління збутом на різних рівнях розподілу продукції. Визначені поняття повного життєвого циклу процесу, а при зіставленні особливостей останнього з разовим проектом виявлено необхідність у виділенні більшого часу на реалізацію стадії планування. Огляд наявних процедур дозволив класифікувати їх за характером (змістом) здійснюваних функцій, ступенем формалізації, ступенем складності, за характером сполучення в часі та ступенем повторюваності. Розглянуто систему менеджменту якості (СМЯ) та визначено, що у документації СМЯ відповідно до стандартів ІСО серії 9000 закладена реалізація певного переліку обов'язкових процедур і опис логіки їх взаємодії, в той же час регламентуючі стандарти носять рекомендаційний характер і жорстко не обмежують способи здійснення діяльності організації, що дозволяє останній напрацювати необхідну систему документів залежно від її параметрів.*

*Подібність логіки побудови методів моделювання бізнес-процесів й застосування дозволяє розглядати їх як єдину групу засобів моделювання й обумовлює необхідність створення універсальних засобів. Із значено, що результати теоретико-методологічних досліджень і методичних розробок могли б сприяти розвитку системи розподілу кінцевої готової продукції, виробленої вітчизняними виробниками, що функціонують в умовах жорсткої конкуренції.*

*Ключові слова:* транспортно-логістична система; документування; документовані процедури; процедурний підхід.