

*conception of logistic, transport systems,  
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## LOGISTIC CONCEPT OF OPTIMIZATION OF THE TRANSPORTATION SYSTEM

Concept of logistic and its adaptation for the conditions of the transport systems is investigated. Characteristics and estimates of market of transport services are summarized. Conditions and factors of forming strategy of transport organization are laid out. Organization transformation perspective is grounded in the logistic company. Dependence of component of logistic charges and place of transport charges in them is investigated.

## KONCEPCJA LOGISTYCZNA OPTYMALIZACJI SYSTEMU TRANSPORTU

Przedstawiona została koncepcja logistyki i jej adaptacja do warunków systemów transportu. Podsumowano charakterystykę i szacunki rynku dla usług transportowych. Przedstawiono również warunki i czynniki tworzenia strategii organizacji transportu. Perspektywa transformacji organizacji opiera się na firmach logistycznych. Została zbadana zależność składnika opłat logistycznych i miejsce opłat transportowych.

A relatively new term of telematic interprets as the application of TV communications and informative technologies in a definite industry with the purpose of authentication separate objects. In such understanding industry of transport, for which authentication of freight units position in space and time is so important, that allows managing the processes of movement in real time, i.e. to control, monitor and regulate them. In [1] of the principle evaluation of subject influence on logistics is presented, paying attention on transport processes. Authors in

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stated below material consider logistics considerably wider, plugging in research of problem of supplies, production, distribution etc.

The moving of material welfares in the space and in the time is one of the key functions of logistics, that causes perceptible grows value and utility of commodity for a client. It increases the utility of place and the utility of time, created in the process of the shipment. At the same time, it grounds the dependence of transportation costs and other logistics costs, foremost costs of supplies, packaging, warehousing etc. these are the reasons for the obligatory consideration of all constituents of logistics conceptions in the forming of transport logistics conception, i.e.:

- first, the system thinking: every transport process is a component part of general transport process and a constituent of general (complete) logistics process;
- secondly, the thought by total costs: the optimization of transportation costs is the suboptimum decision only, as in a close interdependence with them is no less substantial other constituents of logistics costs are found;
- thirdly, the thought by the categories of utility, every transport process has to add the value for a client, consequently, to become more useful taking into account approaching of space and time parameters of commodity to similar parameters of demand;
- fourthly, the thought by the categories of service: the logistics function of transporting will be realized in the coordinates of “an expenditure – the level of service” that means an achievement of the greatest level of service in the accordance with the accepting level of charges;
- fifthly, the thought by the categories of efficiency foresees the optimization of the correlation of “an expenditure – the utility of the service”.

Obviously, that the plenitude of the realization of the transport logistics conception will rely of the level of consideration of the descriptions in acceptance of logistics decisions in the relation to the management laid out by the shifting of material welfares. However, in any case it is necessary to follow the description of a system thought as in a relation to formulation of the strategy, hook and its realization in the process of organization of transporting, adhering to an absolute hierarchy.

The conception of logistics in transporting in the conditions of growth of global processes becomes especially actual, as not only transport but also wake-house charges grow substantially. Therefore the conception of complete charges induces to the search of reduction sources of expenditures in other spheres of logistics, production, distribution activity with that to compensate such growth and constant Status Quo between charges and level of customer service. In other words, speech goes about the search of effective relations trade off. At the same time, the narrowing of limits of optimization of charges only to the sphere of transporting substantially diminishes the changes of acceptance of decisions accepting by the user of eventual products.

Taking into account the valuable introduction of logistics conception in a sphere laid out transporting requires research:

- the market of transport services as the description of suggestion;
- the spheres of delivery, distribution, trade, production and others like that the descriptions as of demand;
- macroenvironments as the descriptions of terms of cooperation of demand and supply are at the transport market.

Consequently, the market of transport services is the component part of economy of the country and as every other market is characterized by a model “the suggestion – the demand –

the price". However, thanks to high substitution of transport favour is not impossible to identify the market of definite transport firm with the definite type of transport. Therefore such descriptions as a rate of growth of market, elasticity of demand, at the transport market is not impossible simply to estimate the level of concentration.

So, after the dynamics of the loads transportation in the USA for a period from 1940 to 1993 there is an absolute stable growth of goods turnover on a railway, motor-car and air transport, however the part of railway and water transport has a tendency to reduction, and the part of motor-car and air – to growth. Thus still more contrasting the structure of charges after the types of transport looks: in 1993 in the USA on a motor transport was 78,5%, on a railway – 7,9%, on air – 4%, water – 5,3%, pipeline – 2,2%. The resulted estimations showing the presence of a substantial range of rates of growth of market in the relation to the types of transport that heterogeneity of elasticity of demand. The last expression goes out also and from estimation of type of market of transport services, which can be monopolistic, oligopolistic, with monopolistic and free competition. By estimation in [3,s.136], for example, a railway can be a transport monopolist in the definite range of services, in the definite place etc., marine transport, aviation – can be oligopoly, international motor-car transportations – example monopolistic competition, an automobile transport is close to the markets with free competition.

Particular transport markets are also characterized by large differentiation of barriers of entrance to the market, foremost in the relation to access to the capital, to the channels of distribution, experience, administrative barriers (permissions, licenses, concessions, price regulators), and also differentiation of level of concentration, which on the whole is high enough.

From the given four descriptions of market in a most measure identify the type of market of "coordinate" of barrier of entrance and price elasticity of demand is identified, given in [3,s.139] with the help of such matrix:

Price flexibility of	High	Free competition	Monopoly
	Low	Monopolistic competition	Oligopoly
		Low	High
The barriers of entrance			

Fig.1. Transport markets

The positioning of transport markets in the parameters of given matrix requires analytical estimations of price elasticity, concentration, factors of demand and suggestion. Therefore we will lay out such estimations in the relation to every type of transport.

Traditionally that or other type of transport can be estimated after such parameters:

- spatial availability;
- vehicular fitness (the type of commodity, the weight of commodity etc);
- the level of market concentration (market structure);
- the level and structure of transport charges;

- the profit of transport;
- the speed of moving;
- the reliability;
- defense of commodities;
- the integration fitness;
- the legal form.

After these and other substantial parameters the types of transport are so appraised.

Table 1

Comparative estimation of types of transport on basic criteria

Criteria of estimation	A kind of transport				
	Railway	Motor-car	Water	Air	Pipeline
Charges	3	4	2	5	1
Time of transportation	3	2	4	1	-
Reliability	2	1	4	3	-
Vehicular fitness	1	2	4	3	5
Spatial availability	2	1	4	3	-
Safety	3	2	4	1	-
Middle income, cents on tone-mile (1993)	2,52	24,30	0,735	45,11	1,526

Based on that the transport system is the inalienable constituent of the logistics system, and it requires the proper concordance already at the stage of the strategy forming. Such understanding is identified, first, by the consideration of transport strategy only one of the functional strategy, secondly, by the consideration of transport strategy by the constituent of logistics strategy of organization, thirdly, by the transformation of transport favour in ma logistics product.

Actuality of the integration of participants of logistics channel mutates essence of communications of ferrymen with other links of logistics chain. From the position of customer service transport expenditure – substantial constituent of complete charges, time of transportation – substantial constituent of term of ordering fulfillment, time and reliability of delivery – substantial factor of level of supplies, consequently and the level of customer service. The list of similar relation can be continued. However this is important, foremost, at the level of the strategy forming, that will allow to evade definite part of depend trade-off at an operating level.

In the relation to any outlined logistics system always it is possible to build the hierarchy of strategies on principle: corporate strategy – logistics strategy – transportations strategy.

At the same time any ferrymen as the element of suggestion of the transport market is, with the purpose of pleasure to the transportation strategy of the customer as to the element of demand at the transport market, forced to harmonize the corporate strategy with logistics strategy of customer. Process of harmonization how the process of change of strategy carrier can be given by means two vectors:

- the vector of change of position;
- the vector of the development of facilities of organization.

The position of transport organization can be definite by estimation:

- the range of services, that are given at the market;
- the range of services, that organization gives;
- the range of maintenance of loads;
- the spatial range of service.

Obviously, that the first factors determine the level of specialization or universality carrier, two next-scales of activity: market, segment. At the transport market the strategies are effectively used of narrow or wide range.

In accordance with the parameters of position of organization its facilities are to be placed, that is concentrated and arranged at the market of transport services.

According to the model of M. Porter in [3,s.142] the given such variants of competition strategies of organization.

Directed on ↓	→	Existent necessities of clients	New necessities of clients
Strong sides of organization		Very strong competition	Competition between investors
Weak sides of competitors		Weak competition	Absence of competition

Fig.2. Competition strategy of organization

The given matrix of variants identifies possible two alternatives of actions:

- gaining of competitive edge by the offensive on the strong sides of competitors or gaining of her thanks to advantage in relation to the weak sides of competitors;
- concentration of efforts on the existent necessities of clients or on the new necessities.

In obedience to these alternatives it is possible to select four alternative strategies of transport organizations:

- attack of the “strongest trump”, for example, low price within the limits of the existent necessities;
- the use of weak side of competitor, for example, unreliability of deliveries, within the limits of existent necessities;
- the competition in the sphere of new necessities of clients by the attack on the strongest sides, for example, at the grant of standard logistics services;
- the competition in the sphere of new necessities of clients by the use of weak sides, for example, the adaptation of logistics services package to the specific lines of strategy of clients.

The theoretical bases of forming of strategies laid out, existent tendencies in development of transport markets allow to generalize the tendentious changes in strategies of ferrymen and outline the spectrum of actual strategic priorities.

Above all things, heading is the base tendency of changes in strategies of development of ferrymen for logistics strategy as general (corporate) strategy. It means that, first, every carrier is to consider the market of transport services (transport, expeditionary, insure, packing, informative etc.) is, secondly, the same carrier, extending the sphere of the jurisdictions, is transformed in logistics organization. True, in concrete case, above all things

in Ukraine, in other countries of CIS hook the transformations ends only with the change “signboards”, to the change of philosophy, to strategy the business does not reach.

The other aspect of tendentious changes, the distribution of logistics conceptions in practice of activity of productions organizations generates the speed-up forming of demand at the market of logistics services.

Forming the strategy of ferrymen is to be based on two basic principles: hieratic and integrating.

Schematically it is possible to give so.

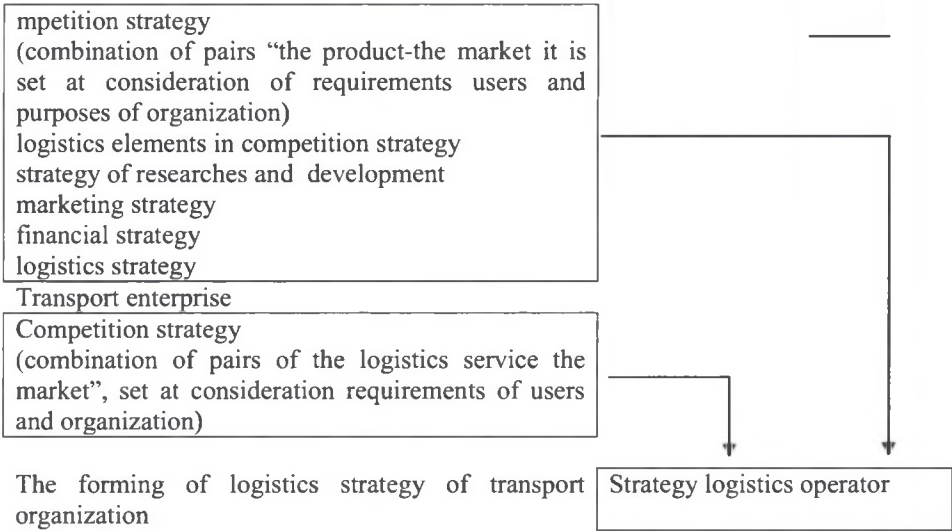


Fig.3. Production, distribution and auction enterprise

After such chart the efficiency of logistics strategy of carrier can be appraised by the payment of his logistics favour in forming of chain of cost for a client.

By the estimation of experts, the market of logistics services is more perspective, than the market of transport services, as scopes to growth of level of customer service has not. Out of that, the barriers of entrance to the market of logistics service are considerably higher, however, profitability are higher too. It is explained by the appearance except for traditional two sources of growth of profitability-demand and scale, third animated source, identified in the theory of logistics as an effect of synergy, to the generation of which a carrier thanks to the integration of actions with all participants of logistics chain.

The effect of synergy in logistics one the chain of deliveries can be interpreted foremost as a result of authentication and elimination of conflict of partial purposes and avoidance of suboptimum decisions of participants of logistics chain.

The evident classic example of removal of conflict of purposes (conflict of charges) are:

- a) between a producer and a carrier: production of goods with the greatest logistics fitness to moving;
- b) between a carrier and distributor: the use of technology of moving only with the minimum possible number of loading –unloading;

- c) between a supplier, producer, carrier and distributor: achievement of even material stream, that is proportional equality of parties of deliveries on all links and removal thanks to it groundless (superfluous) supplies.

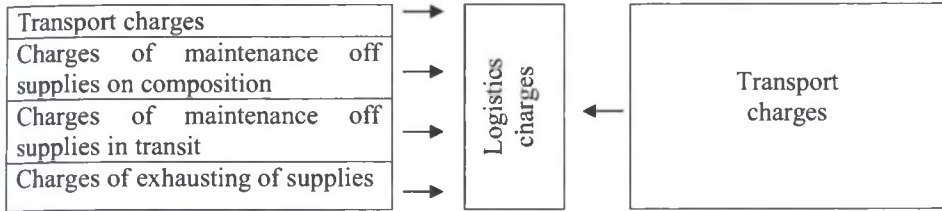


Fig.4. Dependence of "trade-off" component logistics charges

In the mentioned index of specific charges of capital, that is used for computation of charges of maintenance of supplies, the concentrated influencing of efficiency of other spheres of economic activity, alternative in relation to the transportation of materials for addition to the supplies is such how financial, marketing activity, development and research. It means by the language of numbers, that the specific charges of capital for computation of charges of maintenance of supplies can be accepted at the level of 25% in relation to the cost of supply, if, for example, the use of facilities in financial activity guaranties to a 25% profitability.

#### Conclusions

The laid out is argued by the expedience of transformation of the systems of the transportations in the logistics systems or their parts, that will result in:

- radical change of philosophy management by a transport (system thought);
- reduction of the quantity of ferrymen able to provide the accepting level of service (thought by the categories of service);
- active negotiations with the carrier in the relation to achievement of optimum relatsiy of charges and results (thought by the categories of efficiency);
- is making agreements with ferrymen with the purpose of removal of conflicts having a special purpose (thought by the category of complete charges);
- the widely applied consolidation of loads and monitoring of service quality.

#### Resume

The conception of logistics and its adaptation to the transport systems is investigated by descriptions and estimations of transport market services are summarized . The terms and factors of forming strategy of transport organization are presented. The perspective of transformation of organization is grounded in the logistics companies. It is explored component of logistics costs and the place of transport charges are investigated there.