

МОДЕЛЬ ВИБОРУ ЛОГІСТИЧНИХ СТРАТЕГІЙ В УМОВАХ КРИЗОВОГО СТАНУ ПІДПРИЄМСТВА

MODEL OF LOGISTICS STRATEGIES' SELECTION IN CONDITIONS OF CRISIS STATE OF ENTERPRISE



Ігор КРИВОВ'ЯЗЮК,
кандидат економічних наук,
Луцький національний
технічний університет

Igor KRIVOVYAZYUK,
PhD in Economics,
Lutsk National
Technical University

Юлія КУЛИК,
аспірант,
Луцький національний
технічний університет

Yuliya KULYK,
Post-graduate student,
Lutsk National
Technical University



The modern economy creates many problems and contradictions that are causing permanent imbalances in system of modern enterprise's functioning, it cause the emergence of crisis state. On the other hand, enterprise is not quite perfect system, it always has constant striving for development thus it isn't able to combine the necessary resources so that constantly receive synergy's effect, this also creates crisis state at a certain stage of its life cycle. The presence of synergy effect in enterprise activity is often associated with logistics system's functioning.

Essential meaning for any enterprise, that wants to improve the existing logistics system, has selection of behavioural strategies of enterprise in order to optimize its activity to ensure reliability system's functioning as a whole. Moreover, according to the results of research conducted by one of logistics consulting firms in Poland in 2012, the impact of logistics on firm's strategy in 9.6% is defined as crucial, in 41.7% as very important and 35.0% as medium impact (Bartosz Jacyna, 2012).

Lot of enterprises attempted to optimize business during the crisis thus they abandoned their own logistics, preferring to outsourcing, because under the influence of the crisis there was a significant decline in profitability of logistics projects. However, it didn't allow optimizing costs, and in many cases only reduced the efficiency of functioning, because services of outsourcing cost a lot. Another reason for deterioration situation was violation of optimization of interaction of logistic system's units of enterprises in conditions of increased pressure of internal and external environment factors, especially between systems of production and marketing of products. Emergence of crisis states in activity of some enterprises demonstrates the need for implementation of anti-crisis approach to organization of logistic processes' management on enterprise.

First of all, in order to do this, proper strategic level of logistic processes' management should be ensured, because it establishes a system of targets and directions of logistics' development of enterprise and the evaluation principles of business-processes. Considering general corporate strategy, enterprises form portfolio of functional strategies. Logistical strategy, as one of functional, reflects direction of general strategy's realization by using the tools of logistic management. Logistical strategy defines development of logistics that affects the forms and means of its realization on enterprise, inter-functional and inter-organizational coordination and integration.

Many domestic and foreign scholars were engaged research of processes of logistic strategies' formation (Krykavskyy Y.V. (2009), Larina R.R. (2005), Pavlenko T.V. (2002), Pospelyelov A.M. (2009), Redka V.S. (2012), Trydid A.M. (2008), Chromov O.P. (2010), Christopher M. (1999), Czeselski M. (1999), Kisperska –Moroń D. i Krzyżaniak S. (2009).

Each of the scientists deeply researched the formation and implementation of logistic strategies in different conditions and for different circumstances, but solving the problem of their use in crisis state at the enterprise remained unattended. Due to this additional importance has to examine issues of typing of logistic strategies and choosing the optimal one, in circumstances where enterprise is in crisis state.

Purpose of this research is development and realization of management model of logistics development of enterprise which takes into account crisis phenomena at enterprise and allows carrying out selection of optimal logistic strategy.

According to Anthony Di Benedetto (1999, p. 530), logistics plays a key role in the successful strategy of development, so to it should be given proper attention from the side of management personnel.

Logistic strategy – is one of functional strategies of enterprise (along with production, financial, marketing, strategy of development, etc.) that is identified in logistic systems and is based on such objectives: optimization of inventory level, minimization of time moving materials and products, ensuring high level of logistics service, ensuring minimum accepted level of total costs in logistics channel (Redka V.S., 2012, p. 188). It is long-term, quality determined direction of logistics' development; it is related to forms and means of its realization at enterprise, inter-functional and inter-organizational coordination and integration; it is formulated by top management of the company in accordance with corporate goals.

Y.V. Krykavskyy emphasizes the importance of systematic approach to formation of logistic strategies that have to be linked with other functional strategies and match optimal realization of enterprise's competitiveness strategy, and also cover all areas of enterprise's activity. In his opinion, implementation of logistic strategy requires ensuring following conditions (Krykavskyy Y.V., 2006, pp. 208-211): presence of general-corporate strategy and supportive strategies;

possibility of formation of size and structure of production (sales) for logistics requirements; presence of vertical integration of logistics' areas of enterprise; presence of structure of supply, production and distribution that focuses on material flows; conformity of management systems and information; conducting relevant measures to improve the efficiency; conformity of enterprise's automation level, movement of goods and information.

The main essential feature of logistic strategy is purposefulness and its purpose is to build an organization capable of successfully run, overcoming unforeseen circumstances, challenges of competition, internal problems and to get all the new positions in the market.

Logistic strategy of low costs can be distinguished through considering logistic strategies, it accompanied by standardizing processes that allows achieving thrift of production.

Статтю присвячено вирішенню проблеми теоретичного та методологічного обґрунтування вибору логістичних стратегій в умовах кризового стану підприємства. Запропоновано модель управління логістичним розвитком підприємства залежно від ефективності управління логістичними процесами та глибини кризового стану на підприємстві. Розкрито сутність обраних стратегій для кожного з квадрантів стану логістики. Результати моделювання представлені на прикладі підприємств харчової промисловості України.

The article is dedicated to solving the problem of theoretical and methodological justification of the choice of logistics strategies in conditions of crisis state of enterprise. Model of management of logistic development of enterprise, depending on efficiency of management of logistics processes and the depth of crisis state in the enterprise is suggested. Essence of selected strategies for each of quadrants of logistics condition is revealed. The results of modeling are presented on the example of food industry enterprises of Ukraine.

Standardisation' subjects are not only individual products, their elements, components, raw and materials, but also documents, procedures, organizational structures, etc., that all together provide decrease in costs of logistical systems. One more strategy that affects costs reduction of logistic systems is logistic strategy of differentiation, it and marketing strategy of development and formation of needs of potential users are alike, and it also forms logistic systems of products' location in some place and time where and when it is needed. In general, variety of forms and conditions regarding the level of logistic management makes it impossible to formulate logistic strategies' types, but they can be differentiate according solving basic logistical problems (Redka V.S., 2012, pp. 189-190): strategy of functions' and processes' integration; consolidation strategy (transport, storage, inventory); reduction strategy, that is elimination of stocks; strategy of cycle reduction; strategy of customer service differentiation; strategy of cooperation in relations «supplier-consumer»; logistic outsourcing; strategy of logistic innovation.

There are four main directions of development of logistics strategies in business in foreign practice (Czeselski M., 1999, p. 50): contracting (traditional) logistic strategies; logistic outsourcing; logistic partnership; direction of fast cycles and integration of supply chain.

V.I. Sergyeyev (2005) offers to divide logistic strategies on several grounds into 4 groups: minimization of general logistic costs, improving quality of logistic service, minimization of investment in logistic infrastructure and logistic outsourcing; in which he outlines ways of their realization.

Logistic strategies are based on maximizing or minimization of one key indicator. However, it is necessary to impose restrictions on other, important in terms of company' strategy, indicators. For strategy of minimization general logistic costs as such indicator will be quality of logistic service. In general case – the higher demands of consumers for quality of logistic service, the higher logistic costs, that provides this level, should be. Therefore, natural restriction is to limit base level of quality of consumer service.

In some cases, strategy of minimization general logistic costs can be transformed into a strategy of maximization of the ratio: level of service quality – general logistic costs. Realization of strategy of minimization general logistic costs is complicated by poor installation of quality parameters of logistic service and subjective assessment of quality of service on part of consumers.

But now, in a crisis conditions that characterizes the state of a large number of enterprises (according to State Statistics Service of Ukraine: 49.0% of all industrial enterprises in Ukraine were considered as unprofitable at the end of the first quarter of 2013; low level of economic safety characterizes activity of about 50% of industrial enterprises (Krivovyazyuk, 2012, p. 144), logistic strategies should be developed taking into account crisis condition of enterprise.

Special attention during formation of logistic strategy should be given to solving financial, marketing, production and issues of restructuring of logistic process.

In increasingly competitive conditions, success of any enterprise depends on adequate and timely response to constant changes in environment. Therefore, mechanisms of managing should actively applied in the form of models of management of information logistics that allow adapting to market conditions and increase competitiveness of industrial enterprises in the market. At the same time, to succeed in entrepreneurial activities it is already not enough to use only marketing approaches, it needs to use modern highly effective methods of management of informational flowing processes.

Implementation of models of information resources' management in logistics of enterprise structures should anticipate use of systematic approach to problem solving of company. As its components should be used: improvement of system of organization management and analysis of its activities; preparation for implementation of enterprise's management system; optimization, engineering and re-engineering of business processes; implementation of information systems in enterprise; documenting of corporate knowledge in the form of prototype models (Krivovyazyuk & Uskov, 2011).

Topical, in our view, are introduction and use, by entrepreneur structures, of instrumental system «ARIS 5.0», which implements «ARIS» methodology and intended for visual presentation of principles and conditions of company's functioning, and also allows conducting analysis of its activity according to different indicators. Practical interest constitutes use of model of decision making about selection of supplier for enterprise in order to find optimal strategy in situation of uncertainty. For example, the system evaluation criteria in task of making managerial decision on extension contract with supplier based on registration of growth

rates of negative characteristics of their work and realized by computer modelling in environment tabular processor «Microsoft Excel2, control and accounting of material and technical means of enterprise may be formed by using DBMS «Access».

To construct basic characteristics of logistic system should be used model «diagrams of balanced advantages» developed by Christopher, which meets methods of estimation of logistics system in three areas: quality of customer service, time of order fulfilment and logistic costs. Its use will promote ensuring reliability of functioning of enterprise's logistics system (Krivovyazyuk & Kulik, 2012, pp. 160-164).

Considering exceptional importance implementation of effective logistic management in the Ukraine's enterprises in order to offer optimal choice of strategy we suggest to use model of MLDE (management of logistic development of enterprise), which take into account crisis phenomena at enterprise. Construction of matrix based on two criteria: the ratio of industrial enterprises before crisis state taking into account degree of its manifestation and efficiency of management of logistics processes.

Crisis state of enterprise should be determined using K-pendulum, principles of building and diagnostics of its condition detailed revealed in author's scientific work (Krivovyazyuk, 2013, pp. 83-95). Effectiveness of management of logistic processes is determined by proportion of gross profit from on-going activities to amount of logistic costs. In case when indicator value is <0 then management is ineffective.

Matrix of logistic strategies' choice of enterprise in crisis conditions is presented in **Figure 1**.

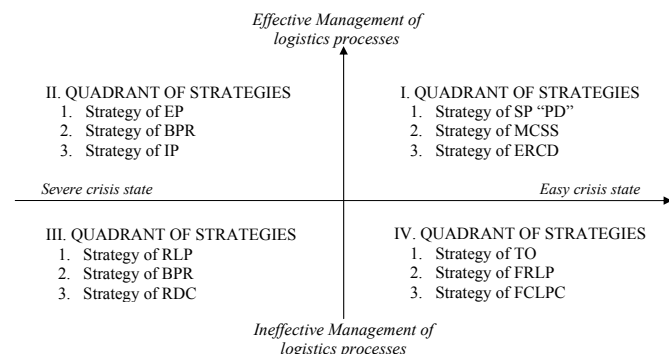
Quadrant 1.

Strategy of SP «PD» (strategic partnership «producer-distributor») – foresees integration of business processes of enterprise with independent distributors, that are an important element in marketing channels of enterprise and often have important market information. This model is based on principles of exclusive distribution and involves producer use of exclusive dealers, distributors, sales agents, whom granted exclusive right to certain logistic functions.

Strategy of MCSS («Management of consumer' stocks by supplier») – it is logistic system of management of demand and replenishment of stocks in which agreement is based on close cooperation between customer and supplier. Consumer does not make out orders for purchase of goods, but simply exchanges information with supplier. This information applies to issues of actual existing demand or sales of products, of supplier's reserves that are available currently and also it informs supplier about details of any additional marketing activity (for example, product promotion to the market). Based on this information, supplier takes responsibility for replenishment of consumer's reserves. Instead of bookings acceptance, customers get information about lower and higher levels of reserves that they are allowed to have available.

Strategy of ERCD («effective reaction to consumer demands») – it is one of directions of method of work organization «just in time». It based on that that producers and retailer enterprises use computerized technology of automatic identification of goods for everyday business transactions involving movement of goods. Use of ERCD creates general approach for combining information and logistics systems that ensure supply «just in time», in order to provide «the right product in the right place and at the right time». It is used to minimize reaction

Figure 1. Model of MLDE (management of logistic development of enterprise) (author development)



time to demand change through the rapid replenishment of stocks in those points of market where demand is predicted to grow.

Joint initiative of retailer enterprises, producers and service suppliers' purpose is to satisfy customers' needs in the best and the most effective way. Within the strategy of ERCD, business processes during the whole chain of price' development from supplier and producer to retail company and customers are evaluated. Through optimization, for example, available goods or control process of commodity stocks, level of customer satisfaction and value creation can be improved. Measures in ERCD's strategy divided into measures for supply side and demand side. Supply side concentrates on effective replenishment of reserves and demand side – on effective promotion, effective derivation of goods on market and effective assortment.

Quadrant 2.

Strategy of EP («exhausted production2) caused due to rising of consumer demand for exclusive goods of enterprise.

The essence of concept EP is following:

- achieving high quality of products that are manufactured by enterprise;
- reducing the size of product batch;
- ability of production to switch quickly on new type/sort/size of products.

The concept uses the idea of combination of low cost price for large volumes of mass production, product variety and flexibility of small batch production. Concept of EP is justified in terms of global economic crisis which has led to a significant decline of consumer demand for goods.

Strategy of BPR («business process reengineering») connected with using method of revaluation of company's condition, restructuring of its activity beginning with the basics, which aims at a sharp decline in costs, improvement of product quality and increase promptness of work. The essence of business process reengineering is to move from specialization to generalization, that is rejection of principles of division of labour. It is optimal under conditions of deep crisis in the enterprise.

Strategy of IP («Integration of production») – aims to increase scale of activity, reduce intensity of competition or reduce logistic costs. Solving problems of the enterprise in traditional way is not always effective. Thus, intensification of efforts often comes down to increase in staff with unjustified expectation of increasing sales by increasing the number of sellers; to growth of branches number (and corresponding freezing of working capital); to increase of promotional budget because of principle diminishing returns, as know, costs of attracting new client at some point start to increase after tendency to decrease. It is understood that such actions of enterprise in deep crisis conditions are possible only under significant restrictions.

Integration strategy is justified when enterprise can improve its profitability by controlling different strategically important for it links in the logistic chain of production and sale of goods. For example, it can be about ensuring supply's regularity, getting access to information about the work of preceding or subsequent links.

Quadrant 3.

Strategy of RLP («Restructuring of logistic processes2) – is an organizational setting of marketing, production and financial restructuring, that is all elements of logistic system that is connected with changes in partnership relationships, servicing of new markets etc. It is embodied in vertical and horizontal integration, co-operation of different types, changes in organizational structures of management and logistic infrastructure. It is consist in creation of new logistic units.

Strategy of RDC («reduction») – is limiting case of strategy of purposeful reduction. In this case, enterprise in short period of time liquidates (closes) individual logistic units because it needs to regroup forces for the growth of efficiency of its activity, or refuses to certain directions of logistic activities.

Quadrant 4.

Strategy of TO («Trade-offs») – art of using interconnections between costs and benefit from service which involves skilful use of interrelations between costs and revenues from sale. By implementing this strategy, enterprise tries to reach this level of logistics services that will maximizes profit that is ensures the highest difference between sales growth and additional costs for achieving it – requires use of aggressive and risky strategy of service (strategy of low costs and high service standards), which is based on high logistics skills and analysis of competitors' achievements.

Strategy of FRLP («Financial reengineering of logistics processes») provides for implementation of processes of management and rationalization of financial

flows at all stages of movement of monetary funds in order to develop and use appropriate methods and innovative financial instruments for achieving the objectives of enterprises' logistics. Financial reengineering includes: model's development of optimization of financial funds' movement in logistic systems; optimization of funding logistics projects and business in general; coordination of operational management of movement of financial and material flows; transformation of operating systems of information processing and financial flows; management of logistic risks.

Strategy of FCLPC («Financial control of logistic processes and costs») involves the development of optimal decisions about use of financial resources and investing of capital during non-severe crisis in the enterprise. Strategic financial control – organized by enterprise review process of execution and ensuring realization of all logistical solutions in the field of financial activity in order to realize effective financial strategy. Use of this strategy allows controlling arrival of monetary refunds for realized production from participants of logistic chain. A clear structure and composition of financial flows helps managers to evaluate and to plan costs in conditions of complication of production, transporting and distribution systems.

Enterprises of food industry were selected as the subjects, because in period of stagnation of production food safety is on first place. Enterprises were selected according to the following principles: leadership in the industry, use of logistics, perspective. All chosen enterprises are leaders, use different methods of logistics and have perspective of development. For wider representation, enterprises were selected with different kinds of economic activity. In particular, PJSC «KyivChlib» and PJSC «Concern Khlibprom» are engaged in production of bread and bakery products; PJSC «Obolon», PJSC «SUN InBev Ukraine», JSC «Slavutich Brewery» – beer production; JSC «Gnidava sugar factory» and PJSC «Gorochov sugar factory» – production of sugar; OJSC «Lutsk Foods» and PJSC «Volynholding» – production of spices and condiments; PJSC «Kharkiv biscuit factory», JSC «AVK» and JSC «Lviv confectionary Svitoch» – production of cocoa, chocolate and sugar confectionery.

Data for the calculation of indicators was taken from public information networks – websites of National securities and stock market commission of Ukraine «Stock Market», «Smida», and also «Escriin».

Baseline data on further selection of logistic strategies for investigated enterprises are presented in tab. 1.

Using the model of MLDE in crisis conditions by setting correspondence between stages of the life cycle of enterprise, crisis state, evaluation results of efficiency of logistic processes' functioning of Ukraine's food industry enterprises, we recommend following types of logistic strategies. (tab. 2).

Level of achievement of objectives will indicate about the quality of chosen logistic strategy: forming and effective use of resources of the enterprise; identifying the most perspective directions of investment and concentration of financial resources around them; conformity of measures to diagnosed condition and possibilities of the enterprise; taking risks, in defined range, of logistic activity and directing action to avoid them or minimize; creation and support for strategic reserves; forming hierarchical system of goals of logistic activities and phased implementation, receiving synergetic effect from carried measures.

Table 1. Basic information about further selection of logistics strategies of the food industry enterprises

Enterprise	Efficiency indicator of logistics management	General indicator of management efficiency	Comparative evaluation of crisis state in Ukraine's food industry enterprises by using K-pendulum	
			Stage of crisis state	Type of crisis state
PJSC «KyivChlib»	0,24	low	pre-crisis	
PJSC «Concern Khlibprom»	0,20	low	situation or	non-severe
PJSC «Obolon»	0,28	low	post-crisis state	crisis
PJSC «SUN InBev Ukraine»	0,33	low	economic	conditional
JSC «Slavutich Brewery»	0,12	low	stability	absence of crisis
JSC «Gnidava sugar factory»	-0,14	ineffective	pre-crisis	
PJSC «Gorochov sugar factory»	0,006	low	situation or	non-severe
OJSC «Lutsk Foods»	0,19	low	post-crisis state	crisis
PJSC «Volynholding»	0,11	low		
PJSC «Kharkiv biscuit factory»	0,21	low	economic	conditional
JSC «AVK», Donetsk	0,19	low	stability	absence of crisis
JSC «Lviv confectionary Svitoch»	0,10	low		

Table 2. Recommended types of logistics strategies for Ukraine's food industry enterprises that are in crisis state

Enterprise	Stage of life cycle	Situation's diagnosis	Efficiency of logistics management	Quadrant of logistic strategies	Recommended type of logistic strategy	Alternative way
PJSC «KyivKhlіb»	maturity	non-severe crisis	low	I	Strategy of ECR	Improving quality of logistic service
PJSC «Concern Khlіbprom»	maturity	non-severe crisis	low	I	Strategy of ECR	
PJSC «Obolon»	growth	non-severe crisis	low	I	Strategy of ECR	
JSC «Gnidava sugar factory»	maturity	non-severe crisis	ineffective	IV	Strategy of FCLP	Minimization of general logistics costs
PJSC «Gorochov sugar factory»	maturity	non-severe crisis	low	I	Strategy of VMI	Improving quality of logistic service
OJSC «Lutsk Foods»	growth	non-severe crisis	low	I	Strategy of ECR	

Table 3. Logistics safety and recommended strategies for food industry enterprises with acceptable level of economic safety

Enterprise	Position of enterprise / strategy of improving enterprise's position	Situation's diagnosis	Indicator of logistic safety	Recommended type of logistic strategy
PJSC «SUN InBev Ukraine»	Favourable / product development in existing markets	conditional absence of crisis	low	Marketing
JSC «Slavutich Brewery»	Favourable / product development in existing markets	conditional absence of crisis	low	Organizational-financial and sales
PJSC «Volynholding»	Strong / cost reduction	conditional absence of crisis	low	Production-technological
PJSC «Kharkiv biscuit factory»	Favourable / product development in existing markets	conditional absence of crisis	low	Production-organizational
JSC «Lviv confectionary Svitoch»	Strong / product development in existing markets	conditional absence of crisis	low	Production-financial
JSC «AVK»	Favourable / product development in existing markets	conditional absence of crisis	low	Production-organizational

Economic and organizational prerequisites that will promote optimization of logistic strategies of food industry enterprises that are in crisis state are:

- clear formulation and argumentation of general corporate mission on priority directions of logistic activity and development;
- achieving satisfying balance structure and sufficient level of financial strength (solvency);
- creating opportunities for integration of logistics at the level of production, marketing, finance.

For enterprises that are not in crisis state, we suggest to choose logistic strategies by calculating indicator of logistic safety. As a key indicator we elect indicator of efficiency of logistic management. It is permissible, because management efficiency quite often directly related to the state of economic safety of enterprise. Thus, according to the paper (Krivovyazyuk, 2012) it is shown as follows: reducing of economic safety level for Ukraine's industrial enterprises in 2010-2011 (which is typical in 53.8% of cases) is associated with decrease in management efficiency (57.5% of cases).

Established limits of importance of logistic safety' indicator:

- $E_{man.log} < 0$ – logistic un-safety;
- $0 < E_{man.log} < 1$ – low logistic safety;
- $1 \leq E_{man.log} < 1,5$ – sufficient logistic safety;
- $E_{man.log} \geq 1,5$ – high logistic safety.

Results of logistic safety' indicator's calculation and analysis of logistic processes for food industry enterprises that are not in crisis state are presented in tab. 3.

All investigated enterprises characterized by low levels of logistic safety that should be considered as a result of adverse state in the economy during crisis in 2009-2010 and period of stagnation in 2011-2012. Recommended type of strategy in all cases affects the strongest sides of food industry enterprises' functioning and is implemented by using research results obtained using the method of Balanced Scorecard. For all enterprises, except PJSC «SUN InBev «Ukraine», recommended the use of integrated logistic strategy. This will get the best effect with implementation of planned strategies.

CONCLUSIONS

The emergence of crisis phenomena is possible at any stage of the logistics cycle, but it can be minimized under the influence of logistic management, in particular, implementation of uninterrupted planning of needs in material resources, production, sale of products, forecasting of it's demand. Management of logistics processes in the enterprise during the crisis is one of the subsystems of general management in the enterprise and it aims to achieve strategic and tactical goals of ant crisis development of enterprise.

Model of management of logistic development of enterprise, which takes into account crisis phenomena at the enterprise is developed and realized in this paper. The basis of model construction includes two criteria: relation of industrial enterprises to crisis state taking into account the degree of its manifestation and the level of efficiency of management of logistics processes. Its use allows to choose optimal ant crisis logistic strategy. For the food industry enterprises, which according to the data of conducted research are not threatened by crisis state, it is offered, by means calculation of indicator of logistical security and with the help of expert assessments, to use integrated logistics strategies.

Considering growing uncertainty and significant risk of activity of food industry enterprises that got in crisis state, it is offered in future studies to pay more attention to issues of modelling of making managerial decisions in the crisis to improve the efficiency of implementation of logistics processes.

The research offers theoretical, methodological and practical recommendations for improvement of management of logistics processes in enterprise in crisis conditions, which allows improve significantly the process of analysis and evaluation and also selection of strategies and optimal management decisions for logistics systems of enterprise and processes that accompany its functioning.

REFERENCES

1. Корпоративна логістика. 300 ответов на вопросы профессионалов / под общ. и научн. ред. проф. В. И. Сергеева. – М. : Инфра-М, 2005. – 976 с.
2. Кривов'язюк І. В. Інноваційний підхід в оцінці безпечності функціонування промислових підприємств / І. В. Кривов'язюк // Актуальні проблеми економіки. – 2013. – № 3. – С. 83-95.
3. Кривов'язюк, Ігор Володимирович. Управління надійністю логістичної системи підприємства [Текст] : монографія / І. В. Кривов'язюк, Ю. М. Кулик. – Л. : Манускрипт, 2012. – 192 с.
4. Кривов'язюк, Ігор Володимирович. Управління логістичними інформаційними системами підприємства [Текст] : монографія / І. В. Кривов'язюк, О. Р. Усков ; Луцьк. нац. техн. ун-т. - Л. : Манускрипт, 2011. – 140 с.
5. Кривов'язюк, Ігор Володимирович. Функціонування та розвиток підприємств в умовах кризи : системно-аналітичний підхід [Текст] : монографія / І. В. Кривов'язюк. – Луцьк : ЛНТУ, 2012. – 392 с.
6. Крикавський, Євген Васильович. Логістика. Основи теорії [Текст] : підручник / Є. В. Крикавський. – 2-е вид., доп. і переробл. – Л. : національний університет «Львівська політехніка», «Інтелект-Захід», 2006. – 456 с.
7. Крикавський, Євген Васильович. Логістичні системи [Текст] : навч. посібник / Є. В. Крикавський, Н. В. Чорнописька. – Л. : Видавництво Національного університету «Львівська політехніка», 2009. – 264 с.
8. Ларіна Р. Р. Теоретико-методологічні основи формування регіональних логістичних систем: дис. ... доктора екон. наук : спец. 08.10.01 / Ларіна Рена Рінатівна. – Донецьк, 2005. – 406 с.
9. Павленко Т. В. Моделі вибору пріоритетів у логістичному управлінні : Дис. ... канд. наук : спец. 08.03.02 / Павленко Тетяна Володимирівна. – Донецьк, 2002. – 252 с.
10. Поспелов О. М. Організація логістичного управління діяльністю підприємства : дис. ... канд. екон. наук : спец. 08.00.04 / Поспелов Олександр Михайлович. – Харків, 2009. – 282 с.
11. Редька В. С. Сутність та основні види логістичних стратегій та їхнє місце у системі управління підприємством / В. С. Редька // Вісник Національного університету «Львівська політехніка». Логістика. – 2012. – № 735. – С. 187-191.
12. Тридід О. М. Логістика [Текст] : навчальний посібник / О. М. Тридід, Г. М. Азаренкова, С. В. Мішина, І. І. Борисенко. – К. : Знання, 2008. – 566 с.
13. Хромов О. П. Еволюція концепцій логістики / О. П. Хромов // Вісник соціально-економічних досліджень: збірник наукових праць. Вип. 40. – В. О. М-во освіти і науки України. – ОДЕУ, 2010. – 412 с.
14. Di Benedetto, Anthony. Identifying the Key Success Factors in New Product Launch. Journal of Product Innovation Management, Vol. 16, No. 5, pp. 530-544, November 1999.
15. Christopher M., «Strategia zarządzania dystrybucją: praktyka logistyki biznesu», wyd. «Placet», Warszawa 1999.
16. Czeselski M. Logistyka w strategiach firm. – Warszawa-Poznan: PWN, 1999.
17. Kisperska –Moron D., Krzyżaniak S., Logistyka, wyd. I LiM, Poznań 2009.
18. Bartosz Jacyna. Miejsce logistyki w strukturze przedsiębiorstw w Polsce. Raport 2012 / Logisys Sp. zo.o. – Krakow, 2012. – 44 s. – Режим доступу: <http://www.logisys.pl/PPML/Raport%20PPML%202012.pdf>.