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КОНЦЕПТУАЛЬНІ ЗАСАДИ УПРАВЛІННЯ РИЗИКОМ В ЛОГІСТИЧНІЙ СИСТЕМІ ПІДПРИЄМСТВА

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Проаналізовано теоретичні засади логістичних ризиків, сформовано характеристику логістичного ризику як економічної категорії. Запропоновано класифікацію логістичних ризиків, у межах якої виділено логістичні ризики (за видами потоків та компонентів логістичної системи різного рівня) та нелогістичні ризики – зовнішні (ризики, джерелами яких є постачальники, споживачі та економічне середовище). Удосконалено алгоритм управління ризиками в логістичній системі підприємства, що повинен бути спрямований на досягнення мінімального ризику або повну його нейтралізацію за допомогою певного інструментарію і методів та з урахуванням специфіки управління, що залежить від рівня схильності до ризику. Запропоновано заходи для покращення процесу управління ризиками в логістичній системі.

Ключові слова: логістичний ризик, логістична система, управління ризиками, класифікація логістичних ризиків.

CONCEPTUAL PRINCIPLES OF RISK MANAGEMENT IN LOGISTIC SYSTEM OF ENTERPRISE

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Theoretical principles of logistic risks are analyzed, description of logistic risk as an economic category is formed. Classification of logistic risks is offered, within its limits logistic risks are distinguished (by the types of streams and components of different level logistic system), and non-logistic risks – external (risks, the sources of which are suppliers, consumers and economic environment). The algorithm of risk management in the logistic system of enterprise is improved, which must be sent to the achievement of minimum risk or its complete neutralization by means of certain tool and methods and taken into account of the specific of management, which depends on the level of propensity to the risk. Measures for the improvement of process of risk management in the logistic system are offered.

Key words: logistic risk, logistic system, risk management, classification of logistic risks.

Problem formulation. Claim of conception of society development and entrepreneurial activity, in modern economic terms, determine logistic principles as necessary pre-condition of any organizationally-economic relations.

Logistic process management on an enterprise is related to implementation of such logistic functions as purchase, storage, transporting, sorting and aggregating of material and non-material flows. For this reason logistic activity of any organization, that determines the level of charges on every stage of functioning of the logistic system, must be sent to prognostication and minimization of level of economic risks influence.

The necessity of risk management in logistic activity is explained by that in the process of realization of logistic functions there is a difficult process of motion of considerable mass of informative, money and material flows, turnover of legal documents, co-operation of interests of different parties. This process is not confined also to influence of factors of environment, which operate through the features of normatively-legal base, specific of purchases, warehousing, transportation, productions and realization of products, dynamics of prices on products, current inflationary processes.

Today's economic situation makes the problem of risk management especially actual for the management of any enterprise, as enterprises run into the enormous amount of negative factors, which influence on end-point of their activity – amount of income: instability of supply, ill-timed and incomplete payments of consumers, complications with bringing in of credit resources and others like that [1].

Analysis of current research outputs and publications. By the problem of research of theoretical principles of logistic risks, their classifications, development of management algorithms, the methodical approaches to the estimation and management the row of researches is devoted [2–5], where logistic risks are examined as an internal situation in logistic system failure in-process one or a few links of supply chain is observed. Other part of researchers examines a logistic risk within the limits of functioning of the logistic system of enterprise, thus the external factors of influence on the origin of risk are distinguished [6–10]. The special approach for the acceptance of optimal administrative decisions in relation to minimization of risks offers T. O. Zagorna, which consists of the necessity of authentication of types of risks: logistic or non-logistic [11]. The most fresh look to the question of logistic risk management plugs in logistic risk management criterion of psychological perception of risk [12].

Article objectives consist of the analysis and clarification of classification criteria of logistic risk, existent conceptual principles of management and formulation of recommendations for the increase of efficiency of risk management in an enterprise logistic system.

Presentation of main materials. Success and effectiveness of enterprises activity depend on rightness and validity of a selected strategy of entrepreneurial activity and use of logistic principles in a management. Application of logistic approach in practice of management allow to increase profitability and quality of service, to provide an effective management of flows processes in the enterprise economic systems, which is the mortgage of substantial advantages in competitive activity [7, p. 382].

One of primary objectives of research of logistic risks is a decline of their negative influence on enterprise activities. Conception of risk management on an enterprise must be worked out on the basis of scientifically-reasonable, adapted to the specific of the enterprise methodology, which takes into account front-rank experience in the field of informative, intellectual and innovative providing and leans on world experience of logistic risks management of an enterprise.

Under a logistic risk the danger of origin of delay in-process chain of supply, violation of terms of supply, violation in-process one or a few links of chain is understood, and mark that risks belong to most widespread, which are related to implementation of corresponding logistic functions during a production, storage, marking and packing, consolidations and growing shallow, transporting of different kinds of transport, documenting, calculations, distribution and so on [4, p. 45].

In [2, p. 248] the logistic risk of an enterprise is examined from the point of view of vagueness perception as an economic category, which represents the features of perception of enterprise management objectively existing vagueness and conflicts, absence of complete (exhaustive) information in the moment of decision making, which inherent to the processes of prognostications, planning, management, co-ordinations and control of material, service, informative, financial flows and intellectually-labor resources flow.

Row of authors [9, p. 176] determines a logistic risk as possibility of offensive of event, which can result in violation of the faultless normal functioning of the logistic system in the conditions of constantly changeable environment. Just this approach identifies an environment as factor, which influences on functioning of the logistic system.

To our opinion logistic risk is a possibility of delay origin in-process one or a few links of chain of supply on the different levels of the logistic system, which arises up as a result of feature of perception of enterprise management objectively of existing vagueness and conflict and also as a result of influence of environment as factor, which influences on functioning of the logistic system on the whole.

As to the economic category, which influences on the results of economic activity, such descriptions are inherent to the logistic risk (fig. 1).

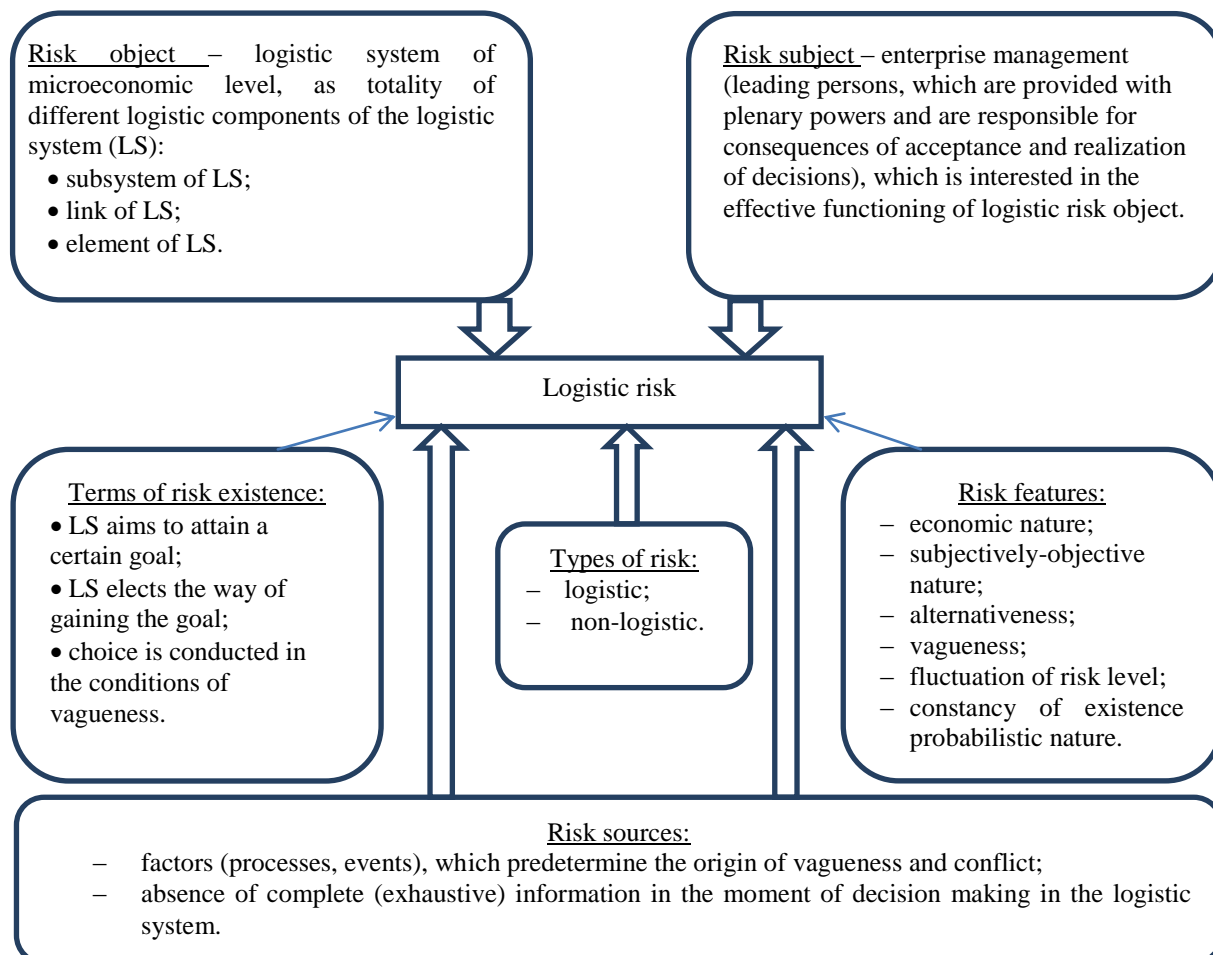


Fig. 1. Description of logistic risk as an economic category

Source: [elaborated by the authors]

Risks in enterprise logistic system of is expedient to divide into two categories (fig. 2): logistic risks (by the types of streams and components of the logistic system of different level) and non-logistic – external (risks, sources of which are suppliers, consumers and economic environment).

Among logistic risks by the types of flows are distinguished:

- 1) material logistic risk – it is possibility of loss of existing and not gaining (necessary for a consumer) properties of material flows in the process of its motion through the components of the logistic system;
- 2) service logistic risk – it is inability of enterprise to provide the proper service support to the consumers of its products and services;
- 3) informative logistic risk – it is a possibility of the incomplete or partial providing of components of the logistic system by information at the right time, in necessary amount and in a necessary place;
- 4) financial logistic risk arises up as a result of possible difficulties of turnover of funds, what are needed for providing of trouble-free motion of corresponding material flow;
- 5) intellectually-labor logistic risk arises up during the management of enterprise intellectually-labor resources [2, p. 249].

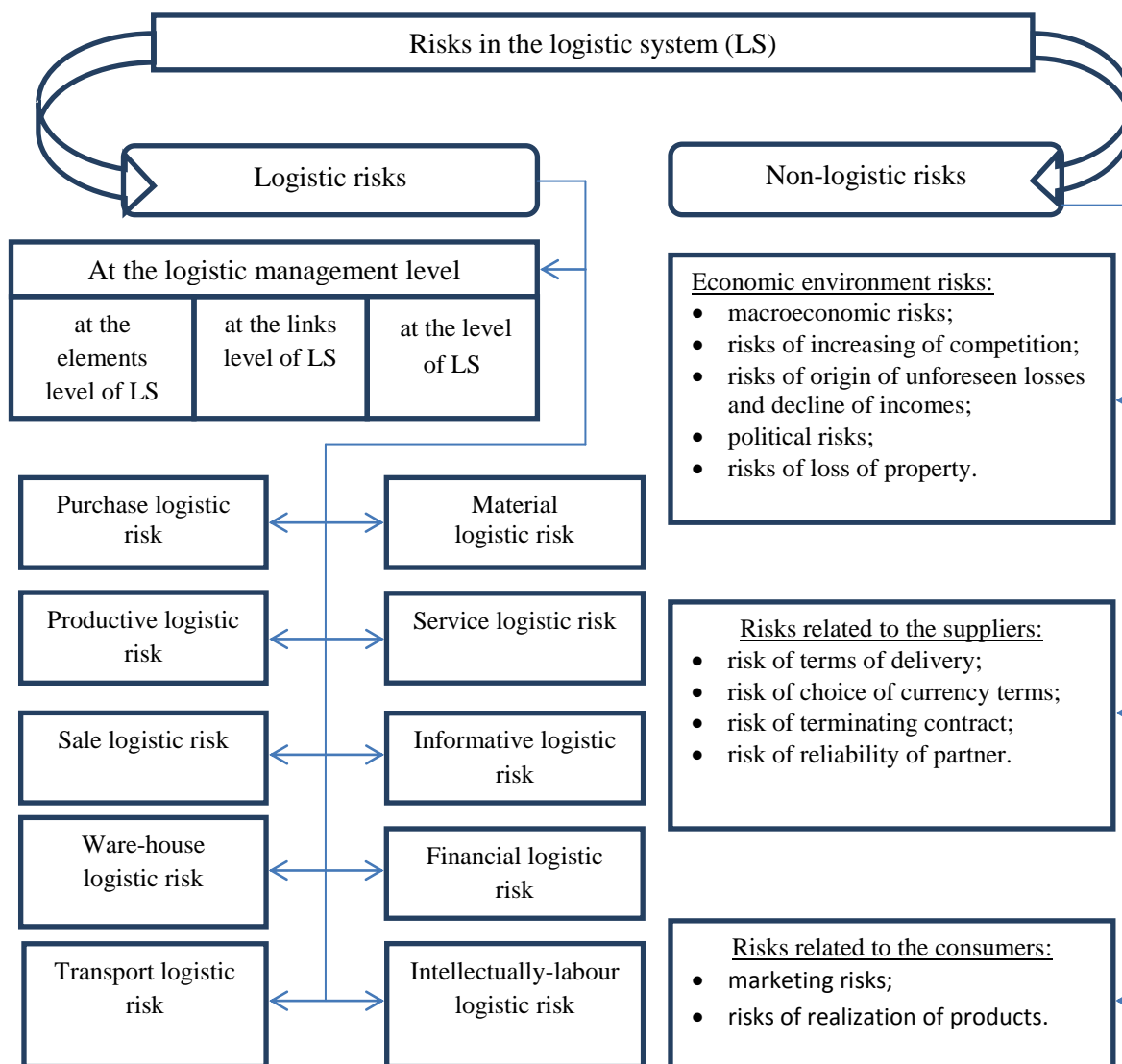


Fig. 2. Classification of risks in the logistic system of enterprise

Source: [elaborated by the authors]

By the basic types of logistic subsystems such risks are distinguished:

- 1) purchase logistic risk, what arises up as a result of insolvency of providing to the enterprise the necessary resources of the proper quality, with maximally possible economic efficiency, for the shortest span of time;
- 2) productive logistic risk is the consequence of violation of continuity and rhythm of productive technological processes of enterprises;
- 3) sale logistic risk is related to complications, which can arise up in the channel of distribution of products, the function of which is, in particular, leading the prepared products from a producer to the consumer;
- 4) ware-house logistic risk – it is possibility of failures in-process warehouses of enterprise;
- 5) transport logistic risk arises up as a result of insolvency to provide necessary quality transportation of shipment (product or raw material) and to carry out operations, which are not included in the process of transportation, but are related to him.

Every type of logistic risk can stipulate the origin of some losses, which can be considerable for an enterprise as stipulating its bankruptcy, or not so much. Such areas of risk are distinguished: risk free area (casual losses are not expected); area of possible risk (casual losses can take place, but they less than the expected income); critical risk area (possible losses exceed the size of the expected incomes); catastrophic risk area (possible losses exceed a critical level and can rich the size of the property state of enterprise) [2, p. 252].

For the exposure of the enumerated risks procedure of audit of logistic processes and SWOT-analysis are used often enough. The row of authors recommends next to these procedures to conduct a content-analysis also. In accordance with distribution of risks on logistic and non-logistic procedures of external and internal audit are conducted. During an internal audit information about the state of implementation of logistic functions, methods of implementation of logistic operations, quality of service, structure of charges and loss from risks are gathered. During realization of external audit the level of maintenance of consumers, works of competitors macroeconomic and branch tendencies is analyzed.

Despite of the variety of risk making factors in the logistic system, both internal and external, to the basic factors, which reduce reliability of the logistic system are those, which are related to influence of information and administrative factor (fig. 3).

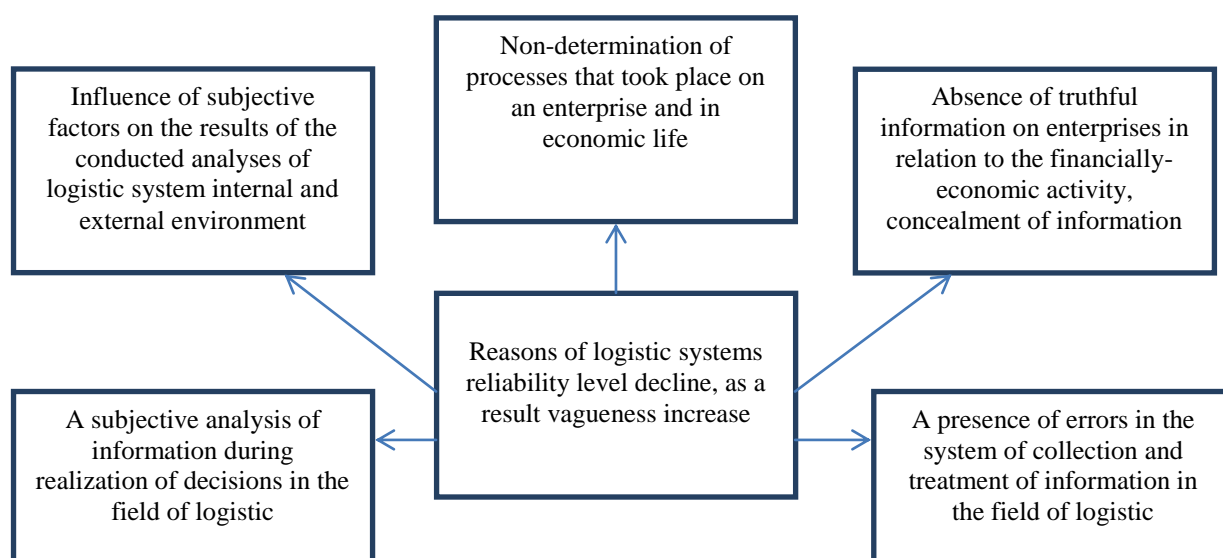


Fig. 3. Principal reasons of logistic systems reliability level decline

Source: [9, p. 171]

Having regard to the feature of origin of risks in the logistic system, which are related to the specific of informative flows and administrative factor in the algorithm of logistic risk management of enterprise it is expedient to identify the stage, where the attitude to the risk of person which makes decision will be determined (propensity to the risk, neutral attitude toward a risk, careful attitude toward a risk).

Under the risk management in logistic activities understands the methods of exposure of risk, analysis, evaluation, determination of reason of origin and application of measures in relation to the decline of existent level of risk. The key task of politics of risk management consists in providing of optimal correlation by the acceptable level of risk and money charges, which are needed for its maintenance. Thus risk control system is called not only to overcome the negative consequences of origin of logistic risks, but also effectively counteract, preventing them from origin. Constituents of this system can be considered: enterprise politics in the field of logistic risks management, procedures of decision making in case of presence of risk, taking into account attitude toward the risk of person, which makes decision, a choice of methods for a decline or avoidance of risk, organizational and informative control risks system and internal checking system.

Politics of risk management is totality of measures, which aim to bring down the risk of error already in the moment of decision making and to neutralize the possible negative consequences of such decision on other stages of functioning of organization [12, p. 111].

The process of risk management includes the next stages in general (fig. 4):

- 1) Authentication of risks by logistic processes;
- 2) Diagnostics of level of risks by logistic processes;
- 3) Prognostication and modeling of result of influence of logistic risks with taking into account attitude toward the risk of person, which makes decision;

- 4) Estimation of logistic risks acceptability;
- 5) Choice of method of logistic risk management.

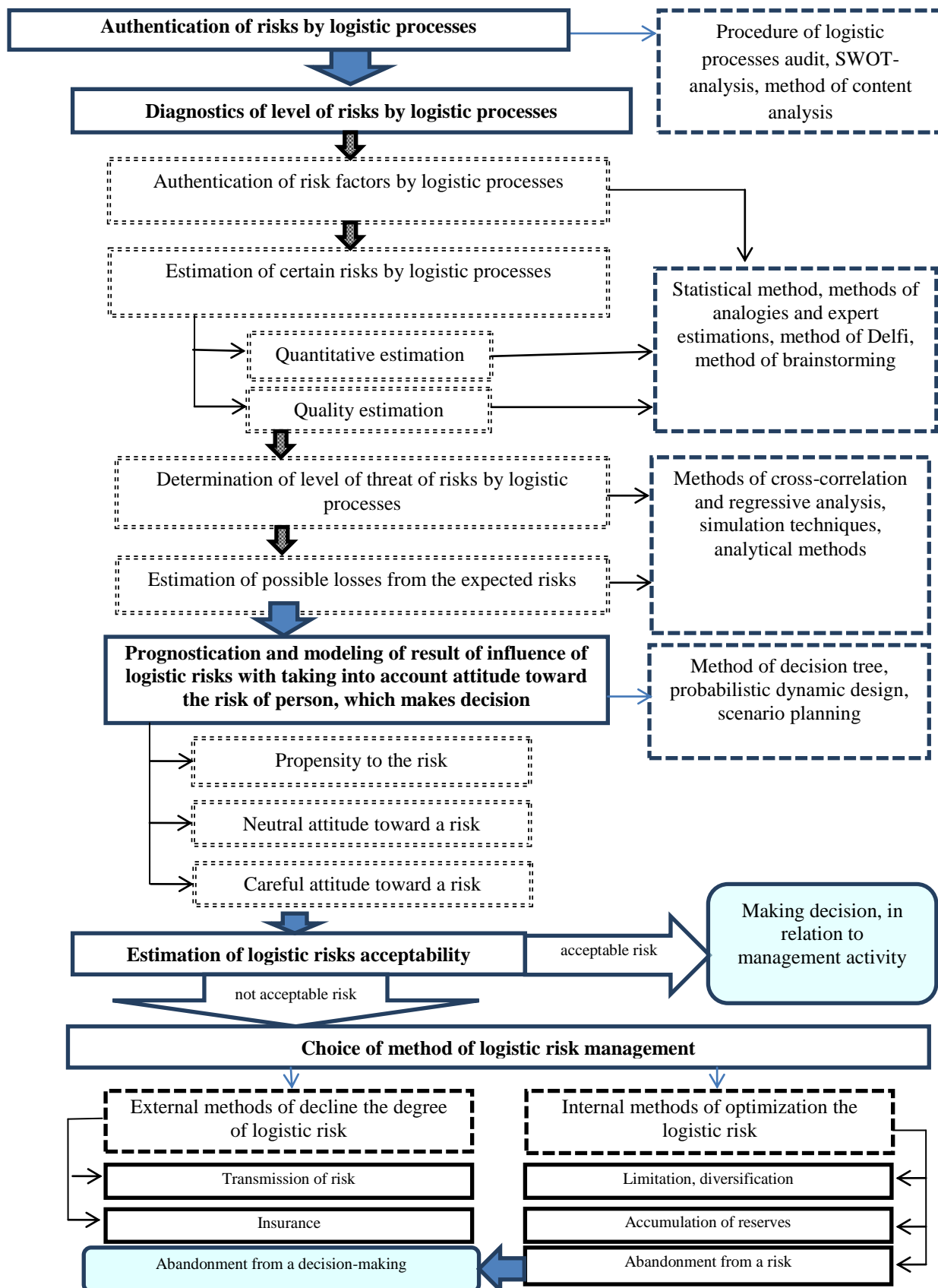


Fig. 4. Algorithm of risk management in the logistic system of enterprise

Source: [developed on basis of 2, 5, 11].

Conclusions and further research prospects. The process of risk management in the logistic system of enterprise must be sent to the achievement of minimum risk or his complete neutralization by means of the offered tool and management methods taking into account the stream of information for the analysis of factors of internal and external environment, and also management specifics, which depends on the level of propensity to the risk.

For the improvement of process of risk management in the logistic system of enterprise it is necessary to accept next measures:

- use the strategic planning for the integral and integrated approach to risk management, which will allow more effectively to manage risks, work out a saving and effective productive-logistic chain, quickly react on the market necessities and inculcate innovations;
- extend intrasystem co-operation between purchase, transport, ware-house and others departments, which will help to decrease difficult risks due to a deep collaboration;
- develop the plan of optimal correlation of risks, taking into account that, risks and charges on their removal are constrained sizes, and reduction of one of them results in an increase other, that's why it is needed to find optimal correlation for that a possible risk will be provided by optimal charges;
- take into account risks, what are impossible to give a quantitative estimation by means of development of the proper methods of risk estimation, take into account possibility of interplay of different types of risks between each other;
- analyze additional information, as the important reason of risk is a vagueness of future and external environment, the receipt of additional relevant information reduces the level of risks, which can arise up.

1. Кондратенко Н. О. Інструменти управління та методи оцінки ризиків у логістичних системах / Н. О. Кондратенко, О. О. Лобашиов // *Комунальне господарство міст: наук.-техн. зб. Серія "Економічні науки"*. – 2012. – Вип. 102. – С. 343–350. 2. Вітлінський В. В. Концептуальні засади моделювання та управління логістичним ризиком підприємства / В. В. Вітлінський, В. І. Скіцько // *Економіка та управління підприємствами*. – 2013. – № 4. – С. 246–253. 3. Ткачова А. В. Врахування ризиків при управлінні логістичною діяльністю підприємства // *Матеріали III Міжнарод. научн.-практ. конф. "Проблеми формування нової економіки XXI століття" (23–24 грудня 2010 року)*. – [Електронний ресурс]. – Режим доступу: http://www.confcontact.com/20101224/3_tkachova.php. 4. Мамчин М. М. Вплив логістичних ризиків на підвищення ефективності діяльності підприємств / М. М. Мамчин, О. А. Русановська // *Вісник Нац. ун-ту "Львівська політехніка"*. "Менеджмент та підприємництво в Україні: етапи становлення і проблеми розвитку". – 2011. – № 720. – С. 45–51. 5. Хромих А. Г. Методичні підходи до оцінки й управління логістичними ризиками в діяльності контрактно-дослідних організацій у сфері клінічних досліджень / А. Г. Хромих, О. В. Посилкіна, М. І. Сидоренко // *Управління, економіка та забезпечення якості в фармацевтиці*. – 2013. – № 1 (27). – С. 36–44. 6. Гапчак Т. Г. Ризики в логістичних процесах / Т. Г. Гапчак // *Економіка: проблеми теорії та практики*. – 2010. – № 262. – С. 10–19. 7. Лір В. Е. Логістична інтегрована модель управління ризиками в системах енергоменеджменту / В. Е. Лір, Я. В. Ліфанова, Е. В. Лобань // *Держава та регіони. Сер. Економіка та підприємництво*. – 2010. – № 2. – С. 121–127. 8. Волинець Л. М. Обґрунтування необхідності управління ризиками в логістичній системі підприємства / Л. М. Волинець, І. П. Гамеляк // *Управління проектами, системний аналіз і логістика. Технічна серія*. – 2012. – Вип. 10. – С. 382–386. 9. Кривов'язюк І. В. Невизначеність та ризик як фактори зниження рівня надійності логістичної системи підприємства // І. В. Кривов'язюк, Ю. М. Кулик // *Збірник наукових праць. Луцький національний технічний університет. Економічні науки*. – Серія "Економіка та менеджмент". – 2011. – Вип. 8 (30). – С. 166–180. 10. Крикавський Є. В. Логістичні системи: навч. посіб. / Є. В. Крикавський, Н. В. Чорнописька. – 2-ге вид., доп. – Львів: Видавництво Львівської політехніки, 2012. – 312 с. 11. Загорна Т. О. Управління ризиками в логістичній системі підприємства / Т. О. Загорна, А. В. Ткачова // *Економіка Крима. Научно-практический журнал*. – 2009. – № 27. – С. 89–93. 12. Управління ризиками в логістиці: [навч. посібн.]. За заг. ред. В. М. Гончарова – Львів: "Магнолія 2006", Львів, Луганськ, 2013. – 253 с.

1. Kondratenko, N. O. & Lobashov, O. O. (2012). *Instrumenty upravlinnia ta metody otsinky ryzykiv u lohistychnykh systemakh* [Management tools and methods for assessing risks in logistics systems]. *Naukovo-tekhnichnyj zbirnyk "Komunal'ne hospodarstvo mist". Serii "Ekonomichni nauky"*, 102, 343–350 [in Ukrainian].

2. Vitlins'kyj, V. V. & Skits'ko V. I. (2013). *Kontseptual'ni zasady modeliuvannia ta upravlinnia lohistychnym ryzykom pidpriemstva* [Conceptual foundations of modeling and control of enterprise logistics risks]. *Ekonomika ta upravlinnia pidpriemstvamy*, 4, 246-253 [in Ukrainian].

3. Tkachova, A. V. (2010, December 23-24). *Vrakhuvannia ryzykiv pry upravlinni lohistychnoiu diial'nistiu pidpriemstva* [Consideration of risk in enterprises logistic activities management]. *Materialy III Mezhdunarodnoj nauchno-prakticheskoy konferencii "Problemy formirovaniya novoy jekonomiki XXI veka"*. Retrieved from: http://www.confcontact.com/20101224/3_tkachova.php [in Ukrainian].

4. Mamchyn, M. M. & Rusanovs'ka, O. A. (2011). *Vplyv lohistychnykh ryzykiv na pidvyschennia efektyvnosti diial'nosti pidpriemstv* [The impact of logistics risks to increase the efficiency of enterprises]. *Visnyk Natsional'noho universytetu "Lvivs'ka politehnika". Serii "Menedzhment ta pidpriemnytstvo v Ukraini: etapy stanovlennia i problemy rozytku"*, 720, 45 – 51 [in Ukrainian].

5. Khromykh, A. H. & Posylkina, O. V. & Sydorenko M. I. (2013). *Metodychni pidkhody do otsinky j upravlinnia lohistychnymy ryzykamy v diial'nosti kontraktno-doslidnykh orhanizatsij u sferi klinichnykh doslidzhen'* [Methodological approaches to assessing and managing risks in business logistics contract research organizations in the field of clinical research]. *Upravlinnia, ekonomika ta zabezpechennia iakosti v farmatsii*, 1 (27), 36-44 [in Ukrainian].

6. Hapchak, T. H. (2010). *Ryzyky v lohistychnykh protsesakh* [Risks in logistics processes]. *Ekonomika: problemy teorii ta praktyky*, 262, 10-19[in Ukrainian].

7. Lir, V. E. & Lifanova ,Ya.V. & Loban', E.V. (2010). *Lohistychna intehrovana model' upravlinnia ryzykamy v systemakh enerhomenedzhmentu* [Logistic integrated model of risk in energy management]. *Derzhava ta rehiony. Ser. Ekonomika ta pidpriemnytstvo*, 2, 121-127[in Ukrainian].

8. Volynets' L. M. & Hameliak, I. P. (2012). *Obgruntuvannia neobkhidnosti upravlinnia ryzykamy v lohistychnij systemi pidpriemstva* [Rationale for risk management in the logistics system of the enterprise]. *Upravlinnia proektamy, systemnyj analiz i lohistyka. Tekhnichna serii*, 10, 382-386 [in Ukrainian].

9. Kryvov'iaziuk, I. V. & Kulyk, Yu. M. *Nevyznachenist' ta ryzyk iak faktory znyzhennia rinvnia nadijnosti lohistychnoi systemy pidpriemstva* [Uncertainty and risk as factors reducing the reliability of enterprise logistics system]. *Zbirnyk naukovykh prats'.Luts'kyj natsional'nyj tekhnichnyj universytet. Ekonomichni nauky. – Serii "Ekonomika ta menedzhment"*, 8 (30), 166 – 180 [in Ukrainian].

10. Krykavs'kyj, Ye.V. & Chornopys'ka, N. V. (2012). *Lohistychni systemy: navchal'nyj posibnyk* [Logistic systems] (2nd ed.). L'viv: Vydavnytstvo L'vivs'koi politehniky [in Ukrainian].

11. Zahorna, T.O. & Tkachova, A.V. (2009). *Upravlinnia ryzykamy v lohistychnij systemi pidpriemstva* [Risk management in the logistics system of the enterprise]. *Jekonomika Kryma. Nauchno-prakticheskij zhurnal*, 27, 89-93 [in Ukrainian].

12. Honcharov, V.M. (2013). *Upravlinnia ryzykamy v lohistytsi* [Risk Management in Logistics] (Rev.ed.). L'viv: "Mahnoliia 2006", L'viv, Luhans'k [in Ukrainian].