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PROBLEMS OF MANAGEMENT IN THE SYSTEM OF SPIRAL DYNAMICS OF SUPPLY CHAINS

Volodymir Koulik, Alla Zaharchuk. *"Problems of management in the system of spiral dynamics of supply chains".* The article is devoted to the identification of logistics management problems that arise during the implementation of the process management concept of the spiral dynamics of supply chains. SCM, as a real system of logistics integration and coordination of business processes of the chain provides for the development of interaction and cooperation of its economic entities in the joint use of their resources. The spiral in its development changes the targets: increasing time intervals of forecasting and planning for the long term, the logistical lag of the spiral of the supply chain increases due to the focus on managing global innovation changes in society and changes in technological patterns. This requires appropriate coherence and restructuring of the cognitive and intellectual state of the climate in all sectors of the economy and their human systems.

Analysis and generalization of modern research in the field of radical change management has allowed to determine the priority of detection and opportunities for preventive management of worldview changes, values and interests of individuals and their associations in human systems, organizations and society as a whole.

The article substantiates the need and expediency of constant updating of the spiral of social thinking, synthesis of knowledge, ideas and intuition of all participants in the supply chain as a unified socio-economic system with a single ultimate goal - to meet the growing needs of consumers. The generalized requirements to spiral management of supply chains are formed and its basic functions and directions of administrative activity are defined. The specific conditions for ensuring the dynamics of the spiral worldview with the help of a set of MEMs specifically focused on supply chain management are considered. The classification of supply chain integration models was proposed, focused on the possibilities and the need to change its targets, forms and methods of management, time scales of operation.

Keywords: logistic integration, socio-economic turbulence, spiral management, MEM, change management, worldview, supply chain.

Володимир Кулик, Алла Захарчук. "Проблеми менеджменту в системі спіральної динаміки ланцюгів постачань". Стаття присвячена виявленню проблем логістичного менеджменту, що виникають при впровадженні концепції управління процесами спіральної динаміки ланцюгів постачань. SCM, як реальна система логістичної інтеграції та координації бізнес-процесів ланцюга передбачає розвиток взаємодії і співробітництва його господарюючих суб'єктів при спільному використанні їх ресурсів. Спіраль в своєму розвитку змінює цільові орієнтири: збільшуються часові інтервали прогнозування та планування на віддалену перспективу, зростає логістичний лаг спіралі ланцюга постачань за рахунок концентрації уваги на управлінні глобальними інноваційними змінами в суспільстві, змінами технологічних укладів. Це вимагає і відповідної узгодженості і перебудови когнітивного і інтелектуального стану клімату у всіх галузях економіки та їх людських системах.

Аналіз та узагальнення сучасних наукових досліджень у сфері менеджменту радикальних змін дозволив визначити першочерговість виявлення та можливості превентивного управління змінами світогляду, цінностей та інтересів як окремих індивідуумів так і їх об'єднань в людських системах підрозділів, організацій і суспільства в цілому.

В статті обґрунтовано необхідність та доцільність постійного оновлення на всіх відрізках спіралі соціального мислення, синтезу знань, ідей та інтуїції всіх учасників ланцюга постачань як об'єднаної соціально-економічної системи з єдиною кінцевою ціллю – задоволення зростаючих потреб споживачів. Сформовано узагальнені вимоги до спірального менеджменту ланцюгів постачань та визначено його основні функції і напрямки управлінської діяльності. Розглянуто специфічні умови забезпечення динаміки спірального світогляду за допомогою комплексу MEMів, конкретно орієнтованих на управління ланцюгами постачань. Запропоновано класифікацію моделей інтеграції ланцюга постачань, орієнтовану на можливості та необхідність зміни його цільових орієнтирів, форм і методів управління, часових масштабів функціонування.

Ключові слова: логістична інтеграція, соціально-економічні турбуленції, спіральний менеджмент, MEM, управління змінами, світогляд, ланцюг постачань.

Владимир Кулик, Алла Захарчук. "Проблемы менеджмента в системе спиральной динамики цепочек поставок". Статья посвящена выявлению проблем логистического менеджмента, возникающим при внедрении концепции управления процессами спиральной динамики цепей поставок. SCM, как реальная система логистической интеграции и координации бизнес-процессов цепи предусматривает развитие взаимодействия и сотрудничества его субъектов при совместном использовании их ресурсов. Спираль в своем развитии меняет целевые ориентиры: увеличиваются временные интервалы прогнозирования и планирования на отдаленную перспективу, растет логистический лаг спирали цепи поставок за счет концентрации внимания на управлении глобальными инновационными изменениями в обществе, изменениями технологических укладов. Это требует соответствующей согласованности и перестройки когнитивного и интеллектуального состояния климата во всех отраслях экономики и их человеческих системах.

Анализ и обобщение современных научных исследований в области менеджмента радикальных изменений позволил определить первоочередность выявления и возможности превентивного управления изменениями мировоззрения, ценностей и интересов как отдельных индивидумов так и их объединений в человеческих системах подразделений, организаций и общества в целом.

В статье обоснована необходимость и целесообразность постоянного обновления на всех отрезках спирали социального мышления, синтеза знаний, идей и интуиции всех участников цепи поставок как объединенной социально-экономической системы с единой конечной целью - удовлетворение растущих потребностей потребителей. Сформировано обобщенные требования к спиральному менеджменту цепей поставок и определены его основные функции и направления управленческой деятельности. Рассмотрены специфические условия обеспечения динамики спирального мировоззрения с помощью комплекса МЭМов, именно ориентированных на управление цепями поставок. Предложена классификация моделей интеграции цепи поставок, ориентированную на возможности и необходимости изменения его целевых ориентиров, форм и методов управления, временных масштабов функционирования.

Ключевые слова: логистическая интеграция, социально-экономические турбулентности, спиральный менеджмент, МЭМ, управление изменениями, мировоззрение, цепь поставок.

The spiral dynamics of supply chains, as a complex and global phenomenon, is characterized not only by constant changes in the technical, technological, organizational and economic state of the logistics business, but also, most difficult - worldview changes in the views of individuals and society as a whole. At the forefront are the need to change the stereotypes of social psychology regarding human values, the dynamic forces of interaction of human systems, strategies and tactics of management and self-management of human relations at each time spiral.

The current and future paradigm of the evolution of the worldview systems of the spiral mind of mankind is based on awareness of the illusory nature of constant stability and recognition of the reality and inevitability of change - predictable and unpredictable (such as the pandemic COVID-19 and Chernobyl), local and global large-scale turbulences caused by the accelerated pace of development of scientific and technological progress and fundamental innovations in the activities of economically, cognitively and psychologically unprepared enterprises, organizations and public associations. New times give rise to new socially oriented thinking of individuals and their associations as a result of the synthesis and change of ideas, new knowledge, principles and human intuition. Issues of social psychology in business organizations and integrated supply chains at the present level are quite thoroughly covered in the works of Arie Gotsdanker, A. Martynov [3; 7] and the collective work "Business Psychology. Theory and practice" [8].

The current state of spiral supply chain management is characterized by specific factors and conditions of logistics as a business concept of the world economy. The basis of profound changes in the logistics spiral is, first of all, the evolution of value systems, which depends not on people's

behavior but on their systemic thinking, which shapes the change of personal and social values and creates tools for managing relationships in human systems on each branch of the spiral. Given the need to manage deep differences in people to combine their efforts to achieve a single ultimate systemic goal of any activity, spiral management should be:

- organizationally flexible;
- knowledge-based;
- sensitive to situational changes;
- integral and consolidated in the composition of subjects and objects of management;
- global and multidimensional in performance.

In such a changing system of spiral management in the course of the spiral necessarily changes the content of management functions, the complexity of management processes, forms and methods of monitoring and regulation, the level and types of integration, leadership and partnership of interacting entities.

Therefore, in the system of spiral supply chain management must be carried out:

- constant deep and systematic examination of the chain as a whole to identify changes in the needs, requirements, expectations and capabilities of consumers, manufacturers and suppliers;
- sensitive monitoring of weak signals about the possibility and probability of future innovative changes and large-scale social turbulence in society and their impact on logistics activities;
- modern development and experimental verification of recommendations for preventive changes and adjustment of production relations of the supply chain entities as a single socio-economic association;
- formation of the basis for the creation of a new value system of human and inter-organizational relations in the next round of

the spiral, taking into account ethnic, religious, transnational, demographic and cognitive features of interacting supply chain actors and its cross-border and later geoeconomic nature.

Well-known researcher of management and marketing of services Christopher Lovelock argued that management systems must constantly take into account the pace and nature of changes in the service sector, which are aimed at deepening the integration, globalization and internationalization of logistics services [6].

Many modern scientists, developing the scientific ideas of Gilbrets, Mayo, Kondratiev, Leontiev, Juran, Tagucci, Covan and others came to the conclusion about the primacy of the human factor in ensuring the effective development of mankind through the constant improvement of its worldview.

Well-known social psychology expert Daniel Goleman focused the attention of managers on the importance of forming the social sensitivity of human systems to the vision of the future, using the effect of resonant leadership [4]. Such a scheme may be inherent in the socio-economic strategy of the supply chain focus company.

Thus, research conducted in recent years in the fields of innovation, business administration, marketing, management and social psychology, showed that from the standpoint of spiral dynamics, the primary factor in building a management system in any industry and the world economy as a whole is the formation of such worldview and values of human systems and their individuals, corresponding to the level of intellectual development of mankind, the phase and basic characteristics of the technological structures of society, the scale and level of globalization of a particular business. This makes the spiral management system flexible and specific to each segment of the spiral.

But there are general principles of formation of spiral management, focused, among other things, on the management of supply chains, the limits and capabilities of

which are rapidly expanding. In his work "Logistics Management" Van Hawk Remko, commenting on the features of the SCOR supply chain model emphasizes the impact of global consolidation in the system of formation of logistics values and partnership principles of logistics management [9]. The potential for the formation of new values of worldview consists of those psychological properties and needs that are inherent in each person such as survival, leadership, cognition, purposefulness, communication, kinship, compassion, self-centeredness and a huge list of other qualities. Their set and proportions form the worldview of man, and all together - the worldview of the human system and its values, adjusted at each turn of the spiral, from individual selfish interests of the individual to understanding and upholding the values of all mankind and later, perhaps, space. At the same time, of course, maintaining the consensus of the adjusted interests of all levels of management.

The most radical scientists and specialists in social psychology have compared the process of forming a person's worldview with the process of forming its physiological form on the genetic basis of DNA. Thus was born the idea of developing, researching and using a set of MEMs (gene analogs) both to prepare each person and the entire organization (human system) to function in separate segments of the spiral. The end result is achieved by "implementation-interaction-regression-exit" from the worldview system of a specifically oriented MEM (power, cooperation, mutual assistance, sacrifice, aggression, competitiveness, etc.).

Principles, the concept of specific value (properties), and also value symbols, social artifacts, behavioral instructions and etc. can be considered as MEMs.

In their works, D. Beck and Covan identified the following basic principles of the formation of the spiral mind, which to some extent can be adapted to the problems of organization of the spiral management of supply chains [2]:

1. Creating the basic potential of ideas, methods and tools for the formation of new values in local human systems and the chain as a whole for the future demands of possible radical changes in society, economy, ecology, worldview (without complete abandonment of existing ones).

2. Monitoring, scanning and diagnostic analysis of geoeconomic changes, conflicts and collisions, threats to sustainable, balanced development of all regions of the world and ensuring the security of global supply chains.

3. Definition of a set of MEMs for elimination of the revealed turbulences and reconstruction of system of logistic management which will provide functioning of a chain in new conditions of the operating segment of a spiral.

4. Development of strategy and tactics of the life cycle of the new MEM - its introduction, development, regression, disappearance, providing flexible adaptation and the required level of use at different stages of changing technological systems in accordance with the Kondratiev-Schumpeter wave theory.

5. Anticipation and organization of pendulum alternation of MEMs along the spiral with their corresponding adjustment in the new conditions of supply chain operation and the need to change stable agreed management decisions to situational scenarios of logistical support of geoeconomic processes.

6. Ensuring targeted management and mutual acceptance of industry MEMs of suppliers, manufacturers, customers, research and marketing organizations as subjects of the supply chain at all stages of the spiral.

7. Taking into account the level of aggressiveness of social cataclysms in the development of programs for the introduction of new and change of existing worldview MEMs and value systems without harming the individual.

In the application plan for supply chain management it is a question of formation of uniform worldview principles and working off

of identical values for subjects of a chain as uniform social system focused on final result of each segment of a development spiral - satisfaction of constantly growing interests of own human system of a chain on condition of maintenance of growing needs and expectations of all society.

This is a very difficult task for logistics and for any management, the solution of which depends on the focus of employees on integration, interaction, mutual support and common interests and values of worldview.

The formation of such a direction of management Michael Armstrong recommends to start with the development of a system of collective information and the development of modern communication processes, which is especially important for supply chains [1].

Despite the variety of forms and methods of integration processes, there are several basic models of integration. Their following classification is offered:

A. The model of integration of a stream of consecutive works and operations in a supply chain which defines:

- expediency and system efficiency of separate technological operations and final efficiency of integrated efforts of their flow;

- optimization of cyclograms of performed works and their constant coordination;

- development of the chain of target expenses, costs and values of the final product with their subsequent differentiation by integrated business processes, agreed with the cooperating actors of the chain;

- use of horizontal management of interaction of subjects of a chain on the coordinated and mutually controlled programs in combination with standard internal self-management of each enterprise.

B. Integration model of incorporation, the main features of which are:

- a single system of participation of all actors in the chain to improve, maintain, strengthen operations and transitions of technological processes in the supply chain;

- corporate management of the functions of strategic planning, controlling, technical and economic analysis and innovation;

- centralized management of organizational restructuring of the chain as external and internal changes, deviations and imbalances;

- use of flexible vertical control of supply chain operation.

C. Integration model of team intelligence, the main features of which are:

- combines the features of the first two models by creating variable flexible control systems according to real or predicted events and situations;

- is based on the capabilities and principles of the digital economy, computerization and informatization of management operations, the use of modern databases of IT, cloud technologies, roadmaps, network management and etc.;

- concentrates in the processor control center competencies, experience, consulting design solutions to coordinate joint actions of supply chain actors;

- creates an analytical and management center in combination with groups (centers) of focused intelligence.

D. Spiral management model, designed for long-term control of the supply chain, which is constantly changing - evolving or degrading (the so-called spiral funnel).

The purposes of this integration model are following:

- formation of long-term forecasts of the future state of society, its needs and opportunities, directions of development of intellectual, industrial, social and other spheres of activity;

- expanding the scope and scale of integration processes, as the subjects of the global and dynamically changing supply chain must be added and social organizations, the product of which will be new needs, research institutions that will develop products to meet these needs; a network of supply and service supply chains

of enterprises, the composition and structure of which changes along the spiral;

- development of a program of the necessary next change of worldview, which would minimize the loss of individuality, create new forms of communication, mutual understanding and interaction on the basis of common basic values, among which the priority would be system-wide interests;

- socio-psychological support of a unified policy and strategy of mandatory changes in the supply chain at different stages of its spiral dynamics by creating an appropriate innovation climate, accumulation of intellectual capital, management of resistance to change and as a result - the creation of new thinking.

As we can see, the problem of changing the worldview of people, organizations and society as a whole is the most important for spiral management. This is especially familiar to our society, which is experiencing a stressful transition from a socialist to a market economy, from the right to work to its search and struggle for a job, from collective communication to freelance, etc. Such inevitable changes require on the one hand a concentration on the development and interests of the individual and at the same time an understanding of each person's dependence on the values and interests of the entire human system. This situation completely coincides with the socio-psychological problems of integration and interaction of supply chain actors.

In spiral management, the object of management - the supply chain - is seen as a spiral of business processes:

- a) from the primary source - customers of the required product to meet their specific needs and to the end point - consumers of this product;

- 6) from the primary process of formation of technical requirements to the future product of satisfaction of need and to the final process of utilization (liquidation) of the used product.

The realization of the essence of spiral management is associated primarily with

changes, the scale of which is growing at an accelerated pace. The need for business response in such volatile changing conditions has led to the emergence of various forms and

methods of management that can be used to manage the spiral dynamics of supply chains (Fig. 1).

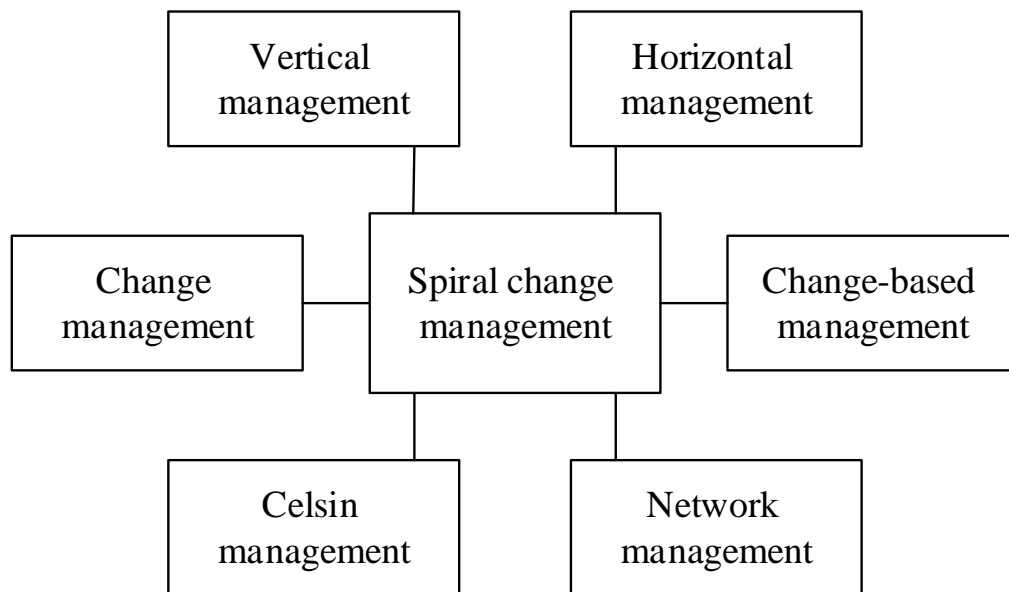


Figure 1 – Components of spiral management

The very idea of spiral management in logistics is a continuation of scientific research and proposals of Harrison, Mason-Jones, Remco van Hawke and others. on the transition from the concept of rational logistics to the model of "dynamic logistics chain", focused primarily on sensitivity to the

end user - the customer and virtual needs assessment and real demand, as well as the integration of business processes and network structure of chain partners with cross-links and a single information platform (Fig. 2).

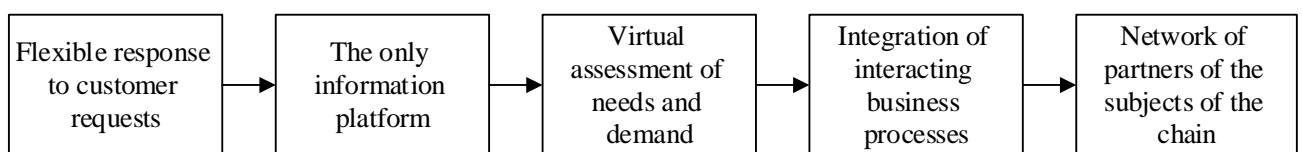


Figure 2 – Integrated dynamic logistics chain

These scientists consider that a special condition for ensuring the dynamism of the chain, the strength and stability of partnerships based on the following principles:

- common moral and ethical values and corporate principles;
- unity and priority of system-wide chain goals;

- recognition of the interdependence of actors and the need for their integration and contacts at all levels;
- mandatory use of a single common and open to partners information system;
- trust and mutual cross-checking;
- joint strategic planning;
- coordination of the subjects activities of the chain by the focus company;

- interaction and exchange of share capital between the subjects of the chain;
- mutual benefit and shared risks.

These factors remain relevant for spiral management, only increasing the horizon for predicting changes and their scale along the spiral, as well as increasing the importance of ideological socio-psychological transformations in human supply chain systems. Spiral management is actually the management of progressive changes - extinction of obsolete products, technologies, ideas, relationships and stimulating the components of a new technological structure and the corresponding change in the value system. The direction of change, as a rule, is towards strengthening the tendencies of integration, globalization and changing the priority of public interests from local, regional, national to the global level of sustainable and secure development of society.

Management of changes (Fig. 1) of the spiral turns, as well as internal changes in the supply chain requires the use of a full range of types, forms and methods of management. First of all - flexible use of both vertical and horizontal control. The vertical of successive technological business processes in supply chains has its own feature: it is directed in the reverse order - from the customer to the initial state - the emergence of a need for a product or service. The vertical of organizational and economic management of the chain is not authoritative in nature, but recommendatory and coordinating in nature. Such management decisions, in our opinion, should have the tools of mandatory implementation provided by the relevant corporate agreements for the actors in the supply chain. At the same time, there are situations that threaten the security of the world, such as pandemics, natural disasters and etc., when competent decisions of government are needed. Therefore, in the future, the human community will need to have control centers for vertical control of the chains necessary to ensure security of supply

on sections of the spiral that threaten humanity.

Horizontal management in the system of spiral management is based on the relationships and partnerships of the chain as a collective like-minded person with a broad outlook and systemic focus, which goes beyond the interests of their own unit and even the company. After all, the understanding of spiral changes as global transformations includes all aspects of activity - scientific, economic, industrial, social and undoubtedly leads to a change in people's worldview on a more complex cognitive, intellectual and spiritual levels. This trend is very instructive in the search for Japanese management, which results in systems of quality control circles, logistics scheme "just in time", production associations such as "keiretsu", and others.

As for the direct management of changes in the supply chain spiral, in addition to the passive adaptive strategy of change management in the external environment of the chain, it is mandatory to manage radical changes in the internal structure, methods and technologies of logistics operations and business processes.

As any processes of production, transportation, use and utilization of products of deliveries are connected with a network of accompanying providing, servicing and service enterprises of various branches of economy, the supply chain in itself represents an extensive network of the integrated system of interacting business entities which is determined by network management methods. Finally, the spiral dynamics of the supply chain is constantly affected by indirect influence of external factors, changes in which, according to the essence of Celsin management, can significantly affect the formation and operation of the spiral of the supply chain.

References

1. Maykl Armstrong. Menedzhment: metody i priyomy: Per. s angl. K. : Znaniya Press. 2006, 876 s.
2. Don Bek. Spiral'naya dinamika na praktike. Model' razvitiya lichnosti, organizatsii i chelovechestva / Don Bek. M. : Al'pina-Publisher, 2019. 382 s.
3. Ar'ye Gotsdanker. Biznes-psikhologiya. M. : Izdatel'stkoye resheniye, 2015. 106 s.
4. Deniyel Goulman. Emotsional'noye liderstvo: Iskusstvo upravleniya lyud'mi na osnove iskusstvennogo intellekta. Per. s angl. M. : Al'pina Biznes Buks, 2005. 301 s.
5. Robert Grant. Sovremennyy strategicheskoye analiz. Pyatyy izd. SPb. : Piter, 2008. 560 s.
6. Kristofer Lavlok. Marketing uslug: personal, tekhnologii, strategiya. Chetvortogo izd. Per. s angl. M. : Vil'yams, 2005. 1008 s.
7. A. Martynov. Effektivnyy menedzher. Sekrety psikhologicheskogo vozdeystviya. 2013.
8. Psikhologiya biznesa. Teoriya i praktika: uchebnik dlya magistrrov / pod obshch. red. N.L. Ivanovoy, V.A. Shtromu, N.V. Antonovoy. M. : Izdatel'stvo Yurayt, 2014. 509 s.
9. Koulik V.A., Zamiar Zenon (2020) "Supply chain spiral dynamics". Intellectualization of logistics and Supply Chain Management. [Online], vol.1, pp.7-16, available at: <https://smart-scm.org/en/zhurnal-1-2020/volodimir-koulik-supply-chain-spiral-dynamics/> (Accessed 30 Apr 2020). DOI: <https://doi.org/10.46783/smart-scm/2020-1-1>

Список використаної літератури

1. Майкл Армстронг. Менеджмент: методы и приёмы: Пер. с англ. К.: Знания Прес. 2006, 876 с.
2. Дон Бэк. Спиральная динамика на практике. Модель развития личности, организации и человечества / Дон Бэк. М.: Альпина-Паблшер, 2019. 382 с.
3. Арье Готсданкер. Бизнес-психология. М.: Издательское решение, 2015. 106 с.
4. Дэниел Гоулман. Эмоциональное лидерство: Искусство управления людьми на основе искусственного интеллекта. Пер. с англ. М.: Альпина Бизнес Букс, 2005. 301 с.
5. Роберт Грант. Современный стратегический анализ. 5-е изд. СПб.: Питер, 2008. 560 с.
6. Кристофер Лавлок. Маркетинг услуг: персонал, технологии, стратегия. 4-е изд. Пер. с англ. М.: Вильямс, 2005. 1008 с.
7. А. Мартынов. Эффективный менеджер. Секреты психологического воздействия. 2013.
8. Психология бизнеса. Теория и практика: учебник для магистров / под общ. ред. Н.Л. Ивановой, В.А. Штроо, Н.В. Антоновой. М.: Издательство Юрайт, 2014. 509 с.
9. Koulik V.A., Zamiar Zenon (2020) "Supply chain spiral dynamics". Intellectualization of logistics and Supply Chain Management. [Online], vol.1, pp.7-16, available at: <https://smart-scm.org/en/zhurnal-1-2020/volodimir-koulik-supply-chain-spiral-dynamics/> (Accessed 30 Apr 2020). DOI: <https://doi.org/10.46783/smart-scm/2020-1-1>