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LOGISTIC SYSTEM OF KAZAKHSTAN FROM THE POSITION OF INNOVATIVE PARADIGM

The relevance of the topic under consideration is devoted to a deeper understanding of the fact that widespread digitalization poses ambitious tasks to modernize the economy of Kazakhstan. As you know, the digital economy will lead to the disappearance of whole industries and the emergence of new ones (one of which is logistics). Logistics, as a science, by virtue of its interdisciplinarity and as a branch of the economy should meet the global challenges of our time. Therefore, it is time to carry out a comparative analysis of the existing evolution and paradigms of the development of logistics as a science and its theoretical and applied continuation in the strategic plan – supply chain management.

The purpose of this article is to show how a conceptual – categorical analysis of the historical aspects of the development of logistics and supply chain management on a global scale provides an understanding for the further development of the logistics system in Kazakhstan within the framework of innovative logistics – smart logistics and network technology for supply chain management. The scientific significance of this article is that if the scientific world has so far shared logistics and supply chain management as two scientific disciplines, then the author made an attempt using the category of «innovative paradigm» to show continuity of conceptual schemes of logistics and supply chain management and to produce a new Classification of types of logistics in accordance with modern challenges of society, such as: basic logistics-integrated logistics-innovative logistics-smart logistics-supply net. Thanks to the conducted research, the article determines the level of theory and practice of development of Kazakhstan's logistics system in terms of business performance.

Key words: logistics, paradigm, basic logistics, integrated logistics, innovative logistics.

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Қазақстанның логистикалық жүйесі инновациялық паридигмасы көзқарасынан

Қарастырылып отырған тақырыптың өзектілігі Қазақстан экономикасын жаңғырту бойынша кең ауқымды цифрландыруды кеңейтетін міндеттерін терең түсінуге арналған. Белгілі болған жайтты ескерсек, ол – сандық экономика тұтас саланың жойылуына және мүлде жаңа саланың пайда болуына алып келеді (соның бірі инновациялық логистика). Өйткені, экономиканың саласы және ғылым ретінде, пәнаралық болуына байланысты логистика жаһандық қатерлерге жауап беруі керек. Supply Chain Management логистиканың ғылыми және теориялық-қолданбалы стратегиялық жоспарын жалғастыру барысында, оның эволюциясы және қолданыстағы даму парадигмаларына салыстырмалы талдау жүргізу қазіргі уақытқа сай.

Инновациялық логистика шеңберінде Қазақстан логистикалық жүйесін одан әрі дамыту және логистика дамуының тұжырымдамалық үшін қалай әлемдік ауқымда жеткізу тізбектерін басқаруы – санатты тарихи аспектілерін талдау осы мақаланың мақсаты болып табылады. Осы баптың ғылыми маңыздылығы бүгінгі күнге дейін ғылыми әлемі логистика мен тізбекті жеткізуді басқару екі пән ретінде бөліп қарастыруда, ал автор логистиканың және жабдықтау тізбегін басқару тұжырымдамалық сұлбаларының үздіксіздігін көрсету және қоғамның заманауи сын-қатерлеріне сәйкес логистика түрлерінің жаңа жіктелуін көрсету үшін «инновациялық парадигма» санатын қолдануға әрекет жасалды: негізгі логистика – интеграцияланған логистика

– инновациялық логистика – смарт логистика – желі логистика. Жүргізілген зерттеулердің арқасында мақала қазақстандық логистикалық жүйенің бизнесті жүргізу тұрғысынан дамытудың теориясы мен тәжірибесінің деңгейін айқындайды.

Түйін сөздер: логистика, парадигма, негізгі логистика, интеграцияланған логистика, инновациялық логистика.

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Логистическая система Казахстана с позиции инновационной парадигмы

Актуальность рассматриваемой темы посвящена более глубокому пониманию того, что повсеместная цифровизация ставит амбициозные задачи по модернизации экономики Казахстана. Как известно, цифровая экономика приведет к исчезновению целых отраслей и появлению новых (одной из которых является инновационная логистика). Логистика как наука в силу своей междисциплинарности и как отрасль экономики должна отвечать глобальным вызовам современности. Поэтому настало время провести сравнительный анализ существующих эволюций и парадигм развития логистики как науки и его теоретико-прикладного продолжения в стратегическом плане – управления цепями поставок. Цель данной статьи показать, насколько понятийно-категориальный анализ исторических аспектов развития логистики и управления цепями поставок в глобальном масштабе дает понимание для дальнейшего развития логистической системы в Казахстане в рамках инновационной логистики. Научная значимость данной статьи заключается в том, что если до сих пор научный мир разделял логистику и управление цепями поставок как две научные дисциплины, то автором сделана попытка, используя категорию «инновационная парадигма», показать преемственность концептуальных схем логистики и управления цепями поставок и произвести новую классификацию видов логистики в соответствии с современными вызовами общества, такую как: базовая логистика – интегрированная логистика – инновационная логистика – smart logistics – supply net. Благодаря проведенному исследованию в статье определяется уровень теории и практики развития логистической системы Казахстана по показателям ведения бизнеса.

Ключевые слова: логистика, парадигма, базовая логистика, интегрированная логистика, инновационная логистика.

In the address of the President of the Republic of Kazakhstan N. Nazarbayev of January 31, 2017. – «Third modernization of Kazakhstan: global competitiveness» outlines specific tasks for the development of the state's innovative potential, which defines a new Kazakhstan model of economic growth that ensures the country's global competitiveness, where the main tools for implementing the above model are the development of basic industries such as industry, agribusiness, transport and logistics, construction sector and others. It was also proposed to develop a program «Digital Kazakhstan», which should be adapted to new realities and our legislation. and their rapid introduction into production (Nazarbayev, 2017: 3)

At present, the development of a logistics system in the Republic of Kazakhstan involves the use of an innovative paradigm. The paradigm (from the Greek paradigma – an example, a sample) is an initial conceptual scheme, a model of posing

problems and their solutions, research methods that dominate a certain historical period in the scientific community. Formation in our country of a scientific approach to the study of logistics in the perspective of an innovative paradigm is represented by the following publications of the following authors: (Akhmetkaliyeva and Sokira, 2017: 10; Kulzhabai et al., 2014: 224; Mukhtarova, 2016a: 24; Mukhtarova, 2016b: 89; Mukhtar, 2016a: 279; Mukhtar, 2016b: 379)

As is known, the evolution of the development of logistics is historically described by the following stages:

From 1980 to the present. Period of integration, globalization

1920-1950 Fragmentary connections

1970-1980 Development period

1950-1970 The period of formation

and the existing 4-th paradigms, which are used by companies of Kazakhstan in the design of logistics systems (Table 1) (Nerush, 2014: 15).

Table 1 – Characteristics of Logistics Paradigms

Paradigm	Characteristic
Analytical	Classical approach to logistics as a theoretical science dealing with the problems of managing material flows in production and circulation
Technological	Information-computer technology and technology of efficient operation of functional areas in logistics
Marketing	It is aimed at describing and explaining the relationship between the logistics system and the firm's capabilities in competition
Integral	Develops a marketing paradigm and uses management and various functions related to material flow

The integral paradigm, in essence, prefigures the concept of supply chain management. The concept of supply chain management is one of the most dynamically developing areas of scientific and practical activity over the past decades. The term «Supply chain management – SCM» was proposed by the system integrator – the company «i2 Technologies» and the consulting company «Arthur Andersen» in the early 1980s. For the first time, the term SCM is scientifically described in the article «Supply chain management: Logistics Catches up with Strategy» (Oliver, 1982: 67). The increase of supply chains (SC) management efficiency requires the theory and methodology of the development of this scientific direction, and it is obvious that the most perspective solution of this problem is to work out and improve the logistic functions and operations at all levels of logistics systems (LS) management (Ballou, 2004: 25, Bowersox, and Closs, 1996: 12; Christopher, 2001a: 235; Christopher, 2004b: 127; Lee, H., 2004a: 102; Lee, H., 1997b: 546; Lukinsky et al., 2013a: 224; Lukinsky et al, 2012b: 404; Stock and Lambert, 2001: 45).

The application of an innovative paradigm in the logistics system of the RK means the introduction of the concept of Supply Chain Management in enterprises. Accordingly, we define Supply Chain Management in a broad and narrow sense: SC management is an innovative logistics strategy in the view of an innovative paradigm, Supply Chain Management is a conceptual scheme of integrated logistics. The supply chain is a new type of logistics system, the management of which from the standpoint of minimizing total costs, increasing profits, improving customer service and reducing the influence of uncertainty factors on the system is called supply chain management (Stepanian, 2014: 46; Harrison, 2010: 32; Ivanov, 2009a: 151; Kurenkov, 2011: 34; Fedotov, 2011: 49). The practice and theory of supply chain management appeared in response to the new economic challenges of the late 1970s, when the macroeconomic characteristics

of the world economy, which was stagnating after the energy crisis, required significant efforts to develop new managerial decisions and concepts. At that time, one of the conditions for the survival of companies was the reduction of logistics costs. The appearance of signs of the «bullwhip effect» in the supply chain, the essence of which is that partners do not have reliable information about real demand and are forced to create an insurance stock of materials and (or) finished products. The paradigm of key competencies that dominated the strategic management only exacerbated the problem of the «whip effect», as focusing the company on key competencies means removing non-core business processes beyond it. As a result, in most cases, there was an increase in the number of links in the supply chain, while reducing control over the activities of suppliers. A natural and logical decision was to organize a simple coordination of the flow of materials and finished products through the exchange of reliable information between partners in the framework of trust relationships. This is what was called the supply chain management and later developed in the direction of creating more complex systems of coordination and integration of key business processes [Hunters, 2014: 49; Sergeev, 2010: 8]. The development of supply chain management has objective bases. According to experts [Ivanov, 2010b: 115], the starting point for the emergence and development of the concept of supply chain management was the desire to reduce uncertainty based on cooperative methods and models and multi-echelon inventory management.

Introduction of Supply Chain Management in the enterprises of the RK will help to solve the following tasks:

1. Reduce the planning cycle and increase the planning horizon by obtaining reliable and timely information;
2. Optimization of costs through the ability to determine strategic counterparties, the optimal choice of purchased products and their suppliers;

3. Reduce production costs (the cost of raw materials, the cost of maintaining stocks, investment in equipment, the cost of in-plant shipments) through the optimization of product flows and the operational organization of information exchange between counterparties;

4. Decrease in warehouse costs due to bringing production volumes in line with demand (analogous to Just in Time in lean manufacturing);

5. Improving the quality of customer service due to the timeliness and flexibility of the supply chain;

Leaders of domestic business realize that to consolidate their competitive advantages in the local market and achieve success abroad, the introduction of SCM is a vital necessity. This is evidenced by the fact that in the management structure of an increasing number of Kazakhstani companies there are top managers responsible for the development of the supply chain.

For the enterprise, the introduction of SCM means doing business on the basis of strategic interaction with suppliers and customers. In a traditional system, enterprises compete by achieving

the ultimate competitive advantage in the supply chain of the product. Managing supply chains involves competition not of individual enterprises and their products, but of supply chains, which include these enterprises.

The supply chain is links connected by information, money and commodity flows. Each chain begins with the acquisition of raw materials from suppliers and ends with the sale of finished goods and services to the consumer. Of course, it is appropriate to note the winged expression of M. Christopher: «It is not enterprises, but the supply chain that are competing.» Also, according to the apt statement of Gartner Group, «the era of competition of individual companies has been replaced by the era of competition for their supply chains.» «Collaborate to compete» – this principle is one of the most important for successful business in modern dynamic markets. The ideology of supply chain management causes significant changes in approaches to the organization and management of the business.

Historically, the evolution of the supply chain management concept is presented in Table 2.

Table 2 – Evolution of the concept of supply chain management

Stage	Period	Characteristic
Stage 1. The origin of the theory of Supply Chain Management. 1980-err.	1980	There is a need for a new concept of business management as the idea of coordinating the flow of materials and finished products, not only within a single firm, but also in a number of firms linked by a technological chain. At this stage of development, the concept of «supply chain management» in its content was only slightly different from the expanded interpretation of integrated logistics and was almost completely determined by it
2 stage. Branch Supply Supply Chain Management from logistics in the	1990s. First half	There is a separation of supply Chain Management theory from logistics, independent research of management of supply chains as a science, as well as areas of use of its concept in practical activity. There is a shift and separation between logistics and SCM conceptual and semantic categories and individual terms. There is a need to systematize the applied concepts and terms of logistics and supply chain management
Stage 3. Formation of the classical concept Supply Chain Management	The second half of the 1990s – the beginning of the 2000s.	The distinction between integrated logistics and supply chain management, control, coordination and integration functions in the management of the flow of goods is clearly defined as the concept of supply chain management. The main research areas focus on integration processes and strategic partnerships, as well as ensuring the interconnection and control of commodity flows and information coordination to ensure communications between links in the chain.
4 th stage. The Modern Stage of the Development of Supply Chain Management	The second half of the 2000s.	There is an even more in-depth study of the theory and practice of supply chain management and their adaptation to different markets. Modern supply chain management practice focuses on intrafirm planning and optimization of resources in building the relationship between the focus company and the rest of the supply chain

The conceptual scheme of the integral paradigm in the 1980s generates the term «integrated logistics». The system of integrated logistics ensures the promotion of products through a continuous and consistent chain of incremental addition of value with the acquisition of goods and services at the right time, in the proper quantity and form. The added cost means that each side of the drug includes actions that increase the cost of the product or service for those who will receive the goods. In this case, logistics can integrate distribution, production and supply so as to synchronize rhythms and flows

The evolution of supply chain management or integrated logistics at the initial stage was accompanied by a paradigm shift.

- 1) functional;
- 2) resource;
- 3) innovative.

The functional paradigm was related to the fact that for a certain period of time (1960-1985), the operational activities, in particular, transportation, warehousing, cargo handling, customs clearance and cargo insurance, were assigned to logistics. The main task of organizations in the performance of logistics functions was to reduce various costs for transportation, storage, handling and handling.

The period of the resource paradigm of integrated logistics (1980-2000) continues to the present. The basic concept is reduced to «total costs». The aggregate composition of total costs includes: 1) operating costs for logistics; 2) administrative and managerial (transactional) costs; 3) costs associated with the immobilization of funds in stocks; 4) lost profits (missed sales) – «fictitious costs».

Thus, the resource paradigm of logistics is associated with a qualitatively new level of its development: a transition to a higher level of influence in the hierarchy of company management – from operations to coordination. The resource concept turned out to be the most in demand in the last decade due to a number of basic methodological innovations (Katkalo, 2003: 4).

The innovative paradigm of logistics has become a further logical continuation of its evolution in the context of SCM – Supply Chain Management.

As the evolution continues, the level of integration, including logistics, is constantly increasing, with the integration gradually developing: from the infrastructure through the organizational to the information one. Integration is a deepening, strengthening of interaction, interrelations and cooperation of economic entities or management with the purpose of more complete use by each subject of their exclusive competitive advantages for

the benefit of all entities. An integrated system is a self-sufficient system of free enterprise. It consists of the economic entities entering into it on a contractual basis, entering into coordinated and coordinated organizational, economic and managerial relations regarding the formation and use of property on the basis of harmonizing the interests of participants with the aim of industrial rationalization, increasing competitiveness and achieving synergies.

Infrastructure integration is connected with the idea of combining the management of transport and warehouse divisions into a transport and warehouse complex, which allowed to synchronize transport and warehouse operations and use the material and technical base more rationally. In the future, this integration has also affected the information part of the logistics infrastructure – information systems.

Organizational integration is associated with the evolution of the organizational structure – from the linear-functional structure of management to the matrix and process-oriented. These processes are characterized by the transition from the management of individual operations to the management of their aggregate – business processes, in order to optimize the company's resources and meet the requirements of end-users.

Information integration was caused by the need to build a single information space for the purpose of working online. The main goals of information integration: – information accessibility and openness; – Operational forecasting of demand, capacity planning and rationing; – monitoring of logistical business processes, carrying out of controlling. To build a holistic information space for managing supply chains, integrated information support includes the type of information systems Advanced Planning Systems (APS) – an advanced planning system: Customer Relationship Management (CRM) – customer relationship management, Supplier Relationship Management (SRM) – relationship management with suppliers.

Undoubtedly, an important condition for the emergence of new industries is the support of innovations, and their introduction into production is the development of Smart Logistics in Kazakhstan, which determines the highest level of logistics as innovative. The improvement of the term Smart Logistics by the concept of Smart Logistics Zones is associated with the increasing requirements for automatic identification and localization, as well as monitoring the condition of logistics facilities as data sources for documentation and control of a secure supply chain.

Examples of Smart Logistics Zone applications for managing automotive parts, managing RFID pallets are discussed in scientific papers: (Loebbecke et al. 2006: 75; Peppel et al. 2014: 67; Poenicke, et al. 2016: 87; Kirch M., et. al. 2017 :526; Schenk, 2012a: 37; Schenk 2007b: 58; Schenk 2010 at: 42; Ten, 2004: 23; Uckelmann, 2008: 273)

Smart Logistics Zones are an enhancement of the term of Smart Logistics. For the further research on Smart Logistics Zones, a structured analysis of logistics processes, frameworks and resources along global supply chains. This analysis will mark a permanent process as well as the needs of customers. The RFID applications are the first example applications where such Smart Logistics Solutions are already in use. For certain domains the use of RFID may be considered to be a mandatory feature for the object identification in Smart Logistics applications. But already the RFID technology is one of the ways

to integrate passive sensor functionalities. The following hierarchy is proposed:

- Supply Net
- Smart Logistics
- Innovative logistics
- Integrated logistics
- Basic logistics.

In conclusion, after a comparative analysis of the evolution of logistics development and supply chain management, it is necessary to propose a classification of logistics, depending on the stages of development and the corresponding paradigms and strategies. It is necessary to point out the following evolution of logistics as a basic one, which synthesizes the theory and practice of functional-analytical and technological paradigms, integral logistics synthesizes the resource-information-marketing paradigm, innovative logistics that synthesizes the resource-information-integrated digital paradigm.

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