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THE SCIENTIFIC LEGACY OF PROFESSOR Y.V. KRYKAVSKYI: DEVELOPMENT OF LOGISTICS THEORY IN UKRAINE AND FUTURE PERSPECTIVES

***Mariia Hryhorak, Chornopyska Natalya, Marchuk Volodymyr. "The scientific legacy of professor Y.V. Krykavskiy: development of logistics theory in Ukraine and future perspectives".** The article presents the first attempt at scientometric analysis of the scientific legacy of the prominent Ukrainian scholar, Doctor of Economic Sciences, Professor Yevhen Vasylovych Krykavskiy. The main stages of his scientific work and its impact on the development of the general theory and practice of logistic science in Ukraine are identified. It is demonstrated that Y.V. Krykavskiy himself formulated the theoretical foundations of logistics as a separate direction of scientific research in the field of economic sciences, established the basic conceptual framework, founded a scientific school of marketing and logistics, and trained a large number of candidates and doctors of sciences who continue and deepen the theoretical developments of the great scientist, as well as expand the spheres of practical application of logistic concepts, tools, and methods, and supply chain management in new economic conditions.*

Keywords: The logistic theory and supply chain management, authored by Yevhen V. Krykavskiy, scientific legacy, scientometric analysis of scholarly works.

Григорак Марія, Чернописька Наталія, Марчук Володимир. «Наукова спадщина професора Є.В.Крикавського: розвиток теорії логістики в Україні та погляд у майбутнє». У

представленій статті зроблено першу спробу наукометричного аналізу наукової спадщини видатного українського вченого, доктора економічних наук, професора Євгена Васильовича Крикавського. Визначено основні етапи його наукової творчості та її вплив на розвиток загальної теорії і практики логістичної науки в Україні. Доведено що саме Є.В. Крикавський сформував теоретичні засади логістики як окремого напрямку наукових досліджень в сфері економічних наук, сформував базовий понятійний апарат, заснував наукову школу маркетингу і логістики, підготував велику кількість кандидатів та докторів наук, які гідно продовжують та поглиблюють теоретичні розробки великого вченого, а також розширяють сфери практичного використання концепцій, інструментів та методів логістики й управління ланцюгами постачання в нових економічних умовах.

Ключові слова: теорія логістики та управління ланцюгами постачання, Крикавський Є.В., наукова спадщина, наукометричний аналіз наукових праць.

On March 5, 2024, the renowned scientist Yevhen Vasylovych Krykavskiy, Doctor of Economic Sciences, Professor, and Head of the Department of Marketing and Logistics at the Lviv Polytechnic National University, passed away. He was a generous soul - a talented educator who paved the way for many Ukrainian scholars, a researcher who significantly shaped and developed the theory of logistics in the Ukrainian academic environment, and a public figure who popularized logistics not only in higher education but also in the business and public sectors. For decades, he served as the responsible editor of the scientific professional publication "Logistics" of the Lviv Polytechnic National University Bulletin, a member of specialized academic councils for the defense of doctoral dissertations D. 35.154.01 of the Institute of Regional Studies of the NAS of Ukraine and D. 35.052.03 of the Lviv Polytechnic National University, and participated in the work of the expert council on economic sciences of the Higher Attestation Commission of Ukraine (2002–2006), the scientific-methodological commission on economics and entrepreneurship, and the scientific-methodological commission on management

and administration of the Ministry of Education and Science of Ukraine.

Yevhen Vasylovych Krykavskiy was born on September 12, 1949, in Radkivshchyna, Lviv region (village of Styrkivtsi). He completed secondary school in 1966 in Radkiv. In 1970, he entered the Faculty of Engineering and Economics at the Lviv Polytechnic Institute (now the Lviv Polytechnic National University), where he distinguished himself as a talented student, earning the right to receive the Lenin scholarship and graduating with honors in 1975 with a degree in "Economics and Organization of Energy". He began his scientific career in 1975 as an engineer at the research laboratory of the Lviv Polytechnic Institute, and from 1980, he worked at the Department of Economics and Organization of Chemical Industry and Energy (now the Department of Marketing and Logistics) of the same institute. All subsequent scientific and pedagogical activities of Yevhen V. Krykavskiy were associated with this department and its development: he rose from an assistant to a professor and head of the department. From October 1992 to March 2024, he served as the head of the Department of Marketing and Logistics.



Krykavskiy Yevhen Vasylovych

Krykavskiy Yevhen Vasylovych left behind a significant scientific legacy, which constitutes a substantial contribution to the development of logistics science in Ukraine. The purpose of this article is to conduct a scientometric analysis of the scientific work of the renowned scholar. The main sources for writing this article were his monographs, textbooks, teaching aids, collections of scientific papers, as well as publications in periodicals and author's certificates.

Scientific achievements became the defining characteristic of Professor Yevhen Vasylovych Krykavskiy's creative activity, as he made a significant contribution to the development of theoretical provisions in the fields of energy economics, marketing, and logistics. His scientific work includes 23 monographs, 24 textbooks and teaching aids with the approval of the Ministry of Education and Science of Ukraine, and over 400 other publications. Under his supervision, 13

doctoral and 44 candidate dissertations were defended.

Considering the vast quantitative indicators of Professor Yevhen Vasylovych Krykavskiy's scientific legacy, the analysis of his work was conducted according to thematic directions over specific periods.

The main scientific direction of the scholar's research throughout his creative life became the general theory of logistics, to which the majority of his scientific publications were dedicated. As early as 1996, the author published his first book, "Enterprise Logistics," which became the theoretical basis of the dissertation presented for the academic degree of Doctor of Economic Sciences on the topic "Formation of Enterprise Economic Potential Based on Logistics Concepts" and successfully defended in 1997. It is worth noting that at that time logistics in Ukraine was perceived as "terra incognita," so it was a very bold step for

the researcher to include "logistics concepts" in the title of his dissertation, unfamiliar to the majority of the scientific community. Later, Yevhen Vasylovych Krykavskiy published several important scientific articles defending logistics as a separate branch of economic science and proving its significance for the development of organizations as a set of specific management tools and methods for managing material, informational, and financial flows.

Separately, it is necessary to mention the scientific works dedicated to the formation of the terminological basis of logistics as a science, the theoretical and methodological principles of organizing and conducting logistic activities in enterprises of various economic sectors. In particular, the textbook "Logistics: Basics of Theory" discusses the concept, goals, and objectives of logistics, methodological apparatus, and logistics tools, identifies objects of logistic management, explores logistic functions and logistic management in the enterprise management system, and substantiates the logistic approach to managing material flows in production and distribution of goods.

The analysis of Yevhen Vasylovych Krykavskiy's scientific legacy indicates that the management of enterprise logistics activity was a constant focus of his research. He firmly believed that logistics is not only a management concept but also a philosophy of enterprise management that requires specific thinking. This thinking is oriented towards the value and utility of space, time, information, and more; thinking in systemic categories based on the interdependence of resources and processes; thinking in terms of total or full costs, which involves resolving conflicts between costs and goals; thinking in terms of service (order cycle, reliability, quality, and flexibility of order fulfillment); and thinking in terms of efficiency.

Defining the essence of modern enterprise management in the book "Logistics Management," the scholar emphasizes the integration of logistics management, structured into strategic and

operational areas. The tasks and principles of strategic logistics management are related to integrating logistics into the structure of enterprise strategic planning, formulating logistics strategy as part of corporate strategy, and specifying strategic objectives through the implementation of logistics projects, among others. The main goal of operational logistics management is to ensure harmonious cooperation through the synchronization of logistics processes and coordination of logistics functions within other structural units. In this context, Yevhen Vasylovych thoroughly researched the forms of organizing logistics activities within the enterprise and paid attention to coordinating and avoiding conflicts in goal structure, exchanging information between functional areas within the enterprise, especially the interaction of logistics, marketing, finance, and others.

The economic aspects of logistics activity and mechanisms for creating sustainable competitive advantages were disclosed in the book "Logistics for Economists." Particularly, the author's position was based on the idea that only orientation towards total costs, total value, and the entire cycle would allow achieving a synergistic result in the form of additional cost savings, value (benefit) for the customer, and the level of customer service. He argued that due to changes in consumer demands regarding product and service customization and the need to provide a wide range of products, mass production shifts from the assembly stage to the component manufacturing stage, thus realizing economies of scale in the final product. Analyzing the understanding of enterprise logistics as a system of material, money, and information flow management, the scholar concluded that the subject of logistics research could be anything that is the subject of logistics considerations, namely, the logistic product and service, representing a set of accepted customer requirements in a specific logistics system. Thus, economic cooperation enables various economic entities to integrate their activities for joint

creation of consumer value, harmonize economic interests focusing on the end consumer, and achieve a multiplier effect.

It is worth noting that Yevhen Vasylovych was very responsive to market changes and the diffusion of knowledge and experience in logistics. He warned against primitive views on logistical problems and solutions, the opportunistic use of the term "logistics," and sought to foster logistic thinking not only among students but also within the scientific community. Generalizing global trends in logistics and supply chain management, analyzing trends in international and national logistics service markets, closely collaborating with foreign colleagues, and participating in numerous scientific and practical conferences were part of his approach. For instance, in 2014, a new book titled "Logistics Economics" was published, prepared by a team of authors under the leadership of Yevhen Vasylovych. This book examined the place and role of logistics as an economic sector, identified the composition of logistics assets, further investigated the economic potential of logistics and its synergistic effect, and proposed methodological approaches to evaluating the results of logistics activities. A crucial conclusion was made about the need for infrastructure development, particularly logistics infrastructure, in the transition of Ukraine to market methods of management. This required state support through legislative regulation, infrastructure planning, and creating favorable conditions for investment in transportation, warehousing, and other infrastructure objects.

The most comprehensive exposition of the theory and practice of modern logistics is the book "Logistics and Supply Chain Management" [11]. The authoring team, led by Yevhen Vasylovych Krykavskiy, synthesized the methodological foundations of supply chain management and investigated the strategic and operational role of logistics as one of the key business processes. Specifically, the basic principles of supply chain management are outlined, and its internal business processes are described

in detail using two well-known reference models commonly employed in supply chain management practice - the SCOR and GSCF models. Typical solutions for supply chain planning are also provided.

A separate focus is given to the characterization of information technologies, the use of which in supply chains enables the formation of a database serving as a source of information for evaluating and continuously monitoring the performance of the supply chain at all levels. It should be noted that in this book, Yevhen Vasylovych viewed the supply chain as a variant of full systemic integration of processes involving supply, production, and distribution, which alters the established boundaries of operation of individual participants, forming a new logistic system of higher hierarchy.

Interorganizational cooperation in supply chains enables inventory management through joint optimization of inventories of all cooperating enterprises based on long-term partnerships, requiring specific logistics management tools, differentiated requirements for information exchange, alternative decisions, and evaluation of the level of achievement of set goals. Therefore, theoretical principles of logistics and supply chain management are illustrated with a large number of widely recognized management techniques and tools, taking into account the practical experience of leading foreign and domestic enterprises.

In 2019, Professor Y.V. Krykavskiy, in collaboration with N.V. Chornopysska, published the book "Logistic Systems," dedicated to the fundamental principles of designing logistic systems, the peculiarities of organizing logistic systems at different integration levels (intra-production systems, supply chains, logistic networks, and global logistic systems), as well as methodological approaches to evaluating the parameters of functioning and development of logistic systems [12]. This book became the next stage in the evolution of the theory of logistic systems, the foundation of which was laid back in 1999 [13], and then developed in the

textbook "Logistic Systems" [14]. Yevhen Vasylovych considered the concept of a logistic system crucial in understanding the general concept of logistics. He developed classification features and identified various classes of logistic systems at micro-, meso-, and macro-levels, determining the main determinants of the functioning and development of logistic systems. The theoretical issues of logistic systems' functioning were investigated by graduate students and doctoral students of the eminent scientist and found their reflection in collective monographs under his scientific editorship, including "Economics of Logistic Systems" [15-17].

Of course, while heading the marketing and logistics department for many years, Y.V. Krykavskiy constantly researched the interrelationship and mutual influence of two sciences - marketing and logistics. The best embodiment of this connection was the international scientific-practical conference with the expressive title "Marketing and

Logistics in Management System," which was regularly held starting from 1996. Typically, this was a meeting place not only for leading scientists of Ukraine but also for many researchers from Poland, Germany, Slovakia, and other countries. During plenary and sectional sessions, the latest theoretical and applied research results of scientists on current trends and prospects for the development of marketing and logistics in modern conditions were presented, and the experience of applying innovative technologies in the activities of domestic and foreign enterprises was generalized. Naturally, the results of scientific discussions found their reflection in the publications of Y.V. Krykavskiy and his colleagues. Already during the first conference, Yevhen Vasylovych formulated the main idea of the conference - marketing and logistics are a perspective view [18], and then developed this idea in his subsequent publications [19-22].



In the photo: Presentation of the State Award "Merited Worker of Education and Science of Ukraine."

Among the main scientific results of a later period, the following should be noted:

– The conceptualization of resolving the conflict between marketing (business) goals and environmental goals, which involves a comprehensive combination of processes: reducing consumer motivations for purchasing packaged products; increasing producers' motivations to use reusable and biodegradable packaging and environmentally safe disposal operations; creating accessible proper infrastructure for reusable packaging and packaging material [23].

– The justification for combining the rational with the irrational in business behavior of participants in integrated organizations, using the example of supply chains, which positively influences the formation of their value orientations, including societal ones, ensures the formation of partnership relations between participants, and contributes to competitiveness growth [24].

– The rationale for ensuring complementarity between marketing and logistics strategies in supply chains through the implementation of the ECR (Efficient Consumer Response) strategic model, which provides the desired flexibility of the supply chain by providing appropriate elasticity to those processes that do not require radical changes and investments. It has been demonstrated that "agile logistics" serves as a compromise solution to the "efficiency versus flexibility" dilemma of the supply chain, whose effectiveness is ensured by: flexibility in physical delivery, purchasing, distribution, and demand management [25].

– The investigation of marketing and logistics peculiarities of enterprises in the agricultural sector and the development of practical recommendations for improving the activities of agricultural enterprises based on marketing and logistics principles [26].



In the photo: from right to left, S. Kubiv presents the Honorary Diploma of the Cabinet of Ministers of Ukraine to Ye. Krykavsky.

It is noteworthy that at different stages of his career, Yevhen Vasylovych favored either marketing or logistics, sometimes combining them under the principles of marketing logistics. For him, they were two wings of the same whole. However, he stated that marketing represents our desires, while logistics represents our capabilities. And marketing logistics is a concept of developing logistic systems aimed at optimally satisfying customer needs to achieve sustainable competitive advantages through the integration, optimization, and rationalization of logistic flows. Digital technologies provide flexibility in physical delivery, purchasing, distribution, and demand management in this context.

Summarizing the scientific legacy of Ye. Krykavsky, it can be concluded that his scientific interests were extremely diverse. Among the main research directions that interested the scientist during the last period and continue to be developed by his students, the following should be noted:

1. The concept of the "logistic passport of the country" was introduced, characterizing the state and dynamics of development of the national logistics sector, its role in the country's economy, and ways to develop logistics infrastructure. Special attention was paid to the development of inland water transport, river transportation, and attracting investments in the development of port infrastructure.

2. Informational groundwork was formed to justify market approaches to managing poorly urbanized territories, combining strategic management and territorial marketing. It was determined that the attractiveness of a territory creates the basis for competition among economic agents and determines the conditions for population living, servicing and recreation, conducting business, and staying for tourists (both existing and potential).

3. The theoretical and methodological principles of developing business strategies for enterprises in complex technical systems were formulated. It was proven that small and

medium-sized enterprises do not have sufficient potential for development, so they should be involved in global supply chains. Strategic partnership involves aligning the goals and objectives of the supply chain with the goals and strategies of enterprises, allowing for better adaptation to global challenges and threats.

4. The impact of military actions on changing the logistic landscape of the country was studied, and the strategic consequences for the future development of the logistics sector, rapid development of humanitarian logistics, and supply chain management in conditions of constant danger, fragility, anxiety, non-linearity, and uncertainty were assessed.

Therefore, a bibliometric analysis of the scientific heritage of Professor Ye. Krykavsky convincingly testifies to his significant contribution to the development of the theory and practice of logistics in Ukraine, as well as to the training of personnel for the logistics sphere. For outstanding achievements in the teaching position, he was awarded the "Excellence in Education of Ukraine" badge (2006), and in 2007, by the Decree of the President of Ukraine, he was awarded the honorary title "Merited Worker of Education." The scientist's favorite expression was: "If you stop wanting, you will be dead." Ye. Krykavsky wanted to be active, useful, creative, and innovative until his last days. He explored the world around him and changed himself, flexibly responding to changes and leaving traces of these changes in his numerous publications. The bright image of Professor Ye. Krykavsky will remain in our hearts forever, and his works will encourage new searches and motivate new researchers.

Conclusions. Therefore, the scientific metrics analysis of the academic legacy of Dr. Evgen Vasiliovich, a professor of economics, attests to his significant contribution to the development of the general theory of logistics in Ukraine as a specific direction of research in the field of economic sciences. Published monographs, textbooks, educational manuals, compilations of

scientific works, and numerous scientific articles formed the fundamental conceptual apparatus of this science, its methodological basis, and practical toolkit. The scholar deeply believed that logistics is not only a management concept but also a philosophy of enterprise management that requires specific thinking oriented towards the value and utility of time, space, and quality of customer service. Systems thinking and a systemic approach allowed for the formation of a set of theoretical propositions and methodical approaches to the design, optimization, and development of logistic systems at micro, meso, and macro levels. Heading the marketing and management department of Lviv Polytechnic for over 30 years, he laid the foundation for research related to marketing logistics.

Summarizing the scientific work of Evgen Vasiliovich Krykavsky, it can be concluded that his scientific interests were extremely diverse, reflecting the international scientific-practical conference "Marketing and Logistics

in Management System" initiated by him. Evgen Vasiliovich researched problems of regional development and the formation of regional logistic systems, logistic strategies, and business models of enterprise management, organization of marketing and logistic activities of enterprises, concepts of sustainability and digitization of logistic processes, supply chain management, deepening the sectoral direction of logistics, tracking the dynamics of the logistic services market, and the logistic landscape of the country, etc.

The favorite expression of the scholar was: "If you stop wanting, you will be dead." Evgen Vasiliovich wanted to be active, useful, creative, and innovative until his last days. He explored the world around him and changed himself, flexibly responding to changes, and left the consequences of these changes in his numerous publications. The bright image of Professor Evgen Vasiliovich will remain in our hearts forever, and his works will inspire new searches and motivate new researchers.

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