**EXAMPLE OF THE FRONT PAGE OF MASTER'S LEVEL
DEGREE QUALIFICATION PAPER**

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE

SUMY STATE UNIVERSITY

Educational and Research Institute of Business, Economics and Management

Department of International Economic Relations

«Admitted to the defense»
Head of the Department

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____ _____ 2023 y.

QUALIFICATION PAPER

It is submitted for the Master's degree

Specialty 292 "International Economic Relations"

on the topic "LOGISTICS MANAGEMENT OF BUSINESS PROCESSES OF INTERNATIONAL COMPANIES"

Student 2   Course _____   Zubrov Sergii Mykolaiovych
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group   МБ.м-21ан
    (group's code)

It is submitted for the Master's level degree requirements fulfillment.

Master's level degree qualification paper contains the results of own research. The use of the ideas, results and texts of other authors has a link to the corresponding source

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Sumy, 2023

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
SUMY STATE UNIVERSITY

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Department of International Economic Relations

TASKS FOR MASTER'S LEVEL DEGREE QUALIFICATION PAPER

(specialty 292 " International Economic Relations ")
student 2   course, group _ МБ.м-21ан
(course number)   (group's code)
<u>Zubrov Sergii Mykolaiovych</u>
(student's full name)

1. The theme of the paper is «Logistics management of business processes of international companies»
approved by the order of the university from university №1371-VI from 29.11.2023

2. The term of completed paper submission by the student is«14» <u>December </u>2023.

3. The purpose of the qualification paper is research logistics management of business processes of international companies

4. The object of the research is research of logistics management of business processes of international companies

5. The subject of research is logistics management of business processes of international companies

6. The qualification paper is carried out on materials statistical reporting, periodical literature, educational literature, reports.

7. Approximate master's level degree qualification paper plan, terms for submitting chapters to the research advisor and the content of tasks for the accomplished purpose is as follows:

Chapter 1 <u>Theoretical basis of the logistics management</u>

(title, the deadline for submission)

Chapter 1 deals with <u> explore logistics management: conceptual approaches; to analyze the logistics of countries and the management of business processes of agrarian companies</u>

(the content of concrete tasks to the section to be performed by the student)

Chapter 2 <u>The mechanism of assessment logistics potential of international companies</u>
(title, the deadline for submission)

Chapter 2 <u>deals with to evaluate logistics management in the work of agrarian companies of countries</u>

(the content of concrete tasks to the chapter to be performed by the student)

Chapter 3 <u>Assessment logistics potential of international companies</u>

(title, the deadline for submission)

Chapter 3 deals with <u>to determine the criteria for making management decisions regarding the level of logistics potential of countries, to draw research conclusions</u>

(the content of concrete tasks to the chapter to be performed by the student)

8. Supervision on work:

Chapter	Full name and position of the advisor	Date	
		task issued by	task accepted by
1	Taraniuk L., professor	20.10.2023	19.11.2023
2	Taraniuk L., professor	20.11.2023	07.12.202
3	Taraniuk L., professor	8.12.2023	12.12.2023

9. Date of issue of the task: «20» October 2023

ABSTRACT
of Master's level degree qualification paper on the theme
"Logistics management of business processes of international companies"
student <u>Zubrov Sergii Mykolaiovych</u>
(full name)

The main content of the master's level degree qualification paper is set out on 36 pages, including a list of used sources of 33 titles, which is placed on 4 pages. The work contains 4 tables, 7figures.

The purpose of the master's level degree qualification paper is research logistics management of business processes of international companies.

To achieve this goal and objectives there were used following scientific methods of research: systematization and generalization (by theoretical justification - the concept of competitive ability), comparison (in the process of logistics management of business processes of international companies), systematic analysis (during the study of the concept competitive ability at different levels).

The information base of the master's level degree qualification paper is statistical reporting, periodical literature, educational literature, reports.

The main scientific results of the work are as follows: an improved methodological approach has been developed for assessing the logistics potential of countries that are major producers of agricultural products worldwide. This method is characterized by a set of competitive elements that include evaluating the logistics management of countries in the following blocks: food security, internationalization of production and logistics, and management of business processes.

The result of this refined method for evaluating the logistics potential of world countries is the development of its criteria base, enabling the adoption of effective managerial decisions at the intergovernmental and governmental levels regarding the logistical development of agricultural production.

Globalization processes play a pivotal role in shaping an efficient mechanism for logistical management within national companies. These processes yield beneficial externalities by introducing advanced technologies from leading nations (Switzerland, Japan, USA, Canada, Australia, China) into the operations of companies in other regions (Latin America, Africa, Asia, Eastern Europe). Additionally, globalization optimizes production costs for companies across different countries due to heightened competition among nations for both established and emerging markets (e.g., China, Taiwan, South Korea, Japan). Furthermore, it involves the relocation of manufacturing facilities belonging to well-known brands from developed nations (USA, Canada, Japan, Switzerland, South Korea, Germany, Australia) to developing countries with lower costs of raw materials, materials, and labor resources (China, Taiwan, Singapore, Ukraine, Belarus, Vietnam). Scholars Seniga P. and Sukalova V. [2] have investigated the influence of logistical management on globalizing processes on a worldwide scale [32].

The rise in digitalization within the economy has significantly impacted the advancement of logistical management on a global scale. Integrating outcomes from both the third and fourth industrial revolutions into a country's logistics has generated a beneficial impact, expediting the implementation of business processes within logistics across diverse nations worldwide. Scholars such as Govindan K., Cheng T., Mishra N., and Shukla N. [5] have explored the

establishment of comprehensive analytical databases in commodity logistics and the improvement of tools for managing supply chains.

It is necessary to emphasize the importance of studying the assessment of logistics management at the macroeconomic level. This analysis remains relevant in the face of globalization challenges, instability in the global economic system, and the influence of leading nations on the world economy. Additionally, it's essential to highlight the role of developing countries, where efficient logistics of transportation flows, including agricultural products, are essential for successfully accessing new markets. For instance, the economies of Asian countries (such as China, Vietnam, Taiwan, Malaysia, and Singapore) and the western direction of exporting the production of these countries play significant roles.

The Chinese concept of the "New Silk Road" deserves mention, as it examines various transport corridors delivering Chinese products to European countries. This initiative involves engaging the logistic infrastructure of countries like Kazakhstan, Russia, Belarus, and Ukraine. The scholar Marsden M. explored the existence of the "New Silk Road" program in the Chinese economy and its export opportunities to Europe, Central Asia, and Afghanistan.

Tasks of the work are explore logistics management: conceptual approaches; to analyze the logistics of countries and the management of business processes of agrarian companies, to evaluate logistics management in the work of agrarian companies of countries, to determine the criteria for making management decisions regarding the level of logistics potential of countries, to draw research conclusions.

Research methods. The methodological approach to assessing the logistic potential of countries that are major producers of agricultural products in the world has been improved. This method is characterized by a set of competitive elements, including the assessment of country logistics management in the following blocks: food security, internationalization of production and logistics, and management of business processes. The result of this enhanced method of assessing the logistic potential of world countries is the development of its criteria base, allowing for effective managerial decisions at the intergovernmental and governmental levels regarding the logistic development of agricultural production

Approval of work materials – carried out in the work of companies of the production sector in the construction of strategic and tactical planning of international economic activity When exploring the conceptual aspects of logistical management, it's esse

KEYWORDS: logistics management, business processes, international companies, assessment, criteria.

Year of Master's level qualification paper fulfillment is 2023.

Year of Master's level paper defense is 2023.

CONTEST

Introduction

Justification of the choice of topic and its relevance. One of the main conditions for increasing the overall competitiveness of a country is the formation of its sustainable logistic potential. This is because logistics is responsible for promoting the country's products both in domestic and international markets. This is applicable to the production of agricultural companies in countries that are major agricultural producers worldwide, necessitating the efficient management of their logistic business processes [32].

Business processes within the logistic sphere include the processes of storage, transportation, and further distribution of agricultural products among the subjects of the agricultural market (warehousing, traders, wholesale and retail networks, consumers) both at the national and international levels

Degree of the studied problem. The internationalization of agricultural production, which involves forming cooperative production links in the agricultural sector between countries in the "production-processing-distribution" chain, and the management of logistic business processes characterized by warehouse, transportation, and distribution sectors at national and international levels, as well as food security representing an increase in the demand for food in many countries of the world, are some of the main signs of achieving sustainable logistic development at the national and international levels [32].

Object of research is research of logistics management of business processes of international companies.

Subject of research is logistics management of business processes of international companies

The purpose of the work is research logistics management of business processes of international companies

Tasks of the work are explore logistics management: conceptual approaches; to analyze the logistics of countries and the management of business processes of agrarian companies, to evaluate logistics management in the work of agrarian

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1 Theoretical basis of the logistics management

1.1 Logistics management: conceptual approaches

Amidst consistent market shifts in food supply and demand, leaders across nations are increasingly prioritizing the advancement of their logistical capabilities. This emphasis aims, firstly, to bolster collaboration among governments within the agricultural sphere, delineating the internationalization processes of agricultural production among nations. Secondly, this focus aims to improve operational effectiveness within agricultural enterprises by fostering international collaborations and adopting cutting-edge technologies in the agricultural sectors of respective countries.

Based on the extensive scientific research conducted by Seniga P., Sukalova V. [2], Pietrosemoli L., Rodrigues-Monroy K. [3], alongside statistical information and analytical evaluations from Schwab K.'s global competitiveness index of countries [1], there are signs that could adversely affect the logistical capabilities of nations involved in agricultural production. These indicators encompass various factors: decreased food production in numerous countries globally due to natural occurrences (e.g., African nations like Rwanda, Zimbabwe, Zaire, CAR, the Democratic Republic of Congo, Mozambique), political situations (Latin American countries: Venezuela, Peru), conflicts (Asian countries: Syria, Afghanistan, Palestinian Autonomy), reduced land productivity due to erosion and neglect (Asia: Mongolia, China; Africa: Sudan, Ethiopia, Egypt, Algeria), climate alterations linked to global warming (Africa, Latin America, Oceania), and trade disputes between nations (manifesting in economic embargoes on goods and services, notably observed in the intricate trade dynamics between Ukraine and RF) [32].

Based on these factors, there is a pressing necessity to cultivate the logistical capabilities of leading agricultural nations globally. This includes appraising these capabilities as a pivotal component of instituting a food monitoring system. Such measures serve to fortify food security levels worldwide and facilitate the formulation of proficient managerial strategies both domestically and internationally in agricultural logistics.

Moreover, assessing a country's logistical potential involves gauging the extent of collaboration among nations within the agricultural sector, determining optimal warehouse placement, and regulating the trade of agricultural goods. This fosters robust logistical ties between nations, thereby augmenting economic efficiency in managing agricultural business

operations. Additionally, this process involves the integration of cutting-edge technologies from prominent agricultural nations into other countries, thus reflecting the global expansion of agricultural practices.

The primary aim of this scholarly investigation is to refine theoretical and methodological approaches pertaining to the international evaluation of the logistical potential of major agricultural producers worldwide.

It's important to highlight that establishing a theoretical framework when examining methods to evaluate logistical management within a country's economic entities is crucial. The theoretical principles underpinning this management serve as the cornerstone for conceptualizing approaches to a nation's logistics, aiding in the advancement of the methodological and systematic foundations for logistical management. Economists Cain R. and Verma A. [4] have conducted research on the methodological aspects of logistical management within supply chains.

Globalization processes play a pivotal role in shaping an efficient mechanism for logistical management within national companies. These processes yield beneficial externalities by introducing advanced technologies from leading nations (Switzerland, Japan, USA, Canada, Australia, China) into the operations of companies in other regions (Latin America, Africa, Asia, Eastern Europe). Additionally, globalization optimizes production costs for companies across different countries due to heightened competition among nations for both established and emerging markets (e.g., China, Taiwan, South Korea, Japan). Furthermore, it involves the relocation of manufacturing facilities belonging to well-known brands from developed nations (USA, Canada, Japan, Switzerland, South Korea, Germany, Australia) to developing countries with lower costs of raw materials, materials, and labor resources (China, Taiwan, Singapore, Ukraine, Belarus, Vietnam). Scholars Seniga P. and Sukalova V. [2] have investigated the influence of logistical management on globalizing processes on a worldwide scale [32].

The rise in digitalization within the economy has significantly impacted the advancement of logistical management on a global scale. Integrating outcomes from both the third and fourth industrial revolutions into a country's logistics has generated a beneficial impact, expediting the implementation of business processes within logistics across diverse nations worldwide. Scholars such as Govindan K., Cheng T., Mishra N., and Shukla N. [5] have explored the establishment of comprehensive analytical databases in commodity logistics and the improvement of tools for managing supply chains.

When exploring the conceptual aspects of logistical management, it's essential to consider the impact of ecological factors on company logistics. The concept of sustainable national development should closely align with modern logistical management, resulting in the rise of value in environmentally friendly products within the global markets. For example, the adoption of green electricity tariffs in numerous countries globally and the economic growth of Scandinavian nations (Sweden, Norway, Denmark, Iceland) due to eco-focused production and green levies. Expert Seroka-Stolka O. [6] delved into the implementation of environmental initiatives in enterprise logistics and environmental management. Within the study of conceptual logistical provisions, attention should also encompass the components of the theoretical foundation, including knowledge systems, theories, algorithms, and logistical tools, as examined by Scholar Cuthbertson R. [7].

The goal for many developing nations is to heighten the value of their production, signifying a shift from raw materials to innovation and customer-centric approaches. Hence, in the context of logistical management within an information-driven society, there should be a focus on meeting the demands and preferences of customers for services and products. Scholar Salhi S. [8] has extensively explored these aspects.

1.2   Logistics of countries and management of business processes of agricultural companies

In forming conceptual approaches to logistical management in the economic activities of countries worldwide, one of the main features is the impact of logistics on the technical efficiency of global production. The implementation of scientific and technological progress in manufacturing technologies, including agricultural production, contributes to increased productivity and effectiveness in the production of goods and their further advancement in global markets. These issues were highlighted in the work of scholars Coto-Millán, Fernández, Pesquera, Agüeros [9].

During scientific research in the field of macroeconomic logistics issues in countries within the system of agribusiness internationalization, it is essential to emphasize the crucial role of studying sector-specific aspects of product distribution across countries worldwide. This process is closely related to managing logistical operations both at regional and international levels. Research by Cantos, De Los Angeles Gil, Melé, Viladomiu, Aparicio, Marti [10]

focused on analyzing the activities of Catalan companies in the agricultural sector and the distribution of their products in European markets [32].

It should be noted that the study of logistics efficiency in countries is a key indicator of the success of implementing state commodity policies, so special attention should be paid to this when researching methods for assessing logistical management. Economists Yi S., Xie Z. [11] focused on studying comparative methods when determining the effects of the logistics sector in China.

The internationalization aspects in logistical management are essential for successful cooperation between countries in managing commodity flows. Within this context, combining goods production with their subsequent advancement into international markets is crucial, making inter-country cooperation an undeniable component of successful logistics. In studying agrarian aspects during inter-country cooperation, there is a merging of agricultural production within countries that possess respective natural and climatic conditions for cultivating agricultural products, followed by promoting these products in other nations. These nations could serve as trading representatives, transit partners, or final consumers of agrarian produce. Scholars Torbianelli V., Mazzarino M. [12] explored the formation of optimal logistics between Italy and Russia regarding agricultural production and commercialization ties.

Additionally, institutional factors play a significant role in logistical management within agrarian companies at both the national and international levels. Research conducted by scholar Finchelstein D. [13] delved into the role of state institutions in the internationalization of firms in Brazil, Argentina, and Chile.

One of the advantages on the path to successful inter-country logistics is the implementation of organizational factors of companies' internationalization within the country. The issue of integrating organizational weaknesses of economic entities in Brazil as a necessity for the internationalization of large companies, including agribusinesses, was investigated by international scholars Carneiro D., Bamiatzi V., Cavusgil S. [14, 32].

In the modern development of agro-industrial production, process-oriented management becomes increasingly essential, allowing for the management of business processes at a horizontal level and significantly enhancing the economic efficiency of agricultural companies. In logistic management, the use of process-oriented management is crucial, enabling all logistics participants to actively engage in the economic process and influence the economic outcome. The pioneers of business process reengineering, Hammer M. and Champy D. [15],

first elaborated the concept of radical reconfiguration of business processes in companies across various economic sectors in the USA and Japan.

Identifying errors in the design and implementation of business processes in logistics is a critical step. Scholars Borkowski M., Fdhila V., Nardelli M., Rinderle-Ma S., Schulte S. [16] investigated machine learning and error detection in forecasting business processes.

Effective risk management in logistic business processes is key to successful business process management. Implementing crisis-oriented procedures aimed at reducing logistic risks contributes to the overall efficiency in logistic management. Researchers Choi T.M., Chiu S.N., Chan N.K. [17] studied these aspects in the operations of Chinese companies.

Analyzing the impact of social and economic factors on logistic business processes in agricultural production is a fundamental feature of business process management. Experts Sineviciene L., Sotnyk I., Kubatko O. [18] investigated the economic factors characterizing energy efficiency in the operations of agricultural companies in Eastern European countries.

When forming high efficiency in managing business processes in the logistics sphere, auxiliary business processes with low added value become important. For example, outsourcing primary equipment to advanced countries (Germany, Netherlands) in agricultural machinery and providing this machinery on lease to agricultural firms in Ukraine and Moldova. Another example is providing agricultural equipment by the US, a leading country, on lease to Mexico, Nicaragua, and Panama. In turn, China's agricultural machinery is successfully used by agricultural enterprises in North Korea. Researchers Zhu V., Ng S., Wang S., Zhao X. [19] highlighted the study of the role of outsourcing management in enhancing the efficiency of logistics outsourcing processes in Chinese production companies.

When exploring the technology of managing business processes in agricultural production, attention must be paid to waste management generated during harvest collection and subsequent raw material processing. This holds particular significance in the operations of agricultural companies in developing countries where concepts of sustainable development receive insufficient, sometimes no attention from the respective governments, solely prioritizing economic enrichment. Examples include developing Latin American countries (Honduras, Nicaragua, Panama, Peru, Chile), as well as several countries in Central and East Africa (Angola, Zaire, Central African Republic, Ivory Coast, Rwanda, Congo), Eastern Asia (Vietnam, Cambodia, Bahrain,

China, Laos, Bhutan, Yemen), and South Asia (India, Bangladesh). Experts Netro Z., Álvarez D., Carrillo A., Flores R. [20] addressed the management of solid waste in the operations of Mexican companies and the establishment of reverse logistics for waste.

2. The mechanism of assessment logistics potential of international companies
2.1 Evaluation of logistics management in the work of agricultural companies of countries

When developing an effective mechanism for logistic management within agricultural enterprises of countries, it's crucial to focus attention on the methodological toolkit for assessing the logistics of agro-companies to determine their economic efficiency. A proposed methodological approach for evaluating the sales logistics of engineering products (such as pumping equipment for irrigating agricultural lands) was introduced by the scientist Kobyzskyi D. [21].

Assessing the stability level of countries in managing logistical processes within agricultural production is a pivotal aspect in forming a comparative analysis of logistic efficiency in the agricultural sector and its impact on the macroeconomic indicators of a nation's development. Researchers Leonov S., Vasilyeva T., Lyulyov O. [22] explored the macroeconomic stability in countries with low to middle-income levels within the agricultural sector.

The analysis of technological readiness among agricultural companies worldwide plays a vital role in determining their readiness for innovative development in line with contemporary scientific and technical progress. The influence of technological factors on the operations of Brazilian agricultural companies during the agricultural reform was studied by researchers Ferreira, Olivier, Vilpoux, Wemerson, Pereira [23].

As previously mentioned, in the current stage of productive forces' development, agricultural companies are transitioning from centralized (functional) management to customer-oriented (process-oriented) management. When examining logistic management evaluation aspects within agricultural companies, attention should be directed towards assessing sustainable development processes in agro-production. This encompasses environmentally-oriented production technologies on one hand and customer-centric agricultural production to meet end-client demands on the other. The formation of the agro-ecosystem in Poland and the Czech Republic, transitioning from administrative to market-oriented agriculture, was elucidated in the research conducted

by scientists Grešlová, Štych, Salata, Hernik, Knížková, Bičík, Jeleček, Prus, Noszczyk [24, 32].

In the realm of international relations economics, government leadership of countries should focus extensively on assessing the natural environment and studying the impact of agricultural activities on it at the intergovernmental level. For instance, policies protecting forest resources in European Union countries that advocate a complete ban on young forest logging and the establishment of new protected zones, as well as the meticulous care by agricultural producers towards forest and land resources. An analysis of the global environment, population dynamics, and anthropogenic factors' influence on the environment was carried out by experts Berck, Levy, Chowdhury [25].

Also, it is worth focusing on the influence of external factors on the operation of agricultural complexes in countries, such as climate change in the world's nations, as well as the formation of an effective strategic management system in agriculture in the event of climate change. Researchers Amare, Ayoade, Adelekan, Zeleke [26] conducted studies on assessing the impact of climatic zones on national economies, including agriculture in Ethiopia, and on forming crisis-resistant strategic management in companies amid climate change.

2.2 Methical approach to assessment of logistics potential in the work of agricultural companies of countries

The methodological framework for this research was based on: the method of comparative analysis used in outlining the major trends in global agro-industrial production and managing its logistical flows; the factor analysis method applied to identify positive and negative factors impacting the agricultural development of nations worldwide; an enhanced method for selecting competitive elements when assessing the logistical potential of different countries, encompassing evaluations of logistic management in agricultural sectors through blocks: product security, production and logistics internationalization, business process management; the Sturges method employed to establish a criterion base regarding the levels of logistical potential among major agricultural-producing countries; and the synthesis method utilized to develop

fundamental approaches to enhance the internationalization levels and efficiency in managing business processes within the agricultural production of nations globally.

During the assessment of logistical potential among the world's major agricultural producers, the study conducted by Schwab [1] on the analysis of the Global Competitiveness Index of countries worldwide was utilized. The evaluation targeted countries identified as primary agricultural producers based on research conducted by Simpson [27]: the United States (grains, corn, soy), Germany (vegetable crops, beans), Canada (grain crops), China (wheat, rice, corn, vegetable crops), Russia (wheat, oats, beans), India (grain and vegetable crops, beans, millet), Brazil (fruit crops), Ukraine (wheat, oilseeds, oats, rapeseed, corn), and Nigeria (fruit crops, millet).

Researcher Schwab [1] conducted an assessment of the logistical management of world countries by calculating the Global Competitiveness Index of these nations. The essence of this study lay in deriving the Global Competitiveness Index, serving to identify leading and lagging countries in terms of economic development on a macroeconomic scale.

Based on the analysis of the Global Competitiveness Index, indicators were adopted as a measuring tool for evaluating the logistical potential of the world's major agricultural-producing countries. Utilizing the Competitive Element Set method proposed by researcher Kononenko [28], this method was refined by creating criterion indicators across various blocks: Productive Security (quality of land resource management, property rights, prevalence of non-tariff barriers, market capitalization, brand application); Internationalization of Production and Logistics (international joint inventions, ease of hiring foreign labor, efficiency of air and railway transport services, road communication index); Business Process Management (efficiency of reform process, market dominance, payment and productivity, growth of innovative companies, cooperation among multiple stakeholders) in calculating the level of logistical potential among major agricultural-producing countries. This aimed to identify leading and lagging countries in logistical management [32].

The measurement tool also encompasses a formulated criterion base of logistical potential among the primary agricultural-producing countries, featuring a six-tier ranking system of logistical potential values across relevant levels. The formation of this criterion base of logistical potential allows for effective decision-making at the national and international levels concerning logistical management. Researchers Thiede, Turetskyy, Kwade, Kara, Herrmann

[29] were involved in developing multi-criteria indicators and their values within an integrated evaluation system for the performance of production companies.

Let's proceed with the assessment algorithm of the logistical potential of countries worldwide using an enhanced methodological approach of competitive elements. For this, it's necessary to delve deeper into the procedure of implementing this methodological approach.

At the initial stage of this methodological approach, a list of indicators characterizing the input analytical information is formed. In this case, it refers to information regarding the analysis of logistical management in countries that serve as the primary agricultural producers globally, as indicated in Table 1.

Table 2.1. - Comparative analysis of the logistic management of the main countries of agricultural production of the world, in 2018, c.u. / location (based on [1,27, 33]

Names of economic indicators	USA	Germany	Canada	China	Russia	India	Brazil	Ukraine	Nigeria
Product safety block									
Quality of land administration	17,6	22,0	21,5	18,3	26,0	8,2	13,8	14,5	7,4
Property rights	5,8	5,5	6,1	4,6	3,7	4,8	4,0	3,3	3,7
Prevalence of non-tariff barriers	5,3	5,1	4,5	4,5	3,9	4,5	3,4	4,1	4,6
Market capitalization	145,4	48,3	116,1	65,6	32,0	72,8	34,6	20,3	9,6
Trademark applications	2890,49	8457,38	1904,45	1561,67	397,29	200,94	699,0	653,8	111,52
Internationalization of production and logistics block									
International co-inventions	12,3	21,26	15,93	0,99	0,75	0,38	0,30	0,50	0,01
Ease of hiring foreign labour	5,0	5,0	4,0	4,5	3,8	4,4	3,4	4,1	4,5
Efficiency of air transport services	5,9	5,6	5,4	4,6	4,9	4,8	4,4	4,0	3,1
Efficiency of train service	5,7	5,5	4,3	4,5	4,9	4,5	2,5	4,3	1,7
Road connectivity index	100	93,5	93,4	88,4	78,0	62,0	63,7	72,7	66,6
Business process management block									
Efficiency of the clearance process	3,8	4,1	3,6	3,3	2,4	3,0	2,4	2,5	2,0

Market dominance volume	5,7	5,5	4,5	4,5	3,7	4,6	3,8	3,3	3,4
Payment and productivity	5,8	5,3	5,0	4,6	4,5	4,7	3,4	4,2	3,6
Growth of innovative companies	5,8	5,4	4,7	4,4	3,7	4,7	4,1	3,5	4,1
Multi-stakeholder collaboration	5,8	5,4	4,6	4,4	4,0	4,6	3,7	3,7	3,1
Integral assessment									
Global Competitiveness Index (assessment/location)	85,6 (1)	82,8 (3)	79,9 (12)	72,6 (28)	65,6 (43)	62 (58)	59,5 (72)	57 (83)	47,5 (115)

The second stage of this methodological approach involves forming a matrix to determine the ranking of logistical management indicators for countries worldwide. This matrix conducts a ranking assessment for each indicator within the categories of "Product Security," "Production Internationalization and Logistics," and "Business Process Management." Based on the absolute values of the indicators (Table 1), the ranks of each indicator (R_{ij}) are determined. Simultaneously, the weight of each indicator ($Vaga_i$) is established using an expert assessment method. In this specific research, the indicators' weights were defined by involving various expert groups, specifically representatives from the Sumska Chamber of Commerce and Industry (Ukraine), scientific experts in international economic relations from Sumy State University (Ukraine), and Henan University of Science and Technology (China).

During the third stage, the weighted evaluation of each indicator within the respective blocks of logistical management for countries is determined. This aims to consider the degree of importance of each metric in assessing the logistical potential of countries using the formula [33]:

$$Rang_i = \sum R_{ij} \cdot Vaga_i, \qquad\qquad\qquad (2.1)$$

where $Rang_i$ is the weighted assessment of the i-th indicator; $\sum R_{ij}$ is the weight of all indicators of the logistic management of the j-th country; $Vaga_i$ is the weight of the second indicator of logistics management;

In the fourth phase, subsequent to a thorough assessment of logistical management indicators among nations, the distinguished (L) and trailing (A) countries in logistic management are recognized.

During the fifth phase, the span of distance between the leading country and the outsider country in logistic management is ascertained using the formula [33]:

$$D_v = Rang_A - Rang_L, \tag{2.2}$$

where D_v is the range of the distance between the leader country and the outsider country; $Rang_A$ is a weighted assessment of the outsider country logistic management; $Rang_L$ is a weighted assessment of the leader country logistics management;

In the sixth phase, the country's competitiveness within logistic management is computed utilizing the formula [33].

$$KSOP_{ia} = \frac{(Rang_A - Rang_I)}{D_v} \tag{2.3}$$

where $KSOP_{ia}$ is the competitiveness of the i-th country according to the first sphere of logistics management; $Rang_I$ is a weighted assessment of the country, an entity of the logistic management.

In the seventh and eighth phases of this evaluation, the enhancement of the methodological approach regarding a set of competitive elements is delineated.

At the seventh stage, the evaluation involves determining the perception level of entrepreneurial risk, closely associated with logistic management within the country's agro-industrial complex, using the following formula [33]:

$$RKS_i = \frac{ER_c}{ER_p}, \tag{2.4}$$

where RKS_i is the level of perception of the risk of entrepreneurial activities of the country; ER_c is the attitude to the entrepreneurial risk of the c (current) value; ER_p is the attitude to the entrepreneurial risk of the b (best) value.

At the eighth stage, the level of logistics potential of the country is assessed by the formula [33]:

$$LP_i = KSOP_{ia} \cdot RKS_i, \qquad (2.5)$$

where LP_i is the level of logistics potential of the i-th country.

During the ninth stage of the evaluation, determining the logistics potential levels involves establishing a set of values dividing each level of logistics potential using the Sturges method, as shown by the formula:

$$k_{LP_i} = \frac{LP_{i_{max}} - LP_{i_{min}}}{1 + 3,322 lgN} \qquad (2.6)$$

where k_{LP_i} is the Sturges coefficient, which characterizes the range of criterial values of the logistic potential of the i-th country; $LP_{i_{max}}$ is the maximum value of the logistic potential of the i-th country; $LP_{i_{min}}$ is the maximum value of the logistic potential of the i-th country; N is the number of countries, objects of assessment.

3. Assessment logistics potential of international companies

3.1 Analytical and theoretical aspects of evaluating the logistic potential of agricultural companies of countries

When evaluating the logistic potential of countries that are major agricultural producers globally, considering the impact of internationalization processes and the management of business processes in agricultural production, it is essential to identify key indicators characterizing the logistic potential of these countries. These indicators are classified into categories: food security, internationalization of production and logistics, and business process management, which signify the influences on the logistic management of countries. This classification distinguishes countries based on criteria such as the size of the agricultural market, level of agricultural exports, and the quantity of consumers within the country, referencing studies by Simpson [27] and Schwab [1] (Table 3.1) [33].

Table 3.1. - Comparative analysis of the logistic management of the main countries of agricultural production of the world, in 2018, c.u. / location (based on [1,27, 33]

Names of economic indicators	USA	Germany	Canada	China	Russia	India	Brazil	Ukraine	Nigeria
Product safety block									
Quality of land administration	17,6	22,0	21,5	18,3	26,0	8,2	13,8	14,5	7,4
Property rights	5,8	5,5	6,1	4,6	3,7	4,8	4,0	3,3	3,7
Prevalence of non-tariff barriers	5,3	5,1	4,5	4,5	3,9	4,5	3,4	4,1	4,6
Market capitalization	145,4	48,3	116,1	65,6	32,0	72,8	34,6	20,3	9,6
Trademark applications	2890,49	8457,38	1904,45	1561,67	397,29	200,94	699,0	653,8	111,52
Internationalization of production and logistics block									
International co-inventions	12,3	21,26	15,93	0,99	0,75	0,38	0,30	0,50	0,01
Ease of hiring foreign labour	5,0	5,0	4,0	4,5	3,8	4,4	3,4	4,1	4,5
Efficiency of air transport services	5,9	5,6	5,4	4,6	4,9	4,8	4,4	4,0	3,1

Efficiency of train service	5,7	5,5	4,3	4,5	4,9	4,5	2,5	4,3	1,7
Road connectivity index	100	93,5	93,4	88,4	78,0	62,0	63,7	72,7	66,6
Business process management block									
Efficiency of the clearance process	3,8	4,1	3,6	3,3	2,4	3,0	2,4	2,5	2,0
Market dominance volume	5,7	5,5	4,5	4,5	3,7	4,6	3,8	3,3	3,4
Payment and productivity	5,8	5,3	5,0	4,6	4,5	4,7	3,4	4,2	3,6
Growth of innovative companies	5,8	5,4	4,7	4,4	3,7	4,7	4,1	3,5	4,1
Multi-stakeholder collaboration	5,8	5,4	4,6	4,4	4,0	4,6	3,7	3,7	3,1
Integral assessment									
Global Competitiveness Index (assessment/location)	85,6 (1)	82,8 (3)	79,9 (12)	72,6 (28)	65,6 (43)	62 (58)	59,5 (72)	57 (83)	47,5 (115)

After conducting a comparative analysis of the logistic management of world-leading agricultural countries, it is crucial to draw specific conclusions regarding the trends in logistical development within the mentioned segments. In the segment of "Food Security," particularly concerning the indicator "Quality of Land Resource Management," a country exhibiting leadership is Russia (26 units). This is attributed to its extensive territory, suitable climatic conditions for cultivating various agricultural crops, and high soil fertility within the European zone, all contributing to the heightened efficiency of agricultural production. Conversely, Nigeria (7.4 units) emerges as an outsider concerning land resource management. This status is due to unfavorable tropical climates, land erosion resulting from drought, low water resources, and the absence of logistical infrastructure (agro-terminals, processing centers), significantly diminishing the efficiency of agricultural production [33].

Within the "Internationalization of Production and Logistics" segment, focus is directed towards the "International Joint Productions" indicator, characterizing collaborative efforts among countries in producing commodities, including within the agro-industrial complex. For this criterion, Germany emerges as the leader (21.26 units), signifying the country's leadership in creating shared agricultural equipment usage centers, joint productions with innovative components, research companies (spin-offs). In contrast, Nigeria (0.01 units) is identified as the outsider, displaying minimal internationalization of production. This status is due to inefficient state policies regarding foreign capital attraction, political and economic system instability leading to de-internationalization of production, and the sector's lag behind contemporary agricultural development trends [33].

Moreover, attention is drawn to the logistic component in the internationalization of production. Under the indicator "Road Communication Index," the United States stands out as the leader (100 units), attributed to efficient road connections between cities and agricultural areas, enhancing logistical management in the agricultural sector (transporting agricultural produce from producers to consumers). Conversely, India ranks as the outsider under this indicator (62 units), owing to low transport connections between agglomerations due to extensive forest areas (tropical forests), unpaved roads causing logistical flow disruptions during seasonal rains, resulting in delays in delivering agricultural produce from producers to consumers, thus incurring economic losses for agricultural producers [33].

In the "Business Process Management" segment, one of the crucial indicators for agricultural producers is the market dominance, as it signifies the level of market segmentation by the agricultural producer and the product realization within that market segment. The United States emerges as a leader in this indicator (5.7 units), attributed to high competition among national producers and their market segment presence. On the contrary, Ukraine ranks as an outsider (3.3 units), primarily due to a high import component of agricultural products in the market, ineffective government policies safeguarding national agricultural producers, and the absence of warehousing logistics for harvested agricultural produce [33].

The conclusions drawn from this analysis emphasize the necessity of implementing production internationalization and enhancing the efficiency of business process management in agricultural production in countries closer to outsider countries. After conducting a comparative analysis of world countries' logistic management within the segments of "Food Security," "Internationalization of Production and Logistics," and "Business Process Management," it's essential to identify positive and negative factors influencing the countries' agricultural product development. Among the positive factors are [33]:

- Globalization of commodity markets, allowing increased competitiveness of agricultural produce in national markets.

- Adoption of scientific and technological progress by leading countries, enabling the utilization of innovative technologies by other nations, thus enhancing logistic management in the agricultural sector.

- Increased international interest among various world countries in improving food security levels, acting as a brake on food and water scarcity primarily in African and Latin American countries.

- Formation of sustainable development processes in the agricultural sectors of countries, resulting in the production of eco-friendly agricultural products with high added value.

On the flip side, negative factors impacting the agricultural product development in countries include:

- Climatic conditions for agricultural cultivation (drought, water scarcity, natural disasters).

- Ineffective governmental policies in developing countries regarding logistic management due to political and economic crises and conflicts.

- Emphasis of governments in certain countries on economic enrichment rather than sustainable country development, leading to the formation of substitutes in the domestic market (soy-based food products, fast-food production), high levels of low-quality imports, and GMO-containing products.

It's worth noting that economists Abdullah, Zhou, Shah, Ali, Ahmad, UdDin, Ilyas, and others [30] delved into the factors influencing Pakistan's food security. They highlighted the social aspect of factors influencing food security in the country.

3.2 Assessment of the logistic potential of agricultural companies of the countries

Let's conduct an assessment of the logistic potential of countries that are major agricultural producers worldwide using an improved methodological approach based on the specified procedure in section (Table 3.2). The obtained results were solely used for research purposes [32, 33].

Table 3.2. - Assessment of logistics potential of the main countries of agricultural production of the world in 2018 (rank; weight) [32, 33]

Names of economic indicators	USA	Germany	Canada	China	Russia	India	Brazil	Ukraine	Nigeria
Product safety block									
Quality of land administration	5;0,05	2;0,05	3;0,05	4;0,05	1;0,05	8; 0,1	7;0,1	6;0,05	9;0,1
Property rights	2;0,05	3;0,04	1;0,1	5;0,04	8;0,05	4;0,05	6;0,05	9;0,1	7;0,1
Prevalence of non-tariff barriers	1;0,04	2;0,05	4;0,05	5;0,05	8;0,05	6;0,1	9;0,02	7;0,05	3;0,05
Market capitalization	1;0,1	5;0,06	2;0,1	4;0,1	7; 0,1	3;0,02	6;0,1	8;0,05	9;0,02
Trademark applications	2;0,06	1;0,1	3;0,05	4;0,1	7;0,05	8;0,1	5;0,1	6;0,1	9;0,02
Internationalization of production and logistics block									
International co-inventions	3;0,05	1;0,1	2;0,1	4;0,05	5;0,1	7;0,05	8;0,05	6;0,1	9;0,05
Ease of hiring foreign labour	1;0,1	2;0,05	7;0,06	3;0,05	8;0,1	5;0,05	9;0,02	6;0,05	4;0,05
Efficiency of air transport services	1;0,05	2;0,05	3;0,04	6;0,05	4;0,05	5;0,05	7;0,1	8;0,05	9;0,1
Efficiency of train service	1;0,05	2;0,05	6;0,06	4;0,05	3;0,05	5;0,1	8;0,02	7;0,05	9;0,1
Road connectivity index	1;0,05	2;0,1	3;0,05	4;0,06	5;0,1	9;0,1	8;0,1	6;0,02	7;0,02
Business process management block									
Efficiency of the	2;0,0	1;0,1	3;0,1	4;0,0	7;0,0	5;0,0	8;0,1	6;0,0	9;0,0

clearance process	4			5	5	5		8	2
Market dominance volume	1;0,06	2;0,05	5;0,04	4;0,05	7;0,05	3;0,08	6;0,1	9;0,1	8;0,2
Payment and productivity	1;0,1	2;0,05	3;0,05	5; 0,1	6;0,1	4;0,05	9;0,02	7;0,1	8;0,02
Growth of innovative companies	1;0,1	2;0,1	3;0,05	5; 0,1	8;0,05	4;0,1	6;0,02	9;0,05	7;0,05
Multi-stakeholder collaboration	1;0,1	2;0,05	3;0,1	5;0,1	6;0,05	4;0,1	8;0,1	7;0,05	9;0,1
$Rang_i$, y.o.	1,45	1,92	3,15	3,82	6,05	6,2	7,02	7,2	7,89
$Rang_A$, y.o.	7,89								
$Rang_L$, y.o.	1,45								
D_v, y.o.	6,44								
Attitude towards entrepreneurial risk (ER_c), c. u., (ER_p=7 c. u.) (Schwab, 2018)	5,8	5,1	4,4	4,5	4,3	4,7	4,1	4,7	4,8
Level of perception of entrepreneurial risk (RKS_i), c. u.	0,83	0,73	0,63	0,64	0,61	0,67	0,59	0,67	0,69
Logistics potential (LP_i), c. u.	0,83	0,68	0,47	0,40	0,18	0,17	0,08	0,07	0,0

As a result of the assessment conducted on the logistic potential of countries that are major agricultural producers globally, it has been established that the logistic potential of the leading country (USA) stands at 0.83 units, indicating the highest level of logistic management in the country, as per the data in Table 3, considering its alignment with contemporary global trends. Meanwhile, the logistic potential of the outsider country (Nigeria) is recorded at 0.0 units, signifying the lowest level of logistic management in that country, as depicted in Table 3.2.

Let's construct a criteria framework for logistic management in the mentioned countries (Table 3.2), which includes an overview of the levels of logistic potential. This framework allows for the implementation of effective management decisions at both state and interstate levels in the domain of agricultural product logistics.

We establish the range of values for the logistic potential, which delineates each level, employing the Sturges method:

$$k_{LP_i} = \frac{0,83 - 0,00}{1 + 3,322 \cdot lg9} = 0,1 \tag{3.1}$$

Table 3.3 presents a criterial basis for assessing the logistics potential of countries across the world.

Table 3. 3 - Criteria of logistics potential of countries across the world [33]

LP_i,c. u.	Characteristic of the range of criterial values
$LP_i \geq 0,5$	The spectrum of criteria-based values of logistics potential indicates the apex level of logistic management within the agricultural production country. This level signifies an advanced degree of product safety, internationalization of production and logistics, adeptness in business process management, and the attractiveness of investment and innovation. It underscores the logistics of the leading country for diverse stakeholders, including agricultural production country governments, traders, investors, partners, and innovation centers.
$0,4 \leq LP_i < 0,5$	The span of criteria-based values representing logistics potential indicates an elevated standard in the logistic administration of the agricultural production country. This highlights an advanced status concerning product safety, the internationalization of production and logistics, efficient business process management, and a compelling allure for investment and innovation within the country's logistics network. This appeal extends to a diverse array of stakeholders, including governments of agricultural production countries, traders, investors, partners, and innovation centers.
$0,3 \leq LP_i < 0,4$	The spectrum of criteria-based values representing logistics potential signifies an acceptable standard in the logistic administration of the agricultural production country. This denotes an adequate level concerning product safety, internationalization of production and logistics, efficient business process management, and an appealing environment for investment and innovation within the country's logistics network. This appeal extends to various stakeholders, including governments of agricultural producers, traders, investors, partners, and innovation centers.
$0,2 \leq LP_i < 0,3$	The scope of criteria-based values reflecting logistics potential denotes an acceptable standard in managing logistics within the agricultural production country. This level signifies satisfactory elements related to product safety, internationalization of production and logistics, efficient business process management, investment appeal, and innovation

	attractiveness within the country's logistics structure. These aspects are beneficial to diverse stakeholders such as governments of agricultural producers, traders, investors, partners, and innovation centers.
$0,1 \leq LP_i < 0,2$	The span of criteria-based values for logistics potential reflects a deficient level in managing logistics within the country engaged in agricultural production. This level signifies inadequate elements concerning product safety, internationalization of production and logistics, ineffective business process management, limited investment and innovation appeal within the country's logistics infrastructure. These aspects are unfavorable for diverse stakeholders, including governments of agricultural producers, traders, investors, partners, and innovation centers.
$0 \leq LP_i < 0,1$	The spectrum of criteria-based values for logistics potential highlights the poorest level of logistics management within the country involved in agricultural production. This level signifies an exceptionally low standard across factors such as product safety, internationalization of production and logistics, ineffective business process management, minimal investment, and innovation appeal within the logistics of the outsider country. These deficiencies have adverse implications for various stakeholders, including governments of agricultural producer countries, traders, investors, partners, and innovation centers.

The formation of a criteria base for evaluating the logistic management of world agricultural-producing countries allows for ranking the levels of logistics among these nations. This facilitates the classification of countries into different clusters concerning the efficiency of logistic activities, which can influence the level of investment and innovation attractiveness of the country to real and potential investors, processing countries of agricultural products, international transport companies, and other participants in business processes in agricultural production [33].

It is necessary to emphasize the importance of studying the assessment of logistics management at the macroeconomic level. This analysis remains relevant in the face of globalization challenges, instability in the global economic system, and the influence of leading nations on the world economy. Additionally, it's essential to highlight the role of developing countries, where efficient logistics of transportation flows, including agricultural products, are essential for successfully accessing new markets. For instance,

the economies of Asian countries (such as China, Vietnam, Taiwan, Malaysia, and Singapore) and the western direction of exporting the production of these countries play significant roles.

The Chinese concept of the "New Silk Road" deserves mention, as it examines various transport corridors delivering Chinese products to European countries. This initiative involves engaging the logistic infrastructure of countries like Kazakhstan, Russia, Belarus, and Ukraine. The scholar Marsden M. explored the existence of the "New Silk Road" program in the Chinese economy and its export opportunities to Europe, Central Asia, and Afghanistan.

It is crucial to underscore the need to establish essential strategies to enhance the internationalization and effectiveness of business processes in the agricultural production of countries worldwide. Some of these strategies include [33]:

- Shifting geopolitical development focus from West to East due to the strengthening economies of Asian countries (such as China, Vietnam, South Korea, Taiwan, Malaysia) and increased internationalization and business process management effectiveness in these nations due to cheaper raw material and labor resources.

- Diversification of investments in Asian countries (China, Vietnam, South Korea, Taiwan, Malaysia) with the primary aim of boosting these nations' competitiveness in the global market.

- Internationalization and implementation of Business Process Management (BPM) standards in agricultural production in African (Morocco, Algeria, Egypt) and Latin American (Argentina, Brazil) countries in the near future, emerging as potential markets for logistics development and agricultural product sales of leading countries.

- Establishment of Free Economic Zones (FEZ) in strategically advantageous countries with simplified and preferential taxation to enhance the logistics of agricultural products. Examples include Ukraine for goods from Asian countries destined for the European Union and Turkey for transporting energy resources from Azerbaijan and Turkmenistan for agricultural products to EU countries.

Conclusions

While examining the methodological approaches to assessing the logistics potential of leading agricultural-producing countries worldwide, it is crucial to emphasize the necessity of clear categorization into different levels. This categorization enables the leadership of countries and investors to identify countries either in leadership positions or as outliers in the development of logistics in agricultural production. This enables the modeling of an optimal logistical flow of agricultural production, primarily aimed at optimizing transportation costs for delivering agricultural products to marketplaces. Moreover, it is essential to consider the influence of external economic factors that could negatively impact the economies of countries.

An example of this can be seen in the political and energy crisis in Venezuela, leading to the redefinition of zones of influence in the country's commodity markets, including the agricultural produce markets affected by the interactions between the USA and the local authorities in Venezuela, thereby having a detrimental effect on the country's logistics. Scholars Pietrosemoli L. and Rodrigues-Monroy K. [31] conducted research on the energy crisis in Venezuela and its influence on the country's commodity market .

During the comparative analysis of logistics management in the world's agricultural-producing countries, several positive and negative factors influencing their product development were identified. Positive factors include globalization, innovation, and sustainable production practices, while negative factors encompass natural-climatic impacts, the absence of effective logistics policies, and a lack of sustainable development in the governments of developing countries. An evaluation of the logistics potential of major agricultural-producing countries revealed the leader country (USA) with a logistic potential of 0.83 u.o., indicating an exceptionally high logistics potential, and the outsider country (Nigeria) with a logistic potential of 0.0 u.o., signifying the lowest logistics potential.

A criteria-based framework for assessing the logistics potential of these key agricultural-producing countries was developed using a six-level ranking system with increments of 0.1 u.o. Based on the attained levels of logistics potential in these countries, strategies for enhancing internationalization and improving the efficiency of business processes in agricultural production were proposed. These strategies encompass altering production directions, diversifying investments, internationalization, Business Process Management (BPM) in agricultural production, and establishing Special Economic Zones (SEZs).

As for future scientific research, a theoretical and methodological elaboration is needed to analyze the impact of external (macroeconomics, geopolitics, external collaborations) and internal economic factors (national development, investments, innovations, labor resources) on the logistics management of world agricultural-producing countries.

An improved methodological approach has been developed for assessing the logistics potential of countries that are major producers of agricultural products worldwide. This method is characterized by a set of competitive elements that include evaluating the logistics management of countries in the following blocks: food security, internationalization of production and logistics, and management of business processes [33].

The result of this refined method for evaluating the logistics potential of world countries is the development of its criteria base, enabling the adoption of effective managerial decisions at the intergovernmental and governmental levels regarding the logistical development of agricultural production.

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