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Logistics Department

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QUALIFICATION PAPER

(EXPLANATORY NOTES)

OF SEEKER OF ACADEMIC DEGREE

«MASTER»

THEME: **«*Adaptation of the logistics company's sustainable development strategy based on megatrends*»**

Specialty 073 «Management»

Educational and Professional Program «Logistics »

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Kyiv 2024

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ДЕРЖАВНЕ НЕКОМЕРЦІЙНЕ ПІДПРИЄМСТВО
“ДЕРЖАВНИЙ УНІВЕРСИТЕТ “КИЇВСЬКИЙ АВІАЦІЙНИЙ ІНСТИТУТ”
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ЗАТВЕРДЖУЮ
Завідувач кафедри логістики
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ЗДОБУВАЧА ОСВІТНЬОГО СТУПЕНЯ

«МАГІСТР»

ТЕМА: ***«Адаптація стратегії сталого розвитку логістичної компанії на основі мегатрендів»***

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TASK

FOR COMPLETION THE QUALIFICATION PAPER OF SEEKER

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1. Theme of the qualification paper: «Adaptation of the logistics company's sustainable development strategy based on megatrends» was approved by the Rector Directive №1559/ст. of August 26, 2024.

2. Term performance of qualification paper: from August 26, 2024 to December 15, 2024.

3. Date of submission qualification paper to graduation department: November 20, 2024.

4. Initial data required for writing the qualification paper: general information of the company «DHL», financial indicators of the logistics company DHL, literary sources on financial source.

5. Content of the explanatory notes: introduction, fundamentals of the sustainable development strategy of a logistics company; global megatrends in busibess and society; influence of megatrends on logistics industry; general characteristics of the DHL company; diagnostics of the financial and economic condition; innovative approach to the adaptation of a logistics company`s sustainable development strategy taking into account megatrends; adapting the existing sustainable development strategy under the influence of megatrends; development of new approaches to assessing the sustainability of a logistics company's business through the prism of the influence of megatrends; conclusions and appendixes.

6. List of obligatory graphic matters: tables, charts, graphs, diagrams illustrating the current state of problems and methods of their solution.

7. Calendar schedule:

№	Assignment	Deadline for completion	Mark on completion
1	2	3	4
1.	Study and analysis of scientific articles, literary sources, normative legal documents, preparation of the first version of the introduction and the theoretical chapter	26.08.24-20.09.24	Done
2.	Collection of statistical data, timing, detection of weaknesses, preparation of the first version of the analytical chapter	21.09.24-13.10.24	Done
3.	Development of project proposals and their organizational and economic substantiation, preparation of the first version of the project chapter and conclusions. Editing the first versions of qualification paper	14.10.24-03.11.24	Done
4.	Preparing the final version of the qualification paper, checking by standards inspector	04.11.24-14.11.24	Done
5.	Approval for a qualification paper with supervisor, getting of the report of the supervisor, getting internal and external reviews, transcript of academic record	15.11.24-19.11.24	Done
6.	Submission qualification paper to Logistics Department	20.11.24	Done

Seeker _____
(signature)

Supervisor of the qualification paper _____
(signature)

8. Consultants of difference chapters of qualification paper:

Chapter	Consultant (position, surname and initials)	Date, signature	
		The task was given	The task was accepted
Chapter 1	Associate Professor, Pozniak O.V.	26.08.24	26.08.24
Chapter 2	Associate Professor, Pozniak O.V.	21.09.24	21.09.24
Chapter 3	Associate Professor, Pozniak O.V.	14.10.24	14.10.24

9. Given date of the task August 26, 2024

Supervisor of the qualification paper: _____ Oksana POZNIAK
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Task accepted for completion: _____ Maryna YASHCHUK
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ABSTRACT

The explanatory notes to the qualification paper «Adaptation of the logistics company's sustainable development strategy based on megatrends» comprises of 106 pages, 45 figures, 20 tables, 3 appendixes, 70 references.

KEY WORDS: ADAPTATION, SUSTAINABLE DEVELOPMENT, MEGATRENDS, LOGISTICS TREND RADAR, STRATEGY, CORPORATE VALUE

The purpose of the qualification work is to further develop theoretical approaches and practical recommendations for adapting a sustainable development strategy of a logistics company, taking into account the impact of megatrends to increase its competitiveness and sustainability.

The subject of the qualification work is tools, models and approaches to adapting a sustainable development strategy of a logistics company under the impact of global megatrends.

The object of the qualification work is the processes of strategic management of sustainable development of logistics companies in the context of global economic, social, and technological changes.

Methods of research are scientific inquiry, empirical, analysis and synthesis, modeling, Porter's Five Forces – analysis.

Materials of the qualification paper are recommended for applying during scientific research, in the educational process and the practical activities of logistics department specialists.

CONTENTS

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NOTATION

ESG – Environmental, social, and governance

LLC – Limited Liability Company

MT – Megatrend

SDGs – Sustainable Development Goals

ROE – Return on Equity

UN – United Nations

INTRODUCTION

At the current stage of economic development, considering socio-economic and geopolitical changes, one of the main problems of logistics companies is their successful adaptation to the challenges of the global environment. Urbanization, digitalization, greening, the development of alternative energy, and other megatrends are significantly changing supply chains and logistics processes, which creates the need to adapt companies' strategies to new market conditions. The growth of consumers' environmental awareness and increased regulatory pressure to reduce emissions require logistics companies to implement sustainable practices. Sustainable development is becoming one of the key factors of competitiveness in the market, and companies that adapt their strategies to the principles of sustainable development gain advantages in the long term.

Traditional models of logistics process management no longer meet the challenges of today, so the integration of digital technologies such as IoT, artificial intelligence, and big data is becoming necessary to achieve efficiency and environmental responsibility. The use of cyclical logistics models and the transition to low-carbon technologies are key elements of sustainable development strategies.

Global crises, in particular economic and political instability, increase the need for adaptive strategies that take into account long-term trends. The growing demand for fast, flexible, and environmentally friendly logistics solutions changes the requirements for companies' activities.

Thus, research on adapting the sustainable development strategy of logistics companies is relevant for solving current problems and ensuring their sustainability and competitiveness in the future.

Literature review. The concept of sustainable development and its integration into logistics management has become a significant area of interest for researchers and practitioners, and the study of the impact of megatrends only deepens the complexity of this issue. The following scientists have studied megatrends, including Hillman,

Pradel, and Aretz, Groddeck and Schwarz, Müller and MüllerStewens, John Naisbitt, Hajkowicz and others.

The study of megatrends in logistics and their impact is being carried out by both scientists and practitioners. Among logistics companies, the greatest contribution not only to research but also to development was made by DHL, which has been developing the Logistics Trend Radar for ten years, which provides a comprehensive framework for understanding the impact of social, economic, and technological megatrends on the logistics sector. The Logistics Trend Radar emphasizes the integration of innovation, sustainable development, and digital transformation into business strategy to remain competitive in an ever-changing environment.

Analysis of global megatrends by consulting firms PwC, Accenture, E&Y, McKinsey Global Institute, and Boston Consulting Group highlights how demographic shifts and climate change are forcing companies to rethink supply chain strategies to ensure resilience and sustainability.

Since the issues of adapting a sustainable development strategy are very complex, further research only expands the range of issues covered and enriches the achievements in this field.

The purpose of the qualification work is to further develop theoretical approaches and practical recommendations for adapting a sustainable development strategy of a logistics company, taking into account the impact of megatrends to increase its competitiveness and sustainability.

To achieve the purpose of the qualification work, the following tasks were performed:

– characterize fundamentals of the sustainable development strategy of a logistics company;

– research global megatrends;

– identify Influence of megatrends on logistics industry;

– develop business portfolio of DHL company;

– analyse the economic and financial state of the company`s activity;

– analyse the sustainable development of the logistics company;

– develop innovative approach to the adaptation of a logistics company`s sustainable development strategy taking into account megatrends;

– adapt the existing sustainable development strategy under the influence of megatrends;

– develop new approaches to assessing the sustainability of a logistics company's business through the prism of the influence of megatrends.

The subject of the qualification work is tools, models and approaches to adapting a sustainable development strategy of a logistics company under the impact of global megatrends.

The object of the qualification work is the processes of strategic management of sustainable development of logistics companies in the context of global economic, social, and technological changes.

The scientific novelty of the work lies in the development of theoretical and methodological approaches to adapting the sustainable development strategy of a logistics company based on the analysis of megatrends:

improved:

- identification of megatrends affecting the logistics industry by generalizing key groups of megatrends that create challenges and opportunities for logistics companies;

- substantiation of the impact of megatrends on the sustainable development strategy by studying the connection between global changes in the social, economic, and technological spheres and the need to transform logistics processes;

developed:

- new approaches to assessing the sustainability of a logistics company's business through the prism of the impact of megatrends, which include the use of tools for building flexible strategies that take into account long-term trends and adapt to the dynamic external environment;

- practical recommendations for the transition to cyclical logistics processes and the implementation of decarbonization strategies, the use of digital technologies to optimize processes and reduce environmental impact.

Thus, the qualification work contributes to the scientific substantiation of approaches to the sustainable development of logistics companies in the face of global changes, providing a theoretical and practical basis for their adaptation to the challenges of the modern environment.

The following research methods were used in the process of writing the qualification work, such as analysis and synthesis for studying scientific literature, regulatory framework, and existing approaches to innovative development of logistics; abstraction and generalization for formulating theoretical propositions and generalizing data on innovations in logistics; classification and comparison for analyzing various innovative approaches, technologies, and practices in logistics; statistical analysis for conducting financial diagnostics of the company's activities; analysis of cost data, investment analysis - for assessing the economic efficiency of project solutions.

In the process of writing the qualification work, the following research methods were used: analysis and generalization of the study of scientific literature, regulatory framework, and existing approaches to identifying megatrends in the global economic environment, megatrends in logistics; classification and comparison for analyzing approaches to defining the concept of megatrends; statistical analysis for conducting financial diagnostics of the activities of a logistics company, analysis of the formation of the value of a logistics company and the profitability of equity to study the impact of megatrends on the sustainable development of a logistics company.

Annual reports of the logistics company DHL, articles, and scientific research materials on the issues of managing the sustainable development of a logistics company were used to write the qualification work.

The qualification work consists of an introduction, three sections, conclusions and proposals, a list of sources used, and appendices.

CHAPTER 1
THEORETICAL BASIS OF ADAPTATION OF THE SUSTAINABLE DEVELOPMENT STRATEGY OF A LOGISTICS COMPANY BASED ON MEGATRENDS

1.1 Fundamentals of the sustainable development strategy of a logistics company

The term "sustainable development" is the official Ukrainian counterpart of the English term "sustainable development", the literal translation of which, depending on the context, can be "sustainable" or "sustainable development", and its extended interpretation is self-sustaining development. The strategy of sustainable development is an alternative to the paradigm of economic growth, which ignores the ecological danger from the development of society according to extensive model.

Sustainable development is a comprehensive and forward-looking concept aimed at meeting the needs of the present without jeopardizing the ability of future generations to meet their needs. It is a holistic approach that seeks to strike a balance between economic growth, social justice and environmental protection, ensuring that development efforts do not deplete or degrade the natural resources and ecosystems that support human life and well-being.

The concept of sustainable development arose at the end of the 20th century as a response to the recognition of the growing negative impact of human activity on the environment and the limitation of natural resources. Its popularization was facilitated by the report of the head of the Commission, the Prime Minister of Norway Gro Harlem Brundtland, the report also known as "Our Common Future", published by the UN World Commission on Environment and Development in 1987 [11].

The author of the innovative economic theory of sustainable development is the leading researcher of the economic aspects of environmental pollution, former World

Bank economist Herman Daly, who interprets the term "sustainable development" as the harmonious, balanced, conflict-free progress of the entire earthly civilization, groups of countries (regions, subregions), as well as individually taken countries of our planet according to scientifically based plans, when in the process of constant innovation-intensive economic development of countries, the entire complex of issues related to the preservation of the environment, the elimination of poverty, exploitation and discrimination is simultaneously and positively resolved, both for each individual person and for entire peoples or population groups, including number based on ethnic, racial or sexual characteristics [60].

The development of a strategy for the sustainable development of society is based on the general laws and methodology of economic, social, natural and environmental sciences. At the same time, along with general scientific methods of research, specific methods of analysis, forecasting and management are also used state of the "society-nature" system. Based on impact assessment of natural and anthropogenic factors, the regularities of the functioning of the "society-nature" system should be revealed, the methodology and methods of assessing its state should be developed and improved, and the directions of the development of this system should be formed.

Several theoreticians consider sustainable development to be the most promising ideology of the 21st century and even of the entire third millennium, which, with the deepening of scientific validity, will supplant all existing worldview ideologies as fragmented and unable to ensure the balanced development of civilization.

Considering the causal relationships, the strategy of sustainable development is the preservation of humanity, and the general task is the preservation of the conditions under which humanity can exist and develop, that is, the preservation of the biosphere and local ecosystems.

The main task of the sustainable development strategy is to ensure the conditions for the balanced functioning of the social, economic, and ecological components of the "Society-Nature" system.

A condition for the formation of a sustainable development strategy is the fulfillment of five main principles:

1. The principle of greening the economy. Revision of economic and sectoral policy with the aim of "internalization of externalities" - the transformation of external ecological and social factors related to the depletion of natural resources and environmental pollution into internal costs of production and their integration into the process of market pricing. Legislative support for the innovative environmental and economic policy includes "trading of emissions quotas", "eco-labor tax reform", and development of the "organic sector".

2. The principle of eco-resource capacity. Limitations that exist in the industry exploitation of natural resources, although relative, but real. They are primarily related to the limited ability of the biosphere to self-renew, as well as to the current level of technology and social organization.

3. The principle of sustainable consumption and production. It is necessary to reconcile the lifestyle of society, especially those who use excessive means (monetary and material), with the ecological capabilities of the planet, in particular concerning the use of energy and material resources - to ensure the implementation of the principle of self-limitation of consumption and production.

4. The principle of coevolution. The coevolutionary development of humanity and nature consists of the symmetrical coevolution of human systems (values, knowledge, culture, technologies, and artifacts) and natural systems with their constant interaction, as well as mutual influence and adaptation to changes in these two worlds. Humans are not exempt from the coevolutionary process that elevates some species and diminishes others. According to the "paradigm of co-evolution", humanity's ability to adapt will always remain critically important. This requires an environmentally safe policy to preserve biological and landscape diversity.

Taking into account these principles, the goals of sustainable development were formed, which consist of 17 interrelated goals aimed at solving the most pressing global problems (see Fig.1.1).

Figure 1.1 – Sustainable Development Goals

Source: [52]

Therefore, the strategy of sustainable development is determined by a paradigm shift through the formation of new environmental ethics and ethical consciousness and becomes a determining factor in the development of all countries, global associations, and individual companies, including logistics ones. Sustainable development is becoming a factor that transforms the existing global order and poses changing challenges to the business models of global industries to focus more on improving environmental and social impact to align with consumer expectations for more sustainable practices.

A sustainable development strategy of a logistics company is a comprehensive plan designed to balance economic growth, environmental protection, and social well-being to ensure long-term viability, sustainability, and a positive contribution to society and the environment.

Key components of a sustainable development strategy of a logistics company are presented in fig.1.2.

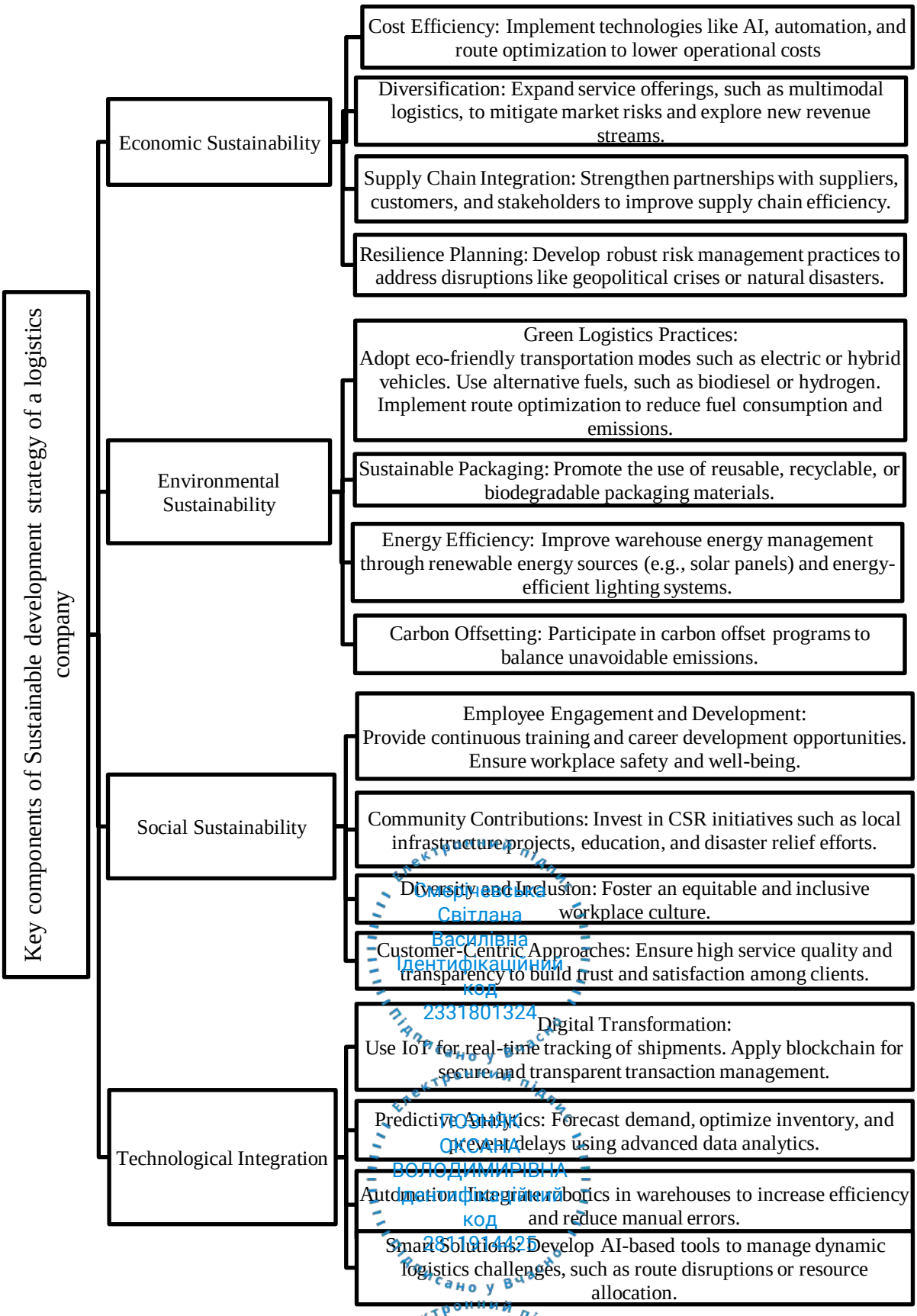

Figure 1.2 - Key components of a sustainable development strategy of a logistics company

Source: developed by the author

The key components of a logistics company's sustainability strategy form the basis on which logistics companies can align their activities with the Sustainable Development Goals (SDGs), enhance their long-term viability and make a positive contribution to environmental protection and societal well-being. This strategy not only increases profitability, but also strengthens the company's reputation and its competitiveness in today's marketplace.

Confirmation of the fact that sustainable development is becoming a global influence factor is the list of changes that may increase in the coming years, which are shown in Table 1.1.

Table 1.1 - Sustainability changes that reshaping the worlds

№	Changes	Content of the impact of sustainability on business
1	Renewable energy source	It is planned to increase the use of solar and wind energy, as well as alternative fuels, to support business processes, as well as to provide life support for components of the logistics infrastructure.
2	Transport transformation	Electronic vehicles and fuelless transport will become more in use, especially in last-mile delivery. Some logistics companies build green supply chains which consist of different modes of electronic vehicles.
3	Standardized sustainable materials	Industries will focus on replacing and standardizing sustainable methods and materials
4	Increase in efficiency technology	Technological advances will further improve the efficiency and user control of many more appliances
5	Brand responsibility and transparency	Public scrutiny and customer demands for environmental policies will lead to demands for transparency from brands and corporate businesses
6	Reuse and repurpose	More businesses will upcycle, buy/sell second hand and reuse items before buying new
7	Recycling	An increase in recyclable products and packaging will lead to higher levels of recycling globally

Source: developed by author based on [37]

The identified consequences form the basis of a new paradigm of economic development, which determines the transition to business models that prioritize reuse, recycling, and resource efficiency; urbanization and globalization, through the strengthening of international networks to ensure the uninterrupted flow of goods in a globalized economy.

Thus, sustainable development is becoming a global trend that defines a list of challenges for adapting strategies, existing business models of logistics companies, global networks, and supply chains to focus more on improving environmental and social impact, to meet consumer expectations for more sustainable practices. But sustainable development is only one of the possible factors of change in the global environment to which logistics companies need to adapt, so for the adaptation to be systemic and the result from it to be the most optimal, it is necessary to establish all the global factors of change to which the logistics company strategy needs to be adapted.

1.2 Global megatrends: concepts, categories, main components

Nothing is as constant as change, and in a global environment, any company is part of an ecosystem that is constantly changing under the influence of external environmental factors. It is about the potential positive or negative impact of these factors, first of all, on the business strategy, so it is important for the company to identify these factors by timing and strength of influence in order to be able to adapt to them in the long term. Factors that have a significant impact on ecosystems at different levels are identified as trends. The conducted literature review, given in Appendix A, enables to summarize the views of scientists and provide the following definition of the concept of a trend.

Accordingly, the trend is identified as a phenomenon that determines the fundamental transformational change of the ecosystem at any level from an economic, psychological or sociological point of view, depending on the time being studied.

Therefore, trends can be classified by level of influence on different types of economic systems: regional, domestic, and global trends. Based on the second classification factor, trends are determined by the terms of influence on economic systems, which are summarized in Fig. 1.3.

Based on the classification of trends, megatrends are defined by the following characteristics, namely: first, they have the longest life cycle, have the potential to exist for up to 50 years, and are characterized by long-term changes. Secondly, megatrends are defined as global variables characterized by a high degree of influence on economic, political, social, demographic, infrastructure, and environmental factors, and have a high degree of certainty. Thirdly, megatrends refer to trends that are global and require adaptation strategies rather than strategies to change the trends themselves, and use scenario planning methodology to predict the impact and probability of results.

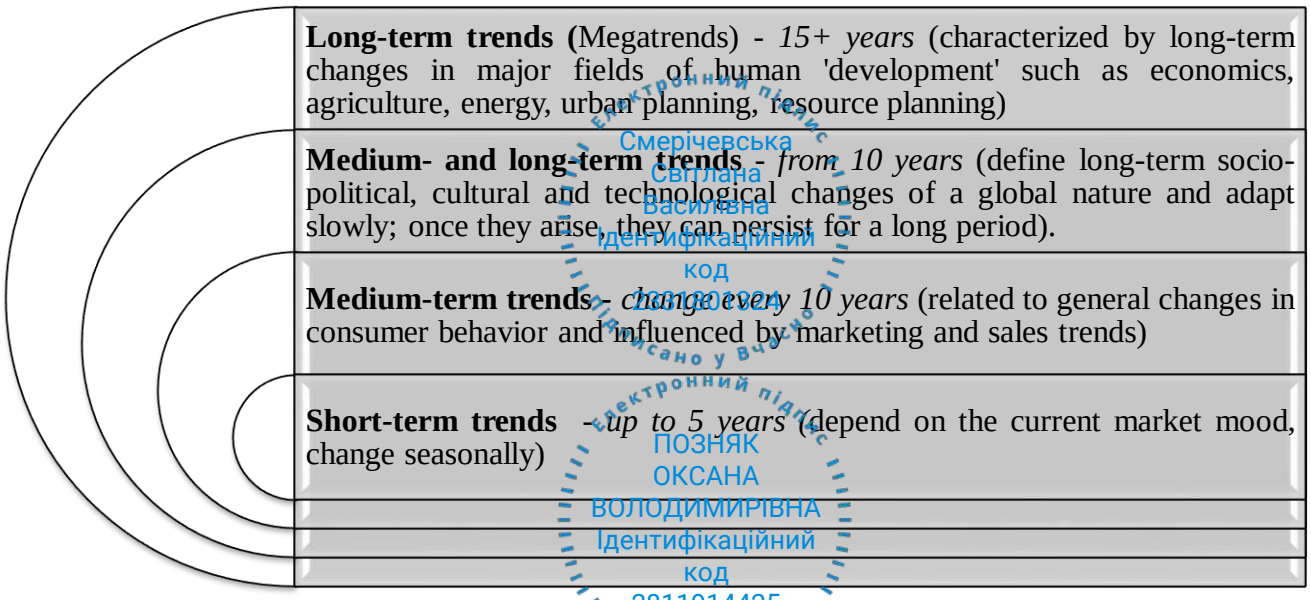

Figure 1.3 – Trends classifications by the terms of influence on economic systems

Source: developed by author

Thus, megatrends are defined as large-scale, transformative and long-term changes that affect various aspects of an individual's life as well as society, economy, culture and technology. Although megatrends have been popularized since 1982, when the term "megatrend" was first used by J. Naisbitt, they are inherently complex and there is no consensus on how they are defined and developed.

J. Naisbitt distinguished new megatrends - far-reaching transformations, expecting them to happen in the future. These are [40]:

– transformation from industrial to information society;
– change of mechanical technology into ultra-technology;
– transformation from national into global economy;
– transition from short-term thinking to long-term thinking;
– replacement of centralization by decentralization;
– transition from institutionalized aid to self-care;
– replacement of direct democracy to representative democracy;
– transformation from dualistic to multiplicity way of thinking.

Further research into megatrends in the year 2012 was conducted by the group of researchers headed by Hajkowicz [30] and distinguished six major megatrends which are presented in fig. 1.4.

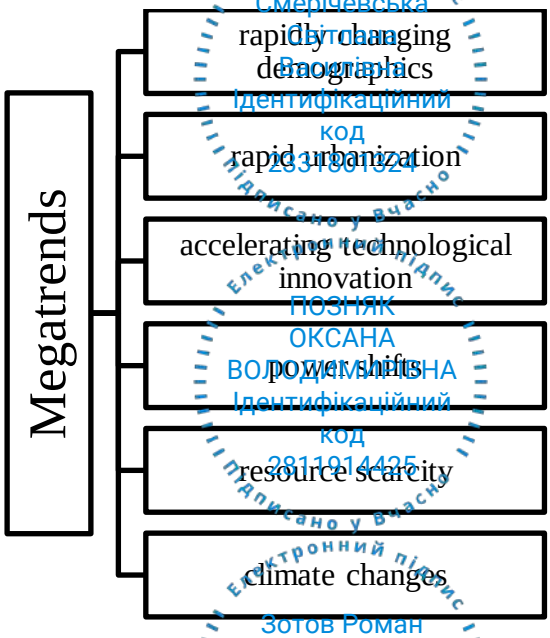

Figure 1.4 – Identification of megatrend by Hajkowicz

Source: [30]

At the same period of time, other group of authors headed by Tinnilä pointed to six more specific megatrends [51]:

1) change in the age structure of the population and processes of urbanization;

2) society's movement towards round-the-clock access to various goods, services and consumption;

3) introduction of ICT; significant expansion of consumers due to wide access to information;

4) expansion of e-commerce, e-shopping and mobile services;

5) globalization of business as a result of structural changes in the competitive market.

Realizing the relevance of the topic, research on megatrends was continued by Hessel, who described megatrends as global changes in individual, social, and technological structures that are believed to have a major impact on futures markets. In particular, he singled out megatrends:

– demographic changes;
– individualization reaches a new stage;
– social and cultural disparities;
– reorganization of healthcare systems; changes to gender roles;
– new patterns of mobility;
– digital culture;
– learning from nature;
– ubiquitous intelligence;
– technology convergence;
– globalization;
– knowledge-based economy;
– business ecosystems;
– changes in the work world;
– new consumption patterns;
– upheavals in energy and resources;

– climate change and environmental impacts;

– urbanization;

– new political world order;

– global risk society.

The megatrends identified by him significantly expand the list, but do not generalize them by groups, which significantly reduces the possibilities of identifying the challenges associated with them and predicting their impact on various areas of human life. Therefore, further research into megatrends by consulting companies such as KPGM [35]; PWC[46]; EY[32], in our opinion, makes it possible to level this shortcoming. Taking this approach reflects the policies of multilateral agencies and global companies and reflects the current focus of scenario planning of international organizations that guide resource management practices, reducing the number of megatrends identified for analysis.

Ernest and Young [32] identified six megatrends that, they think, illustrate the world in motion and possess the capacity to change the world in which we live in an unexpected and surprising way. These megatrends, as well as their interrelationships, are shown in Figure 1.5, and a breakdown of each group of megatrends by terms and phrases that describe the megatrends, as well as their explanations, along with the challenges they pose today, is provided in Appendix B.

Figure 1.5 – Identified megatrends by EY

Source: [32]

The consulting company PWC, unlike EY, identifies the following four groups of megatrends: demographic, education level, capital investment and technological progress, which are detailed in Table 1.2.

Table 1.2 – Megatrends identified by PWC [46]

MT	Terms and phrases		Explanations / Results / introduction	Challenges
	Level 1	Level 2		
Demographics		population growth	Most of the developed economies are expected to experience low levels of population growth.	Importance of structural reforms and institution building aimed at boosting the productivity element of growth. Increases in labor productivity will account for all of its economic growth.
		ageing population	The impact of a declining, ageing population is significant in restricting any county's ability to increase its share of world GDP in a similar way to other large emerging economies.	An ageing population also acts as a drag on country growth in the longer term relative to that of country with big growth of population
Education level	education levels in the workforce	quality of labour education levels human capital	Growth in the quality of labour ('human capital') is assumed to be related to current and projected average education levels in the workforce. Must be a strong commitment to developing human capital and entrepreneurship through improving education and rising education levels.	Downside risks are associated with shrinking workforces in some countries being impaired by insufficient competition in, or resource allocation to, or staff incentives in, education. Economy grow requires sustained economic reforms and increased investment in infrastructure, institutions and mass education
Capital investment		physical capital stock investment/GDP ratios	Growth in the physical capital stock is driven by new capital investment. With declining marginal returns on new investment over time, the very high investment/GDP ratios in developing countries will tend to decline in the long run as these economies mature	Downside risks associated with shrinking workforces in some countries being impaired by capital investment
Technological progress		technology transfer human capital investment factor productivity growth degree of intellectual property rights GDP growth	Technological progress is assumed to be related to the extent to which a country lags behind the technological leader and so has the potential for 'catch-up' through technology transfer, conditional upon levels of physical and human capital investment and other, more institutional factors, such as political stability, openness to trade and foreign investment, the strength of the rule of law, the strength of the financial system and cultural attitudes to entrepreneurship.	Economy growth through technological progress is only intended to produce projections for long-term trend growth. It ignores cyclical fluctuations around this long-term trend, which history suggests could be significant in the short term for emerging economies in particular, but which we cannot hope to predict more than a year or two ahead at most. It also ignores the possibility of major adverse shocks (e.g. political revolutions, natural disasters or military conflicts) that could throw countries off their equilibrium growth paths for longer periods of time, but which are inherently impossible to predict.

Therefore, based on an in-depth review of the literature, the megatrends and highlight the corresponding trends for each important area of social development are presented in fig.1.6 - fig.1.9.

The first group is determined by economic factors, which determine the three groups of megatrends and the corresponding trends.

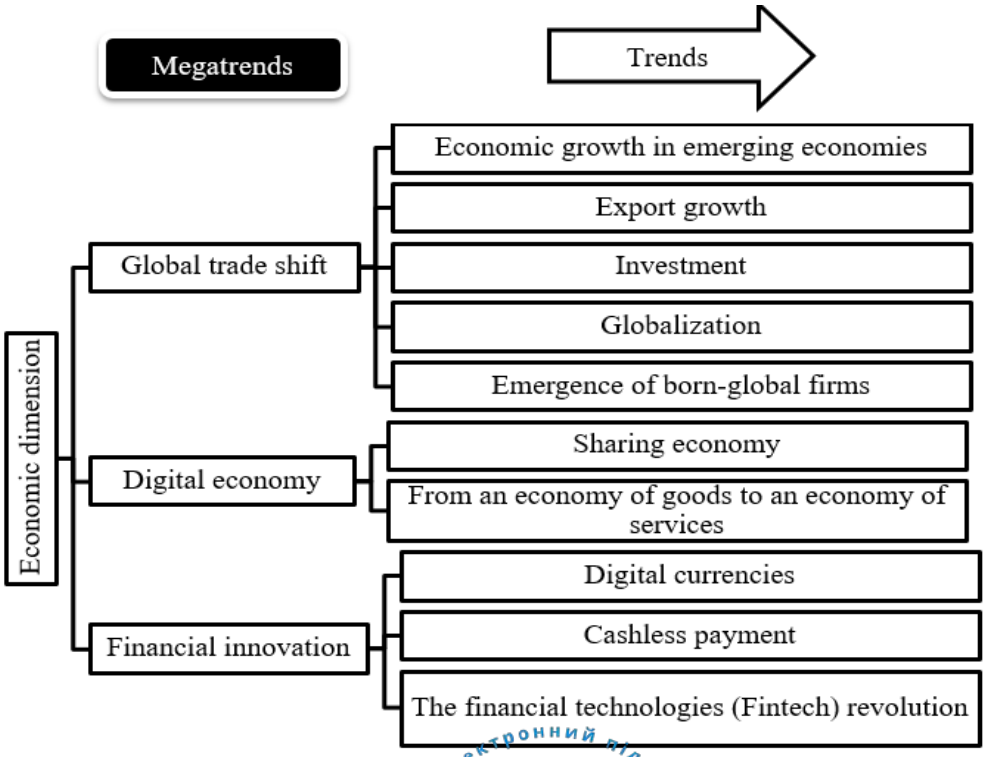

Figure 1.6 – Identified megatrends and trends in economic area

Source: developed by author

The first group of megatrends, defined by the following trends, is economic growth in countries such as China, which will become the largest economy by 2030, and India, which will become the third-largest economy in the world by 2050. This will affect demand and the structure of supply chains.

The second group of megatrends is represented by trends such as the digital economy trend, which is defined as where customers use online platforms to facilitate the exchange process. The sharing economy has achieved rapid growth in various industries. The transition from a goods economy to a services economy is characterized

by the transition to a new sales platform or new, future online services, the creation of a virtual duplicate of physical businesses.

In the third group of megatrends of financial innovations, there are trends such as cashless payments and digital currencies, which are aimed at increasing the security of financial transactions in supply chains. Thus, business-to-consumer (B2C) transactions are increasingly digitized, and financial technology firms are expected to revolutionize supply chain finance.

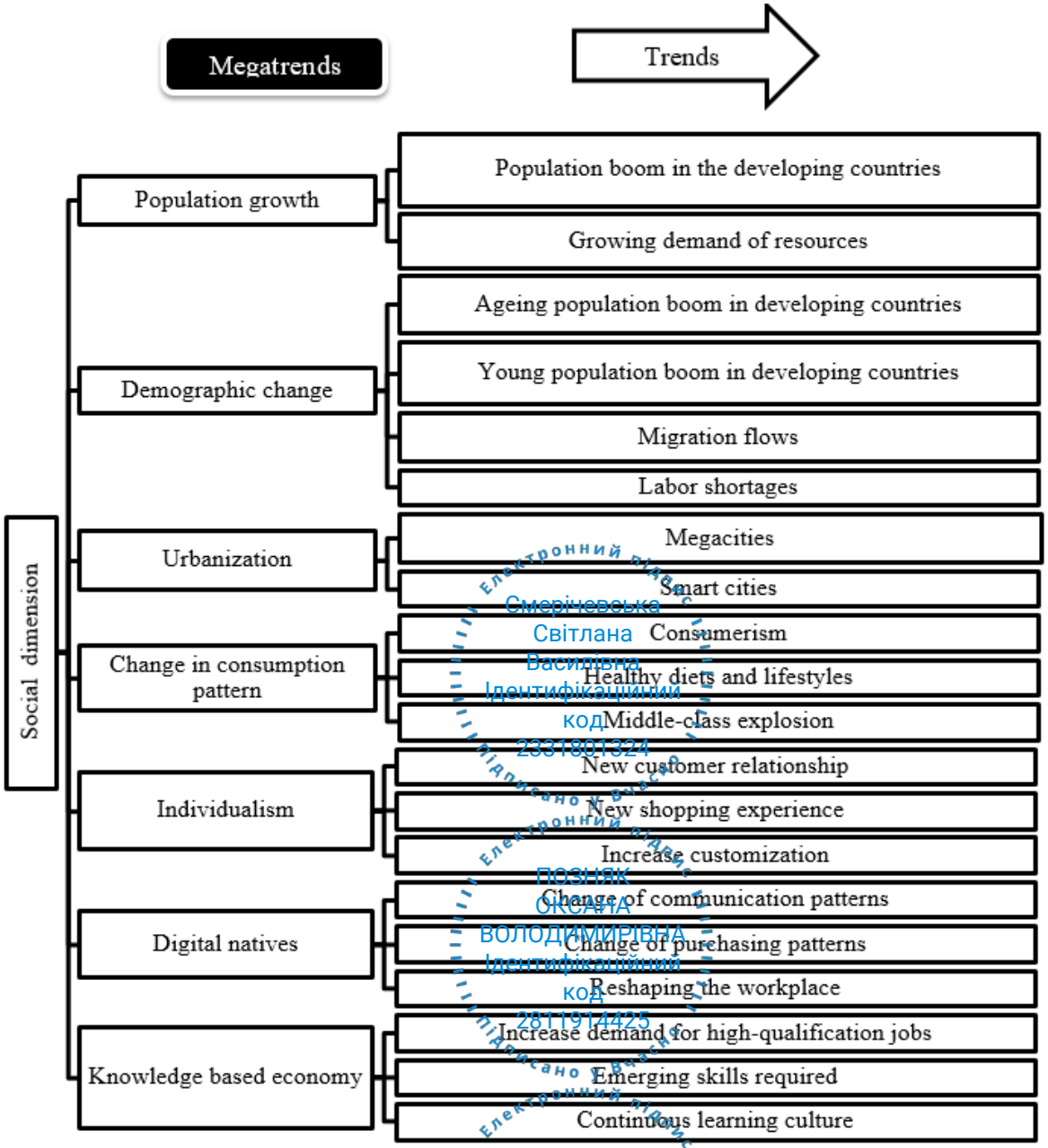

Figure 1.7 – Identified megatrends and trends in social area

Source: developed by author

In the social area, the key megatrend is population growth, which will lead to an increase in demand for resources. Population aging is the biggest demographic challenge, leading to a shortage not only of labor but also of workers with the necessary skills, which also delays the introduction of digital technologies. One way to solve this problem is migration from countries with a high proportion of young populations. It is predicted that by 2030, 35 million people will move from less developed countries to developed ones, which will lead to an expansion of the labor force and, as a result, to increased demand and investment.

The growth of new megacities and smart cities will lead to a change in the concept of urban logistics and the need to find alternative modes of transport suitable for urban centers (new concepts of underground transport).

Consumption patterns are changing due to various trends, such as the explosion of the middle class and online shopping, which will lead to a growth in the market for last-mile parcel delivery services and reverse logistics. New business models must take into account the increasing role of social media in advertising and promoting products and services. Individualization is leading to greater decentralization of production structures, e.g. healthy lifestyles have led to a demand for fresh, healthy, unprocessed food with a short shelf life.

The problem of training professional personnel will increase with the increasing role of megatrends and technological trends that are presented in fig.1.8.

In recent decades, the technological sphere has become a key megatrend in the development of society, and digital transformation is changing not only production and operational processes, but also determining the transformation of human development. Technological progress has increased industrial productivity and there is a rise of a new digital industrial technology known as Industry 4.0. Digital transformation forces companies to reconsider what customers value most and adjust operating models to achieve competitive advantages. For example, this is investing in blockchain to avoid document flow in maritime transportation, detecting counterfeit products, minimizing inefficiencies in “last mile” delivery, and tracking the origin. Regarding the megatrend development of technology and automation, the use of robots in factories and cyber-

physical systems will affect manufacturing companies from the point of view of production systems. Developments within robotics allow for “re-support” of activities: re-introducing domestic production in the country.

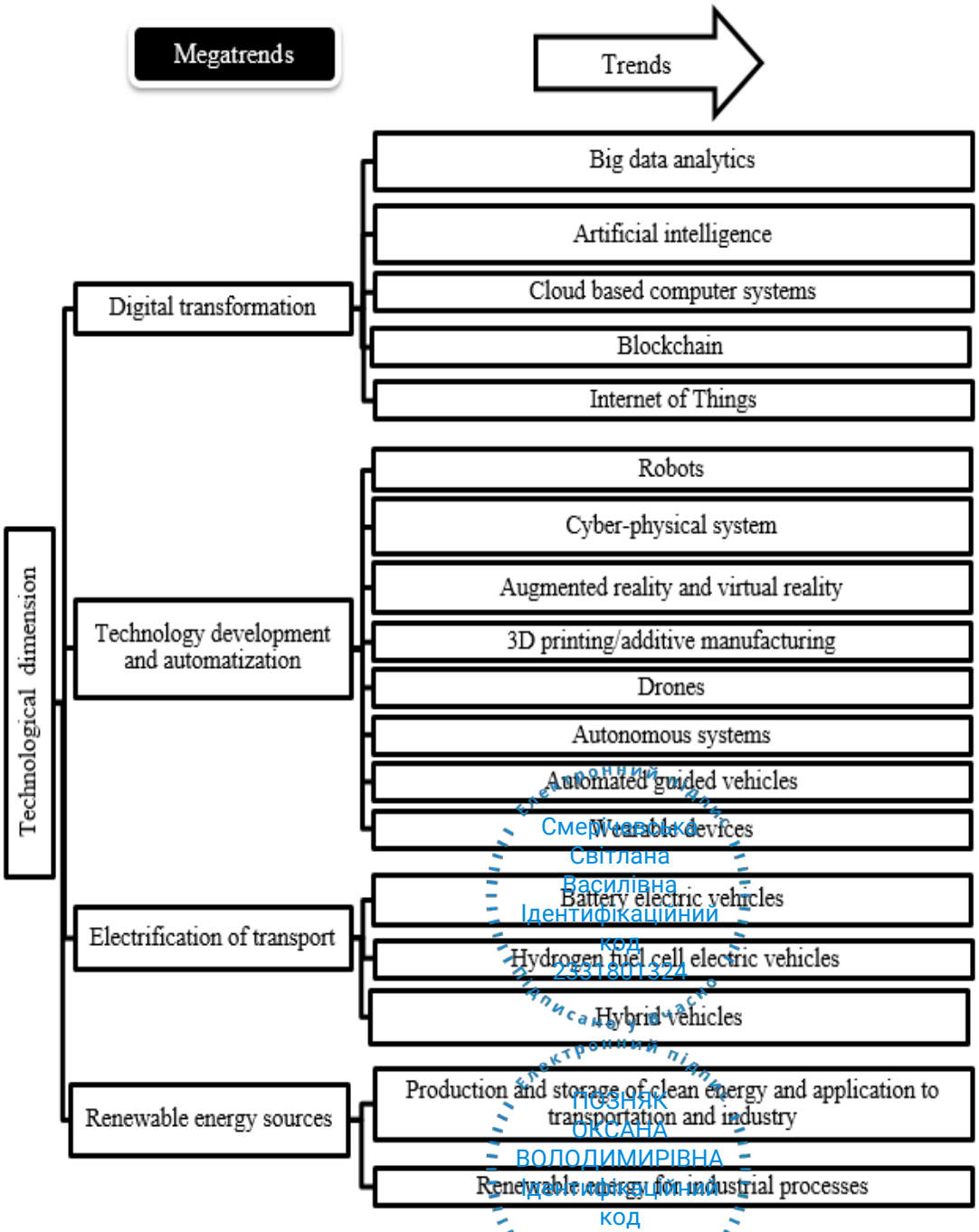

Figure 1.8 – Identified megatrends and trends in technological area

Source: developed by author

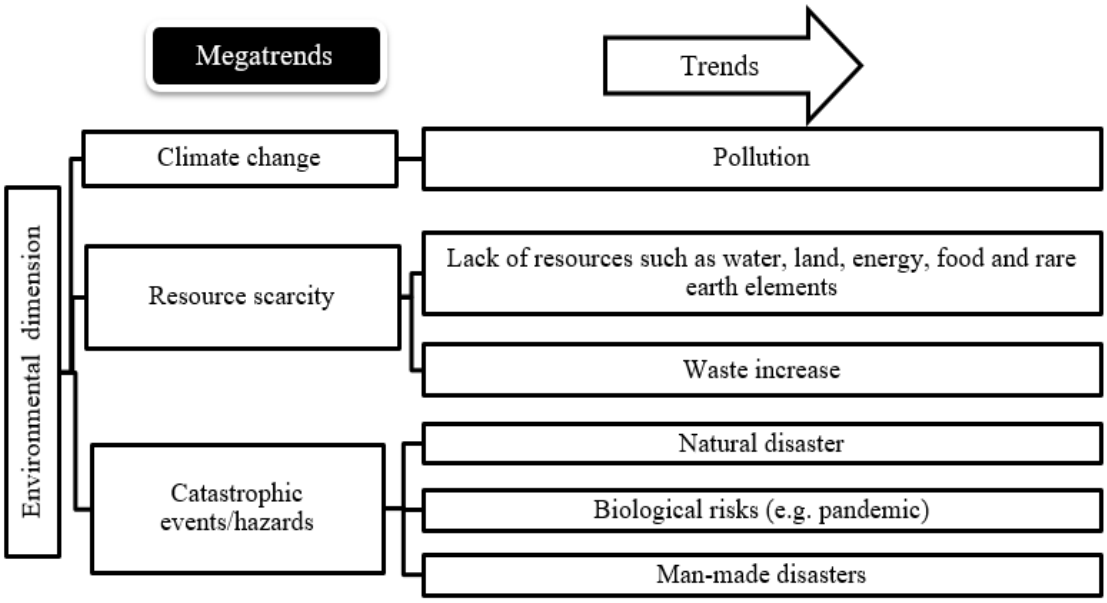

Figure 1.9 – Identified megatrends and trends in environmental area

Source: developed by author

The last group of megatrends defines the environmental sphere of society's development and is combined with the components of the logistics company's sustainable development strategy, which were defined in Fig. 1.2. It is worth noting that the components of the sustainable development strategy consist of four groups that are similar to the defined megatrends in the main directions of society's development. This indicates that sustainable development is a megatrend that defines the development of society and is closely related to other groups of megatrends, with climate change being most often singled out as a megatrend.

Summarizing the concept of megatrends, it should be noted that megatrends, as long-term changes that affect all spheres of society, form a new reality, and set the direction of development for business and society as a whole. They allow us to understand the direction of global changes and predict opportunities and risks for further development, helping to effectively adapt to new conditions. The identified megatrends, due to their systematic nature, have an impact on all spheres and industries of the economy, including logistics, however, it is possible to identify specific features of the impact on the logistics industry.

1.3 Influence of megatrends on logistics industry

One of the most recent approaches to analyzing megatrends affecting logistics, including supply chains, is presented by Gernandt in his research paper “Megatrends and Their Impact on Logistics.” According to Gernandt, megatrends are having a profound impact on global society, changing the way people live, their needs, wants, and opportunities [27].

He identified the following groups of megatrends [27]:

1) globalization – localization – glocalization;

2) virtual goods (digitization, Internet, Internet of Things, big data, 3D printing, online shopping;

3) demographic changes;

4) global population and urbanization;

5) communication and connectivity;

6) increasing the speed of innovation;

7) sustainability, resources, and recycling (a crucial element for the future development of “green logistics services” will be the consumer’s willingness to accept higher product prices to finance sustainability and environmental protection).

The consulting company BCG in its study "Transport and Logistics in a Changing World" [24] identified six groups of megatrends (Fig. 1.10), and their impact on segments of the logistics business, such as road transportation, freight forwarding, contract logistics.

The concept of a two-speed world emphasizes the difference in economic growth trajectories between developing and developed economies. While developed countries face stagnant growth, developing economies are growing rapidly, creating significant implications for global trade and logistics.

Urbanization, marked by large-scale migration from rural areas to urban centers, is driving significant changes in consumer demand patterns and logistics operations.

As more megacities emerge, logistics companies must adapt to the complexities of urban environments and rising consumer expectations for speed and convenience.

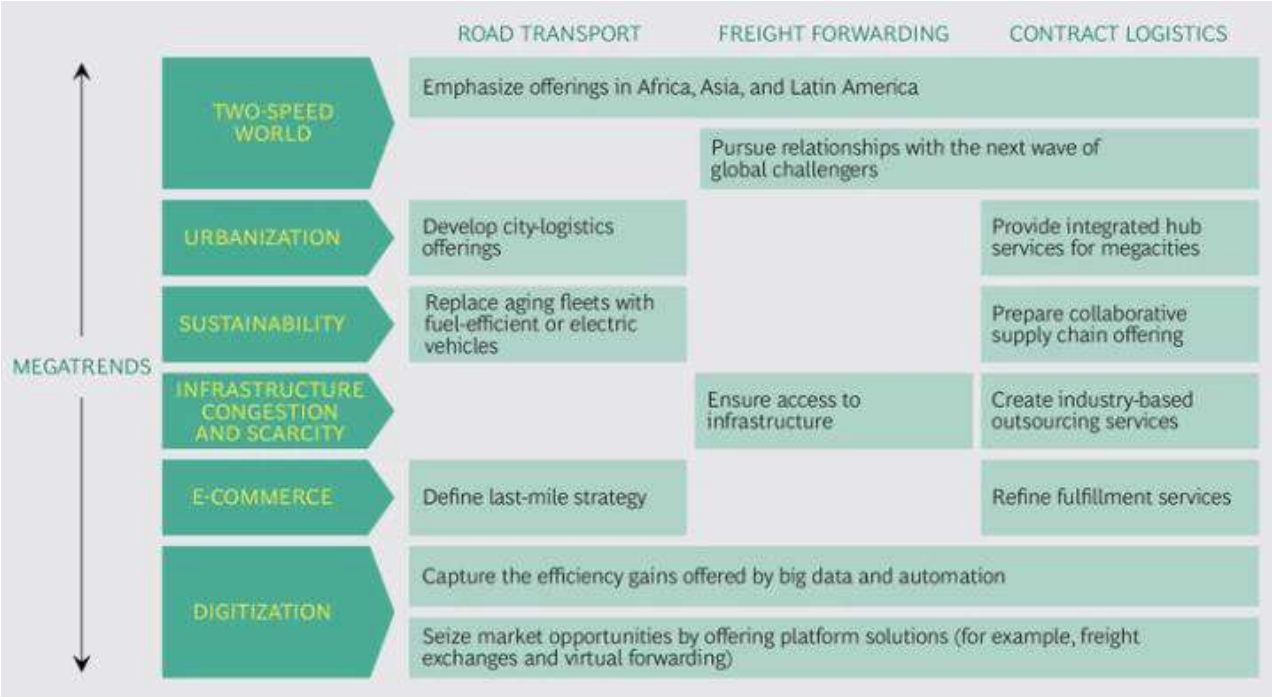

Figure 1.10 - Influence of megatrends on road transport, freight forwarding, and contract logistics

Source: [24]

Consider these influence in more detail. Road transport is significantly influenced by these megatrends that reshape operational strategies, regulatory compliance, and customer expectations. These trends, driven by global changes in urbanization, technology, sustainability, and demographics, create both challenges and opportunities for road transport players.

The growth of urban populations is leading to congestion, complex delivery networks, and increasing customer demands for efficiency and convenience. However, this creates opportunities for the development of last-mile logistics solutions with urban areas in mind, the creation of micro hubs and LTL (less-than-truckload) groupage centers to optimize freight deliveries in cities, and the creation of innovative delivery models.

Stricter environmental regulations, rising fuel costs, and potential carbon taxes are challenging trucking companies. This creates opportunities to replace aging fleets with fuel-efficient or electric vehicles (EVs), implement green transportation solutions such as zero-emission delivery fleets to help customers achieve their sustainability goals, and use alternative fuels such as hydrogen or biofuels to reduce emissions and operating costs.

The development of intelligent logistics systems and automation is transforming road transport, providing opportunities for using IoT and artificial intelligence for real-time tracking and optimization of delivery routes, deploying autonomous vehicles for cost-effective logistics solutions, and integrating predictive analytics to forecast demand and optimize load management.

Changing population structures and consumer expectations are impacting the demand for faster and more personalized delivery options. Adapting delivery networks to serve aging populations in developed countries or a growing middle class in emerging markets, aligning services with the preferences of young, tech-savvy consumers for on-demand logistics and environmentally friendly practices.

Freight forwarding, a critical component of the global supply chain, is being shaped to a large extent by emerging megatrends. These trends are driving changes in operations, technology adoption, and sustainable practices, creating both challenges and opportunities for freight forwarders.

The growth of urban populations and the growth of megacities are increasing the demand for efficient logistics solutions in densely populated areas, which are being developed in urban logistics hub projects to consolidate cargo and optimize delivery routes, or in the formulation of dedicated last-mile delivery solutions in cities with growing demand for e-commerce.

Increased focus on reducing carbon emissions and complying with stricter environmental regulations is impacting freight transportation.

Investing in sustainable freight solutions, such as carbon-neutral delivery options or partnerships with green transport providers, and implementing digital freight platforms to optimize routes and reduce fuel consumption, can help address these

challenges. The rapid adoption of technology is transforming freight forwarding, enabling greater efficiency, transparency, and automation, while leveraging blockchain technology to securely and transparently process transactions, leveraging artificial intelligence and predictive analytics to forecast demand and optimize cargo consolidation, and implementing IoT-enabled tracking to view shipments in real-time, are creating opportunities for optimization and increased transparency.

Contract logistics, which involves the outsourcing of comprehensive supply chain management and operational tasks, is being significantly impacted by megatrends. These trends are changing service models, operational efficiency, and sustainability strategies, opening up opportunities for innovation and adaptation in the industry.

The growth of megacities and urban populations is increasing the demand for logistics solutions adapted to densely populated urban environments. Solutions to these challenges include the creation of urban distribution centers and micro-fulfillment centers to reduce delivery times, the development of last-mile delivery solutions to address congested urban areas, and investments in warehouse automation for faster processing and optimized space utilization in urban logistics facilities.

The growing pressure to reduce carbon emissions and comply with stricter environmental regulations is changing the way businesses operate. The adoption of green warehouse technologies such as solar power plants and energy-efficient equipment, the adoption of eco-friendly packaging solutions that meet customer and consumer expectations, the optimization of transportation routes, and the consolidation of shipments to minimize environmental impact create opportunities to offset the negative impact of the identified trend.

Technology is revolutionizing contract logistics, increasing operational efficiency, and providing better visibility. Deployment of AI and machine learning to optimize inventory management and demand forecasting, use of robotics and automation in warehouses for picking, sorting, and packing processes, integration of IoT-enabled tracking for real-time visibility of shipments and warehouse operations,

improved client interfaces through cloud platforms that offer detailed tracking and analytics are driving solutions to improve the efficiency of logistics companies.

Rapid expansion of e-commerce is driving demand for flexible and scalable contract logistics solutions. Creating multi-channel fulfillment centers to serve multiple sales channels, increasing delivery speeds through on-demand fulfillment and same-day delivery capabilities, and investing in returns management systems to efficiently handle high volumes of e-commerce returns are all ways to streamline logistics processes.

Thus, the term 'megatrend' in logistics refers to a major transformation that significantly impacts the functioning of logistics business entities. It involves the reorganization of their overall activities and operations to adapt and thrive in a competitive market. Megatrends drive long-term structural changes, influencing how logistics companies operate, innovate, and deliver value across the supply chain. A logistics megatrend is a significant, long-term transformation that impacts the way logistics businesses operate and involves reorganizing their overall operations and activities to adapt to competitive market conditions.

Chapter 1 summary

The first chapter of the qualification work provides a comprehensive analysis of approaches to forming a sustainable development strategy for a logistics company

A sustainable development strategy for a logistics company involves integrating environmental, social, and governance (ESG) principles into its core business model. This strategy aims to balance profitability with responsible practices that reduce environmental impact and promote social well-being. The logistics sector, which directly affects global supply chains, must focus on long-term sustainability to remain competitive while addressing pressing global challenges such as climate change, resource depletion, and increased regulatory requirements. Sustainable strategies

should focus on increasing efficiency, reducing emissions, optimizing resource us,e and ensuring ethical labor practices.

The study of global megatrends has determined that global megatrends are long-term, major changes in the global environment that shape the future of industries, economies, and societies. These trends can be divided into several categories, including technological advancements, demographic changes, environmental changes, and social transformations. Key components of these megatrends include technological innovation, increasing urbanization, changing consumer preferences, and growing concern for the environment. Understanding these megatrends allows logistics companies to better anticipate market needs, align their business strategies with future changes, and remain adaptable to the ever-changing global landscape.

The logistics industry has been identified as being significantly impacted by global megatrends that create both challenges and opportunities. For example, technological advances such as automation, artificial intelligence, and blockchain are transforming logistics operations, increasing efficiency, reducing costs, and improving transparency in the supply chain. Urbanization is driving the need for more efficient and sustainable transportation solutions, while globalization continues to increase the complexity and scale of logistics operations. Environmental megatrends, such as climate change and sustainability regulations, require logistics companies to implement green practices, optimize routes, and reduce carbon emissions. Demographic changes, including an aging population and changes in the labor market, are affecting labor availability and consumer demand, requiring adjustments to logistics strategies.

Therefore, adapting a logistics company's strategy to these global megatrends is critical to its long-term success. By implementing sustainable practices and leveraging technological innovation, logistics companies can position themselves as leaders in a rapidly changing industry while contributing to a more sustainable global economy.

CHAPTER 2
ANALYSIS OF DHL'S ACTIVITIES IN THE IMPACT OF MEGATRENDS

2.1 Business portfolio of DHL company

DHL is an international company and major global player in the logistics industry, known for its parcel transportation and express delivery services. It is an important component of international trade, as its network seamlessly connects the markets of more than 220 countries and territories. DHL has maintained its position as a leader in the logistics sector through its commitment to innovation, sustainability and customer-focused solutions.

Business portfolio of the company are shown in Table 2.1.

Table 2.1 – Business portfolio of DHL

Indicator	Content
Industry	Courier
Founded:	September 25, 1969, in San Francisco, U.S.
Founders	Adrian Dalsey, Larry Hillblom, and Robert Lynn
Headquarters	Bonn, Germany
Area served	Worldwide (over 220 countries)
Services	a wide range of logistics services (Express, Global Forwarding, Supply Chain, E-Commerce, Post & Parcels) for all industries, including consulting, development of innovative products and services
Number of employees:	600,000 (2023)
Parent:	DHL Group
Website:	www.dhl.com
Market share	Number 1 in Europe with 25% market share

Source: developed by author

The company's purpose, mission, vision, and values, which are shown in Fig. 2.1, complement the company's business portfolio.

Main competitors of Deutsche post DHL group are: United Parcel Service, FedEx, Dachser, DB Schenker, Kuehne + Nagel, Ceva, DSV, Expeditors, XPO Logistics, Hitachi Transport System, Ryder, SNCF Geodis.

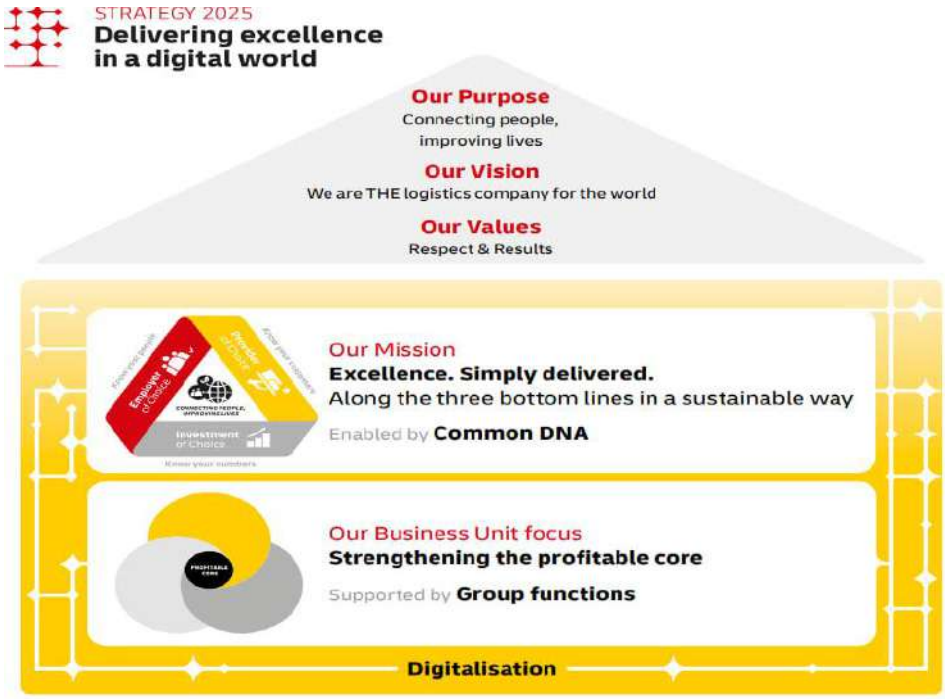

Figure 2.1 - Strategic triad of purpose, vision and values of DHL

Source: [1]

The Group is organized into five operating divisions that are presented in fig.2.2: Express; Global Forwarding, Freight; Supply Chain; eCommerce; and Post & Parcel Germany. Each of the divisions is managed by its own divisional headquarters and subdivided into functions, business units or regions for reporting purposes. Let's take a closer look at the activities of each of them.

In the “Express” subdivision (see Figure 2.3), the company reliably and timely delivers important documents and goods from door to door. International remittance with a fixed time is the main activity of the company. The main product of this division is Time Definite International (TDI), a cross-border transportation and delivery service. TDI’s services ensure timely delivery and our customs clearance expertise ensures that the movement of goods is essential to providing fast and reliable door-to-door service. Company also provide industry services to complete TDI product.

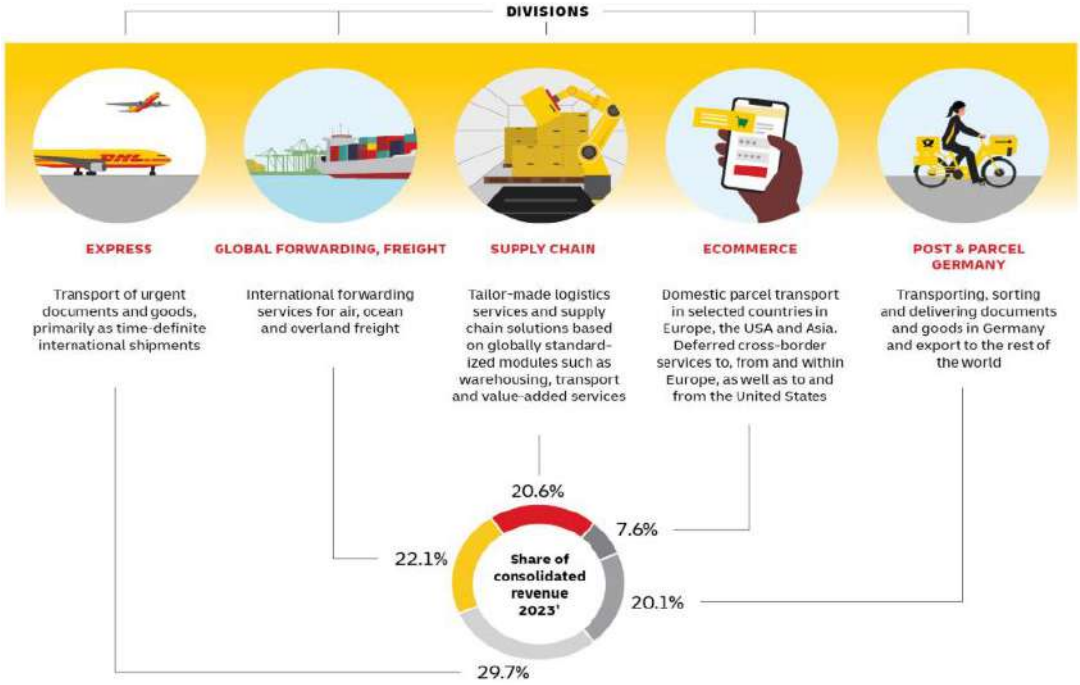

Figure 2.2 – Corporate structure of DHL by business divisions

Source: [1]

Figure 2.3 - A global express network of Deutsche Post DHL

Source: [1]

The company's core business is air, sea and land freight forwarding services. This includes standardized transport as well as multimodal and industry solutions, as well as customized industrial projects and customs services. The company's business model is based on intermediary transport services between customers and freight forwarders. The company's global network coverage allows DHL to offer efficient routes and multimodal transport options. Compared to other divisions of the Group, the

operational business model is asset-light. The key figures for this division are presented in Figure 2.4.

Figure 2.4 - Key operational indicators of Global forwarding, freight division Deutsche Post DHL

Source: [1]

The Supply Chain division's core business includes customized logistics services and supply chain solutions that simplify customers' operations and create sustainable value. DHL offers a broad product portfolio, including warehousing and transportation, as well as additional services such as e-fulfillment, omnichannel solutions and returns management, a leading logistics partner (LLP), real estate solutions, service logistics, and packaging solutions, tailored to the needs of customers worldwide, in all strategic industry sectors. DHL offers modular solutions that enable customers to be more agile and flexible to respond to changing supply chain needs and requirements.

The key operating indicators of the Deutsche Post DHL Supply Chain division are presented in Figure 2.5.

Figure 2.5 - Key operational indicators of Supply Chain Division Deutsche Post DHL

Source: [1]

The main activity of E-commerce division is domestic last-mile delivery of packages in selected countries of Europe, the USA, selected countries of Asia, especially India, and non-TDI cross-border services, primarily to, from, and within Europe, as well as to and from the USA. Domestic delivery of "last mile" packages is provided through our own and partner networks, serving B2C and B2B clients in all sectors. DHL's non-TDI cross-border service provides worldwide delivery solutions to enable customers to take advantage of the strong growth in cross-border trade while meeting their expectations for speed, transparency, and quality. The DHL Parcel Connect platform is a delivery and returns solution designed specifically for e-commerce in Europe, serving both B2B and B2C, streamlining Pan-European cross-border delivery with harmonized labeling, common IT systems, core functionality, and local services.

The key performance indicators of Deutsche Post DHL's e-commerce division are shown in Figure 2.6.

Figure 2.6 - Key operational indicators of E-commerce Division Deutsche Post DHL

Source: [1]

As Europe's largest postal company, Post and Parcel Germany Division core business is the transport, sorting and delivery of documents and goods. DHL maintains a nationwide post and parcel network in Germany, which division continually expands in consideration of digitalization and sustainability. Products and services in the mail communication segment are targeted towards both private and business customers and range from physical and hybrid letters to special products for the delivery of goods, and include additional services such as registered mail, cash on delivery and insured items.

Key operational indicators of Post and Parcel Germany Division DHL are shown in fig.2.7.

By providing a wide range of services, the logistics company DHL competes with other companies that offer a similar range of services, as well as with companies that provide separate services. Thus, the main competitors in the parcel delivery market in America are FedEx, UPS, DSV, XPO Logistics, USPS.COM, Hellmann, GLS, ECHO, and others.

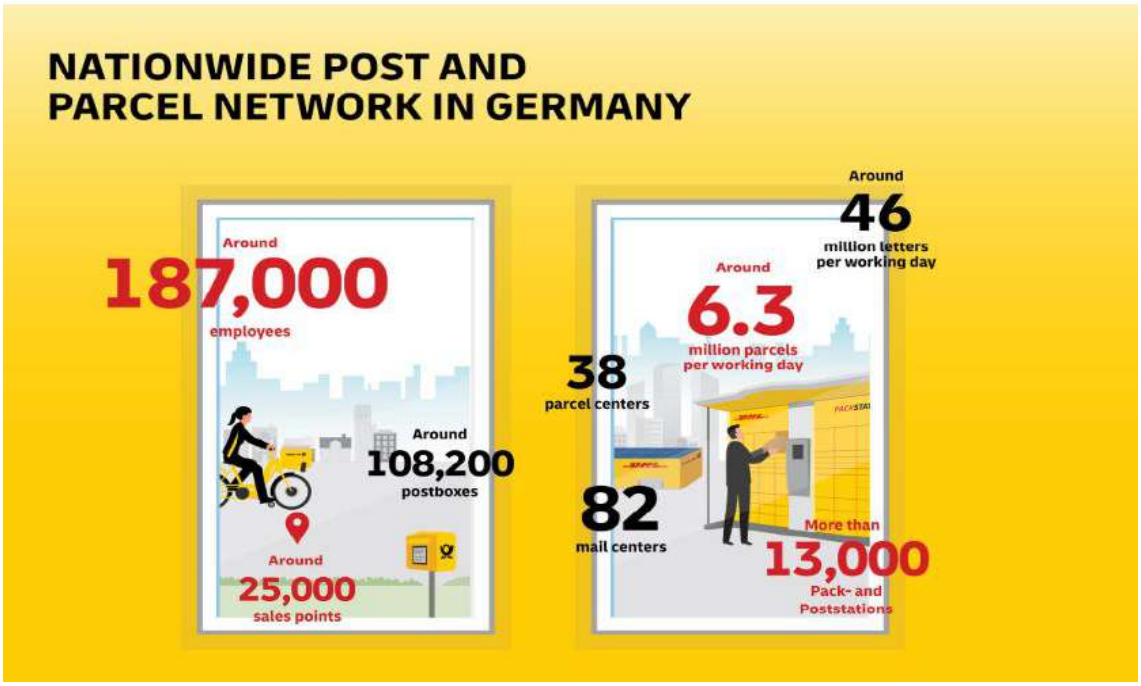

Figure 2.7 - Key operational indicators of Post and Parcel Germany Division Deutsche Post DHL

Source: [1]

For a more detailed analysis of the competitive environment, an analysis of Porter's 5 forces was used, which is summarized in Table 2.2.

Table 2.2 - Analysis of Porter's 5 forces for DHL

Parameter	Value	Description	Influence of forces on DHL
1	2	3	4
Threat of substitute products or services	Middle	The company provides services, analogues of which exist on the market.	Substitute from local companies. Increasing the role of Research and Development Department /Innovation Centers to diverse existing assortment of services and develop new services
Rivalry among existing competitors	High	The market in which the company operates is quite promising; services provided by the company have additional benefits; there are restrictions on price increases.	High level of market saturation. High competition level, extensive services, especially internationally. Small/ middle companies represent danger and increase rivalry on local/ international level. The logistics services provided by the company on the market are standardized by the main indicators but have additional advantages, individual solutions for industries, that differ DHL from competitors

Continuation of Table 2.2

1	2	3	4
Threat of new entrants	Middle	Moderate risk of entry of new players due to the presence of micro-niches and a high level of initial investment.	A strong brand with a high level of knowledge and loyalty is a barrier for new companies to occupy the DHL niche Wide range of services and global presence ensure high market share for the company High quality of logistics services provides customer loyalty
Bargaining power of customers	Middle	The client portfolio has medium risks; buyers are completely satisfied with the quality of services; the presence of excellent characteristics important to customers; and only in the case of a significant difference in price - it is possible to switch to services with a lower price.	More than 80% of sales received from multiple clients The company's services are partially unique, there are characteristics that are important for customers Price sensitivity (through demand elasticity)
Bargaining power of suppliers	Low	Complete stability on the part of suppliers.	Wide choice of suppliers, build strong relationship with suppliers Development of DHL Supplier Code of Conduct Creating DHL Procurement Sourcing Platform for Suppliers

Source: developed by the author

Thus, based on the analysis of the business portfolio of the logistics company DHL, it can be concluded that the company is a global logistics provider, provides a wide range of logistics and other services, makes both standardized and tailor-made logistics solutions, which forms the company's competitive advantages in the logistics market.

2.2 Analysis of the economic and financial state of the company`s activity

Diagnostics of the activities of the logistics company, which are based on key performance indicators, are given in Table 2.3.

Table 2.3 – Analysis of key figures of DHL

№	Indicators		2019	2020	2021	2022	2023	2023/ 2022, +/- %	2022/ 2021, +/- %	2021/ 2020, +/- %
1	Revenue	€m	63,341	66,716	81,747	94,436	81,758	-13,42	15,52	22,53
2	Profit from operating activities (EBIT)	€m	4,128	4,847	7,978	8,436	6,345	-24,79	5,74	64,60
3	Return on sales	%	6,5	7,3	9,8	8,9	7,8	-12,36	-9,18	34,25
4	Consolidated net profit for the period	€m	2,623	2,979	5,053	5,359	3,677	-31,39	6,06	69,62
5	Net cash from operating activities	€m	6,049	7,699	9,993	10,965	9,258	-15,57	9,73	29,80
6	Free cash flow	€m	0,867	2,535	4,092	3,067	2,942	-4,08	-25,05	61,42
7	Capex	€m	3,617	2,999	3,895	4,123	3,370	-18,26	5,85	29,88
8	Equity ratio	%	27,6	25,5	30,7	34,6	34,3	-0,87	12,70	20,39

Source: developed by author based on [1-2]

Graphically, the dynamics of the main key indicators listed in Table 2.3 is shown in Fig. 2.8.

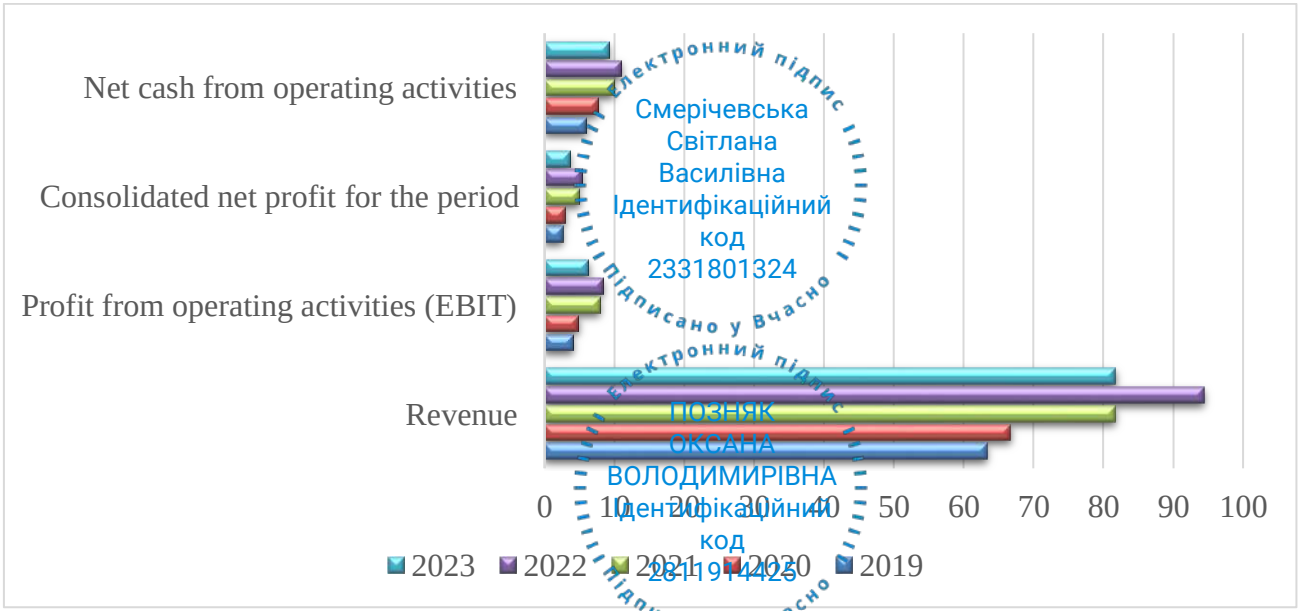

Figure 2.8 – Dynamics of key indicators of DHL

Source: developed by author

Analyzing the dynamics of the main key effective financial indicators, it is possible to conclude about the emergence of negative trends. Revenue in 2023 decreased by 13.4%, profit from operating activities decreased by almost 25%, and net profit decreased by 31.4% - which is the largest indicator of negative dynamics.

In order to understand the causes of negative trends, a detailed diagnosis of each business segment of the company was conducted, since the data in Table 2.3 are consolidated for all segments of the logistics company.

The analysis of the main indicators of the Express business segment is given in Table 2.4.

In 2023, the revenue of the Express division decreased by 10.0% to 24,846 million euros. This negative trend was caused by the high level of economic uncertainty around the world and consumer behavior in both the B2B and B2C segments.

Table 2.4 - Analysis of the main performance indicators of the Express business segment

№	Indicators		2021	2022	2023	Dynamics,%	
						2022/2021	2023/2022
1	Revenue	eur. m	24,217	27,592	24,846	13,9	-10,0
1.1	of which Europe	eur. m	10,193	11,287	11,053	10,7	-2,1
1.2	Americas	eur. m	5,120	6,149	6,023	20,1	-2,0
1.3	Asia Pacific	eur. m	8,871	9,908	8,893	11,7	-10,2
1.4	MEA (Middle East and Africa)	eur. m	1,361	1,569	1,514	15,3	-3,5
1.5	Consolidation/Other	eur. m	-1,328	-1,321	-2,637	0,5	-99,6
2	EBIT	eur. m	4,220	4,023	3,229	-4,6	-19,8
3	Return on sales	%	17.4	14.6	13.0	-	-
4	Operating cash flow	eur. m	5,894	5,549	4,786	-5,9	-13,8

Source: developed by author based on [1-2]

A detailed revenue structural analysis of this segment (by region) made it possible to conclude that during the period of 2020-2023, the share of revenue from the provision of services in Europe remains the largest, and in 2023 it amounted to 40% (see fig.2.9).

The operating profit of this business segment decreased by almost 20% and amounted to EUR 3,229 million, and the cash flow from operating activities decreased by 13.8%, the return on sales was 13.0%.

Summarizing the diagnostics of the Express segment, it should be noted that the decline in the key indicators of this business segment in 2023 indicates a decrease in its operational efficiency, which was reflected in a negative impact on the company's consolidated performance indicators.

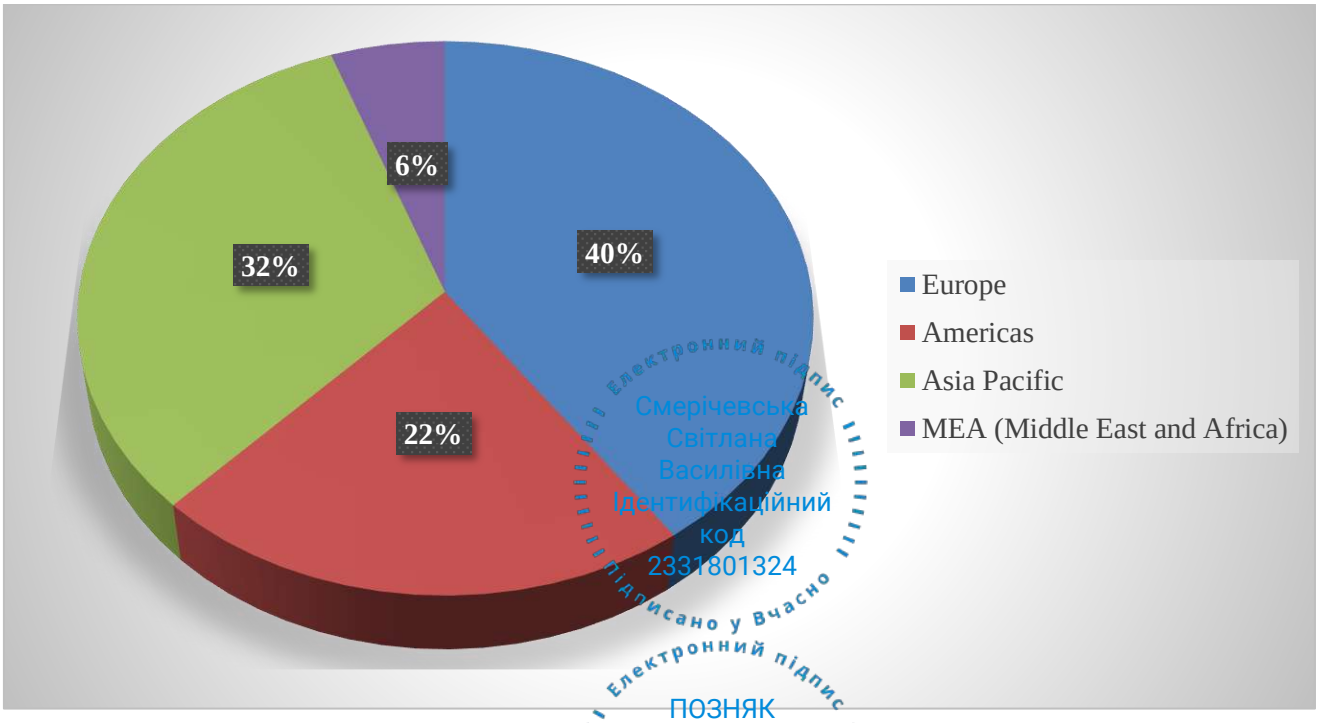

Figure 2.9 – Revenue structure of Express business segment in 2023 (by regions)

Source: developed by author

The analysis of the main indicators of the next business segment - Global Forwarding, Freight division is given in the table 2.5.

Table 2.5 - Analysis of the main performance indicators of the Global forwarding, Freight division

№	Indicators		2021	2022	2023	Dynamics,%	
						2021/2022	2022/2023
1	Revenue	eur. m	22,833	30,212	19,315	32,3	-36,6
1.1	Global Forwarding	eur. m	18,108	24,976	14,259	37,9	-42,9
1.2	Freight	eur. m	4,848	5,374	5,162	10,8	-3,9
1.3	Consolidation/Other	eur. m	-123	-138	-116	-1,.2	15,9
2	EBIT	eur. m	1,303	2,311	1,423	77,4	-3,5
3	Return on sales	%	5.7	7.6	7.4	-	-
4	Operating cash flow	eur. m	1,008	3,221	2,385	>100	-26,0

Source: developed by author based on [1-2]

Before starting the diagnosis of the activity of this business segment, it is necessary to determine the challenges that had a decisive impact. So, in 2023, the global freight forwarding market was shaped by post-pandemic normalization, a weak global economy, and geopolitical wars and conflicts, such as those in Ukraine, the Middle East, and, at the end of the year, the Red Sea. Due to weak demand, market volumes were lower than last year, but stabilized during the year. In the field of air transport services, normalization continued, as expected, and there were no significant fluctuations. In the field of sea transportation, there is an increase in rates, as carriers have started to take into account the higher costs of changing the cargo route on the Red Sea. In the European road freight market, demand continued to fall, but costs remained high due to rising diesel costs, water wages, and other factors.

Against the background of the identified challenges, the revenue of the Global Forwarding, Freight division fell significantly in 2023 by 36.1% to EUR 19,305 million due to smaller volumes and significantly lower freight rates. The revenue of the Freight

business unit in 2023 amounted to 5,162 million euros, which is 3.9% less than in the previous year.

The segment`s revenue formed due to the provision of sea and air transportation services and overland transportation. The structural revenue analysis shown in Fig. 2.10 displays the contribution of each subdivision. The share of Global Forwarding is 73%, Freight division - 27%.

EBIT in the Global Forwarding, Freight division fell in 2023, from €2,311 million to €1,423 million. The EBIT margin was 7.4%. EBIT in the division thus corresponds to 28.4% of gross profit and 34.6% for the Global Forwarding business unit.

Based on the conducted analysis, it can be determined that the decrease in the key indicators of this business segment continued to form a negative dynamic of influence on the consolidated indicators of the company's activity, as well as the activity of the previous business segment.

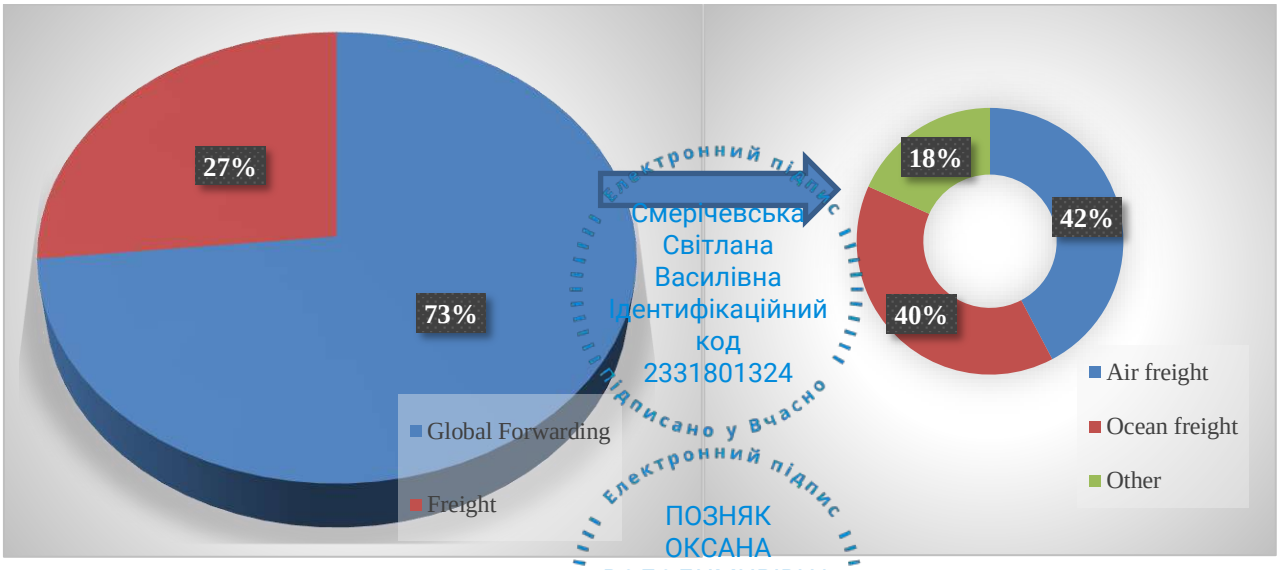

Figure 2.10 - Revenue structure of the Global forwarding, Freight division in 2023

Source: developed by author

Detailed analysis of the next segment of the logistics company's activity - the Supply Chain division based on the analysis of the main indicators is given in Table 2.6.

Table 2.6 - Analysis of the main performance indicators of the Supply Chain Division

№	Indicators		2021	2022	2023	Dynamics,%	
						2021/2022	2022/2023
1	Revenue	eur. m	13,864	16,431	16,958	18,5	3.2
1.1	of which EMEA (Europe, Middle East and Africa)	eur. m	6,596	7,252	7,481	9,9	3.2
1.2	Americas	eur. m	5,266	6,832	7,003	29.7	2.5
1.3	Asia Pacific	eur. m	2,046	2,419	2,542	18.2	5.1
1.4	Consolidation/Other	eur. m	-44	-72	-68	-63.6	5.6
2	EBIT	eur. m	705	893	961	26.7	7.6
3	Return on sales	%	5,1	5,4	5,7	-	-
4	Operating cash flow	eur. m	1,582	1,433	1,726	-9.4	20.4

Source: developed by author based on [1-2]

Unlike the previously reviewed business segments of the company, the revenue of this segment increased by 3.2% to 16,958 million euros in 2023. All regions and sectors reported revenue growth, underpinned by new business, contract renewals, and e-commerce expansion. In 2023, the Supply Chain division concluded additional contracts worth 7,378 million euros. The consumer, retail, and technology sectors account for most of the new business, which can largely be attributed to e-commerce-based solutions. The level of contract renewals remained at a consistently high level.

In the revenue structure of this business segment (see Fig. 2.11), the EMEA region showed the most positive dynamics, revenue increased by 3.2% in 2023, compared to 2022, and the contribution of this region to the formation of the total revenue in 2023 is 44%.

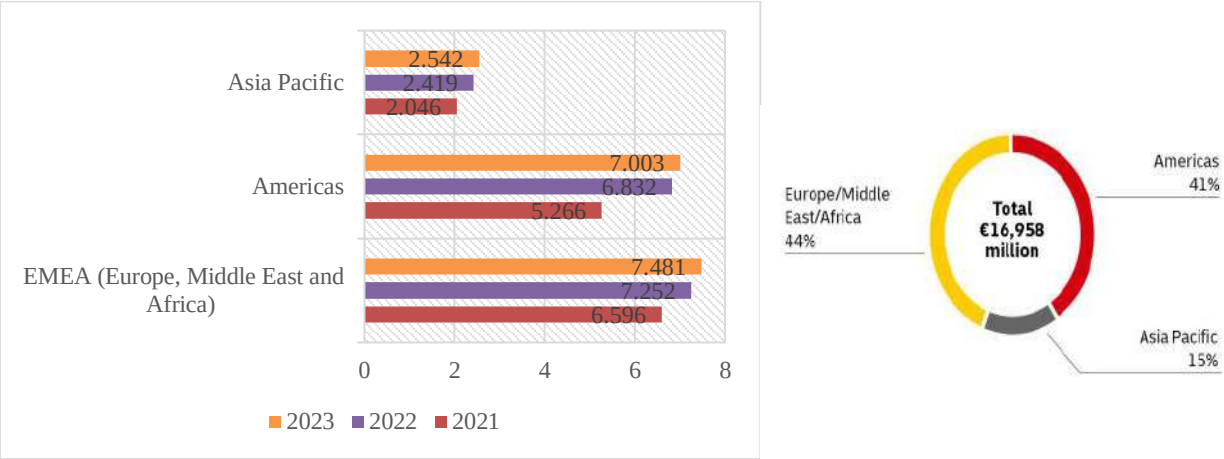

Figure 2.11 – Revenue structure of Supply Chain division (by region)

Source: developed by author

EBIT in the supply chain division increased to €961 million in 2023 (2022: €893 million). In addition to positive revenue dynamics, earnings growth was driven by increased productivity through digitization and standardization. EBIT profitability in 2023 was 5.7%.

The activities of the following business segment - E-commerce Division were significantly influenced by geopolitical conflicts and a noticeable increase in the cost of living, which led to a slight decrease in the volume of parcels in some regions. However, thanks to a diversified portfolio, the logistics company was able to stabilize the business, which led to positive trends in operating results that that are analyzed in Table 2.7.

Revenue generated by the e-commerce division in 2023 amounted to 6,315 million euros, which is 2.8% higher than in 2022. EBIT in the e-commerce division in 2023 fell from €389 million to €292 million. This is mainly due to higher costs, as well as constant investments in network expansion. EBIT profitability for 2023 was 4.6%. EBIT in the e-commerce division was €78 million (2022: €91 million).

Summarizing the results of the analysis of this business segment, it should be noted that the dynamics of key indicators are ambiguous. As a whole, the segment's revenue increased by 2.8%, which is a positive trend, but the structure of revenue by region showed an 8% decrease in revenue in Asia Pacific. The drop in the EBIT

indicator by almost 25% indicates a significant decrease in the operating efficiency of the segment, which is confirmed by the decrease in Return on sales to 4.6%.

Table 2.7 - Analysis of the main performance indicators of the E-commerce Division

№	Indicators		2021	2022	2023	Dynamics,%	
						2021/2022	2022/2023
1	Revenue	eur. m	5,928	6,142	6,315	3,6	2,8
1.1	of which EMEA (Europe, Middle East and Africa)	eur. m	2,079	2,188	2,190	5,2	0,1
1.2	Americas	eur. m	3,140	3,235	3,465	3,0	7,1
1.3	Asia Pacific	eur. m	719	720	659	0.1	-8.5
2	Consolidation/Other	eur. m	-10	-1	1	90,0	>100
3	EBIT	eur. m	417	389	292	-6,7	-24,9
4	Return on sales	%	7.0	6.3	4.6	-	-
5	Operating cash flow	eur. m	654	582	504	-11,0	-13,4

Source: developed by author based on [1-2]

The last but not the least business segment is Post and Parcel Germany Division. As the largest postal company in Europe, the main business of the division is the transportation, sorting, and delivery of documents and goods. DHL maintains a nationwide mail and parcel network in Germany, whose division is constantly expanding with a view to digitalization and sustainability. Products and services in the postal segment are aimed at both private and business customers and range from physical and hybrid letters to special products for the delivery of goods and include additional services such as registered mail, cash on delivery, and shipping with declared value.

Detailed analysis of the this segment of the logistics company's activity is given in Table 2.8.

The revenue of the Post & Parcel Germany division in the reporting year amounted to 16,892 million euros, which slightly exceeded the figure of the previous year by 0.7%. The main reasons for this development were higher prices for business customers, starting from the second half of the year, and increased volumes in the national and international business with shipments of goods. This was offset by a decline in domestic and international mail business, driven by long-term structural changes in the postal and communications business, as well as a drop in advertising mail sales.

The parcel in Germany performed well, against the general market trend. EBIT of the Post & Parcel Germany division in 2023 amounted to 870 million euros, which is 31.5% lower than the previous year.

Table 2.8 - Analysis of the main performance indicators of the Post and Parcel Germany Division

№	Indicators		2021	2022	2023	Dynamics,%	
						2021/2022	2022/2023
1	Revenue	eur. m	17,445	16,779	16,892	-3.8	0.7
1.1	Post Germany	eur. m	7,995	7,892	7,554	-1.3	-4.3
1.2	Parcel Germany	eur. m	6,785	6,408	6,785	-5.6	5.9
1.3	International	eur. m	2,570	2,400	2,459	-6.6	2.5
1.4	Consolidation/Other	eur. m	95	79	94	-16.8	19.0
2	EBIT	eur. m	1,747	1,271	0,870	-27.2	-31.5
3	Return on sales	%	10.0	7.6	5.2		
4	Operating cash flow	eur. m	1,811	1,558	1,088	-14.0	-30.2

Source: developed by author based on [1-2]

Therefore, a detailed diagnosis of the activity of the logistics company by business segments, which characterizes its operational efficiency, shows that only one

segment - the supply chain, is marked by positive dynamics not only of key indicators but also of the main effective indicator of operational activity - operating profit, which is reflected in Fig.2.12.

The decrease in the operational efficiency of the business segments is negatively reflected in the consolidated performance indicators of the logistics company. If the logistics company is not able to adapt its operational activities to the identified challenges in order to eliminate their negative impact, it may lead to a long-term crisis situation, which will also affect the implementation of sustainable development goals.

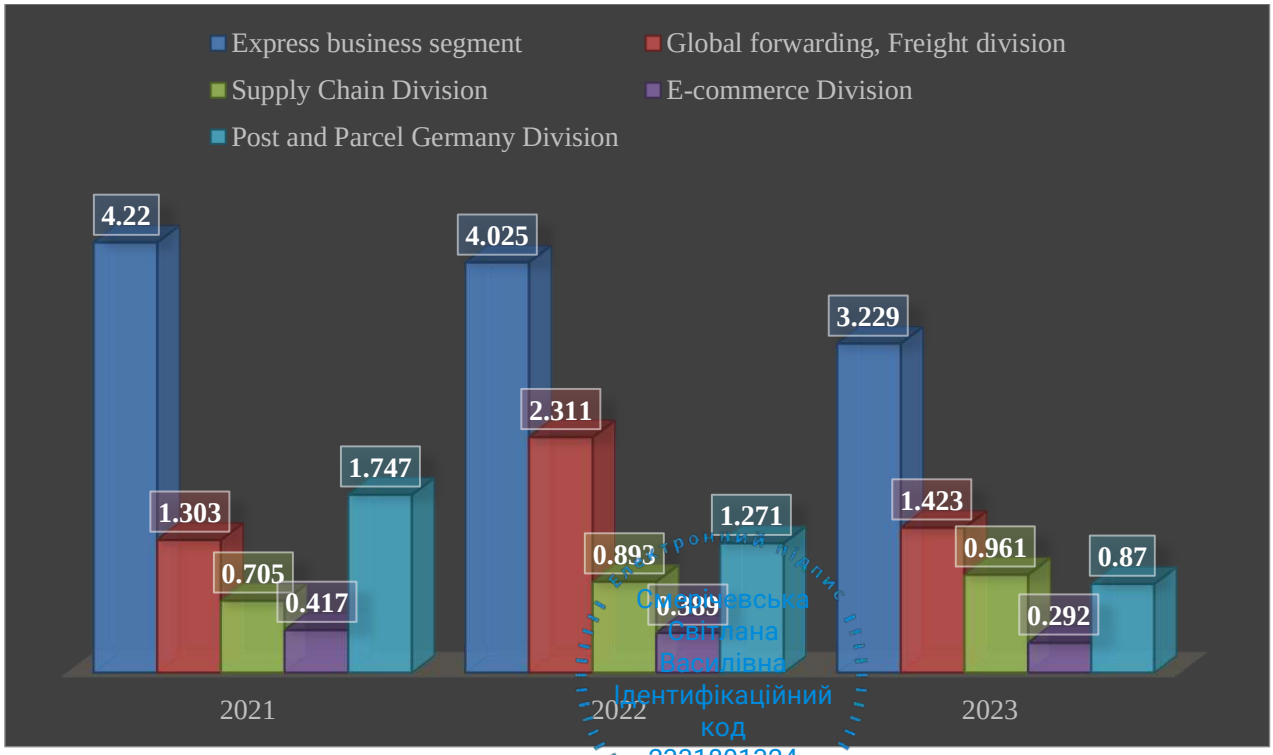

Figure 2.12 – EBIT analysis by divisions

Source: developed by author

The company's activities are based on the principles of sustainable development, which is reflected in the company's goal of "Connecting people and improving lives." For DHL, sustainable development and sustainable business practices are opportunities that shape the company's competitive advantages. The long-term success of the company is determined by the extent to which the needs of key groups of stakeholders

are met, the impact of business on the environment is minimized, and the contribution to social development is increased.

2.3 Analysis of the sustainable development of the logistics company

The main figures of DHL in sustainable development are shown in fig.2.13.

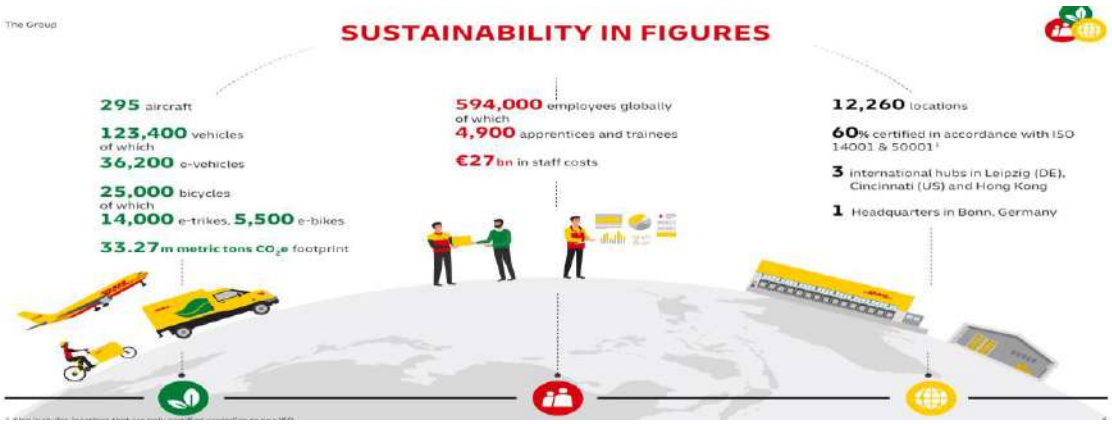

Figure 2.13 - Sustainability in figures of DHL company

Source: [3]

The main goals of DHL in sustainable development are shown in fig.2.14.

DHL ESG Roadmap increasingly realigns climate action and environmental protection activities with decarburization measures and further defines strategies towards social responsibility and corporate governance.

Figure 2.14 – DHL Goals of ESG

Source: [3]

DHL Group's commitment is most closely aligned with six of the 17 UN Sustainable Development Goals (SDGs):

4 Quality Education.

5 Gender Equality.

8 Decent Work and Economic Growth.

11 Sustainable Cities and Communities.

13 Climate Action Partnerships for the Goals.

The logistics company started implementing these goals in 2003, gradually developing and implementing three strategies, which are listed in Table 2.9.

Table 2.9 – Sustainability milestones

Strategy	Year	Activity
Unlocking our Potential Strategy 2015	2003	ESG reporting launched
	2005	UN Partnership: GoHelp
	2006	UN Global Compact signed Code of Conduct introduced
	2008	Supplier Code of Conduct introduced. GO programs launched
	2009	GoTeach launched
Focus. Connect. Grow Strategy 2020	2015	Certified training program to communicate strategy, corporate culture and values
	2016	UN Sustainable Development Goals (SDGs) taken into account for the first time
	2017	Climate protection target set: Net zero greenhouse gas emissions by 2050
Delivering excellence in a digital world Strategy 2025	2019	Long-term, sustainability-focused value creation
	2020	GoTrade launched
	2021	ESG Roadmap: New climate protection goals set, ESG KPIs fully integrated into our finance systems, ESG KPIs incorporated into our remuneration policies

Understanding the importance of the strategy of sustainable development, the organizational structure of the logistics company was transformed for its implementation (see fig. 2.15). Thus, the Board is the central body that makes decisions about the focus on sustainable development of the entire global logistics company, while the divisions are responsible for implementing the measures. The progress achieved is regularly discussed by the Board. ESG topics are also regularly discussed

at meetings of the Supervisory Board, as well as its Committee on Strategy and Sustainable Development and Finance. The views of external stakeholder groups are included through the Sustainable Development Advisory Board.

Other key figures in the implementation of the sustainable development strategy are:

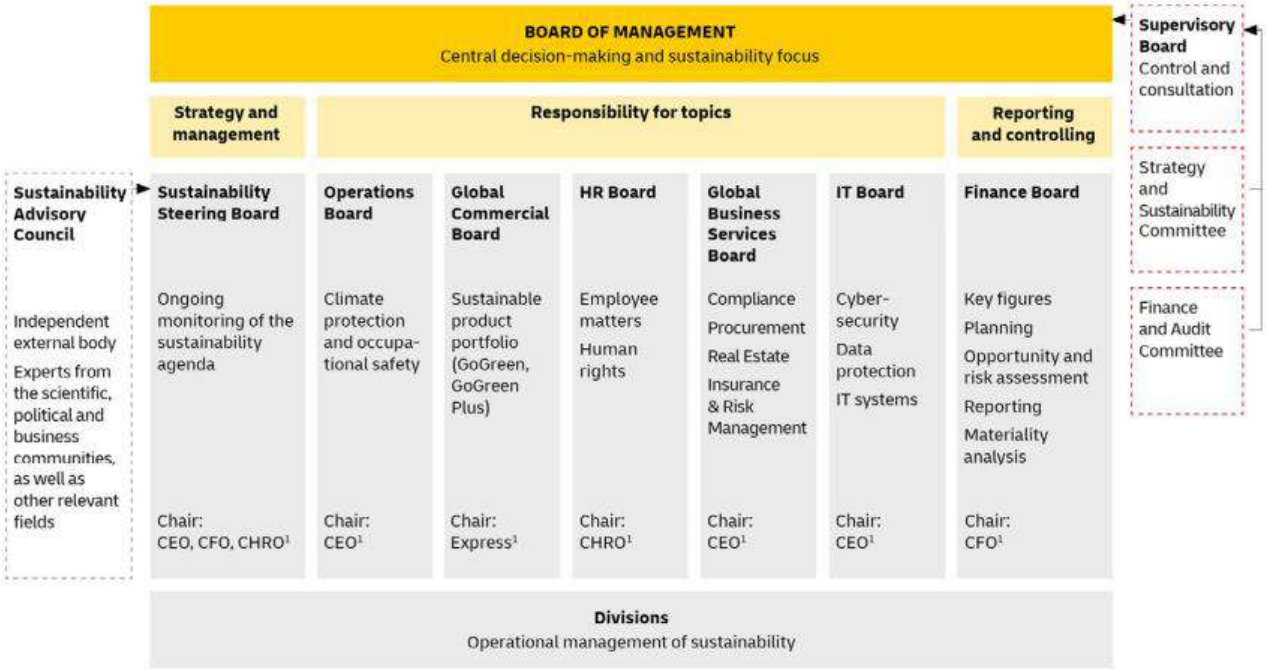

Figure 2.15 – Organizational structure of Sustainable Development of DHL

Source: [4]

1. Chief executive officer of the department: responsible for strategic orientation, dialogue with stakeholders, and implementation of ESG programs. ESG topics are further developed in the global company strategy and regularly reviewed by the Sustainability Supervisory Board. The Sustainable Development Management Board includes the CEO, CFO, and HR board members, as well as central and divisional managers. From January 1, 2024, responsibility for group-wide cybersecurity standards was transferred from the Department of Global Business Services to the Chief Executive Officer of the Department.

2. Human Resources: Develops group-wide concepts for leadership and corporate culture, talent and skills promotion, specifications related to HR processes and services, and to support employee relations and human rights in our workforce.

3. Finance department: responsible for ESG reporting and control, opportunity and risk assessment, integration of internal control and financial systems, compliance management and data protection.

4. Global Business Services Department: responsible for defining group-wide environmental procurement standards and the supplier selection process, as well as specifications for insurance and risk management and corporate real estate, among other topics.

The formed organizational structure allows the implementation of all established goals of sustainable development. Specific indicators and KPIs that can be measured are used to achieve the degree of achievement of the established goals and are used to track and display the effectiveness of achieving the goals of sustainable development, which are summarized in Table 2.10.

Table 2.10 - KPI of sustainable development

Green solutions for sustainable logistics (Reducing logistics-related GHG emissions)	**Great company to work for all** (Offering best working conditions)	**Highly trusted and reliable business partner** (Conducting business in accordance with the law and own values)
Measures		
Using sustainable technologies and fuels	Maintaining employee engagement at a high level	Safeguarding our compliance and cybersecurity expertise
Expanding e-vehicles in pick-up and delivery	Promoting gender diversity	Building sustainable supplier relations
All new, owned buildings CO2 neutral	Ensuring employee health and safety at work	Anchoring sustainability in remuneration policies
Sustainable product alternatives		
Steering-relevant KPIs		
Logistics-related greenhouse gas (GHG) emissions	Employee Engagement	External cybersecurity rating
Realized Decarbonization Effects	Share of women in middle and upper management	Share of valid Compliance
	Lost time injury frequency rate LTIFR	Training certificates in middle and upper management

Among the main goals implemented in the sustainable development strategy is the decarbonization of activities. This is because the main environmental impact of business activities is caused by logistics-related greenhouse gases (GHGs), which contribute to climate change. Therefore, the company wants to reduce greenhouse gas emissions from its logistics services to zero by 2050. This means that the company will

take active measures to reduce these emissions (areas 1, 2 and 3) to an unavoidable minimum, which must be fully offset by recognized countermeasures (except for offsetting) (see Fig. 2.16).

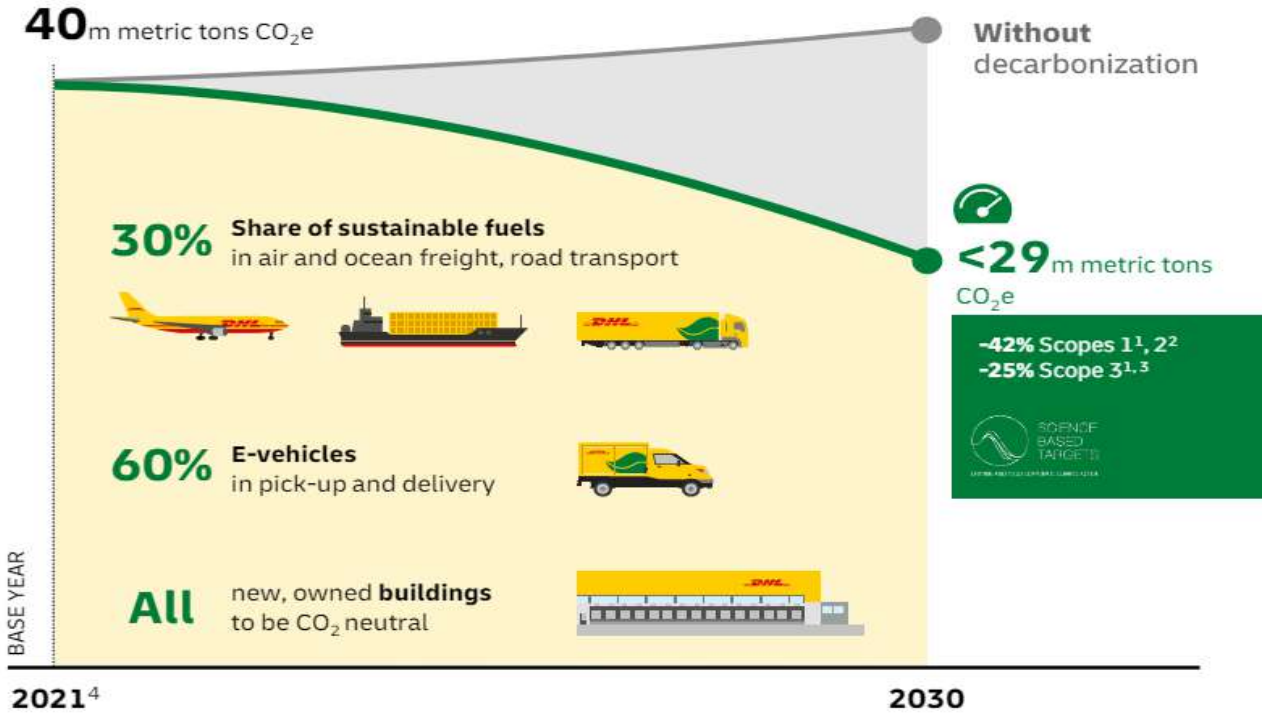

Figure 2.16 – The target of decarbonization

Source: [4]

Orientation and targets concerning climate and environmental protection are set out in Group policies: in the Code of Conduct and the Supplier Code of Conduct, in the Environmental and Energy Policy, the Paper Policy, the Sustainable Fuel Policy (not public), and the policies for procurement processes. To achieve goals by 2030, DHL plans to spend up to an additional €7 billion to expand the use of sustainable fuels and technologies in fleets and buildings. DHL rounds out this package of measures with a range of specifically environmentally friendly products: GoGreen Plus enables customers to make a conscious decision for sustainable transport solutions or the use of sustainable fuels. This approach allows to uphold responsibility for the climate and the environment. In addition, together with subcontractors, DHL works as part of initiatives to reduce fuel consumption and lower GHG emissions. This also enables

procuring the consumption and emissions data necessary for subcontractor management, which is why DHL takes part in industry-wide initiatives and collaborates closely with customers, suppliers, and industry partners.

To achieve these goals, the company has developed the GoGreen program. DHL GoGreen Solutions portfolio (see Table 2.11) offers various levels of carbon transparency tools and helps to find improvement areas to optimize the carbon efficiency of the supply chain and reduce environmental impact. Solutions are externally verified and in line with all major carbon calculation standards such as EN 16258:2012.

Table 2.11 - DHL GoGreen Solutions portfolio

SOLUTION	VALUE PROPOSITION	KEY FEATURES
1	2	3
DHLi / Track & Trace	Shipment and CO_2e Report: Understand carbon footprint for all products at shipment level in one report, combining a carbon report with a shipment report. Instant overview, available anytime	Combine shipment reports with CO_2e data Online self-service (available any time) Main haul CO_2e emissions
Online Calculator	Single Shipment and Scenario Calculation: Calculate carbon emissions for single shipments on the spot and/or simulate the potential impact of modal shifts and routing change	Calculate carbon emissions for single shipments on the spot • Online self-service (available any time) • CO_2e emissions for all transportation legs
Carbon Estimate	Total Company Logistics Carbon Footprint: Receive overall carbon footprint in one report for all transport providers. A solution which allows all shipments to be incorporated from all LSPs, using the same calculation framework	Leverage DGF's carbon calculation expertise and network averages for overall carbon footprint Include 3rd party data CO_2e emissions for air freight and ocean freight shipments
Carbon Report	Detailed Carbon and other Emissions Report: Understand carbon footprint in detail for all transport legs, modes and tradelanes. Suitable for transparency reporting, especially for corporate social responsibility reporting or compliance setting.	Carbon report providing comprehensive emission data • CO_2e emissions for all transport modes CO_2e emissions on tradelane level
Carbon Dashboard	Carbon Efficiency Visualization: Visualization of carbon footprint for all transport modes and tradelanes without extra data handling, in order to analyze and deep dive into carbon efficiency improvements. Suitable to identify carbon-intense hotspots or track changes in shipping patterns (e.g. modal shift).	Illustration of carbon emissions, KPIs and shipment routings Gain insights on carbon reduction levers CO_2e development and trends

Continuation of Table 2.11

1	2	3
Green Consulting	Sustainable Supply Chain Optimization: Learn about potential optimization options and identify customer-specific levers with the highest impact on improving carbon efficiency.	Tailor-made customer supply chain analytics Identify potential to make supply chains more carbon efficient
Green Danmar/ Carrier Selection	Carrier Selection: Reduce carbon footprint of ocean freight by using a more carbon efficient carrier	Carbon efficient ocean freight option Use only carriers at least 5% more carbon efficient than the industry average for each tradelane
Offsetting	Neutralize Carbon Footprint: Neutralize carbon emissions from transport with high quality carbon credits and externally audited processes	Carbon credits from recognized climate protection projects worldwide Annual certificate, based on a certified carbon report Compensate CO_2e emissions from all transportation legs
Biofuel	Driving Decarbonization: Avoid GHG emissions in an ocean freight supply chain by using container vessels run on environmentally friendly produced biofuel. Drive innovation and decarbonization of the ocean freight shipping industry.	Replace Heavy Fuel Oil with biofuels Cooperation with the GoodShipping Program Annual certificate, based on a certified carbon report

The implementation of these programs allows the logistics company to achieve the established strategic goals that the company has determined to achieve by 2030 and 2050, which are shown in Fig. 2.17.

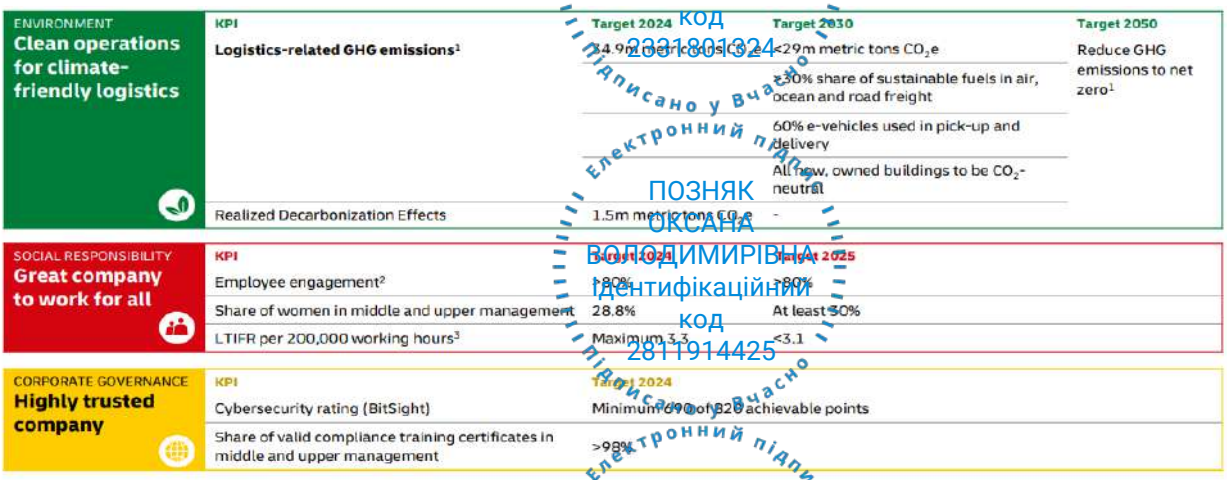

Figure 2.17 – Targets of the ESG roadmap

Source: [3]

Thus, the DHL company is not only a leader in the global market of logistics services, but also a leader in the development and implementation of "green" technologies in logistics activities, spreading its experience not only among all branches of the company around the world, but also involving suppliers in the implementation of the principles of sustainable development, intermediaries, customers, forming global "green" supply chains.

At DHL's 2023 Era of Sustainable Logistics Summit, the company brought together stakeholders to share their vision, best practices and real-world experiences to illustrate how cleaner and greener logistics can play an important role in unlocking new and better forms of growth business, economic development and well-being for all. "The modern era is also the 'logistics era' and its time to use our industry to make the world a better place," said Katya Busch, DHL's Chief Commercial Officer and Head of Solutions and Innovation at DHL.

Chapter 2 summary

DHL is a global logistics leader with a diversified business portfolio, providing comprehensive services across various sectors of the logistics industry. The company operates through its five core divisions, offering tailored solutions to meet the unique needs of its customers worldwide. DHL is integrating advanced technologies such as AI, IoT, and robotics into its operations to increase efficiency and improve customer engagement. Through its “GoGreen” initiative, DHL is focusing on reducing emissions by offering carbon-neutral delivery options and transitioning to electric vehicles. Customized logistics solutions ensure that the company meets the unique needs of diverse industries and markets. Operating in more than 220 countries and territories, DHL uses its extensive network to connect customers around the world. DHL’s broad portfolio allows it to maintain its position as a global leader in logistics, meeting the dynamic needs of customers in a rapidly evolving market environment.

A comprehensive analysis of the production and financial indicators of DHL reveals the nuances of productivity during the years 2021-2023. Analyzing the dynamics of the main key effective financial indicators, it is possible to conclude about the emergence of negative trends. Revenue in 2023 decreased by 13.4%, profit from operating activities decreased by almost 25%, and net profit decreased by 31.4% - which is the largest indicator of negative dynamics.

The diagnostics of the Express segment showed a decline in the key indicators of this business segment in 2023 indicating a decrease in its operational efficiency, which was reflected in a negative impact on the company's consolidated performance indicators.

EBIT in the Global Forwarding, Freight division fell in 2023, from €2,311 million to €1,423 million. The EBIT margin was 7.4%. EBIT in the division thus corresponds to 28.4% of gross profit and 34.6% for the Global Forwarding business unit.

EBIT in the Supply chain division increased to €961 million in 2023 (2022: €893 million). In addition to positive revenue dynamics, earnings growth was driven by increased productivity through digitization and standardization. EBIT profitability in 2023 was 5.7%. Summarizing the results of the analysis of E-commerce Division, it should be noted that the dynamics of key indicators are ambiguous. As a whole, the segment's revenue increased by 2.8%, which is a positive trend, but the structure of revenue by region showed an 8% decrease in revenue in Asia Pacific. The drop in the EBIT indicator by almost 25% indicates a significant decrease in the operating efficiency of the segment, which is confirmed by the decrease in Return on sales to 4.6%.

Therefore, a detailed diagnosis of the activity of the logistics company by business segments, which characterizes its operational efficiency, shows that only one segment - the supply chain, is marked by positive dynamics not only of key indicators but also of the main effective indicator of operational activity - operating profit.

The decrease in the operational efficiency of the business segments is negatively reflected in the consolidated performance indicators of the logistics company. If the

logistics company is not able to adapt its operational activities to the identified challenges in order to eliminate their negative impact, it may lead to a long-term crisis situation, which will also affect the implementation of sustainable development goals.

The company's activities are based on the principles of sustainable development, which is reflected in the company's goal of "Connecting people and improving lives." For DHL, sustainable development and sustainable business practices are opportunities that shape the company's competitive advantages. The long-term success of the company is determined by the extent to which the needs of key groups of stakeholders are met, the impact of business on the environment is minimized, and the contribution to social development is increased.

Thus, the DHL company is not only a leader in the global market of logistics services, but also a leader in the development and implementation of "green" technologies in logistics activities, spreading its experience not only among all branches of the company around the world, but also involving suppliers in the implementation of the principles of sustainable development, intermediaries, customers, forming global "green" supply chains.

CHAPTER 3
PROJECT PROPOSALS FOR ADAPTATION OF THE SUSTAINABLE DEVELOPMENT STRATEGY OF A LOGISTICS COMPANY BASED ON MEGATRENDS

3.1 Innovative approach to the adaptation of a logistics company`s sustainable development strategy taking into account megatrends

The literature review conducted in the first chapter of the qualification work showed the lack of unified approaches to identifying and classifying megatrends. As a leading company, pioneer in research and implementation of innovations and a thought leader, DHL has been studying this issue since 2010. Every two years, the DHL Trend Research team develops and publishes the Logistics Trend Radar to reflect generalized views on the development of existing and emerging trends and their impact on logistics as a whole.

The Logistics Trend [18] is based on DHL's integrated, customer-centric approach. This approach allows the company to combine the ideas of its key customers with the perspectives of DHL employees who work directly on the ground, experiencing and driving logistics transformation every day.

These ideas are further strengthened by classic research methodologies and enriched by the perspectives and assessments of a wide range of experts. This includes key thought leaders from influential think tanks, renowned consulting firms and leading academic institutions around the world.

The Logistics Trend Radar identifies two groups of trends: social and business trends and technology trends, and tracks and assesses trends in technological, social, economic and environmental aspects. It covers both macro trends (long-term changes such as digitalization or sustainability) and micro trends (short-term changes such as consumer expectations for convenience).

The latest edition of the Logistics Trend Radar, which was published in 2024, is provided in Appendix C.

The difference between the current edition of Logistics Trend Radar 7.0 and the previous one, which identifies new trends and redefined trends within the framework of already identified trends, is shown in Fig. 3.1.

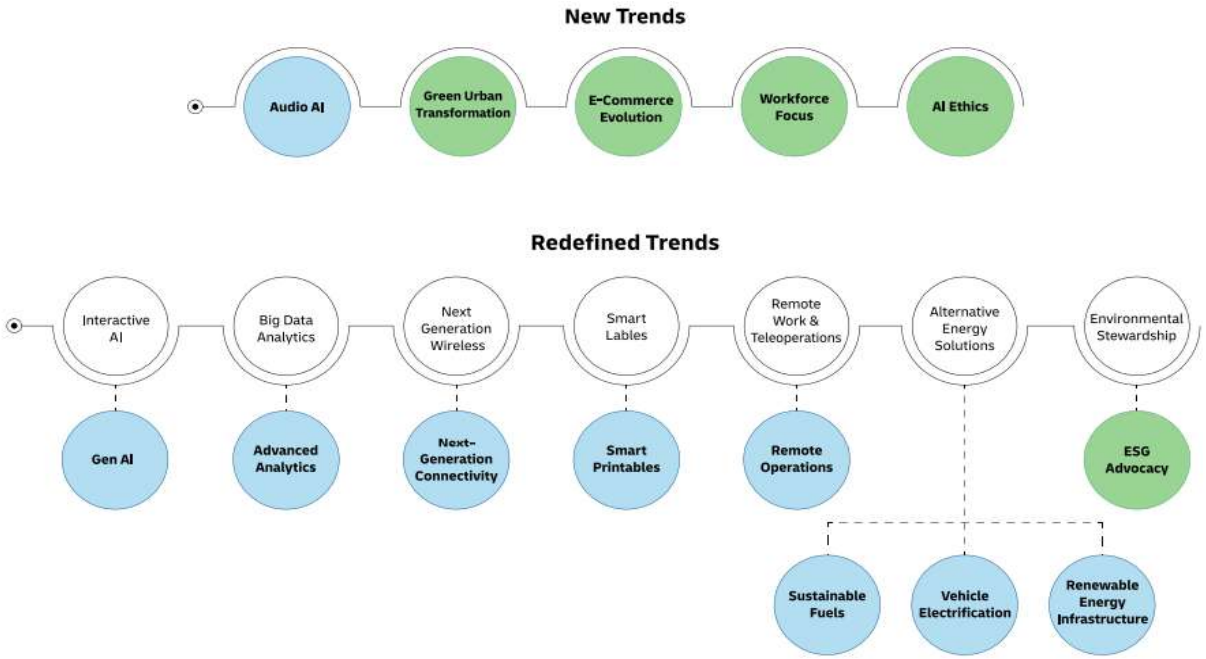

Figure 3.1 – New trends in Logistics Trend Radar 7.0

Source: [18]

The interaction of social, economic, and technological trends, illustrated in Figure 3.2, forms a dynamic ecosystem that shapes the logistics and supply chain landscape. These trends influence each other and together drive innovation, operational transformation, and strategic adaptation.

Social and economic trends serve as contextual forces that set expectations and constraints for technological innovation. Technological innovation provides tools and platforms to meet the needs created by socio-economic trends. The relationship between these categories of trends is two-way. Social and economic changes create demand for new technologies.

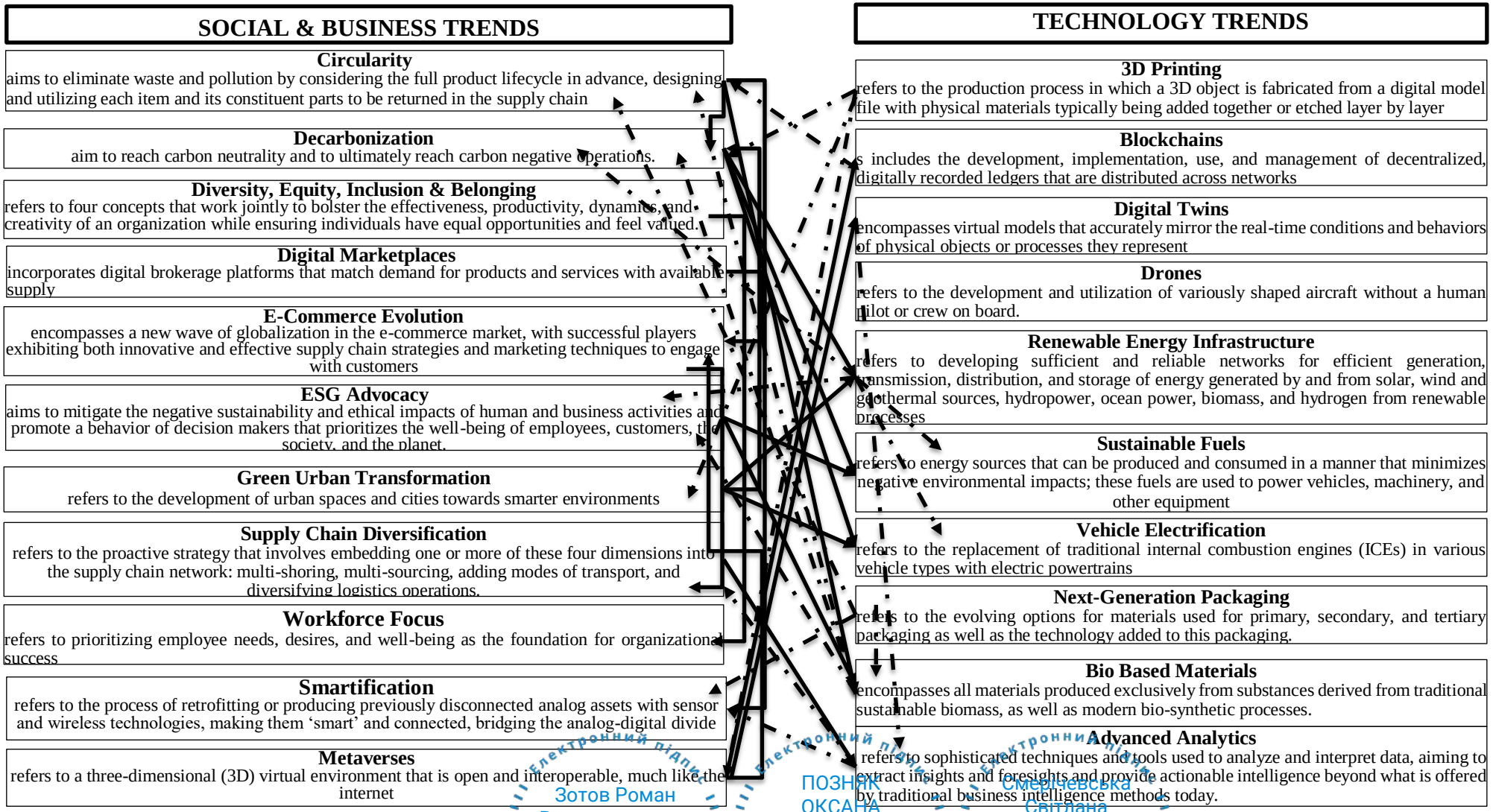

Figure 3.2 - The relationship between social and economic trends and technological trends in Logistics Trend Radar 7.0

Source: developed by authos based on [18]

Figure 3.2 shows a combination of trends that determine the sustainable development of both an individual logistics company and all entities in global supply chains. These trends are combined with each other in groups of trends, and together they form synergistic relationships that shape the future of logistics, ensuring that the industry remains adaptive, sustainable and innovative in a rapidly changing world.

To implement its global sustainability strategy within supply chain management, DHL organizes events that bring together leading logistics leaders, thought leaders, and stakeholders to focus on developing cleaner and greener logistics.

United efforts to combat climate change can pave the way for a new era focused on sustainable logistics. Through collaboration with leading industry experts and a commitment to continuous innovation, solutions are being created that shape sustainable supply chains, the foundation for an era of sustainable logistics.

The content of the “Era of Sustainable Logistics” [8-17] concept is composed of key elements(see fig.3.3) needed to create more sustainable and environmentally friendly supply chains. These topics explore the integration of sustainability into business strategies, compliance with the latest norms, standards, and regulations, as well as the full range of available decarbonization levers.

In addition, they address the transition to circular supply chains, harnessing the power of digital technologies, engaging the workforce in sustainability initiatives, and adapting to the impact of the evolving energy landscape. Together, these elements form the basis for a more sustainable and forward-looking approach to logistics.

Building a sustainable development strategy is a multifaceted task—a complex framework composed of many interconnected elements. Understanding and linking the various building blocks, key drivers, and success factors is not always straightforward.

One of the cornerstones of a sustainable development strategy is assessing the materiality of environmental, social, and governance (ESG) factors. These elements

guide modern stakeholders and inform effective sustainable strategies. By leveraging this foundation, companies can craft a value-driven strategy with clear, measurable goals and a roadmap of initiatives to achieve them.

An ambitious sustainability strategy also explores the possibilities of developing green business models and takes into account the preferences and expectations of today's environmentally conscious consumers. A successful strategy must recognize the value of alliances and the instrumental role that logistics plays in achieving sustainable development goals.

Figure 3.3 shows a diagram of the development of an effective sustainability strategy, the main blocks, and practical steps.

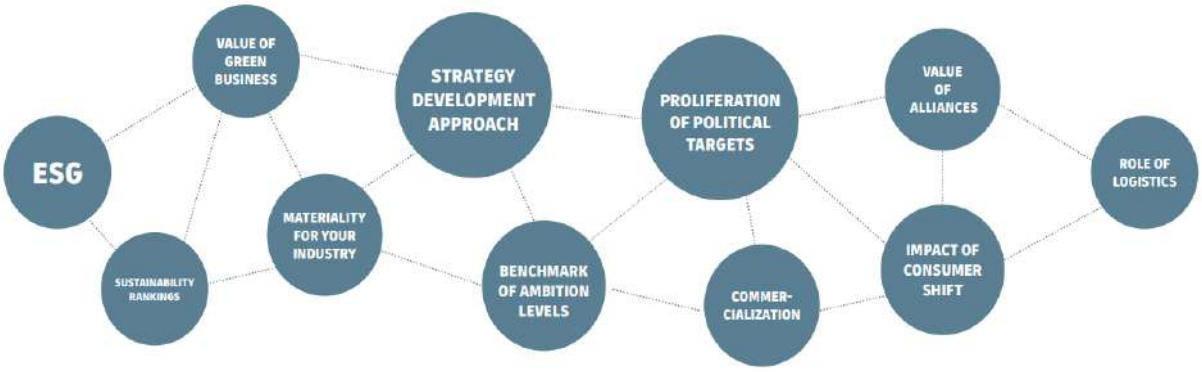

Figure 3.3 – General scheme of sustainability strategy development

Source: [9]

Changes caused by megatrends are marked by the constant transformation in society, business, and technology. To ensure competitiveness in the market, successful logistics companies must adapt to these changes by adapting and transforming strategies, placing customers at the center of their actions, and focusing on the excellence of supply chains that are global, environmentally sustainable, and reliable.

Adapting a sustainable development strategy to megatrends requires a systemic approach to consider long-term trends and integrate them into business

processes and management decisions. The algorithm for the adaptation of a logistics company's sustainable strategy according to megatrends is presented in Fig. 3.4.

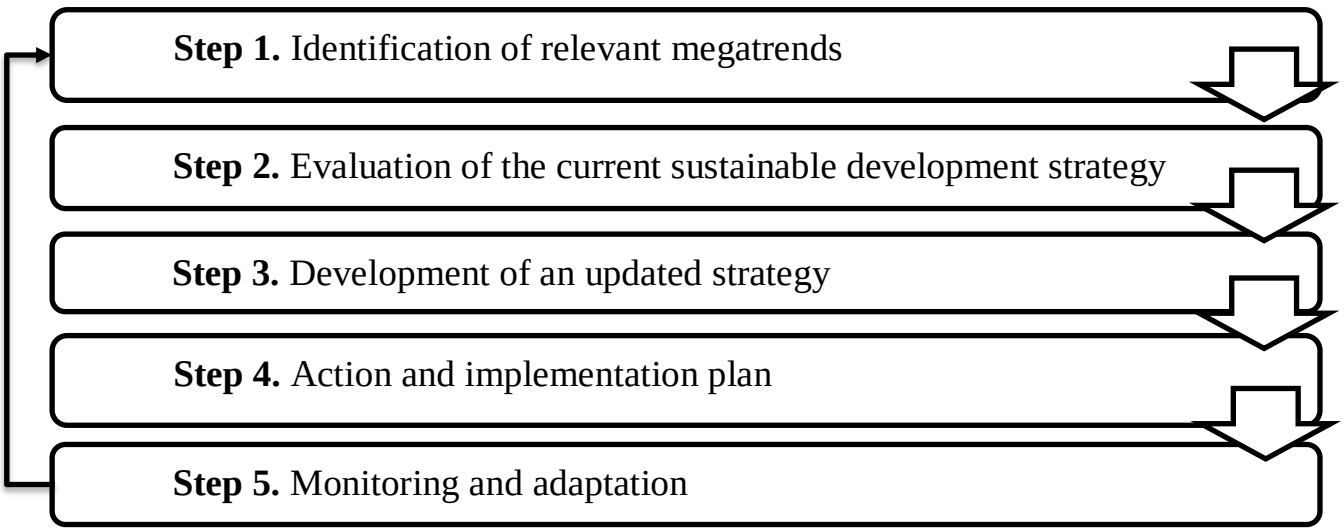

Figure 3.4 – Algorithm for the adaptation of a logistics company's sustainable strategy according to megatrends

Source: developed by author

The formation of a conceptual model for the adaptation of a logistics company's sustainable strategy begins with the identification of megatrends that will have a significant impact on the company's activities.

This stage is described in detail in Table 3.1 and includes several key actions. First, it is important to identify changing areas of technology that are currently in the process of active development or evolution. Next, the researcher must analyze how exactly these technologies affect the stimulation of megatrends, that is, large trends that change industries or society as a whole.

Another important part of this stage is the creation of a taxonomy — a classification that will help systematize information and determine those technological areas that will change most dynamically. Such a taxonomy becomes a tool that allows the researcher to better navigate future changes and predict their impact on various industries and sectors.

Table 3.1 – Identification of relevant megatrends of a logistics company

Step	Sub-Step	Activity
1. Identification of relevant megatrends	Global Trend Analysis	Analyze current and future megatrends (e.g. digitalization, climate change, demographic change).
	Impact Assessment	Determine which megatrends are having the biggest impact on logistics company.
	Focus on sustainability	Assess how each megatrend will affect the goals of sustainable development (environmental, social and economic aspects).

Source: developed by author

The second step is described in detail in the Table. 3.2, aimed at evaluating the company's existing sustainable development strategy regarding the potential of megatrends, as well as collecting analytical information for the sustainable development management system. Evaluating the existing sustainable development strategy will help the sustainable development management system determine the company's future development and the impact of megatrends on it.

Table 3.2 – Evaluation of the current sustainable development strategy

Step	Sub-Step	Activity
2. Evaluation of the current sustainable development strategy	Strategic Goal Analysis	Review organization's existing sustainability goals.
	Identify gaps	Identify where the existing strategy does not take into account megatrends or is not sufficiently integrated with them
	Assess Risks and Opportunities	Assess the potential risks of ignoring certain megatrends and the opportunities that can be used to improve the strategy

Source: developed by author

The third step is development of an updated strategy (see Table 3.3), especially in a constantly changing environment, must be a dynamic process. Integrating megatrends like sustainability, digital transformation, and shifting

consumer behaviors ensures the strategy remains resilient, forward-thinking, and adaptive to the future.

Table 3.3 – Development of an updated strategy

Step	Sub-Step	Activity
3. Development of an updated strategy	Integrating megatrends into the strategy	Make changes to the sustainability strategy based on the analysis of the megatrends (for example, include goals related to the fight against climate change, the transition to a circular economy).
	Setting New Goals	Define new, measurable goals that align with megatrends and ensure organizational sustainability
	Support Innovation	Provide innovative approaches and technologies to achieve new goals.

Source: developed by author

The forth step is an action and implementation plan translates the strategic objectives into specific, measurable, and time-bound steps that guide an organization toward achieving its updated strategy. This step is described in detail in the Table. 3.4.

Table 3.4 – Action and implementation plan

Step	Sub-Step	Activity
4. Action and implementation plan	Develop an action plan	Create a detailed plan to implement the updated sustainability strategy. This may include new business processes, technology investments, reallocation of resources, etc.
	Training and development	Provide employee training to adapt to new sustainability goals and standards.
	Stakeholder engagement	Actively communicate with stakeholders (employees, customers, partners) about new priorities and changes in strategy.

Source: developed by author

The last step – monitoring and adaptation are critical to ensuring the successful execution of the action and implementation plan. This stage involves continuous assessment of progress, identifying areas for improvement, and making necessary adjustments to stay on track with strategic objectives. This step is described in detail in the table. 3.5.

This algorithm will help the company remain flexible and competitive, responding to global changes while maintaining sustainability at all levels.

Table 3.5 – Monitoring and adaptation

Step	Sub-Step	Activity
5. Monitoring and adaptation	Monitoring progress	Continuously monitor progress towards new sustainability goals, taking into account the impact of megatrends
	Adaptation based on changes	Regularly analyze new trends, adjust the strategy as the external environment changes or new challenges and opportunities appear.
	Public reporting	Ensure transparency in the communication of the results of an adapted sustainability strategy, for example through the publication of sustainability reports.

Source: developed by author

In Fig. 3.4, after the fifth step, an arrow is shown, which determines the return to the analysis of new trends, i.e. the completion of one cycle makes it possible to begin a new stage of adaptation, which ensures a continuous improvement process and forms a cyclical approach. The cyclical approach to adapting the strategy of a logistics company takes into account constant changes caused by megatrends, which allows the business to effectively respond to external challenges and opportunities. This approach is based on the principles of constant analysis, adjustment, and improvement of strategic decisions in a dynamic environment.

Thus, an innovative approach to adapting the strategy of sustainable development of a logistics company taking into account megatrends forms a comprehensive system for identifying new and/or adjusting the impact of established

megatrends on the activities of a logistics company through updating the Logistics Trend Radar every two years, according to which the sustainable development strategy is adapted (adjusted) based on the proposed algorithm. This allows the logistics company to focus on the perfection of supply chains, forming them global, environmentally sustainable, and reliable.

3.2 Adapting the existing sustainable development strategy under the influence of megatrends

The implementation of the developed algorithm for the logistics company DHL for adapting the existing sustainable development strategy under the influence of megatrends is discussed below. The first stage, which includes the identification of megatrends, is formalized in the developed seventh edition of the logistics trend radar. Given that every two years the logistics company updates the trends identified in it, accordingly, every two years the company must adapt the corporate strategy and the sustainable development strategy.

The existing sustainable development strategy is formed and implemented based on the roadmap, which was considered in the analytical section of the qualification work.

Since every two years, the logistics company updates the logistics trend radar, it is necessary to adapt the company's corporate strategy to the identified trends. It is proposed to consider possible ways of its adaptation taking into account megatrends. The basis for adapting the strategy will be the existing strategy, which is determined by the corporate value of the logistics company that is presented in Table 3.6.

Table 3.6 - Corporate Value of DHL

№	Component of corporate value	Content
1	Financial Performance	Revenue Generation: DHL contributes significantly to Deutsche Post DHL Group's revenue, with billions earned annually across its divisions: Express, Global Forwarding, Freight, and Supply Chain. Profitability: The company maintains strong profitability margins, supported by efficient cost management and technological integration. Global Reach: Operating in over 220 countries and territories, DHL capitalizes on its vast network to secure stable financial groth.
2	Sustainability and ESG Initiatives	Sustainable Development Goals (SDGs): DHL integrates sustainability into its corporate strategy, aiming for zero emissions by 2050. Green Logistics Solutions: Investments in electric vehicles, carbon-neutral warehousing, and green supply chain solutions enhance its environmental stewardship. Social Impact: Programs like GoGreen, GoHelp, and GoTeach demonstrate DHL's commitment to environmental sustainability, disaster management, and education.
3	Innovation and Technological Advancements	Automation and Digitalization: Through initiatives like DHL SmartSensor and MySupplyChain, the company leverages data analytics, IoT, and AI to optimize operations. Investment in Emerging Technologies: DHL has invested in robotics, blockchain, and autonomous delivery systems to stay ahead in logistics innovation. Customer-Centric Platforms: User-friendly interfaces for shipment tracking, digital invoicing, and predictive analytics strengthen customer relationships.
4	Brand Strength and Market Leadership	Global Brand Recognition: DHL is one of the most recognized brands in logistics, associated with reliability and speed. Customer Loyalty: DHL's focus on excellent customer service has resulted in high customer retention and satisfaction rates. Awards and Recognition: Frequent accolades for excellence in logistics, innovation, and sustainability reinforce its market position.
5	Adaptability to Megatrends	Urbanization: DHL has developed efficient last-mile delivery systems and urban logistics hubs to adapt to growing cities. Digital Economy: The company's e-commerce logistics solutions cater to the rapidly growing online retail market. Globalization and Localization: DHL balances global operations with localized services to meet diverse customer needs.
6	People and Culture	Employee Value: With over 500,000 employees worldwide, DHL invests heavily in training, diversity, and workplace satisfaction, contributing to high productivity and innovation. Leadership: Visionary leadership under Deutsche Post DHL Group ensures alignment with long-term corporate goals.

Source: developed by author

The corporate value of DHL is driven by its ability to combine financial performance, sustainable practices, innovation, and exceptional service. By focusing on these areas, DHL not only meets the current demands of the logistics industry but also positions itself as a resilient and forward-thinking leader, ensuring long-term value for stakeholders.

Considering the identified corporate value advantages, existing corporate strategy and the impact of megatrends, the following is proposed for the logistics company DHL accelerating sustainable growth strategy.

The accelerating sustainable growth strategy reflects a comprehensive approach for businesses, particularly in logistics, to embed sustainability into their core operations. This strategy integrates environmental, social, and economic dimensions, focusing on long-term resilience and growth while addressing global challenges such as climate change, urbanization, and digital transformation.

Figure 3.5 – Concept of accelerating sustainable growth strategy

Source: developed by author

As already noted, the accelerating sustainable growth strategy is part of the corporate strategy of a logistics company, therefore it must be implemented as part of the growth strategy of DHL, which is shown in Fig. 3.6.

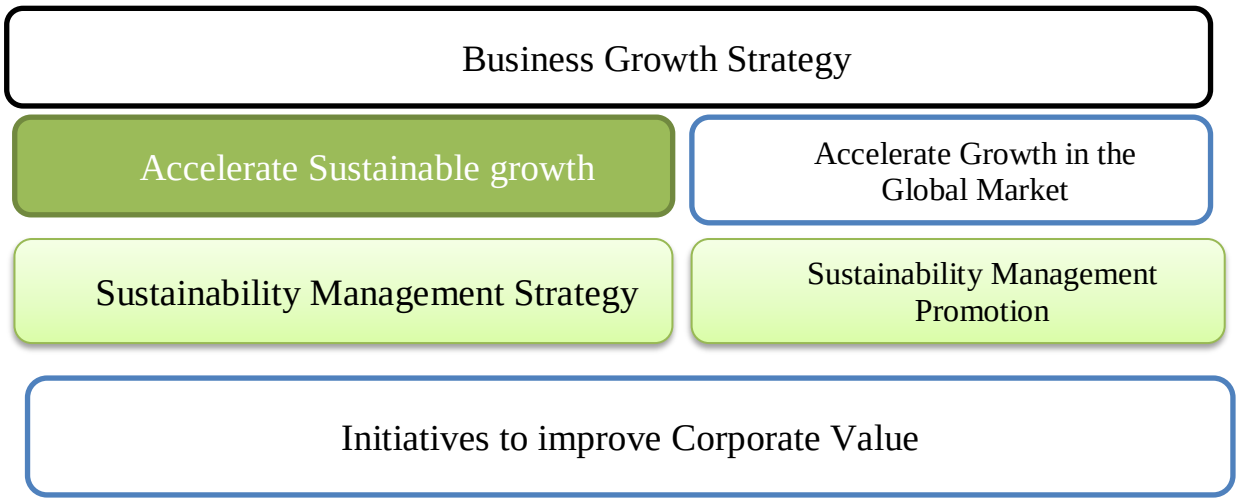

Figure 3.6 - Proposed "pool" of strategies for sustainable developing logistics company taking into account megatrends

Source: developed by author

A sustainable growth strategy for a logistics company focuses on achieving economic success while reducing environmental impact, enhancing social value, and ensuring long-term resilience in operations and supply chains. This involves adopting innovative technologies, optimizing processes, and aligning with global sustainability frameworks.

To support this strategy, the logistics company provides green logistics operations, invests in electric and alternative-fuel vehicles to reduce greenhouse gas emissions, optimizes delivery routes using AI and IoT to minimize fuel consumption and enhance efficiency, and ensures transition to renewable energy sources for warehouses and other facilities.

To support sustainable supply chain practices the logistics company collaborates with suppliers and partners to establish transparent, sustainable sourcing practices, implements circular supply chain models to promote recycling,

reuse, and waste reduction, uses eco-friendly packaging solutions to reduce environmental footprints.

As part of the accelerating sustainable growth strategy and adaptation to digital transformation, digital technologies such as leveraging data analytics, IoT, and blockchain for real-time tracking, emissions monitoring, and supply chain transparency are combined to reduce resource consumption and improve efficiency (see fig.3.7).

Figure 3.7 – Proposed digital ecosystems

Customer-centric innovations offer green shipping options, such as carbon-neutral deliveries and eco-friendly logistics solutions, provide tools for customers to measure and offset their supply chain carbon emissions, develop urban logistics solutions, including last-mile delivery hubs and cargo bikes, to meet urbanization challenges.

In addition, it is proposed to combine digital technologies with existing environmental programs as part of adaptation to the challenges of technological and environmental trends, which creates a digital ecosystem for sustainable development, which is shown in Fig. 3.8.

To accelerate growth in the global market, a logistics company must adopt a comprehensive strategy that leverages innovation, technology, customer-centric approaches, and sustainability-driven by megatrends.

Figure 3.8 – Digital ecosystem for sustainable development

To implement this strategy, the logistics company identifies actions to be implemented within this strategy. Expand into emerging markets, focusing on emerging economies where trade volumes are growing. Customize services to regional market conditions, regulatory environments, and customer preferences. Create strategic partnerships by collaborating with local logistics providers or creating joint ventures to gain rapid market access.

This strategy could accelerate growth within DHL's logistics divisions, as projected in Table 3.7.

Table 3.7 – Projected accelerate growth within DHL's logistics divisions

Divisions	Divisional strategies	Accelerating growth tools	Assumptions on the forecasted market growth for 2024-2030
1	2	3	4
Express	Consistent quality and operations excellence across global network as basis for further market share, EBIT and cash flow growth	- Geographic tailwinds - SMEs - GoGreen Plus	Time Definite International shipment growth: 4-5%

Continuation of Table 3.7

1	2	3	4
Global Forwarding, Freight	Further productivity improvement based on centralization and standardization agenda; leverage strong product expertise around the world	- Geographic tailwinds - Industrial Projects - Customs clearance - Sector focus - SMEs	Growth in core products in line with global GDP
Supply Chain	Further build out track record by leveraging successful operating model based on identified focus technologies	- E-commerce & omnichannel - Pharma network - Fulfilment network - Spare parts logistics	4-6% average growth in global contract logistics market
eCommerce	Fully leverage structural e-commerce growth trend, with both organic and selected inorganic investments	-Cross-border -Out-of-home network -Returns	Growth of 6 to 8% across domestic and crossborder e-commerce markets
Post & Parcel Germany	Ongoing transformation from Post to Parcel and leveraging synergies between both networks	-E-commerce -Cross-selling -Digital touchpoints	Mail: mid-single digit decline; Parcel: midsingle digit growth

In the proposed scheme, which was presented in subchapter 3.1, an implementation plan needs to be developed to implement the adaptation strategy. Based on the premise that sustainable development management helps to solve social problems and achieve a sustainable society, as well as create a company chosen by customers, society, shareholders, and employees, it is proposed to focus efforts on solving main problems that are identified as the basis for sustainable management and affect the corporate value of the logistics company.

It is worth noting that in response to megatrends, especially the group of environmental megatrends, given that the importance of the natural environment and sustainable development in society and industry is becoming increasingly important for all companies, DHL provides services that help solve social problems such as environmental rethinking that customers and the logistics industry are facing. This provides new values to meet customer needs, and for the Group, it is also a business growth opportunity that will increase the number of customers and the volume of transactions.

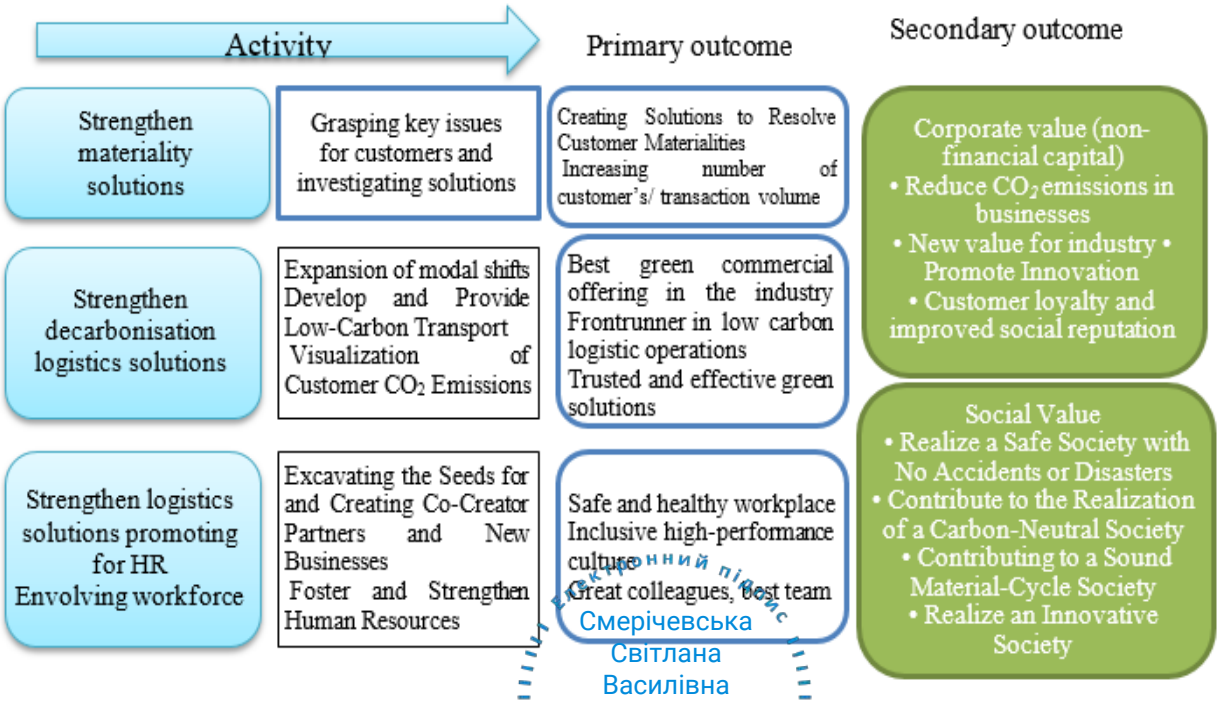

Figure 3.10 - Develop and strengthen sustainable solutions initiatives and connections with corporate value

Source: developed by author

Moreover, sustainability is becoming a key factor in increasing the corporate value of logistics companies in today's world, where environmental, social, and governance (ESG) criteria are increasingly influencing decision-making by investors, customers, and partners.

The main aspects of the impact of sustainable development on corporate value are:

1. Increased competitiveness. Logistics companies that actively implement sustainable development strategies attract more customers and partners who prefer environmentally responsible suppliers. The introduction of energy-saving technologies and green transport solutions helps reduce operating costs, increasing profitability.

2. Reputation and trust of stakeholders. Companies with sustainable business practices gain public trust and a reputation as environmentally responsible organizations. A high reputation reduces the risks of losses associated with regulatory fines and environmental scandals.

3. Financial attractiveness. Investors are more likely to choose companies that meet ESG standards, as such companies demonstrate lower volatility, higher long-term stability, and increased profitability. Increased corporate value through increased P/E, P/B, and ROE ratios.

4. Cost optimization and process efficiency. The use of environmentally friendly technologies in logistics (for example, electric or hybrid vehicles) reduces energy and fuel costs. Modernizing warehouses and transportation networks through the introduction of smart technologies reduces the carbon footprint and increases productivity.

5. Regulatory compliance. Implementing sustainable development strategies helps companies comply with strict regulatory standards and avoid fines. Developing "green" logistics solutions helps adapt to future changes in legislation.

6. Increased corporate value through ESG integration. Integrating ESG factors into a sustainability strategy creates long-term corporate value by attracting environmentally conscious customers and investors. Reducing risks and increasing resilience to global challenges such as climate change increases a company's long-term value.

Based on the above, a model was built (Fig. 3.11), which summarizes the impact of the two main components of the proposed model, namely the sustainable value and corporate value of the logistics company DHL, and defines a group of

indicators based on which the impact of megatrends on the sustainable development strategy of the logistics company will be assessed.

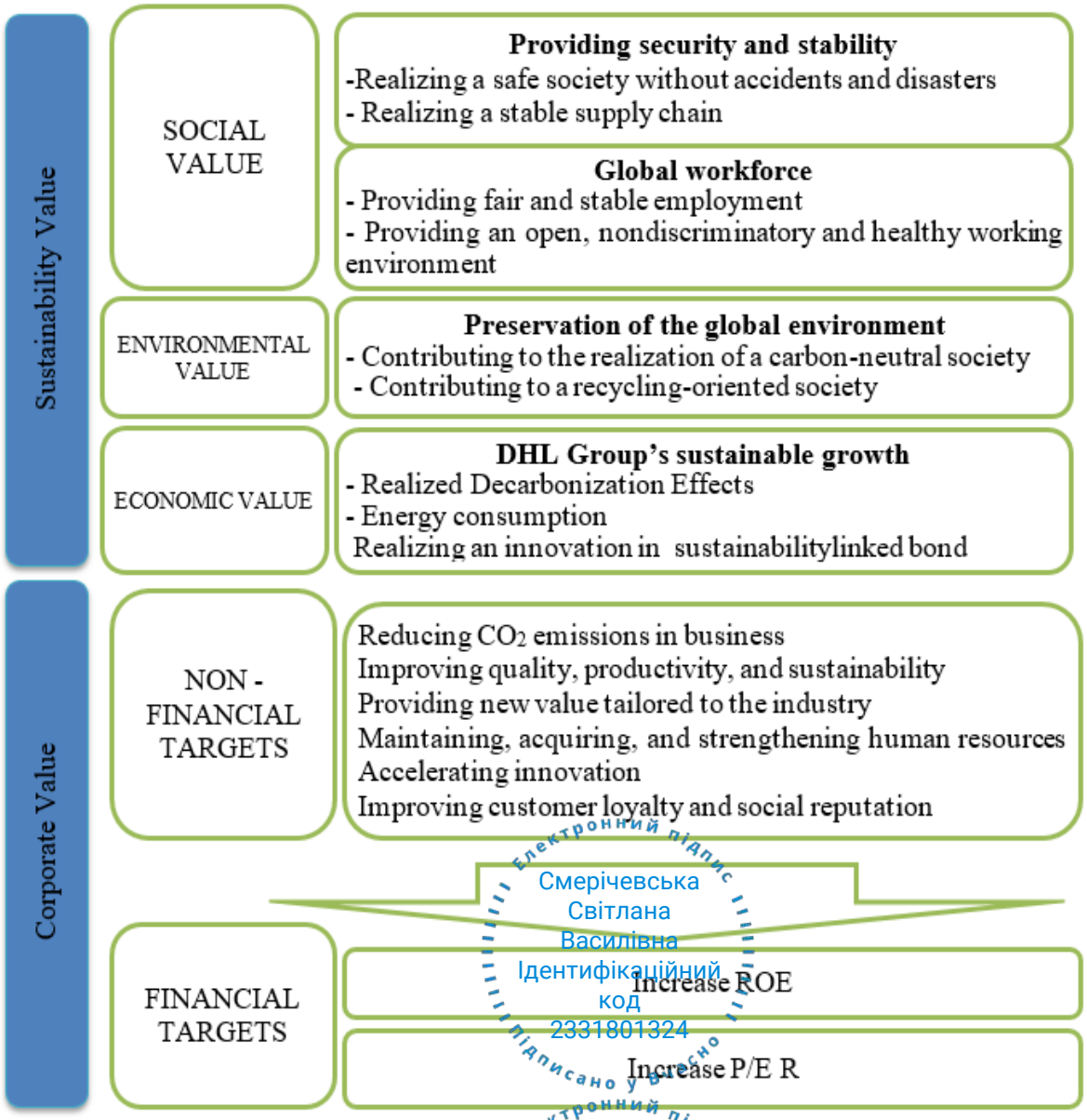

Figure 3.11 – Components of model for assessing the impact of megatrends on the corporate value of a logistics company

Source: developed by author

Therefore, DHL, as a global logistics leader, should actively adjust its sustainability strategy to meet the emerging megatrends. To adapt the existing

sustainability strategy, it is proposed to "build" into the existing growth strategy an accelerating sustainable growth strategy, which can be implemented by implementing growth through divisional growth strategies, which are aimed at quality, customer loyalty, and yield management. In addition, key areas for sustainable adaptation can be proposed, namely digital transformation and automation, through the formation of digital ecosystems, as such technologies can increase operational efficiency, reduce environmental impact, and improve customer service. DHL should focus on creating smarter supply chains through data-driven decision-making and predictive analytics. The global shift towards decarbonization is driving demand for environmentally friendly logistics solutions. DHL must accelerate its efforts to achieve zero emissions through the development of digital ecosystems, the use of electric vehicles, sustainable fuels, and sustainable packaging. Investments in renewable energy for warehouses and carbon offset programs are also critical. By aligning its sustainability strategy with these megatrends, DHL can strengthen its position as an industry leader, contributing to a more sustainable future. Integrating innovation, environmental protection, and social responsibility will be crucial to overcoming the challenges of an evolving global landscape.

3.3 Development of new approaches to assessing the sustainable development of a logistics company through the prism of the influence of megatrends

The assessment of the impact of megatrends on the sustainable development strategy, according to the model shown in Fig. 3.11, is proposed based on the calculation and analysis of ROE and P/E R indicators. The choice of these indicators is since, firstly, on their basis, it is possible to establish the effectiveness of the implementation of the logistics company's business growth strategy and financial

policy and the policy of capital formation and use, which determines the direct impact. Secondly, to determine the effectiveness of increased anticipated growth and increased non-financial value, sustainable management, which determines the indirect impact of the socio-economic and technological trends identified in Fig. 3.2, which have and will have a significant impact on the logistics company's sustainable development strategy.

Detailed model for assessing the sustainability development strategy of DHL under the influence of megatrends is shown in fig.3.12.

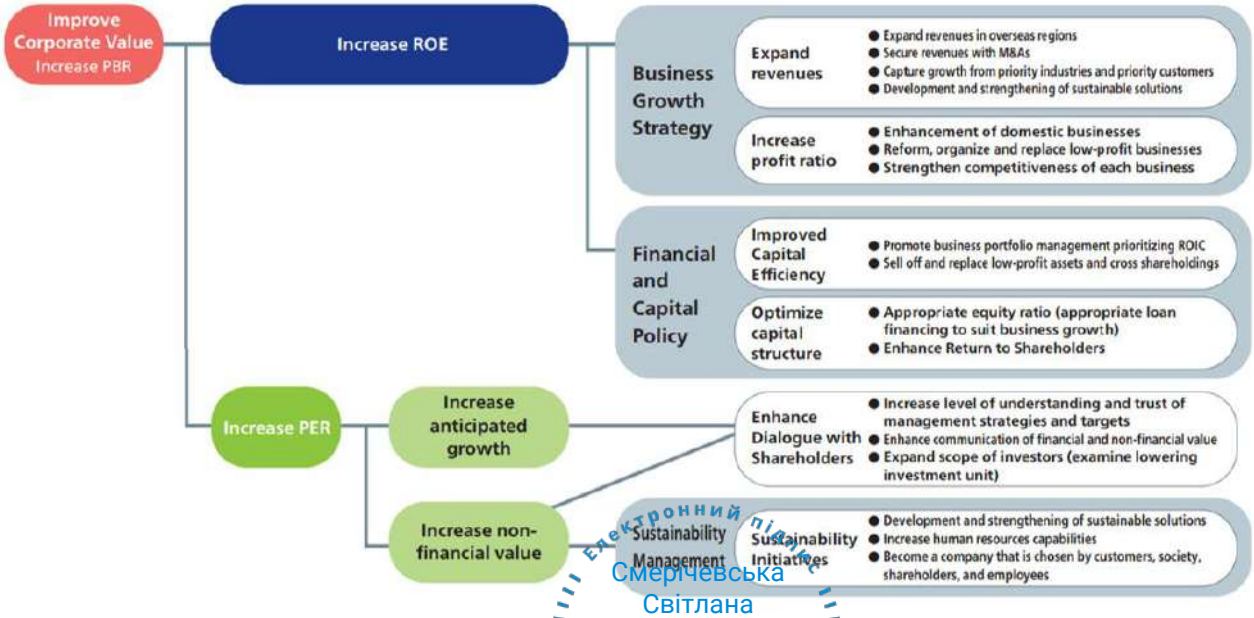

Figure 3.12 – Detailed model for assessing the sustainability development strategy of DHL under the influence of megatrends

Also, it is proposed to use the P/B R indicator in the model, which summarizes the impact of social and corporate value.

P/B Ratio (Price-to-Book Ratio) [44] is a financial ratio used to evaluate the value of a company. It is calculated by the following formula:

$$\text{P/B Ratio} = \frac{\text{Market price per Share}}{\text{Book value per Share}}, \quad (3.1)$$

where price per share determines the current market price of one share of the company's stock;

book value per share shows the difference between the company's assets and liabilities, divided by the total number of shares.

If P/B < 1- the stock may be undervalued because the market price is lower than the book value.

If P/B = 1 - the market price is equal to the book value.

If P/B > 1 - the stock is valued above the book value, which may mean that the market expects the company to grow or believes it is strong.

The P/B ratio is a useful tool for assessing the impact of megatrends on a logistics company's development strategy, allowing it to integrate financial indicators with long-term socio-economic changes. It shows the connection between megatrends and the value of a logistics company. Megatrends such as digitalization, decarbonization, automation, and changes in the sustainable economy directly affect the prospects of logistics companies. The P/B ratio reflects the market's perception of the company's future profitability and competitiveness, which may include reactions to these trends and the assessment of sustainable development through the market price of the stock. A logistics company that successfully integrates the principles of sustainable technologies can encourage investor confidence in developing environmentally friendly technologies, change risks by adapting to regulatory changes, and strengthen competitive advantages, which are positively reflected in the value of the logistics company.

To analyze the impact of megatrends on sustainability through the value of a logistics company, it is appropriate to use the dynamics of the P/E Ratio and P/B Ratio to assess the relationship between the market price of a stock and real financial indicators, which were included in the model as key indicators for assessing market capitalization trends, which reflect the overall assessment of the company's strategy by investors.

Thus, for a logistics company like DHL, which successfully integrates the principles of sustainable development, it can increase investor confidence through

the implementation of environmentally friendly technologies, reduce risks through adaptation to regulatory changes, and strengthen competitive advantages, which has a positive impact on the company's corporate value.

In addition, the market value per share can serve as an indicator showing how successfully a logistics company adapts to megatrends in its strategy. This indicator, combined with other financial and ESG indicators, allows you to assess the strategy's effectiveness and its contribution to the company's long-term value.

Figure 3.13 shows the dynamics of this indicator, starting from 2009, in order to trace the changes that have occurred after the implementation of the sustainable development strategy, in accordance with the roadmap.

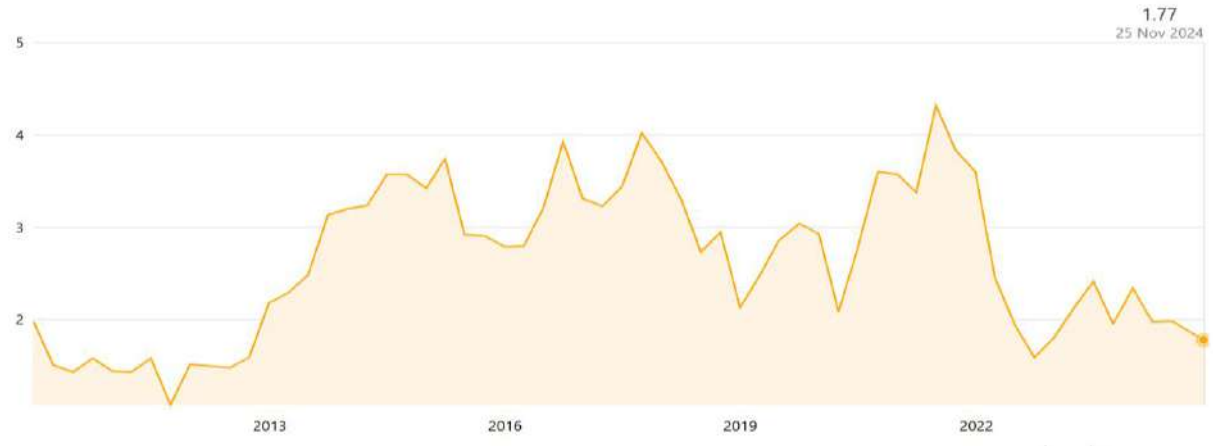

Figure 3.13 – Dynamics of P/B ratio for DHL Group

Source: [44]

The next indicator, the P/E (Price-to-Earnings) [43] ratio, shows the ratio of a company's market price to its earnings per share (EPS). Often called a price or earnings multiple, the P/E helps assess the relative value of a company's shares by comparing them to historical performance, other companies in the industry, or the overall market. It is calculated by the following formula:

$$\text{P/E Ratio} = \frac{\text{Market price per Share}}{\text{Earnings Per Share}}, \quad (3.2)$$

where

A high P/E ratio could mean that a company's stock is overvalued or that investors expect high growth rates. Companies with no earnings or are losing money don't have a P/E ratio because there's nothing to put in the denominator. P/E ratios are most valuable when comparing similar companies in the same industry or for a single company over time.

Using the P/E Ratio (Price-to-Earnings) to assess the impact of megatrends on a logistics company's sustainability strategy allows us to determine how the market assesses the company's effectiveness in adapting to global changes. This indicator can serve as a key indicator of investor interest in the company's long-term prospects. Megatrends such as decarbonization, automation, digitalization, and increasing environmental responsibility requirements are changing the business environment.

The P/E Ratio reflects the market's assessment of the company's ability to adapt to these trends and integrate them into its sustainability strategy. A high P/E ratio may indicate that investors see significant potential in the company's sustainability strategies, such as implementing environmental initiatives. A high ratio may also indicate a positive perception of the company's innovations stemming from megatrends. A low P/E ratio may indicate that the company is lagging behind in implementing new technologies or eco-models, or that the market does not expect significant growth from their implementation. It may also mean that the current sustainability strategy is not effective enough.

A logistics company's P/E ratio can be compared to other companies in the same industry, and if the company has a higher P/E, this may indicate its leadership in implementing sustainable practices. Analyzing changes in the P/E ratio over time allows us to understand how the market reacts to the introduction of new environmental or technological initiatives.

Therefore, the P/E ratio is an effective tool for assessing how the market perceives a logistics company's adaptation to megatrends and the implementation of sustainable development strategies. Comparing this ratio with industry standards,

historical data, and competitors allows us to identify the strengths and weaknesses of the company's strategy.

Figure 3.14 shows P/E ratio history for DHL Group from 2009 to 2024.

Figure 3.14 - History of P/E ratio for DHL Group from 2009 to 2024

Source: [43]

The final component of the model is ROE (Return on Equity) [45]— a financial ratio that measures a company's profitability relative to its shareholders' equity. This ratio shows how effectively a company uses shareholders' investments to generate profits. It is calculated by the following formula:

$$ROE = \frac{Net\ Profit}{\text{Shareholder's Equity}}. \quad (3.3)$$

ROE is a gauge of a corporation's profitability and how efficiently it generates those profits. The higher the ROE, the better a company is at converting its equity financing into profits. ROE will vary based on the sector a company is in, so it provides the most information when it's used to compare companies in the same industry.

ROE is a powerful tool for assessing the impact of megatrends on a logistics company's sustainability strategy. It allows to analyze how effectively a company is using its equity capital to respond to the challenges and opportunities arising from global changes.

Megatrends create the need to adapt business models, and these initiatives affect capital efficiency and, consequently, ROE. A high ROE indicates that a company is effectively using equity capital to implement sustainable development strategies, such as: Investing in environmentally friendly technologies (e.g., energy-efficient warehouses), optimizing routes using artificial intelligence, reducing operating costs through automation, and demonstrating the ability to adapt to new market conditions and maintain profitability.

A low ROE may indicate that the implementation of megatrends is not yet bringing the expected return, for example, high initial investments in sustainable development without a quick result, inefficient use of resources, or insufficient integration of new technologies, which indicates possible management problems or shortcomings in the strategy. An increase in ROE over time may indicate the gradual implementation of sustainable practices and their effectiveness. Since companies with high ROE and sustainable strategic initiatives become more attractive to ESG investors.

Therefore, ROE allows to assess how effectively a logistics company uses its capital to implement sustainable development strategies under the influence of megatrends. A high ROE signals the success of these efforts, while a low indicator may indicate the need to refine the strategy. Combined with other financial indicators, ROE helps create a complete picture of the company's performance.

Figure 3.15 shows the dynamics of both the ROE indicator itself over the years, and its two main components - net profit and equity. The highest value of the ROE indicator was in 2011 - 39.85%, the logistics company DHL no longer received such a result, this can be defined as a goal to achieve. Analyzing the value of the ROE indicator, we can conclude that the cycle that characterizes the dynamics of the indicator is approximately four-five years. That is, there is a gradual increase, and then a sharp decline. Starting from 2021, there has been a constant decrease in the value of the indicator, which indicates that the company needs strategic changes, this confirms the feasibility of the solutions we have proposed.

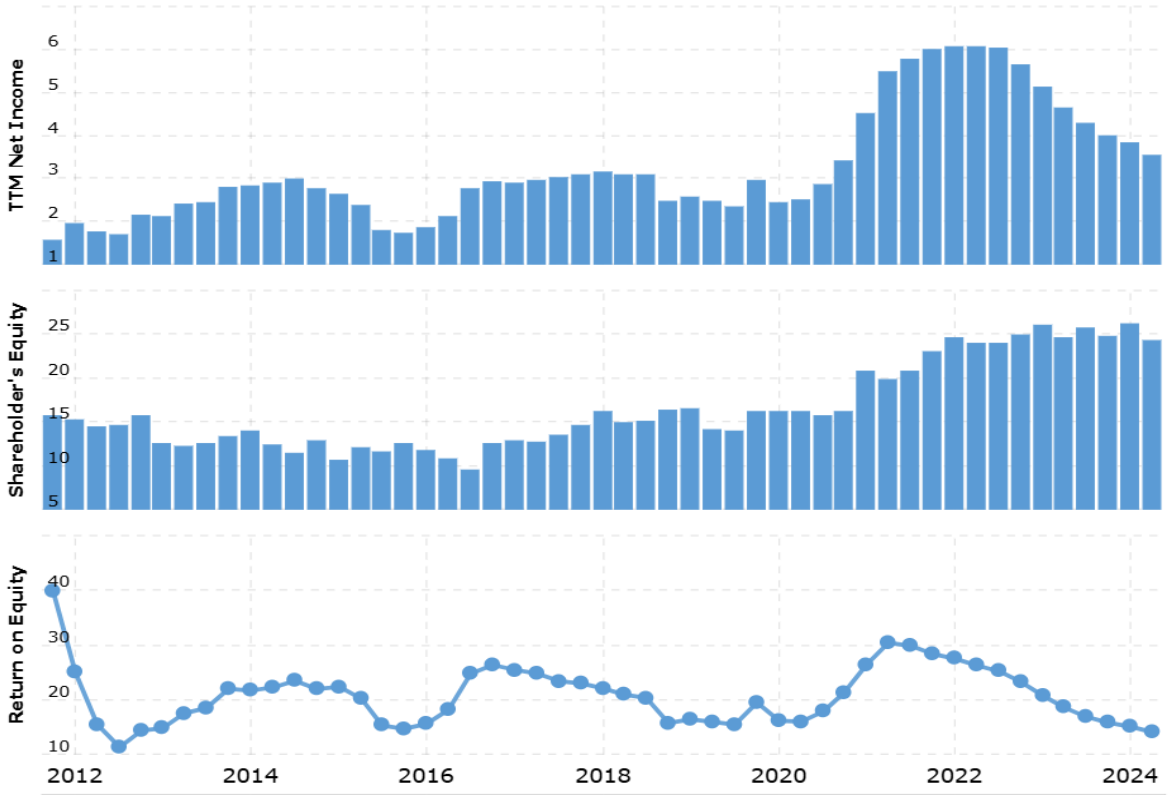

Figure 3.15 – DHL dynamics of ROE

Source: [20]

The dynamics of all three indicators is summarized in Fig. 3.16.

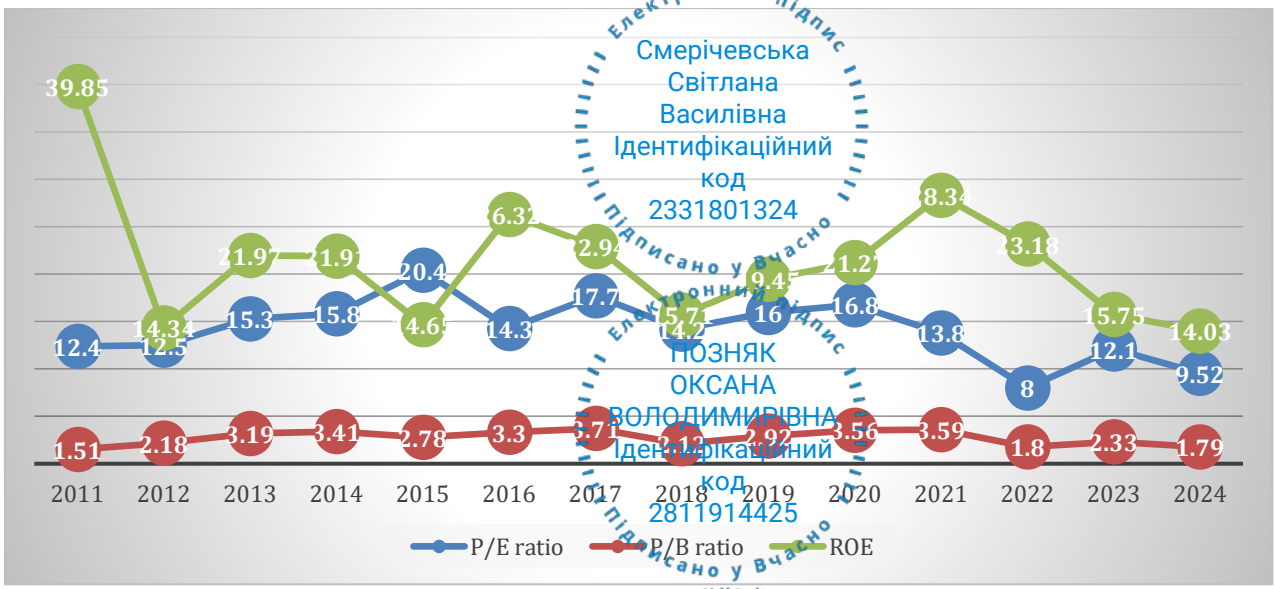

Figure 3.15 – DHL dynamics of ROE, P/E ratio and P/B ratio

Source: developed by author based on [20,43-44]

Based on the calculation of the linear trend equation, the values of each indicator were predicted for the next five years, the results are shown in Fig. 3.16-3.18.

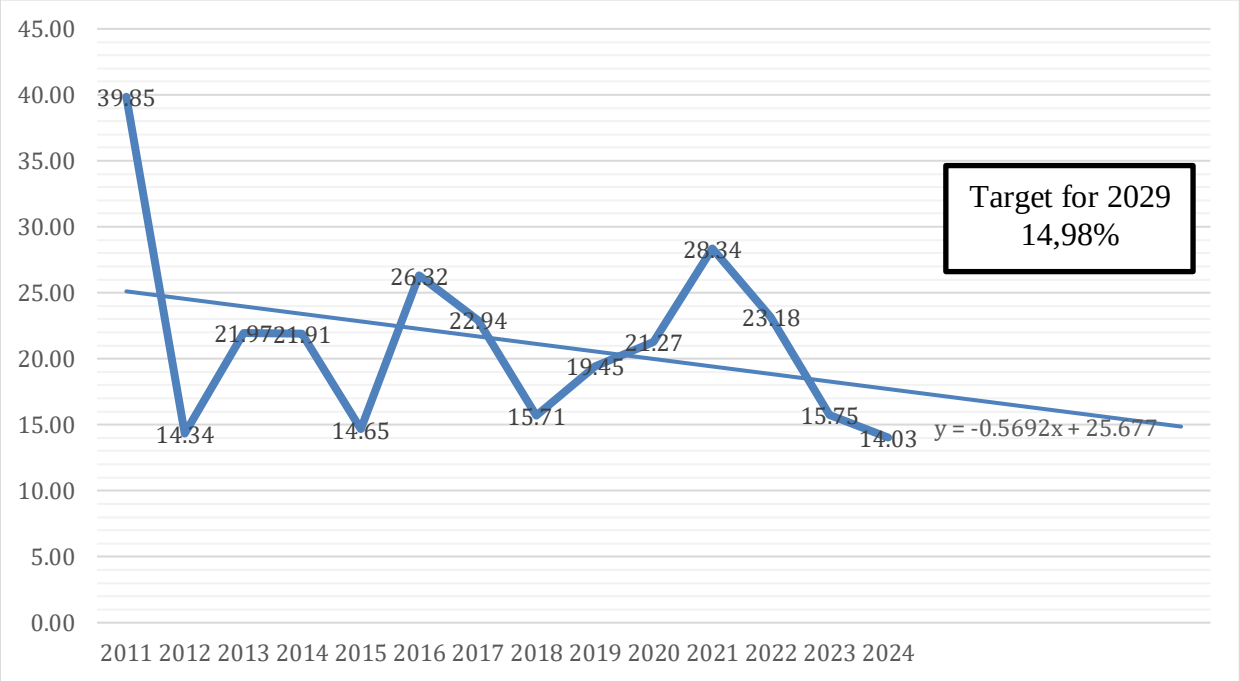

Figure 3.16 – ROE forecast for the next five years to 2029

Source: developed by author

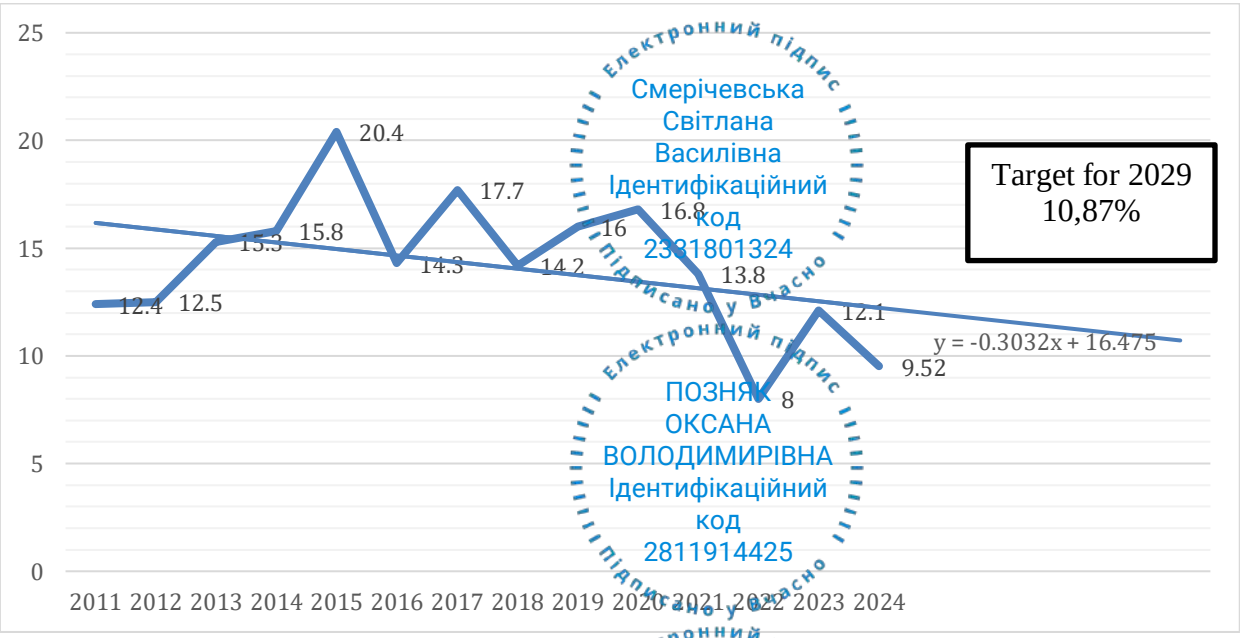

Figure 3.17 – P/E ratio forecast for the next five years to 2029

Source: developed by author

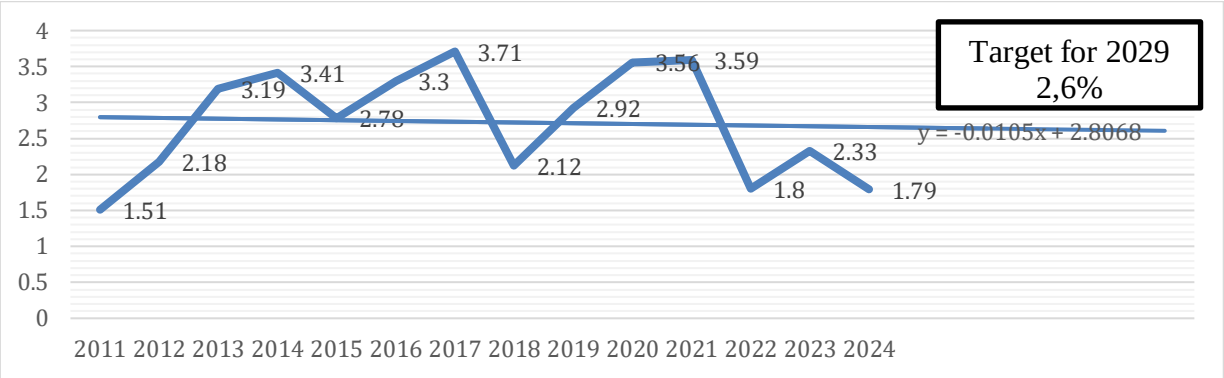

Figure 3.18 – P/B ratio forecast for the next five years to 2029
Source: developed by author

Analysis of the impact of megatrends on indicators showed that the cycle, characterized by the presence of positive benefits from the implementation of previous socio-economic and technological trends, is ending. With the development of a new Logistics Trend Radar, it is necessary to adapt the growth strategy of the logistics company, implement the strategy of accelerating sustainable growth, and spread the practice of not only developing but also implementing appropriate technologies to support it in all regions of the presence of the logistics company DHL.

Chapter 3 conclusions

The innovative approach proposed in the project section to adapting the sustainable development strategy of a logistics company taking into account megatrends forms a comprehensive system for identifying new and/or adjusting the impact of existing megatrends on the activities of a logistics company by updating the Logistics Trend Radar every two years, according to which the sustainable development strategy is adapted (adjusted) based on the proposed algorithm. This allows the logistics company to focus on the perfection of supply chains, the formation of global, environmentally sustainable and reliable ones.

To adapt the existing sustainability strategy, it is proposed to “build” into the existing growth strategy an accelerating sustainable growth strategy, which can be implemented by implementing growth through divisional growth strategies that focus on quality, customer loyalty, and profit management. Existing strategies should be refined to enhance agility and adaptability, ensuring a swift response to evolving megatrend impacts. The integration of innovation, environmental protection, and social responsibility will be crucial to overcoming the challenges of the evolving global landscape.

To ensure the assessment of business sustainability, it is necessary to develop modern approaches that take into account financial metrics, including the use of indicators such as ROE, P/E Ratio, and P/B Ratio, which were used in the corporate value assessment model, with an emphasis on sustainable development. The conducted study showed that the reaction cycle of indicators to the implementation of innovative technologies is on average from 3 to 5 years, which determines the logical sequence of recommendations for adapting a sustainable development strategy. The development of a new edition of the Logistics Trend Radar every two years leads to an update of the list of socio-economic and technological trends that have an impact on the sustainable development of a logistics company. Accordingly, this requires the adaptation of the existing corporate growth strategy, and the introduction of innovations that support its update taking into account changes. The reaction of ROE, P/E Ratio, and P/B Ratio indicators to the changes made does not occur immediately, which determines the "time lag" between implementation and obtaining a result. Therefore, there is a need to reduce this time gap to obtain a faster result, without waiting for the emergence of a negative trend in their dynamics.

In addition, the developed model can be supplemented with ESG analysis, and further analysis and determination of the degree of influence of the model components on the formation of the assessment result, and set target indicators for them. These approaches will help not only to assess the current sustainability of the business but also to predict its long-term effectiveness in the context of global challenges.

CONCLUSIONS AND RECOMMENDATIONS

The qualificaton work is devoted to the development of theoretical and methodological approaches to adapting the sustainable development strategy of a logistics company based on the analysis of megatrends.

The foundations of a sustainable development strategy for a logistics company rely on a careful integration of the economic, environmental, and social dimensions of sustainability. The logistics sector is inherently resource-intensive, requiring companies to prioritize efficiency, emission reduction, and resource optimization.

In today's unstable environment, megatrends, which are powerful forces transforming the modern world, act as one of the key tools for predicting future changes in society, economy, politics and culture. In view of this, megatrends are not only the object of research by futurologists, but are also actively analyzed by consulting companies and think tanks that cooperate with governments and international organizations in order to form development strategies in the economic sphere, business and public administration.

Considering the literature review conducted, it can be stated that, despite the beginning of the study of this problem in 1982, the nature of megatrends is very complex, therefore there is no clearly formed concept regarding their definition, classification and typology.

Global megatrends, including digital transformation, climate change, urbanization, demographic shifts, and globalization, exert a profound influence on the sector. These trends redefine customer expectations, regulatory requirements, and competitive dynamics. For instance, urbanization has increased the demand for last-mile delivery services, while climate change has emphasized the importance of low-carbon logistics solutions.

The interplay between megatrends and logistics highlights the necessity of long-term planning and innovation. Companies must be proactive, identifying opportunities for alignment with these trends to remain relevant and competitive.

This theoretical framework establishes the necessity of adapting strategies to address both immediate challenges and future opportunities.

Based on the analysis of the business portfolio of the logistics company DHL, it can be concluded that the company is a global logistics provider, provides a wide range of logistics and other services, makes both standardized and tailor-made logistics solutions, which forms the company's competitive advantages in the logistics market.

A comprehensive analysis of the production and financial indicators of DHL reveals the nuances of productivity during the years 2021-2023. Analyzing the dynamics of the main key effective financial indicators, it is possible to conclude about the emergence of negative trends. Revenue in 2023 decreased by 13.4%, profit from operating activities decreased by almost 25%, and net profit decreased by 31.4% - which is the largest indicator of negative dynamics.

The diagnostics of the Express segment showed a decline in the key indicators of this business segment in 2023 indicating a decrease in its operational efficiency, which was reflected in a negative impact on the company's consolidated performance indicators.

EBIT in the Global Forwarding, Freight division fell in 2023, from €2,311 million to €1,423 million. The EBIT margin was 7.4%. EBIT in the division thus corresponds to 28.4% of gross profit and 34.6% for the Global Forwarding business unit.

EBIT in the Supply chain division increased to €961 million in 2023 (2022: €893 million). In addition to positive revenue dynamics, earnings growth was driven by increased productivity through digitization and standardization. EBIT profitability in 2023 was 5.7%. Summarizing the results of the analysis of E-commerce Division, it should be noted that the dynamics of key indicators are ambiguous. As a whole, the segment's revenue increased by 2.8%, which is a positive trend, but the structure of revenue by region showed an 8% decrease in revenue in Asia Pacific. The drop in the EBIT indicator by almost 25% indicates a

significant decrease in the operating efficiency of the segment, which is confirmed by the decrease in Return on sales to 4.6%.

Therefore, a detailed diagnosis of the activity of the logistics company by business segments, which characterizes its operational efficiency, shows that only one segment - the supply chain, is marked by positive dynamics not only of key indicators but also of the main effective indicator of operational activity - operating profit.

The decrease in the operational efficiency of the business segments is negatively reflected in the consolidated performance indicators of the logistics company. If the logistics company is not able to adapt its operational activities to the identified challenges in order to eliminate their negative impact, it may lead to a long-term crisis situation, which will also affect the implementation of sustainable development goals.

The company's activities are based on the principles of sustainable development, which is reflected in the company's goal of "Connecting people and improving lives." For DHL, sustainable development and sustainable business practices are opportunities that shape the company's competitive advantages. The long-term success of the company is determined by the extent to which the needs of key groups of stakeholders are met, the impact of business on the environment is minimized, and the contribution to social development is increased.

Thus, the DHL company is not only a leader in the global market of logistics services, but also a leader in the development and implementation of "green" technologies in logistics activities, spreading its experience not only among all branches of the company around the world, but also involving suppliers in the implementation of the principles of sustainable development, intermediaries, customers, forming global "green" supply chains.

The innovative approach outlined in the project section for adapting a logistics company's sustainable development strategy in light of megatrends presents a holistic system. This system identifies new megatrends or adjusts the influence of

existing ones on the company's operations by updating the Logistics Trend Radar every two years.

Over the past decade, the DHL Logistics Trend Radar™ has become a key tool for strategy development, innovation and learning in the logistics industry. It helps industry professionals navigate a dynamic environment and seize new opportunities. In its seventh edition, DHL reaffirms its commitment to providing its customers, partners and employees with valuable insights that reflect the direction society, business and technology are taking in shaping the future of logistics. Innovation and collaboration are key to success. The DHL Logistics Trend Radar highlights the need for both, providing a better understanding of emerging trends, anticipating future challenges and encouraging organizations to develop partnerships. Collaboration, both within and outside the industry, is the most effective way to create new solutions and adapt strategies to stay ahead of the competition.

Based on this updated radar, the sustainable development strategy is refined using a proposed algorithm. This enables the company to focus on enhancing supply chains and forming global, environmentally sustainable, and reliable networks.

To adapt the current sustainability strategy, it is suggested to integrate an "accelerating sustainable growth strategy" into the existing growth strategy. This integration involves divisional growth strategies targeting quality improvement, customer loyalty, and profit optimization. Refinement of existing strategies is necessary to boost flexibility and adaptability, ensuring a swift response to the dynamic impacts of megatrends. Key pillars such as innovation, environmental stewardship, and social responsibility are vital for overcoming the challenges posed by a rapidly evolving global environment.

For assessing business sustainability, modern evaluation approaches should be implemented, leveraging financial metrics like ROE, P/E Ratio, and P/B Ratio, which are already used in corporate value assessment models. These indicators, with a focus on sustainability, provide a robust framework for understanding long-term impacts. Research indicates that the reaction of these indicators to innovative

technology adoption occurs over 3 to 5 years. This highlights the need for strategic alignment and sequencing of recommendations to adapt the sustainable development strategy.

Updating the Logistics Trend Radar biennially ensures the incorporation of new socio-economic and technological trends impacting sustainable development. Consequently, the corporate growth strategy must also be adapted and supported by innovations to address these changes. However, the "time lag" in the response of indicators like ROE, P/E Ratio, and P/B Ratio suggests a need to minimize this gap, enabling faster results without waiting for adverse trends to emerge.

The author's proposed model for assessing the impact of megatrends on the corporate value of a logistics company takes into account the impact of megatrends as a multifactorial environment that shapes the long-term strategic prospects of a logistics company. The model is based on the integration of financial, operational, environmental and social parameters, which together affect corporate value, ensuring business sustainability and adaptability.

Additionally, the proposed model can be enhanced with ESG analysis**,** allowing a deeper examination of the components influencing sustainability assessments. Setting target indicators for these components will aid not only in evaluating the current sustainability of the business but also in predicting its long-term effectiveness in the face of global challenges.

This comprehensive approach ensures that logistics companies can remain competitive and resilient while contributing meaningfully to sustainable development.

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Appendix A

Table A.1 – Literature review of the trend concept

№	Authors	Definition
1	Hillman, 2007, p. 907	Trend is a statistical term which refers to the direction of global changes in the future
2	Pradel & Aretz, 2008, p. 230	Trend indicates the course of action which will ensure integrity and balanced development in particular sectors of economy
3	Vejlgaard, 2008, p. 9	Trends form the way of development for many different fields, being the monotone component varying according to the investigated moment of time. It is a process of transformation presented from economic, psychological or sociological perspective which can be short-, medium- or long- term phenomenon of a regional or global scope
4	Buck et al., 1998	The classic definition describes a trend as an ongoing and fundamental societal change over an extended period. In contrast, the modern definition, treats a trend as a short-term phenomenon, such as in fashion or music
5	Liebl, 2002, p. 161-184	Trend as a phenomenon that is always complex and that cannot be perceived simply as a fashion; neither can its lifespan be measured accurately. A trend is a connection, an association that is defined by crossing contextual borders
6	Groddeck & Schwarz, 2013, p. 28-37	From business perspective, trends are considered as a crucial element in forming companies' overall strategy
7	Müller & MüllerStewens, 2009, p. 4	Trends influence life's conditions and peoples' behaviours, have stability over time and are composed of many interconnected occurrences

Appendix B

Table B 1 – Megatrends identified in Ernest and Young

MT	Terms and phrases		Explanations / Results / introduction	Challenges
	Level 1	Level 2		
Digital future	Digital transfo-rmation	cloud computing connected devices - "Internet of Things" Mobile social media Big data analytics	distribution of goods and services via digital channels (cloud); Subscription-based revenue models; micropayments such as "freemium" and pay-per-use models	companies reassess and adapt their pricing strategies, sales processes and distribution models; issues related to for revenue recognition and customer privacy; changing customer engagement and business models;
	Facts	80% of companies see changes in how their customers access goods and services; 51 % of these companies are changing their pricing and delivery models		
	"mobile first" world		Interaction between customers and brands through mobile devices; Mobile devices are also becoming preferred tools for work and communication; companies are building applications and interfaces on a mobile platform first, not for the desktop or web browser	IT infrastructure of companies need to support the latest mobile technologies.
	Facts	Webpage views from mobile phones are gaining share — from 17% in 2013 to nearly 29% in 2014; Consumer spending via mobile will increase from US$204b in 2014 to US$626b in 2018;		
	Prolifera-tion of data	Data from social media Online shopping behavior Geo-location information Individual "prosumers"	Companies that can extract value from this information using data analytics will gain a more precise understanding of customer segments; Products and services can be tailored to the level of the individual; consumers' expectations are growing	Issues related to the possibilities of companies to control messages about themselves; companies need to increase transparency, while proactively cultivating and managing relationships with their stakeholders and customers
	Facts	Companies are failing to use approximately 80% of customer data now generated		
	Digital disruption	best-of-breed platforms	companies are pricing and delivering their products as a service via the cloud; companies develop their own digital platforms providing innovative solutions to meet the unique needs of their customers and partners;	Companies in digital ecosystem may be partners in one market segment and competitors in another - buying and implementing digital technologies from their competitors, as well as competing with their existing technology business partners in the market offering similar vertical solutions
	Facts	one-third of the top-20 companies in most industries will be disrupted by industry-specific data platforms n 2018		
	cyber threats	data breaches cybercrime – theft of data bring your-own-device policies	organizations' data are more accessible and vulnerable due to greater use of the internet, smartphones and tablets; more access points to company and personal data as digital connections between entities and people increase.	companies, organizations and governments will need secure digital assets and protect confidential information
	Facts	In 2013, cyber attacks compromised 800+ million record; Digital crime and IP theft currently costs between $375b and $575b per year — eclipsing the annual GDP of most nations		
	Work-styles	virtual workforce online "crowdsourcing" freelance platforms	Workforce connected to work anytime, from anywhere, and on any device workstyles will be matched by new means of engaging with talent	skills and resources on demand (rather than owning) hampers efforts to keep widely distributed workforces motivated, productive and satisfied
	Facts	By 2020, 50% of the workforce will be Generation Y and Z members — and they have grown up connected, collaborative and mobile		
	robotic technologies	artificial intelligence machine learning computer processing power sophisticated mobile robotics	Automation impacts on all work categories, not just those that require routine; New opportunities to develop, service or operate the next generation of software and machines will arise requiring advanced skills	large number of individuals will be relegated to lower-skilled service occupations that cannot easily be mechanized, or to the unemployment line; governments and educational system will be under pressure to develop and retool workers to operate in the new environment
	Facts	47 % of occupations in advanced economies are at "high risk" of being automated in the next 20 years		
Entrepreneurship rising	rapid-growth markets	High TEA (Total Early Stage Entrepreneurial Activity) Index	the percentage of individuals aged 18 to 64 in an economy who are in the process of starting or are already running new businesses;	entrepreneurs launch businesses out of necessity
		innovative rapid-growth market startups	creating a product, service or process that represents a significant commercial opportunity	
	Facts			
	High-impact entrepre-neurs	transformative businesses	start-ups making high impact on native markets (Google, Facebook, Twitter, Virgin Airlines, andGoPro);	
		frugal innovation	offering lower-cost products and services tailored to unmet and local market needs.	
	Facts			
	Young entrepre-neurships	Youth unemployment	young people are increasingly turning to entrepreneurship;	along with training, young entrepreneurs across the G20 need additional support to launch and scale their enterprises
		entrepreneurial education		
	Facts	ILO reports that globally, almost 13% of young people (close to 75 million people) are unemployed; more than 5,000 entrepreneurship courses are offered in the US today, compared with 100 in 1975; nearly 50% of the world's entrepreneurs are between the ages of 25 and 44.		
	Women entrepre-neurs	Women's entrepreneurial ventures	increasingly important source of new jobs	Access to finance remains a hurdle for female entrepreneurs; Policy-makers and other stakeholders to create enabling environments for female entrepreneurs across the globe
		women-run SMEs		
	Facts	today, roughly 126 million women are launching or operating brand new businesses in 67 economies around the world; at least 48 million female entrepreneurs and 64 million female business owners currently employ one or more people in their businesses; across the globe, there are roughly 8 million to 10 million formal SMEs with at least one women owner.		
	Entrepre neurial growth	supportive environments access to funding; entrepreneurial culture; supportive regulatory and tax regimes educational systems	essential to successful entrepreneurship and these are evolving across the world.	urgent action needed to improve support for their entrepreneurs Elimination of tax on capital gains Relaxation of rules preventing foreign investment
	Facts	entrepreneurial ventures are currently responsible for 75% of new jobs each year and 68% of exports – focus on improving the regulatory and tax environment for new ventures and SMEs;		
	Access to funding	lack of funding crowdfunding market microfinance tax incentives credit guarantee schemes - CGSs	Smart governments are creating a range of mechanisms and institutions to provide entrepreneurs with financing options to meet these changing requirements; CGSs used by banks, often with public sector support, to ease the constraints SMEs face in accessing finance	primary reason for business discontinuance around the world; private sector investors to focus more on startups through improved taxes'; crowdfunding and microfinance require regulatory support to achieve scale.
	Facts	Crowdfunding market for developing countries – which was US$5b in 2013 – could rise to US$96b by 2025, since there are 344 million households in rapid-growth economies capable of making crowd funding investments in their local communities		

Continuation of Appendix B

Global marketplace	rapid-growth economies		Shifting of global economic power the east and south	shift in economic power will force major adjustments in strategy of all companies with global ambitions
	Facts	By 2030, rapid-growth markets will comprise 63% of global GDP, up from 38% today and amounting to US$223t.		
	Trade-off patterns	continued transformation fragmentation of supply chains high levels of market integration	world's fastest-growing trade routes are Asia-MENA, Asia-Latin America and Asia-Africa; Middle East and Africa will become new trade hubs, driven by economic integration with Asia, proximity to Europe, capacity for low-cost production and growing domestic markets;	economies will remain highly interdependent through trade and financial system linkages, need for stronger global policy coordination among nations need for resilient supply chains for companies
	Facts	Global merchandise trade is forecast to grow 8% annually to 2030, and should outpace GDP growth		
	share of capital inflows and outflows	gross capital inflows and outflows foreign direct investment (FDI) greenfield investment	including foreign investment, equity and debt portfolio investment, bank loans and other investment developing countries more attractive sources and destinations for capital flows	national policy-makers to create more businessfriendly investment environments in rapidgrowth markets; volatility, particularly political, could also continue to deter FDI inflows in rapidgrowth markets
	Facts	By 2030, rapid-growth markets will account for 47% of gross global inflows up from 23% in 2010.		
	growing global middle class	emergence of lucrative new markets middle income consumers	fast-growing countries are becoming prime markets for global and home-grown companies Rapidly growing, young populations combined with strong economic growth; new Asian middle class;	competition is increasing companies need to carefully position their brands and portfolios to meet the needs of increasingly empowered and diverse consumer bases
	Facts	The World Bank projects that 50% of the total global stock of capital will reside in the developing world by 2030 (up from 33% in 2010) Two-thirds of the global middle residents by 2030, up from just under one-third in 2009		
	new knowledge world order	shift in knowledge production homegrown innovation outsourcing of services	rapid-growth markets are steadily increasing their academic and research output, particularly in Asia (China); Chinese companies have begun to outsource manufacturing to Africa, South America and the Middle East;	
	Facts	By 2022, China is expected to overtake the US as the largest global spender on research and development (R&D)		
	war for talents	worldwide competition for qualified talents labor market pressures multicultural workforce gender-balanced workforce	Many emerging market invest more in education have rapidly expanded the number of college graduates that they produce; By 2025, the South rather than the North may become the major source of technical talent in the global economy;	Difficulties of employers when trying to find employees skilled in science, technology, engineering and mathematics
	Facts	In 2015, 54% of college graduates were from leading emerging market countries — in 10 years it will be 60%.		
	Global cities	Global urbanization	Asia and Africa are urbanizing at the fastest rate among regions; urbanization will drive the world's future economic growth; shift in spending power to urban areas	
	Facts	By 2030, the world's 750 biggest cities will contribute 61% of total world GDP — close to US$80t (in 2012 prices) and will gain 220 million additional middle-class consumers.		

Urban world	Aging popula-tions	"old" and "new" cities	Young populations create large and productive labour forces	young populations drive unrest in countries with underemployment and other social ills; aging populations leave the workforce without an adequate younger cohort to replace them, depressing growth and straining public resources;
	Facts	a full 90% of the 0–14 age group residing in cities on the top 750 cities list will live in Africa in 2030		
	economic order of cities	shift eastward mid-sized cities	balance of economic power held by cities will shift eastward;	mid-sized cities will be the fastest-growing urban economies over the next 15 years; mid-sized cities will be potential new markets of global companies; mature markets will retain some of the largest and most important urban centers in the world
	Facts	by 2030, 40% of the 50 largest cities in the world in terms of constant-prices GDP will be in China; five of the top six cities in 2030 will be traditional centers of business and commerce: Tokyo, New York, Los Angeles, London and Paris.		
	Urbani-zation	sector shifts change of employment patterns	shift from agriculture to manufacturing (Africa) jobs growth in the industrial sector (Asian cities) high land and labor costs (mature market cities) manufacturing expansion (capital-growth market cities)	need to build new infrastructure in emerging cities; upgrading infrastructure in mature market cities;
	Facts	Beijing, Lagos and Mumbai are all expected to create more financial service sector jobs than London from 2013 to 2030.		
	investment in infrastru-cture	high-quality infrastructure Public-private partnership (PPP) models	financing infrastructure is a key challenge for governments	many emerging nations builds new urban infrastructure from scratch; many developed nations face the problem of aging infrastructure; recommendations for actions of G20 nations: • setting specific targets for infrastructure in their national growth plans; • establishing a Global Infrastructure Hub and • increasing the availability of long-term financing for investment
	Facts			
	Sustainable and resilient urbanization	resource risks global resource depletion more sustainable cities "Green" cities "smart" cities "smart" mobility solutions "smart" grids	energy-efficient buildings, reduced waste relying heavily on renewable energy sources and energy efficient transportation systems use of state-of-the-art ICT to build smart mobility solutions, smart grids	
	Facts	Roughly 50% of the urban population being monitored (12% of the total global urban population) exposed to air pollution – at least 2.5 times > WHO recommended levels; 70% of primary energy consumption and 80% of global GhG emissions are derived from cities, while up to 80% of the US$100b per year in climate-adaptation costs will be assumed by urban areas.		
	Reducing urban poverty and margin. populations	social problems unplanned growth	not all citizens are reaping the positive aspects of urbanization	municipal governments struggle to provide the basic requirements — adequate food, water, health care, and shelter — to slums and informal settlements; crime; traffic congestion; air pollution; unsafe food and water supplies;
	Facts	nearly 1 billion people currently live in slums; over the next 15 years, the number of global slum dwellers is expected to double to 2 billion people.		

End of Appendix B

Resourceful planet	limited resources	energy, commodities food and water finite limits of resources technological developments new sources of supply competition for natural resources	increase the demand for energy, commodities food and water; technological developments have allowed for access to resources previously thought impractical or impossible to recover;	accessing new sources of supply will be increasingly difficult and expensive governments to put a price on resource security through taxes and regulations;
	Facts	1.2b increase in world population by 2030; 33 % increase in global energy demand by 2035;		
	global energy mix	shale formations tight formations shift in global energy production newly found or exploitable unconventional energy sources renewable sources clean technologies	Natural gas released from shale formations Oil produced from tight formations; shift away from traditional suppliers in Eurasia and the Middle East to suppliers in North America, Australia, Brazil and Africa; renewable energy will grow rapidly as clean technologies become more cost competitive;	Oil and gas companies will need to adjust their production and spending plans to meet the demands of shifting price environments; countries to develop expertise, sign technology transfer agreements and find cost-efficient ways to unleash the potential of unconventional resources; new models and sources of financing significant infrastructure demands due to changing energy mix and empowerment of consumers;
	Facts	Over the next 20 years, unconventional sources of oil will contribute to 70% of oil supply growth, while unconventional sources of gas will account for almost 50 % of increases in global gas production; By 2030 the share of electricity generated by renewable energy could reach 50 %.		
	water scarcity	water usage water shortage water withdrawals energy and food production	water usage has been growing at more than twice the rate of population growth in the last century;	Rise of the need to reconcile the demands of food production; accessing dwindling water supplies for energy production or private consumption will become harder;
	Facts	The UN estimates that by 2030 demand for water may be 40% more than supply, and water shortages could affect almost 50% of the world's population; by 2030, freshwater shortages could cause a 30% reduction in grain production; by 2025, water withdrawals will increase by 50% in emerging countries and 18% in developed countries;		
	climate changes	extreme weather events resiliency Impact on urban centers	climate change impacts are already accelerating instability in vulnerable areas of the world and are serving as catalysts for conflict; incidence of extreme weather events has increased	need to create resilient infrastructure due to grow of urban population; need for new funding models; move toward lower-carbon economies (carbon taxes and emission trading programs) need to include carbon costs into decision-making processes of companies;
	Facts	The UN forecasts that the number of people in large cities who are exposed to cyclonic winds, earthquakes and flooding will more than double in the first half of this century;		
	transparency and security of global supply chains	supply chain risk management systemic disruptions to global supply chains raw material traceability transparency of sourcing strategies	systemic disruptions to global supply chains due to environmental, geopolitical, economic and technological triggers;	companies are at risk of suffering serious reputational damage in real time if their social and environmental performances is below average level; companies are at need to apply with more powerful means of communication
	Facts			

Health reimagined	health care reform initiative	new delivery and payment models transparency of information		need for new delivery and payment models based on outcomes and value; need to increase the transparency of information on quality, price and other metrics — enabling patients and others to make better decisions
	Facts	13% of adults in France and 6% in the UK have serious problems in paying medical bills		
	incide-nce of chronic disease	global chronic disease epidemic ageing population	ageing population contributes to the increase of global chronic disease epidemic; number of chronically ill individuals across the globe will also swell due to increasing incomes, changed diets and increasingly sedentary lifestyles in rapid-growth markets;	new approaches to driving desirable behavioral change (tobacco use, harmful use of alcohol, physical inactivity and poor diet) are required;
	Facts	non-communicable diseases account for 75% of health care spending and will cause a loss of US$47 trillion to world GDP by 2030		
	mobile and social health solutions	mobile health technologies smartphone apps wirelessly connected medical devices social media	empowerment of patients with more transparent information and more control over their health; creation of real-time data and opportunities for interventions;	need to integrate mobile health technologies into our everyday life
	Facts	global mobile health and fitness sensor market will grow at 40% CAGR between 2013 and 2018; social media channels will generate significant health care data – from 50 petabytes today to 25,000 petabytes by 2020		
	Big data in health care	electronic health records payer claims pharmacy data mobile health technologies "big data" technologies	utilization of "big data" technologies across the service of health care (from drug R&D to care-coordination)	
	Facts			
	Genetic/ genomic info	drug development new therapies genes; gene products		New drug discovering programs based on genes and gene products
	Facts			
	persona-lized medicine	personal genome sequencing targeted therapeutics	price of personal genome sequencing has failed significantly, so manufacturers are increasingly focused on personalized medicine approaches	
	Facts			
	entrants from non-traditional fields	telecommunications firms ICT data analytics Retailers and food manufacturers	Companies from sectors once far removed from health care are developing approaches to empower patients with their personal health management	
	Facts			

Appendix C

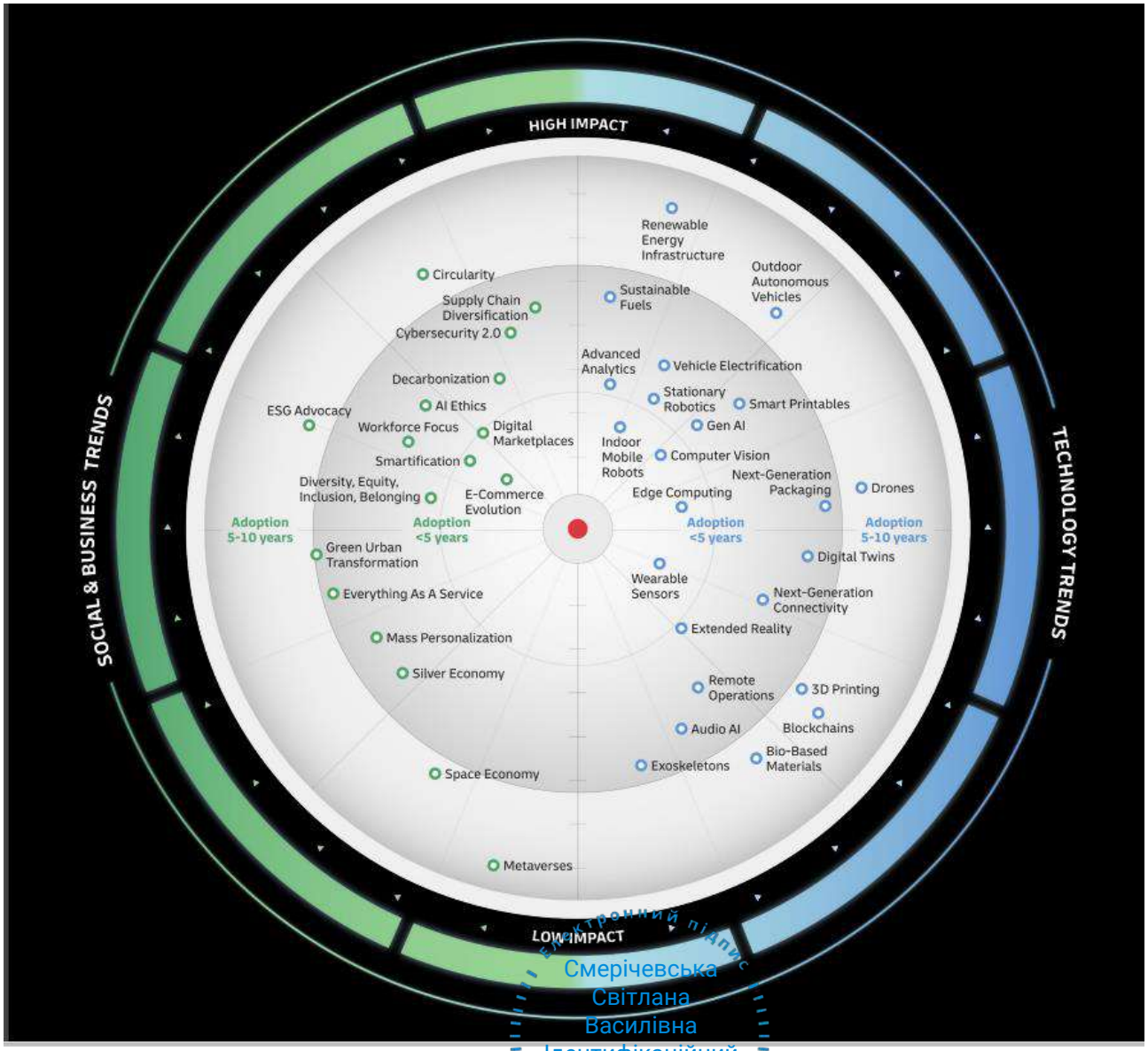

Figure C.1 – Logistics Trend Radar 7.0

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