Electronic scientific and practical journal

INTELLECTUALIZATION OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

#26 (2024)
August ‘24

WWW.SMART-SCM.ORG
ISSN 2708-3195
DOI.ORG/10.46783/SMART-SCM/2024-26

ISSN 2708-3195

Electronic scientific and practical collection
INTELLECTUALIZATION OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Electronic scientific and practical publication in economic sciences

Electronic scientifically and practical journal “Intellectualization of logistics and Supply Chain Management” included in the list of scientific publications of Ukraine in the field of economic sciences (category "B"): **Order of the Ministry of Education and Culture of Ukraine dated October 10, 2022 No. 894 (Appendix 2)**

Field of science: Economic.
Specialties: 051 – Economics; 073 – Management

ISSN 2708-3195
DOI: https://doi.org/10.46783/smart-scm/2024-26

The electronic magazine is included in the international scientometric databases:
Index Copernicus, Google Scholar

Released 6 times a year

№ 26 (2024)
August 2024

Kyiv - 2024

Founder: Viold Limited Liability Company

The electronic scientific and practical journal is registered in international scientometric data bases, repositories and search engines. The main characteristic of the edition is the index of scientometric data bases, which reflects the importance and effectiveness of scientific publications using indicators such as quotation index, h-index and factor impact (the number of quotations within two years after publishing).

In 2020, the International Center for Periodicals (ISSN International Center, Paris) included the Electronic Scientific and Practical Edition "Intellectualization of logistics and Supply Chain Management" in the international register of periodicals and provided it with a numerical code of international identification: ISSN 2708-3195 (Online).

Recommended for dissemination on the Internet by the Academic Council of the Department of Logistics NAU (No. 7 of February 26, 2020). Released 6 times a year. Editions references are required. The view of the editorial board does not always coincide with that of the authors.

Electronic scientifically and practical journal "Intellectualization of logistics and Supply Chain Management" included in the list of scientific publications of Ukraine in the field of economic sciences (category "B"): ***Order of the Ministry of Education and Culture of Ukraine dated October 10, 2022 No. 894 (Appendix 2)***

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https://smart-scm.org

Contents

UDC 658.7: 628.5
DOI: https://doi.org/10.46783/smart-scm/2024-26-1
JEL Classification: F29, O29, O31, O39.
Received: 18 July 2024

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PLANNING THE CUSTOMER SERVICE PROCESS OF A LOGISTICS COMPANY BASED ON IMPLEMENTING GREEN TECHNOLOGIES

Oksana Pozniak, Tetiana Kisera, Iryna Suvorova, Alina Shvets, Mykhailo Podrieza. "Planning the customer service process of a logistics company based on implementing green technologies". *The peculiarities of planning environmentally oriented customer service for a logistics company based on implementing "green" technologies are discussed in the article. It has been researched that planning is an integral part of the successful management of any company, especially in the logistics sector, where customer satisfaction and operational efficiency are key factors. Under modern conditions, to respond to customer requests, logistics companies must take into account the impact of their activities on the environment and implement appropriate methods to minimize the negative impact on the environment, and accordingly, the process of planning customer service in a logistics company should include an environmental component. Given this, the importance of integrating environmental factors and business processes at each stage of planning to ensure sustainable development of a logistics company based on forming a cyclic approach to planning environmentally oriented customer service is substantiated. The method of iterative planning that allows a logistics company not only to improve the quality of customer service but also to integrate environmental practices into its activities, which meets the modern requirements of sustainable development and social responsibility of business has been established. The developed model of environmentally-oriented planning of customer service combines business processes of logistics service and "green" technologies, transforms the operational efficiency of a logistics company in the context of sustainable development, substantiates the integration of environmentally sustainable solutions at all stages of the logistics chain - from initial planning to the final delivery of goods to consumers. To support the proposed model, the implementation of Power-to-X technology is recommended, which allows the conversion of excess renewable energy into energy specifically for logistics and transportation purposes. The implementation of this measure enables the logistics company to reduce emissions and increase energy efficiency, to form a comprehensive approach to the development and integration of environmentally friendly technologies in the company's logistics operations to increase efficiency and competitiveness. It is emphasized that the proposed model demonstrates a comprehensive approach to building a highly efficient and at the same time environmentally sustainable logistics system of the company by integrating innovative "green" technologies.*

Keywords*:* environmentally oriented planning, cyclical approach, logistics service, "green" technologies, logistics company, DSV

Оксана Позняк, Тетяна Кісера, Ірина Суворова, Аліна Щвець, Михайло Подреза. «Планування процесу обслуговування клієнтів логістичної компанії на основі впровадження «зелених» технологій». *В статті розглянуто особливості планування екологоорієнтованого обслуговування клієнтів логістичної компанії на основі впровадження «зелених» технологій. Досліджено, що планування є невід'ємною частиною успішного управління будь-якою компанією, особливо в секторі логістики, де задоволеність клієнтів і операційна ефективність є вже не є ключовими факторами, процес планування обслуговування клієнтів в логістичній компанії повинен включати екологічну складову. Враховуючи це, обгрунтовується важливість інтеграції екологічних факторів та бізнес процесів на кожному етапі планування для забезпечення сталого розвитку логістичної компанії га основі формування циклічного підходу до планування екологоорієнтованого обслуговування споживачів. Встановлено, що методика ітераційного планування дозволяє логістичній компанії не тільки підвищити якість обслуговування клієнтів, але й інтегрувати екологічні практики у свою діяльність, що відповідає сучасним вимогам сталого розвитку та соціальної відповідальності бізнесу. Розроблена модель екологоорієнтованого планування*

обслуговування клієнтів логістичної компанії поєднує бізнес процеси логістичного обслуговування та «зелені» технології, трансформує операційну ефективність логістичної компанії в контексті сталого розвитку, обґрунтовує інтеграцію екологічно стійких рішень на всіх етапах логістичного ланцюга – від початкового планування до кінцевої доставки товарів споживачам. Для підтримки запропонованої моделі рекомендовано впровадження технології Power-to-X. Реалізація даної технології дозволить логістичній компанії зменшити викиди та підвищити енергоефективність, сформувати комплексний підхід до розробки та інтеграції екологічно чистих технологій у логістичні операції компанії з метою підвищення ефективності та конкурентоспроможності. Наголошено, що запропонована модель демонструє комплексний підхід до побудови високоефективної та водночас екологічно стійкої логістичної системи компанії шляхом інтеграції інноваційних "зелених" технологій.

Ключові слова: екологоорієнтоване планування, циклічний підхід, логістичне обслуговування, «зелені» технології, логістична компанія, DSV.

Introduction. Under modern conditions, the way of serving consumers changes every day, and customers are increasingly interested not only in the type of services that logistics companies provide, but also in the way they are provided. With this in mind, the logistics company must prioritize the development of environmentally friendly customer service processes to meet current requirements as customer awareness of the environmental component of the process increases. The expansion of logistics operations has a negative impact on the environment, so it is imperative to prioritize the implementation of environmental principles and technologies in logistics processes, in particular in customer service processes, in order to guarantee the sustainable development of companies. When planning an effective environmentally oriented customer service system, a careful balance of excellent customer service with the ideas of sound environmental management and minimization of environmental impact is necessary. Leading logistics companies are actively involved in implementing ambitious programs to reduce environmental impact and promote decarbonization. Nevertheless, the complex coordination of environmentally-oriented procedures, incorporating advanced "green" technologies and taking into account the entire supply chain and product life cycle, still creates an unresolved issue that requires comprehensive scientific research.

Analysis of recent research and publications. Modern studies of this issue are focused mainly on specific elements, such as the study of logistics service processes [4], planning of logistics activities [5], the issue of the peculiarities of eco-oriented management at industrial enterprises in modern conditions [1], environmental studies, the introduction of alternative types of fuel, the development of infrastructure electric vehicles or the use of renewable energy sources in warehouses [7-8]. Such fragmentation determines the lack of a comprehensive approach to the formation of an ecologically oriented customer service planning system of a logistics company, which should take into account the entire chain of logistics customer service processes and provide a conceptual approach to planning the introduction of environmental principles and technologies into logistics processes and customer service processes.

Objectives statement. The purpose of the article is to develop a conceptual approach to planning the customer service process of a logistics company based on the implementation of "green" technologies.

Basic material and results. The customer service process of a logistics company is a set of interrelated actions and measures aimed at meeting customers' needs in transportation, warehousing, inventory

management, and related logistics services following agreed requirements and standards.

This is a flexible framework that can be customized and tailored to the unique needs of the logistics company and the environmentally conscious customer service (see Figure 1).

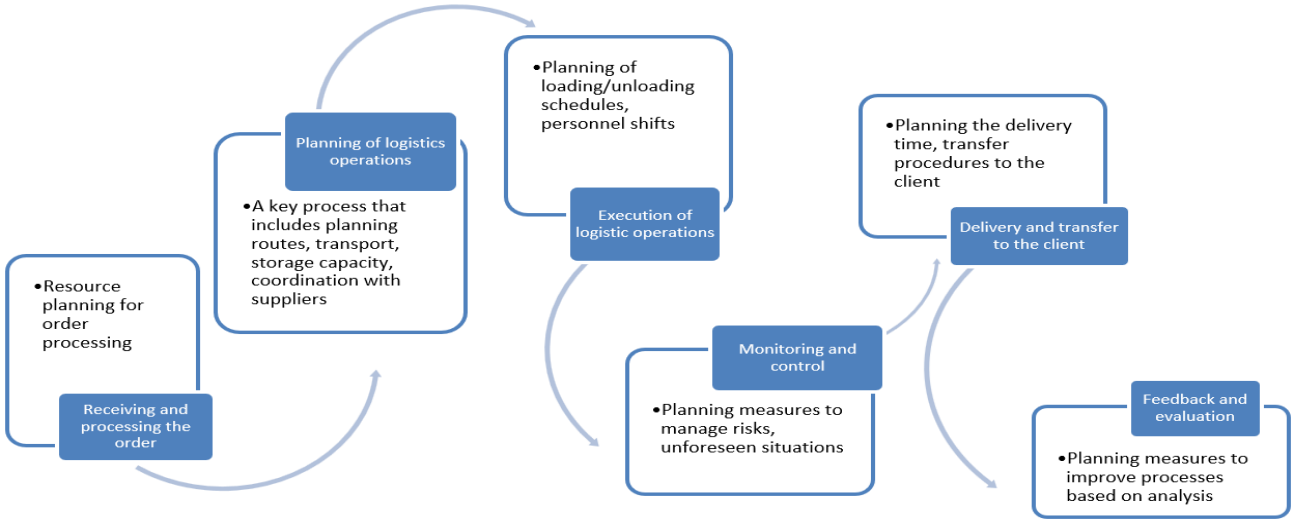

Figure 1 – The role of planning in the main processes of customer service
Source: compiled by the authors

Planning is an integral part of the successful management of any organization, especially in the logistics sector, where customer satisfaction and operational efficiency are key factors. However, in today's realities, companies must also consider the impact of their activities on the environment and implement appropriate methods to minimize the negative impact on the environment. Therefore, the process of planning customer service in a logistics company should include an environmental component to achieve environmental sustainability.

Environmental sustainability is an approach aimed at integrating environmental considerations into all aspects of an organization's activities or processes. This includes the minimization of the negative impact on the environment, the rational use of natural resources, and the introduction of environmentally friendly technologies and practices. Environmental sustainability involves comprehensive consideration of environmental factors at all stages of planning, production, operation, and disposal of products or services.

Achieving such environmental sustainability requires careful planning and implementation of relevant processes in the company's activities. In the context of environmentally oriented customer service in a logistics company, the term "process" covers the entire sequence of operations from the customer's order to the delivery of goods or services. This process should be planned and carried out taking into account environmental considerations and minimizing the harmful impact on the environment at each stage, forming a comprehensive planning system for environmentally-oriented customer service of the logistics company.

Given the importance of integrating environmental factors at each stage of planning to ensure the sustainable development of the company, it is advisable to apply a cyclical approach to planning environmentally safe customer service, which is depicted in Fig. 2.

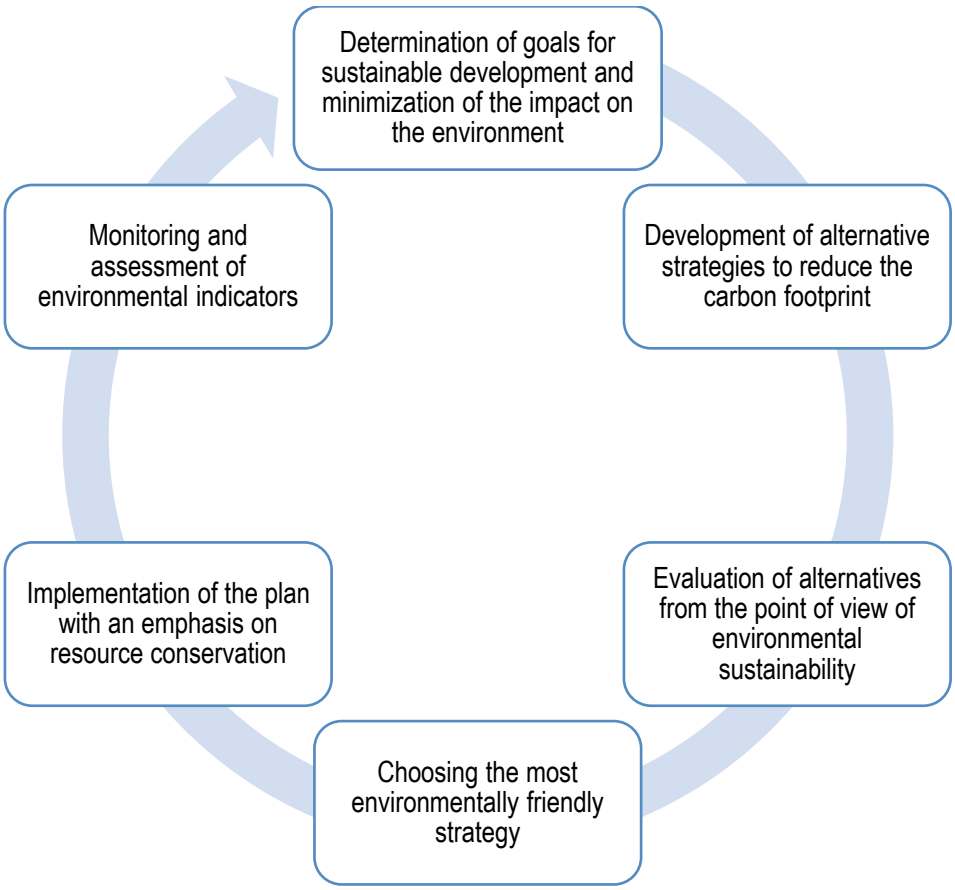

Figure 2 – Planning cycle of environmentally-oriented customer service
Source: compiled according to the data [4]

This scheme determines not only the sequence of actions in the cycle but also emphasizes the environmental aspect for the logistics company when planning customer service, namely:

1. Setting objectives for sustainable development and reducing environmental impact. During this phase, the company sets clear environmental goals and objectives that it aims to achieve in its operations. These include reducing emissions, optimizing resource usage, and minimizing the company's environmental footprint.

2. Exploring different approaches to minimize the carbon footprint. This step entails exploring and assessing various methods, advancements, and resolutions that can contribute to reducing carbon emissions and the overall environmental impact in the customer service process.

3. Considering different options based on their impact on the environment. During this stage, a thorough analysis and evaluation of different strategies and approaches are conducted to assess their potential impact on the environment, costs, effectiveness, and alignment with the company's environmental objectives.

4. Exploring the most eco-conscious approach. After a thorough assessment of the options, the most ideal approach is selected, prioritizing sustainable development principles, and minimizing harm to the environment.

5. Implementation of the plan with a focus on conserving resources. The selected approach is implemented, focusing on optimizing resource utilization, reducing waste, and implementing environmental conservation measures. We also monitor and assess environmental indicators.

The cycle is repeated to continually improve and find new, more effective approaches to environmentally focused customer service.

Such an iterative planning methodology allows a logistics company to improve the quality of customer service and integrate environmental practices into its operations, which meets the modern requirements of sustainable development and social responsibility of business.

The way companies plan their customer service processes within this environmentally conscious framework is central. To seamlessly combine both elements without compromising quality or efficiency; careful planning becomes imperative.

Planning an environmentally conscious customer service process requires a fundamental revision of existing paradigms. It begins by intertwining two often disparate areas: the effectiveness of business operations in the process of customer service in supply chains and environmental initiatives - to create a model in which these dimensions are harmoniously combined rather than contradicting each other, creating a synergistic effect.

When developing a customer service process for a logistics company with an emphasis on the environment, it is important to determine the principles of environmentally oriented logistics service planning:

1. Segment customers according to their environmental service needs and adjust logistics processes to effectively serve these segments.

2. Review the sustainability of the logistics system under the requirements of sustainable development and profitability for different customer segments.

3. Keep abreast of market trends and effectively manage demand planning for environmental services across the supply chain to ensure accurate forecasts and efficient resource allocation.

4. Effectively oversee environmental procurement practices to minimize environmental impact and optimize the cost-effectiveness of materials and services.

5. Improving environmentally friendly services that are more accessible to customers and accelerating the transition to green logistics practices.

6. Create a comprehensive environmental strategy for the entire logistics chain that improves the decision-making process at different levels and offers a transparent understanding of the movement of products, services, and information, taking into account environmental factors.

7. Utilize performance indicators that cover the entire logistics chain to measure the overall achievement of sustainability goals for end users.

By implementing these principles, a logistics company can effectively integrate environmental factors into its planning process and provide customers with the highest level of environmental services.

Consequently, logistics companies must take calculated risks to combine excellent customer service with sustainable practices to prepare for the environmentally conscious consumer. This marks the beginning of a transformational change as logistics companies shift their priorities from profitability to environmental awareness, establishing mutually beneficial partnerships with all supply chain stakeholders. Recognizing the synergistic effect of forming an environmentally oriented customer service, which leads to the transformation and adaptation of the business model and strategy of interaction with customers and partners, a logistics company should integrate innovative green technologies, firstly, into its own business processes of customer service, and secondly, involve partners in the use of green technologies, forming a green supply chain ecosystem.

Leading logistics companies act as pioneers who shape the development trends not only of their own company but also the development trends of the entire logistics industry. One such organization is DSV, a logistics company that makes extensive use of

advanced technologies, especially environmentally friendly ones, to improve customer service processes. The growing importance of environmentally-oriented technologies in today's world requires studying their impact on supply chain management and planning, as well as appropriate adjustments. Therefore, there is a need to introduce a system approach to the environmentally oriented customer service process of the company, which forms an end-to-end vision of the use of green technologies to ensure logistics service processes [35].

The proposed model of environmentally oriented planning of customer service processes (see Figure 3) determines an intricate logistics process in the company that encompasses several phases of the transportation of products from the source to the ultimate receiver. The upper section illustrates the overall sequence of stages: planning, inbound (transportation to the warehouse), storage, outbound (distribution), and delivery to the destination. Each stage includes a comprehensive account of the specific processes involved, including cargo pickup, customs clearance, warehousing, order picking, and ultimate delivery to the consumer.

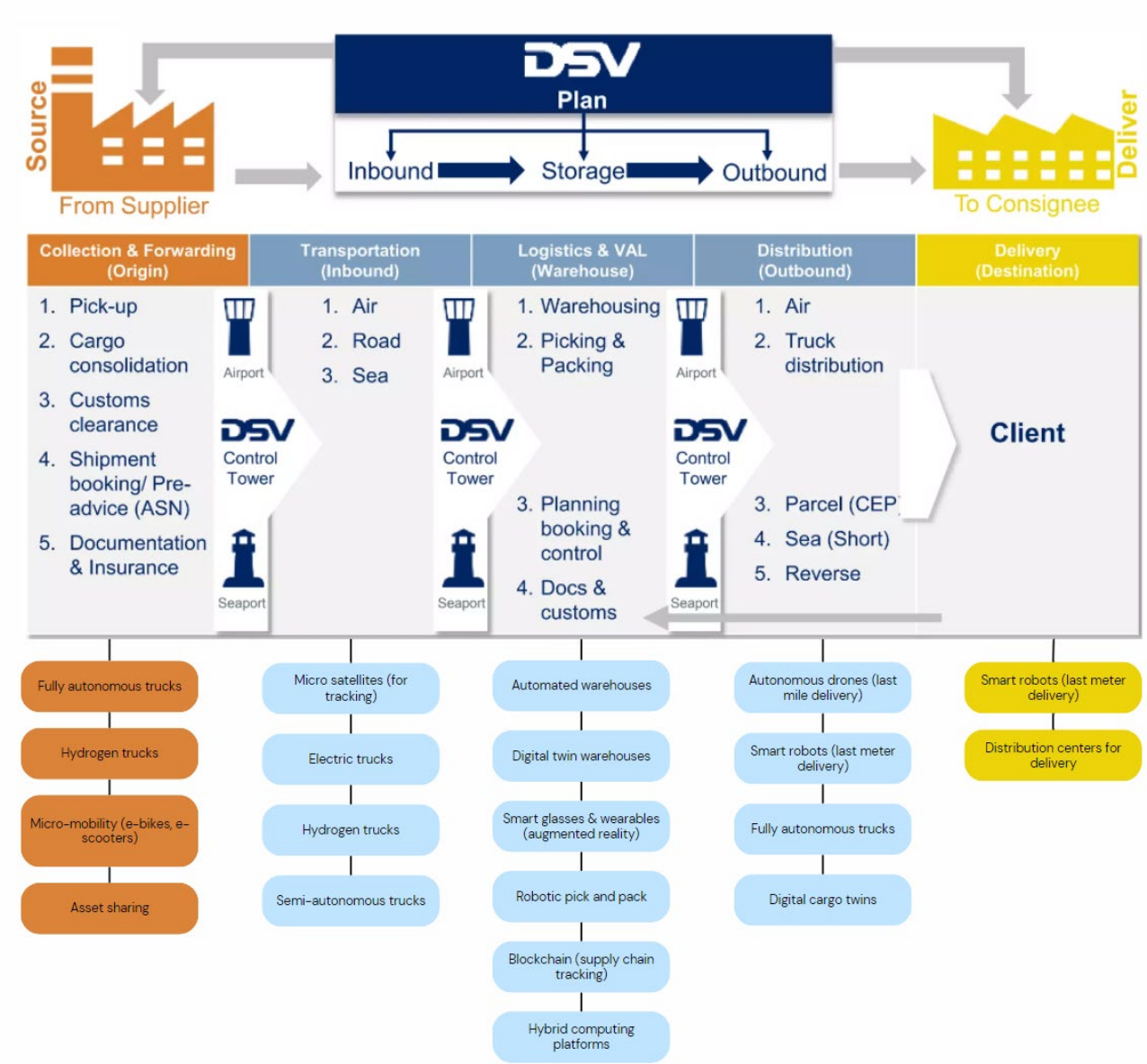

Figure 3 – Model of environmentally oriented planning of customer service processes for DSV company

Source: compiled according to the data [2]

Furthermore, Figure 3 illustrates a range of cutting-edge and environmentally sustainable technologies that may be implemented at every level of the logistics chain to enhance both the efficiency and ecological compatibility of the operations.

Transportation services include completely autonomous and hydrogen-powered trucks, and electric cars, as well as asset-sharing and micromobility solutions. Warehouses can employ automated and digital replica warehouses, robotic picking systems, augmented reality technology, blockchain for tracking purposes, and hybrid computing platforms.

The ultimate goal is to develop autonomous drones, intelligent delivery robots, and completely automated vehicles for delivery. Advanced technologies, including microsatellites, are also demonstrated to track and monitor at every level.

The proposed model provides a comprehensive view of the logistics and distribution process for DSV. The process outlined covers the various stages involved in managing the flow of goods, from receiving them from suppliers to storing them, distributing them, and ultimately delivering them to the intended recipient.

The fundamental process flow is illustrated above, showcasing the input, storage, and output steps. Specific activities are listed under each step, including pickup, customs clearance, warehousing, and various methods of transportation for final delivery, such as air, truck, and parcel service.

The process starts with the initial phase of Inbound logistics, which involves the gathering and transportation of goods from suppliers. During this stage, various operations are carried out, including cargo selection, consolidation, customs clearance, shipment booking, and insurance.

Next comes the Storage stage, where the focus is on showcasing a warehouse for the temporary storage of goods.

The Outbound stage of the supply chain focuses on the distribution and shipment of goods to customers. This is where the process of loading vehicles, planning routes, and maintaining control occurs.

The last step involves delivering the goods to the final recipient through different methods such as air transportation, road transport, or courier service.

Moreover, the developed model demonstrates the potential for the integration of advanced environmental technologies at various stages of planning customer service processes of a logistics company with the help of innovative technologies and environmentally friendly solutions and defines the prospects for providing logistics processes with "green" technologies, such as fully autonomous trucks, hydrogen/ electric trucks, micro-mobility solutions, automated warehouses, last-mile delivery drones, smart robots, digital twins, blockchain for supply chain tracking and hybrid computing platforms.

The model is aimed at researching the integration of sustainable solutions into various stages of the customer service process to improve operational processes by implementing appropriate green technologies.

Thus, the model provides a comprehensive reflection of the modern logistics process, including promising environmental solutions to increase efficiency, sustainability, and quality of customer service. The model demonstrates how the integration of advanced digital and green technologies can revolutionize conventional logistics operations, resulting in a highly efficient and environmentally sustainable supply chain.

Environmentally oriented planning of customer service processes focuses the logistics company on the effective use of the investment in the development of "green" technologies, which potentially leads to performance improvements, competitive

advantages, and reputational benefits, such as:

1. Maximization of cost-effectiveness. Green technologies can help improve operational efficiency, leading to long-term cost savings.

2. Improved reputation and increased market share. As consumers become more aware of the environmental impact of the brands they support, companies that actively participate in green initiatives can gain significant market favor and contribute to their success.

3. Future-proofing is critical in an ever-changing global regulatory landscape. By staying ahead of the curve and adopting new rules early on, you can minimize any potential disruptions.

4. Innovation catalyst. A strong focus on the environment can inspire other creative endeavors, leading to improvements in previously unexplored methods of delivering products and services.

Despite the optimistic appearance of this landscape, it would be unwise to overlook the possible challenges that lie ahead. The shift towards more environmentally friendly alternatives can present certain challenges, resulting in several potential risks:

1) Investment Costs: Transition may involve a substantial initial investment, often necessitating significant changes to current systems.

2) Technological complexity: Frequently, the transition entails intricate operations that necessitate specialized expertise that can be challenging to identify and acquire.

3) Potential for Failure: Just like any new system, there is always a possibility of encountering challenges, whether it is related to integration issues or falling short of expectations.

4) Uncertainty surrounding regulations. Similar to a financial advisor, firms aim to adhere to existing legislation. However, the presence of uncertain future changes poses considerable risks that can negatively impact ROI calculations.

Based on the data studied and the company's goals, investments in the development of environmentally friendly green technologies were proposed, which are consistent with the company's future forecasts and solve the problem. One of these technologies is Power-to-X, which affects the entire supply chain and is environmentally sustainable, which is a decisive factor for customers (see Fig. 4) [3].

DSV has a separate structural division for the implementation of innovative projects - the DSV Innovation Center. This dedicated team monitors development trends and technologies, collaborates with both internal and external stakeholders, validates concepts, develops financial business cases and oversees projects across the network, ensuring that DSV remains at the forefront of industry advancements. It is the Innovation Center that must develop a plan for the implementation of environmental projects to ensure customer service processes. In most cases, these are infrastructure projects, the implementation of which is determined by the following factors:

1. Increasing attention to environmental problems. Global concern about climate change and environmental degradation has led to a sharp increase in demand for environmentally friendly goods and services.

2. Regulatory obligations in several countries require companies to minimize their impact on the environment, encouraging logistics operators to make green decisions.

3. Financial benefits. Green technology can provide logistics service providers with several economic benefits, including:

- reduction of energy and fuel costs;
- reduction of emissions of harmful substances;
- increasing the company's reputation.

4. Efficiency and optimization of processes can be achieved through the implementation of "green" technologies, such as autonomous flying drones and manned vehicles. These technologies play a critical role in improving delivery and

warehouse operations, especially for logistics organizations.

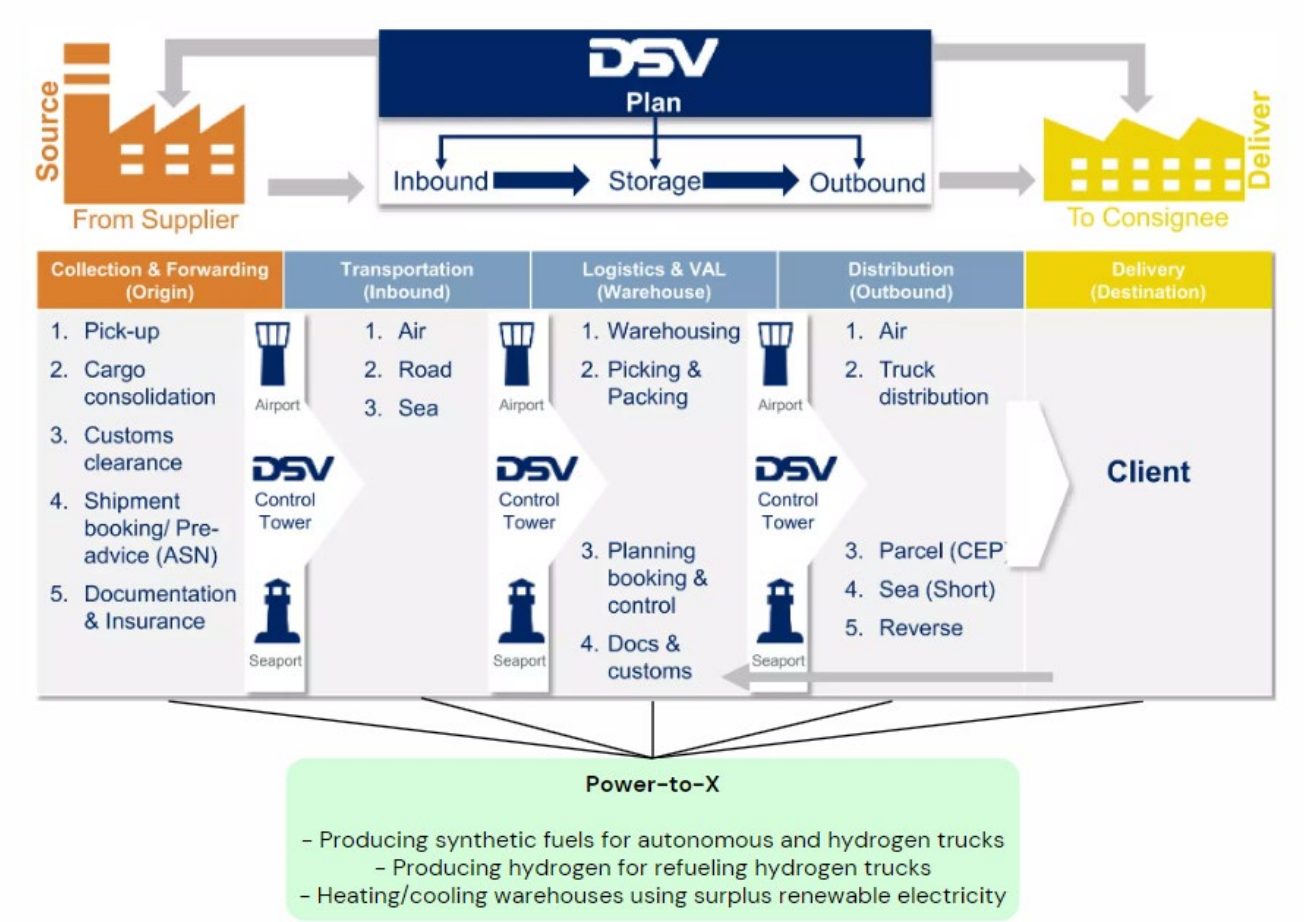

Figure 4 – DSV's logistics flow with the "Power-to-X" concept
Source: compiled according to the data [6]

5. DSV is transforming its operations by integrating artificial intelligence and digital platforms to increase productivity and optimize mergers and acquisitions, thus significantly transforming logistics processes.

6. Increase supply chain visibility: Using digital technology to connect suppliers and customers at every stage of the delivery process can improve supply chain visibility, which is a key aspect in today's world.

Based on SWOT analysis, which is presented in Table 1, the most important factors that should be taken into account when planning, designing, and implementing logistics infrastructure greening projects to ensure an environmentally-oriented customer service process are determined.

The SWOT analysis findings indicate that the integration of "green" technology into the operations of logistics provider DSV has identified numerous strengths that may be effectively applied. An optimal setting for successful implementation is established by the increasing demand for eco-friendly products and services, legislative mandates to reduce environmental impact, and the financial benefits of green technology. Moreover, DSV's history of pioneering advancements, namely in the use of digital platforms and artificial intelligence, demonstrates its willingness to embrace technological progress. Nevertheless, it is necessary to take into account the shortcomings of the project. To enhance the success of an endeavor, it is important to take

into account these aspects in both the planning and execution stages. With its strengths and future prospects, the project has the capacity to establish dominance in the logistics and logistics infrastructure industry. Nevertheless, it is crucial to anticipate and be ready for any possible obstacles that can occur.

Table 1 – Analysis of strengths and weaknesses of logistics infrastructure greening projects to ensure an environmentally-oriented customer service process

Strengths	**Weaknesses**
1. DSV is a global logistics provider that sets trends in environmentally friendly customer service. 2. Implementation of sustainable development strategy, and sustainable development goals. 3. Development of a "green" supply chain strategy, and implementation of "green" logistics services in the company's business model. 4. Growing demand for "green" products and services among the company's customers 5. Experience of DSV in implementing innovations, including "green" projects 6. Dissemination of experience in the implementation of "green" technologies, and involvement of partners who also implement the goals of sustainable development.	1. Significant investments and resources for the introduction of new "green" technologies. 2. Long payback period of "green" projects. 3. Risk of employees' rejection or non-adaptation to new technologies.
Opportunities	**Threats**
1. Expanding the use of "green" technologies can increase environmental responsibility and competitiveness. 2. Active innovation activities and the presence of the DSV innovation center allow to remain at the forefront of the industry. 3. Improving the company's image	1. The possibility of changes in legislation or regulatory requirements regarding the use of environmental technologies. 2. Competition and pressure to reduce costs can become an obstacle to the effective adoption of new technologies. 3. Unforeseen technological risks

Source: developed by the authors

The technology proposed to ensure the environmental sustainability of logistics processes for DSV is the implementation of Power-to-X technology. The essence of the technology is that excess electricity obtained during periods of excess production of renewable energy sources over consumption is used to produce fuel (Power-to-Fuel), hydrogen and methane (Power-to-Gas), ammonia and methanol (Power) -to -Liquid) or other chemicals.

Potentially, the introduction of such technology for the DSV company is promising, since it allows it to join the ecosystem of the "Bringing the Era of Electricity" concept, which describes a world in which the main form of energy is inexpensive and practically inexhaustible electrical energy from renewable sources. The key to implementation is comprehensive electrification, networking, and automation of all sectors of the economy and infrastructure, that is, an ecosystem is formed where the negative impact on the environment is minimal.

Planning the implementation of ecologically oriented technologies in a logistics company requires a detailed development of the work structure, which is summarized in Table 2.

Table 2 – Hierarchical structure of the project work on the implementation of "green" technologies in the activities of the logistics provider

Task code	Activity	Description
1	***Preparatory stage***	
1	***2***	3
1.1	Determination of strategic goals for the introduction of "green" technologies in logistics activities	This stage involves defining strategic goals for implementing "green" technologies in logistics activities, including reducing the carbon footprint, increasing resource efficiency, environmental improvement, and enhancing competitiveness.
1.2	Market analysis of "green" technologies and Power-to-X	At this stage, an analysis of the market for "green" technologies and Power-to-X is carried out in order to determine the best solutions for the logistics provider.
1.3	Determining the amounts and types of energy that can be converted using Power-to-X	Identify the volumes and types of energy that can be converted using Power-to-X technology, aligning them with the logistics provider's requirements.
1.4	Signing an agreement with Power-to-X technology developers	At this stage, an agreement is signed with the developers of Power-to-X technologies, in order to ensure the implementation of the project.
2	***Risk and security management***	
2.1	Identification of potential risks associated with the implementation of Power-to-X.	Assess potential risks associated with implementing Power-to-X technology.
2.2	Development and implementation of a risk management plan.	Create and execute a comprehensive risk management plan to mitigate identified risks.
3	***Documentation and approval***	
3.1	Development of technical documentation for Power-to-X implementation	Create technical documentation for Power-to-X implementation, encompassing plans, specifications, work schedules, and cost estimates.
3.2	Approval of plans and specifications using "green" technologies	Plans and specifications using "green" technologies are approved by the management of the logistics provider.
3.3	Review and approval of the territory plan for the placement of energy equipment	The plan of the territory for the placement of energy equipment is reviewed and approved by the management of the logistics provider.
4	***Financing and Investments***	
4.1	Development of a financial plan	Develop a comprehensive financial plan detailing the costs and funding required for Power-to-X implementation.
4.2	Financial approval of the project and obtaining the necessary funds for implementation	The Power-to-X implementation project is financially approved by the management of the logistics provider, after which the logistics provider receives the necessary funds for the implementation of the project.
5	***Ordering equipment and materials***	
5.1	Creation of copies of technical plans and specifications	Copies of technical plans and specifications are created for future use.
5.2	Choice of technology and suppliers	Choose appropriate technology and suppliers for Power-to-X equipment procurement.

End of table 2

5.3	Ordering the necessary equipment for energy conversion using Power-to-X technology	The necessary equipment for energy conversion using the Power-to-X technology is being ordered from suppliers.
6	***Construction stage***	
6.1	Development of the work schedule and determination of rates for construction	A work schedule is developed and rates for construction are determined.
6.2	Obtaining permits for construction and classification of files	Building permits are obtained and files are classified.
6.3	Carrying out construction works and installation of energy equipment	Construction works and installation of energy equipment are being carried out.
7	***Testing and Debugging***	
7.1	Conducting tests and checking the effectiveness of Power-to-X technology	Tests are conducted and the effectiveness of Power-to-X technology is verified.
7.2	Integration with Existing Systems	Integrate Power-to-X systems with existing logistics systems.
7.3	Optimization of system operation taking into account the obtained results	The operation of the system is optimized taking into account the obtained results.
7.4	Obtaining the necessary certificates and permits for operation	Acquire necessary certificates and operational permits for the system's functionality.
8	***Operation and monitoring***	
8.1	Starting the Power-to-X system and transitioning to its full operation	At this stage, the Power-to-X system starts up and goes into full operation.
8.2	Definition of the efficiency and environmental impact monitoring system	A system for monitoring the efficiency and environmental impact of the Power-to-X system is being implemented.
8.3	Conducting regular maintenance and identifying opportunities for improvement	Regular maintenance of the Power-to-X system is carried out and opportunities for its improvement are identified.

Source: developed by the author – T. Kisera

The implementation of innovative projects of this type requires careful development and implementation, therefore the structure of works indicated in Table 2 is only an approximate conceptual procedure that can be adjusted according to changes in the external and internal environment.

Conclusions. The logistics company's customer service activities have a significant negative impact on the environment, and to ensure that the processes are carried out using more environmentally friendly technologies, the logistics company should give priority to planning the implementation of environmental principles and technologies in the logistics and customer service processes. The proposed model demonstrates a comprehensive approach to building a highly efficient and at the same time environmentally sustainable logistics system of the DSV company by integrating innovative green energy technologies. This fully corresponds to the current world trends of decarbonization and helps to significantly increase the competitive position of the company in the market of ecologically responsible logistics. This identifies new directions for further research and opportunities for creating "green" supply chain ecosystems.

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