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## **DIGITALIZATION OF LOGISTICS COMPANY BUSINESS PROCESS IN CONDITIONS OF INDUSTRY 4.0**

**Sergiy Gritsenko, Olga Karpun, Anastasia Kolisnichenko.** *«Digitalization of logistics company business process in conditions of industry 4.0».* The article defines that the digitalization of logistics business processes is, if not obligatory, then a very necessary process that allows company reach a new level. Keeping customers in growing competition, providing quality services, reducing the cost of logistics allows company to do the job correctly and efficiently. So the introduction of modern technologies in the logistics company is an integral step towards scaling up and growth.

The essence of the company activity digitalization is not to digitize any channel, individual production operation or a separate business process, but in a complex approach to the transformation of the company, covering all areas of the company and all areas of economic activity.

The need for the logistics industry to adapt to this new digital age in order to evolve has been proven. Enterprise business process digitalization tools are more flexible tools due to their user interface customization capabilities and integration capabilities with most advanced systems. New purpose – automation of business processes with the use of smart technologies allows company to simplify the load when performing their daily tasks to each employee.

The aim of the article is to develop proposals and recommendations for improving the management of the company's logistics business processes by their digitalization.

*It is claimed that due to the modern policy of increasing digitalization in the company AsstrA Ukraine, there is an increase in indicators and quality of work performance, increasing the level of job satisfaction among employees, which is the key to further growth of the company.*

*It is noted that digital technologies allow to automate supply chain management processes, which reduces operating costs, facilitates simpler and faster billing methods, improves customer service and develops an important new era for building ideal and competitive supply chains.*

**Keywords:** digitalization of business processes, logistics companies, management, digital transformation, AsstrA Ukraine.

**Сергій Гриценко, Ольга Карпунь, Анастасія Колісниченко. "Діджиталізація бізнес-процесів логістичної компанії в умовах промисловості 4.0".** У статті визначено, що діджиталізація сфери логістичних бізнес-процесів є, якщо не обов'язковим, то дуже необхідним процесом, що дозволяє вийти на новий рівень. Утримання клієнтів на тлі зростаючої конкуренції, надання якісних послуг, зниження витрат на організацію логістики дозволяють виконувати роботу правильно та ефективно. Так що впровадження сучасних технологій в логістичну компанію – невід'ємний крок до масштабування і зростання.

Суть цифровізації діяльності компанії не в тому щоб оцифрувати будь-який канал або окрему виробничу операцію, окремий бізнес-процес, але в комплексному підході до трансформації діяльності компанії, що охоплює всі сфери діяльності компанії та всі сфери господарської діяльності.

Доведено необхідність для галузі логістики, яка повинна адаптуватися до цієї нової цифрової епохи, щоб розвиватися. Інструменти діджиталізації бізнес-процесів на підприємстві – це більш гнучкі інструменти завдяки їх можливостям налаштування інтерфейсу користувача і можливостям інтеграції з більшістю передових систем. Нове призначення – автоматизація бізнес-процесів з використанням смарт-технологій дозволяє спростити навантаження при виконанні своїх повсякденних завдань кожному працівникові.

Метою статті є розробка пропозицій та рекомендацій щодо вдосконалення управління логістичними бізнес-процесами компанії шляхом їх діджиталізації.

Стверджується, що завдяки сучасній політиці підвищення діджиталізації в компанії AsstrA Ukraine, спостерігається підвищення показників діяльності та покращення якості виконання роботи, зростає рівень задоволеності роботою серед працівників, що є запорукою подальшого росту компанії.

Зазначено, що цифрові технології дозволяють максимально автоматизувати процеси управління ланцюгами постачань, це призводить до зниження експлуатаційних витрат, сприяє більш простій і швидкій методиці узгодження рахунків, підвищенню якості обслуговування покупців і розвитку важливо нової епохи для зведення ідеальних і конкурентних ланцюгів постачань.

**Ключові слова:** діджиталізація бізнес-процесів, логістичні компанії, управління, цифрова трансформація, компанія AsstrA Ukraine.

**Сергей Гриценко, Ольга Карпунь, Анастасия Колисниченко. «Диджитализация бизнес-процессов логистической компании в условиях промышленности 4.0».** В статье определено, что диджитализация сферы логистических бизнес-процессов является если не обязательным, то очень необходимым процессом, позволяющим выйти на новый уровень. Удержание клиентов на фоне растущей конкуренции, предоставление качественных услуг, снижение затрат на организацию логистики позволяют выполнять работу правильно и эффективно. Так что внедрение современных технологий в логистическую компанию – неотъемлемый шаг к масштабированию и росту.

Суть цифровизации деятельности компании не состоит в том, чтобы оцифровать любой канал или отдельную производственную операцию, отдельный бизнес-процесс, но в комплексном



*подходе к трансформации деятельности компании, охватывающей все сферы деятельности компании и все сферы хозяйственной деятельности.*

*Доказана необходимость в области логистики, которая должна адаптироваться к этой новой цифровой эпохе, чтобы развиваться. Инструменты диджитализации бизнес-процессов на предприятии – это более гибкие инструменты благодаря их возможностям настройки пользовательского интерфейса и возможностям интеграции с большинством передовых систем. Новое предназначение – автоматизация бизнес-процессов с использованием смарт-технологий позволяет упростить нагрузку при выполнении своих повседневных задач каждому работнику.*

*Целью статьи является разработка предложений и рекомендаций по совершенствованию управления бизнес-процессами компании путем их диджитализации.*

*Утверждается, что благодаря современной политике повышения диджитализации в компании AsstrA Ukraine, наблюдается повышение показателей деятельности и улучшение качества выполнения работы, растет уровень удовлетворенности работой среди работников, что является залогом дальнейшего роста компании.*

*Отмечено, что цифровые технологии позволяют максимально автоматизировать процессы управления цепями поставок, это приводит к снижению эксплуатационных расходов, способствует более простой и быстрой методике согласования счетов, повышению качества обслуживания покупателей и развитию важной новой эпохи для создания идеальных и конкурентных цепей поставок..*

**Ключевые слова:** диджитализация бизнес-процессов, логистические компании, управление, цифровая трансформация, компания AsstrA Ukraine.

**Introduction.** Digitalization in global is a concept of economic activity based on digital technologies implemented in various spheres of life and production. Innovation is important for every industry. Innovation is the main path that ensures the constant growth and prosperity of the company [1, p. 9]. To stay competitive, companies need to innovate and optimize their processes.

Currently, an important competitive advantage for a logistics company is the ability to flexibly manage the supply chain, i.e. the company's ability to respond quickly and at the lowest cost to changes in the external environment and regulatory violations.

Digitalization of business processes in the field of logistics at the present stage of rethinking business is more important than ever, because due to inefficient construction of internal logistics processes in the world, automation of business networks has become an acute problem on the background of globalization. Automation processes can reduce time at all stages of the supply chain, thus simplifying routine actions and making

them more efficient, minimizing the probability of error.

Business – process – can be defined as a set of activities (organizations), through which specific initial components are transformed into original components in accordance with pre-established specifications, in order to create value for the consumer [1, p. 300]. The use of digitalization facilitates the implementation of logistics business processes.

Innovation of a process / business model differs in that the resulting competitive advantage lasts longer than from a product or service innovation. Competitors often quickly copy related product or service innovations, but very slowly replicate process innovations [2, p. 78]. In this regard, radical digital innovations of logistics business processes have a much greater competitive potential of Industry 4.0 [3, p. 129].

**Analysis of recent research and publications.** In the economic literature, much attention is paid to the digital transformation of structural changes in the

economy of the regions, in marketing, logistics and commerce [3-10].

Studies have also shown that increasing digital transformation has led to increased cooperation in supply chains.

However, the highlighted approaches to the improvement of logistics activities through digitalization do not contain the features of the management of logistics business processes for their application in today's environment, which requires further research.

**The purpose and objectives of the research:** development of proposals and recommendations for improving the management of the company's logistics business processes by their digitalization.

**The main material and results of the research.** The last decade has seen the steady growth and spread of digital applications and platforms in logistics, in part due to the conscious push of companies to implement technologies that increase efficiency and reduce costs.

The impact of digitalization and automation on the supply chain is widespread. Digitization provides greater transparency in supply chains and scheduling, and thus improves supply chain management.

Digitalization has changed the way people communicate and interact with others. New technologies and gadgets, including smartphones, computers, drones and smart portable devices, have changed the way we access and disseminate information. These innovations and digital transformations apply to every industry, and supply chains are no exception. Digitization in supply chains encompasses digital products and services, as well as supply chain management in companies that are undergoing such rapid change. To benefit from the digital supply chain, new approaches need to be used, including digital transformation through technologies.

The dissemination of technologies and capabilities in digital supply chains means that companies need to be serious about

outsourcing these functions. This, in turn, will contribute to the emergence of fundamentally new business models and the discussion of supply chain management as proposals. Digital transformation is better than anything else, allows companies to effectively use multiple channels of communication with customers, integrating them into a single system (omnichannel), opens access to intelligent technologies for analyzing consumer preferences, helps to personalize communication with each customer. Customers see a modern company that takes their needs into account, so they are willing to make deals and return to the company again and again.

In this study, the digital supply chain is defined as a set of interrelated activities, processed through new technologies, involved in supply chain processes between suppliers and customers. In other words, the digital supply chain is a smart, new value-added process that uses new approaches, including digital transformation through technology, to create competitive value and network effects. Digital transformations allow companies to take advantage of additional features, such as barcode scanning, location-based services, and short-range communications.

The digitalization of the logistics company leads to a rethinking of business, structural changes in building future capacity in the areas of digital transformation [11]:

- Automation of interaction processes within the company. The company used to work on this principle. Accepts orders, sends them to contractors. They offer their conditions. The manager collects data manually, sends to the client. The client chooses, the order is formed, documents are prepared. Then reporting forms – all processes are controlled manually.

- Automating these processes significantly shortens the chain of action and saves time.

- Minimize errors. The human factor cannot be ruled out when processing



documents or drawing up a route. Digital tools allow minimizing errors.

- Cost reduction. Transport downtime is reduced, cargo handling is simplified, and the order fulfillment stage is easy to control. This saves a lot of money, and company owners can control the actions of employees, monitor compliance with fuel consumption.

- Reducing the workload on the manager. Reduces the number of additional questions, the customer can track the movement of their goods online through the application; choose their own time and delivery.

- Automation of document management. The speed of paperwork is significantly increased due to the introduction of new technologies in the logistics company. Some documents can be template; fast transfer of documentation simplifies work with clients.

- Increasing loyalty and company image. Clients receive timely information, simplifies the process of interaction with the company, there is an opportunity to evaluate the work, leave feedback and get information.

Most developed companies are already successfully applying the latest trends of business process management. At the same time, methods of their automation became widespread. However, a universal tool for this is the concept of continuous improvement of business processes – BPI – business process improvement. The concept implies a smooth change of business processes.

The main advantage of business process reengineering is that companies need to start a business from scratch, destroying old, unprofitable business processes.

As a result of redesigning the existing business processes of the enterprise redistributes and minimizes the use of various resources, improves the quality of customer service, simplifies the organizational structure of the enterprise, increases the efficiency of activities.

Enterprise business process automation tools are the most flexible tools due to their user interface customization capabilities and

integration with most modern systems. The newest direction – automation of business processes with the use of smart technologies allows to lighten the load during the performance of their daily tasks to each employee. Examples are robotic bots, supplemented by artificial intelligence capabilities that help them learn from previous examples and take advantage of data processing or image recognition capabilities. These supplemented bots are sometimes called cognitive, or smart, bots that help work with large amounts of data from enterprise sensors; fill in web forms in accordance with the established restrictions; create reports on the information panel using an array of data from different information systems; to carry out a series of calculations with the subsequent redirection to other division; recognize form templates and automatically update software systems; monitor security systems to block the threat object; manage the consumption of inventory during the tracking of purchases and invoicing; carry out rapid credit checks and alert departments in the event of threatening transactions and fraud; perform batch processing of large amounts of data and other transactions; implement paperless paperwork and other related operations.

The second promising area is low-code application platforms that allow non-technical users to quickly automate modern applications. Initially, they were built for the rapid development of graphical user interface applications. Today, such platforms are flexible tools that can be used in any industry or business to quickly develop applications and automate tasks.

Special automation tools for business, such as automation of information business processes, are a promising tool that can automate complex multisystem processes. This tool helps departments reduce service time by automating common tasks. In particular, it is the provision of a virtual server, which usually requires a number of steps to enter data manually. The automation module can monitor approved reserve requests; start

the process of turning on the server after receiving an approved request to change the reserve; configure server settings, initiate server shutdown.

Choosing a specific tool to improve the management of business processes in the enterprise requires careful analysis and justification of future business development strategy, because the automation of only one business process may be ineffective. The process of automation of business processes in the enterprise must be complex.

The most promising tool in this direction is the use of information and computer technology, and a possible approach to the description of business processes and evaluation of their effectiveness is the introduction of a system of production performance indicators. At the same time, most Ukrainian enterprises still do not use the same systematic approaches to calculating the system of efficiency in the implementation of each business process. And this is a requirement of many international standards, compliance with which is obligatory when entering foreign markets and integration into global value chains for domestic producers. Thus, the prospect of further research in the field of improving approaches to business process management is to substantiate the possibility of implementing a system for evaluating the effectiveness of business processes using information and computer technology.

Digital transformation is the introduction of modern technologies into the business processes of the enterprise. This approach involves not only the installation of modern hardware or software, but also fundamental changes in approaches to management, corporate culture and external communications. As a result, the productivity of each employee and the level of customer satisfaction increase, and the company gains a reputation as a progressive and modern organization.

Thus, AsstrA Ukraine is an international transport and logistics company, a global 3PL provider offering comprehensive services,

including the organization of international transport by various modes of transport, import and export support, customs services, warehousing services, cargo insurance, project logistics, and trade services. The AsstrA group of companies is represented in Europe, Ukraine, CIS countries, Asia and the USA [12, 13].

The biggest advantage for the company is the provision of services by various modes of transport. It is also important that customers can deliver trucks of different sizes, as this can make delivery cheaper.

For the company, new firms in the same environment are direct competitors, as they will lower prices for customers to get them in their customer base, as well as give suppliers prices higher than market, just to attract them to their ranks. Of course, this will take time, and in order for AsstrA not to lose its position, they will also have to make discounts to customers and not lose their opportunities, at this point a very important reputation, which has developed over the years.

The main barriers for new companies in today's logistics market are competition, as it will be difficult for a new company to gain customers (gain them by lowering prices), and companies must be prepared for the fact that their activities will be unprofitable for a long time.

Currently, the number of competitors (Zammler, Raben, Pan-Logistics, etc.) is several thousand logistics companies operating in different countries and with different services.

Over the last 2 years, there have been significantly more imports and exports from Ukraine, so the logistics market is now more developed, and accordingly, many see the potential in this area.

It is also necessary to expand the list of competitive advantages, now the main ones for the company are: settlement with suppliers not in cash, but in the form of cheap fuel, acceleration of settlements, provision of customs broker services, own warehouses, etc.

The suppliers are companies that provide AsstrA freight facilities, and some of them provide freight customs services and temporary storage.

Suppliers can have both positive and negative effects on a company's profitability.

This is influenced by factors such as: the presence of competition between carriers, the season, the political and economic situation, the volume of supply and demand in the market.

Suppliers can also work with competing companies, so the company's competitors will know information about the company's customers and manipulate amounts in the market.

Suppliers are divided into several categories: A, B and C.

The first category includes regular carriers (an average of 5-10 cars per week), several hundred of which make up 15% of all in the company. The value of such carriers is that they are flexible – if companies need to make concessions on the price – they go, if the loading plans have changed – they quickly adapt to new ones, always in touch with the forwarder.

The second category is about 25-30% of all carriers of the company. The number of cars per week is about 5. The provision of services is the same as in category A.

Group C includes carriers who rarely use the company's services. The last group includes carriers with whom the company has not carried out transportation for a long time and so on.

The company provides various types of services – air, rail, road and sea transportation. Also transportation of excisable products,

bulk cargo of various levels of danger, transportation of oversized cargo and prefabricated. Transportation is carried out to countries in Europe, Asia and sea transportation to / from the United States.

Each of the services provided by the company can be customized according to the customer's wishes, as it is a customer-oriented company.

Digital transformation of processes optimizes the work of employees of the enterprise, which increases the productivity of each individual team member. For example, automation of routine operations provides more time to solve really important and complex tasks. The company's SWOT matrix is presented in Table 1.

There is fierce competition in the logistics services market, and a customer-oriented development strategy helps to win the competition. Process automation helps to fully implement this strategy.

Thanks to the automation of business processes in AsstrA, work is established not only within the company, but also with partners – customers and suppliers of the company.

The supply chain has become more streamlined and optimized, all processes are reduced to clarity and transparency.

The result of the introduction of technology in the company was an increase in orders, increase the customer base, increase the efficiency of transportation participants. Eventually, the company's profit also increased as a result of increased workload over the same period.

Table 1 –SWOT-matrix of the company AsstrA

	<p>Strengths:                  High level of customer satisfaction;                  Reliable suppliers;                  Activity automation;                  Highly skilled workforce;                  Portfolio of strong brands;                  Strong free cash flow;                  Good return on capital.</p>	<p>Weakness:                  Product marketing must be better;                  It is not very successful to combine companies with different work cultures;                  Financial planning is not done properly and efficiently;                  There are gaps in the range of products sold by the company;                  Not very good forecast of demand for products.</p>
<p>Opportunities:                  New technology;                  Reducing the cost of transportation in the high season for customers (more profitability);                  Market development;                  Increasing the economy and increasing customer costs;                  State green drive;                  The main competencies of the organization;                  New trends in consumer behavior.</p>	<p>Strategy for the development of own software technologies;                  Market development;                  Increasing the economy and increasing customer costs;                  Activity automation;                  Highly skilled workforce;                  Portfolio of strong brands;                  Reliable suppliers.</p>	<p>Create a program for calculating financial planning;                  Develop SMM-advertising and advertising mailings to customers;                  Introduce information about new services / banner in company representatives;                  Expanding service capabilities will expand the customer base.</p>
<p>Threats:                  Lack of regular supply of innovative products;                  Increasing the level of wages;                  Liability laws vary from country to country;                  Changing consumer buying behavior;                  Demand for highly profitable products is seasonal;                  Expanding the presence market, finding new customers and paving new delivery routes;                  Fierce competition.</p>	<p>Company expansion;                  Access to new markets;                  Emergence of new services;                  Changing consumer buying behavior.</p>	<p>The company does not provide a full range of logistics services;                  Imperfect safety system in transport;                  Due to the long chain within the company, it is impossible to make quick decisions</p>

The following is a table with a brief description of the functionality of the AsstrA programs used (Table 2)..

Table 2 – Comparative analysis of AsstrA software systems

Name of systems	System description	Result
Electronic data exchange	Software for exchanging documents in and out of the company.	Thanks to the implementation of this program, the company saves a huge amount of paper, saves time on signing documents, as well as sending them to the appropriate person.
Shippeo	A company that transmit the actual locations of trucks.	Cooperation with this company allows to be more independent of carriers, quickly and accurately obtain the necessary information without the cooperation of third parties.
Supplier's office	The site where the actual loadings are posted, updates all the necessary information about the curator of transport, the location of the vehicle, is in contact with the supplier.	Working with this software allows to secure the company in working with suppliers, reduce all unnecessary costs. Document sharing will be available soon.
Client's office	The site, which publishes current loadings, updates all the necessary information about the curator of traffic, updates the location of the car and communicates with the client.	Working with this software allows to secure the company in working with suppliers, reduce all unnecessary costs. Document sharing will be available soon
GetRate	Program for calculating current tariffs.	Allows to reduce time of conversation with suppliers, to learn the present course.
Customer relationship management	Software for organizations designed to automate customer interaction strategies.	Increase sales, optimize marketing and improve customer service by storing customer information and relationship history, establishing and improving business processes and further analyzing results.
Corporate content management	Software that allows to manage digital documents and other types of content, as well as store, process and move within the organization.	This allows to optimize work within the company, reduce the time required to complete business processes for more actions.
Oracle Transport Management	Software for logistics companies allows to manage all aspects of transportation in the global supply chain.	The product helps reduce transportation costs, optimize service levels and automate processes so that the company can perform logistics operations more efficiently.

Using the above systems, the company can experience the following changes:

- reduction of time of repetitive processes;
- compliance with the process of supplier control;
- work of the company's employees independent of suppliers;
- speeding up the process of providing the necessary information to the client;
- blocking customers with receivables;

- tracking of the vehicle from the beginning of arrival at the place of loading to unloading of the vehicle;
- confidentiality of communication with suppliers and customers;
- increase the security of company data.

This suggests that due to the increase in the customer base, the demand for suppliers in the company has also increased. Therefore, the work through digitalization has gained momentum. As the company's own exchange



was established, work time was accelerated and processes became more automated.

AsstrA Ukraine has already implemented a number of automated processes that already help employees save time on routine activities and thus provide more time to maintain customer relationships. At the moment, the company has implemented automatic verification of insurance policies of suppliers, a single database of documents, integration of freight telematics with the internal system, automatic distribution upon receipt of originals of transport documents and notification of accounts readiness for customs / customer.

Also, the introduction of new systems in the company improves its reputation among companies, thereby advertising among potential customers.

The use of new technologies accelerates processes by optimizing resources: human, financial, etc.

Work in the company has become more automated. Due to the constant information of the system, the employee is always aware of any changes and inconsistencies, which significantly reduces the response time.

Digital modification of actions improves the work of company employees, thereby increasing the productivity of each individual team member.

Thanks to the current policy of improving traffic safety, AsstrA will gain more and more regular customers, as well as more reliable carriers due to their thorough inspection through coordinated work within the company.

In recent years, digitalization has become one of the main tasks of the transport and logistics sector. The crisis triggered by the pandemic has shown that the development of technology directly affects the ability of businesses to adapt to new realities and survive difficult times without significant losses. The purpose of business digitalization is to measure the company's processes, collect data on indicators and sensors, as well as facilitate human work in routine, simple tasks. As a result, processes are better

controlled. The availability of information allows to assess the situation and develop an optimal action plan.

Companies, including AsstrA-Associated Traffic AG, are restructuring their project activities using Agile's flexible development methodology. In a changing reality, "once and for all" planning no longer works. A roadmap with short sprints that take into account current circumstances with a constant focus on strategic objectives and goals gives better results. One and a half years of "new reality" have confirmed that it is not the strongest who survives, but those who are ready to react quickly and adapt to a changing environment. Digitalization is a faithful helper of business in these processes [16].

**Conclusions.** Restructuring the company's digital transition management by improving its software, including the digitalization of business processes, means that, despite significant investments, service delivery will be better, faster and better. It will also be a great competitive advantage in the current market, which will allow to work with many large progressive industries. Today, digital technologies are carrying out the fourth industrial revolution, which allows the convergence of digital and physical goods [3, p. 129].

The main purpose of automation is to improve the quality of the process. The automated process has more stable characteristics than the manual process. In many cases, process automation can increase productivity, reduce process execution time, reduce cost, and increase the accuracy and stability of operations.

In addition to the above, the digitalization of business processes is designed not only to provide consumers with the necessary information about the service, the location of the truck, the exchange of documents, but also to ensure the trust of customers to the provider of these services. After all, thanks to information technology reduces the time to provide customers with the necessary information.



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