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ФОРМУВАННЯ ТА ВПРОВАДЖЕННЯ СУЧАСНОЇ БІЗНЕС-МОДЕЛІ ПОРТОВОГО ОПЕРАТОРА

Анотація. Дослідження спрямоване на розробку методології побудови дієвих бізнес-моделей та виявлення перспективних напрямків розвитку портів операторів. На основі аналізу діяльності портів операторів в українських морських торговельних портах розроблений загальний профіль портів оператора, що дозволяє відобразити еволюцію бізнес-моделі морських транспортних організацій від однієї з досить простих форм до іншої, що представляє типове сучасне транспортне підприємство.

Стаття присвячена розгляду основних тенденцій у роботі українських морських портів. В статті здійснений аналіз структури та динаміки вантажообігу українських портів. Визначена позиція України в транспортному забезпеченні основних транс-європейських транспортних коридорів. Визначені основні переваги та недоліки логістичного процесу на території України. Досліджено логістичний індекс, визначені основні країни конкуренти та напрями подальшого розвитку для українських транспортних підприємств. На основі аналізу можливостей зростання експорту, імпорту та транзиту визначено, що найбільший потенціал подальшого розвитку для портів операторів полягає у розширенні вантажної бази та залученні транзитних вантажів. Визначені основні причини для перебудови або трансформації бізнес-моделі підприємства. Визначені основні сектори перебудови бізнес-моделі портів оператора.

Ключові слова: порт, портів оператор, бізнес-модель, вантажообіг, транзит.

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ФОРМИРОВАНИЕ И ВНЕДРЕНИЕ СОВРЕМЕННОЙ БИЗНЕС-МОДЕЛИ ПОРТОВОГО ОПЕРАТОРА

Аннотация. Исследование направлено на разработку методологии построения эффективных бизнес-моделей и выявление перспективных направлений развития портовых операторов. Цель состоит в том, чтобы сделать схематическое сравнение разных по грузовой и сервисной ориентации портовых операторов и проанализировать роль бизнес-модели в достижении коммерческих целей предприятий. На основе анализа деятельности портовых операторов в украинских морских торговых портах разработан общий профиль портів оператора, позволяет отобразить эволюцию бизнес-модели морских транспортных организаций от одной из достаточно простых форм к другой, представляет типичное современное транспортное предприятие.

Статья посвящена рассмотрению основных тенденций в работе украинских морских портов. В статье осуществлен анализ структуры и динамики грузооборота украинских портов. Определенная позиция Украины в транспортном обеспечении основных транс-европейских транспортных коридоров. Определены основные преимущества и недостатки логистического процесса на территории Украины. Исследован логистический индекс, определены основные страны конкуренты и направления дальнейшего развития для украинских транспортных предприятий. На основе анализа возможностей роста экспорта, импорта и транзита определено, что наибольший потенциал дальнейшего развития для портовых операторов заключается в расширении грузовой базы и привлечении транзитных грузов. Определены основные причины для перестройки или трансформации бизнес-модели предприятия. Определены основные секторы перестройки бизнес-модели портів оператора.

Ключевые слова: порт, портів оператор, бизнес-модель, грузооборот, транзит.

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FORMATION AND IMPLEMENTATION OF THE MODERN PORT OPERATOR BUSINESS MODEL

Abstract. *The research presented in this article is aimed at developing a methodology for building effective business models and identifying promising areas for the development of port operators. The aim is to make a schematic comparison of different cargo and service orientation of port operators and to analyze the role of the business model in achieving the commercial goals of enterprises. The various business modeling methodologies are considered and the methodology used in this article, based on UML (Unified Modeling Language), is chosen, as it is a powerful analytical method for creating diagrams from different data and information sources. Based on the analysis of port operators in Ukrainian sea trade ports, a general profile of the port operator has been developed, which allows reflecting the evolution of the business model of maritime transport organizations from one of the simplest forms to another, representing a typical modern transport enterprise.*

The article is devoted to the consideration of the main tendencies in the work of Ukrainian seaports. The article analyzes the structure and dynamics of cargo turnover of Ukrainian ports. Ukraine's position in the transport provision of the main pan-European transport corridors has been determined. The main advantages and disadvantages of the logistics process in Ukraine are identified. The logistics index is studied, the main competing countries and directions of further development for Ukrainian transport enterprises are determined. Based on the analysis of growth opportunities for exports, imports and transit, it was determined that the greatest potential for further development for port operators is to expand the cargo base and attract transit cargo. The main reasons for restructuring or transformation of the business model of the enterprise are identified. The main sectors of restructuring the business model of the port operator are identified.

Keywords: *port, port operator, business model, cargo turnover, transit.*

Problem statement. The modern transport industry is characterized by growing uncertainty and high dynamics of business processes, hypertrophied

competition between domestic and foreign manufacturers, carriers, modes of transport, service companies, increasing customer requirements, as well as dif-

ferentiating consumer priorities, increasing risks, changing technologies, especially information and communication. Maritime transport companies are under significant pressure due to the non-compliance of outdated business models with the new requirements and due to significant changes in the directions and specifics of cargo flow. In the process of adapting to organizational and economic changes, they face a new problem – the need to form a modern business model as an economic tool to ensure sustainable and efficient operation of the enterprise. Solving this problem is one of the tasks of strategic management, in the plane of which is the concept of business modeling.

The formation and development of the business model concept is associated with the change of existing and the emergence of new opportunities and threats to the company in the market environment, and thus complicate the process of managing them. The business model of the transport company should be based not only on the use of external market sector opportunities and the company strengths as a basis for competitive advantage, but also on the internal potential realization (abilities, competencies, resources) of the port operator.

Review of the last research and publications. According to Osterwalder and Pigneur (2010), the business model describes the rationale for how an organization creates, delivers, and fixes value. Companies that have completely changed or significantly rebuilt the basic blocks of their business models are achieving obvious success. These companies, no doubt, will dominate and in some way monopolize their industries.

This allows us to talk about changing the source of competitiveness. Such models do not have revolutionary products and services, the basis of their success is unique business models. Business model innovations help companies deliver more sales, higher profitability, and higher cash flow than their competitors.

The business model is a mechanism of value creation, which is studied in many works of domestic and foreign scientists (Teece, 2010). The study of business models and value chains has become an important area of study of enterprises in recent years (Zott et al., 2011). According to Peter Drucker, the business model is a «business theory» (Drucker, 1994).

Bowman and Ambrosini define the business model as a different set of benefits that a company offers to its customers, and the revenue model as a capture of value (Bowman and Ambrosini, 2000). Osterwalder and Pigneur (2010) also use the value dimension and define the business model as the goal for how an organization creates, delivers, and captures value.

There is no universal definition of the business model. But almost all researchers, researchers and industry agree on the importance, applicability and relevance of the concept of innovative business model (Amit and Zott, 2012, Bashir, 2016).

Tasks of research. The main purpose of the article is to determine the basics of building existing business models of port operators and determine the directions of their transformation in terms of complicating competition and the transformation of cargo flows in the global economy.

The basic material of research.

The presence of the transport system maritime component and the general geographical location make Ukraine the part of the main transport corridors between Europe and Asia. It is customary to divide all traffic in these corridors into exports, imports and transit in relation to a particular country.

Ukraine's geographical location and system of international relations allow it to participate in and be part of the global trade process through transport and service infrastructure and through consumption. Unfortunately, the role of exports in these processes at this stage is minimized and at the moment the reduction of this sector significantly affects the need for reorientation of transport companies and their areas of development. The import component of this flow has a clear direction and attraction, and therefore a stable transport infrastructure. Regarding the transit component, this direction is considered a priority for the development of the transport industry in general, and the work of port operators in particular. The maritime transport industry must compete for transit routes through the country.

Participation in the competition in this area is possible under the conditions of modernization and improvement of the material base and management systems of enterprises in the industry, their integration with all modes of transport.

Objective competitors for Ukraine in this direction are companies that provide alternative routes through Poland, Belarus and the Baltic States. Ukraine's geographical location provides an opportunity to become part of the logistics system through the development of logistics chains.

Such a reorientation of transport and service enterprises can become a reliable source of added value and a highly profitable and systemforming activity. Moreover, this type of trade flow is historically justified for Ukraine.

Transport services are an ancillary but extremely important part of the global process of creating added value in various types of export and import products. Ukraine's position on the quality of such services in comparison with other countries can be determined by several indicators, one of which can be determined by the Logistics Performance Index (LPI). In 2018, Ukraine ranked 66th out of 160 countries in terms of logistics efficiency, gaining 2,83 points, and was located between Serbia and Egypt, and in the post-Soviet space was third after Estonia (3,31 points and 36th rank) and Lithuania (3,02 points and 54th rank). Poland had 28th rank (table 1). In total, the ranking includes five areas in which research has been conducted. In the section «customs» Ukraine scored 2,49 points, on infrastructure – 2,22 points, on international shipments – 2,83 points, on logistics competence – 2,84 points, on cargo tracking – 3,11 points, on timeliness – 3,42 points. The nearest strategic goals should be connected with the arising of infrastructure and logistics competence to the level of Bulgaria and Slovak Republic. The higher the score, the stronger position have countries in this category. Thus, the main direction of development and reformatting should be a consistent systemic intensive improvement of the quality of logistics services in Ukraine in general and port operators in particular (fig. 1).

Table 1

LPI Global Rankings 2018 (Neighboring countries)

Country	LPI Rank	LPI Score	Customs	Infra-structure	International shipments	Logistics competence	Tracking & tracing	Timeliness
Poland	28	3.54	3.25	3.21	3.68	3.58	3.51	3.95
Hungary	31	3.42	3.35	3.27	3.22	3.21	3.67	3.79
Turkey	47	3.15	2.71	3.21	3.06	3.05	3.23	3.63
Romania	48	3.12	2.58	2.91	3.18	3.07	3.26	3.68
Bulgaria	52	3.03	2.94	2.76	3.23	2.88	3.02	3.31
Slovak Republic	53	3.03	2.79	3.00	3.10	3.14	2.99	3.14
Lithuania	54	3.02	2.85	2.73	2.79	2.96	3.12	3.65
Ukraine	66	2.83	2.49	2.22	2.83	2.84	3.11	3.42
Russian Fed.	75	2.76	2.42	2.78	2.64	2.75	2.65	3.31
Belarus	103	2.57	2.35	2.44	2.31	2.64	2.54	3.18
Moldova	116	2.46	2.25	2.02	2.69	2.30	2.21	3.17
Georgia	119	2.44	2.42	2.38	2.38	2.26	2.26	2.95

Source: The World Bank 2018

Fig. 1. The main Ukraine competitors according to the five main logistic features

Source: own development

The level of quality of port equipment significantly affects the efficiency of the port operator. That is, the orderly infrastructure of the port, berths, canals, dams, warehouses and roads, railways determines the efficiency of the logistics process, and therefore directly affects the choice of service provider.

The infrastructure is specific to different types of cargo, has different requirements for storage: bulk cargo – in tankers, bulk – in warehouses or bunkers, refrigerated – in refrigerated warehouses or containers. The quality and capacity of the equipment is directly related to the efficient operation of the port operator.

In addition to the organization and management of the material base, one of the tasks of the port operator's management is to optimize the capacity of the equipment in relation to the forecasted cargo flows.

Modern realities of Ukrainian ports define the achievement of maximum capacity as difficult to implement the task, in practice it is more important to optimize rather than maximize, as industrial experience shows that the utilization rate of 70 % brings the operation of terminals to the most efficient. The optimal level of employment for the

container terminal is estimated at about 65 %. At this point, as a rule, the quality of service decreases [1].

The main reason for the small share of transit in the traffic of port operators is the high bureaucratization in Ukrainian ports. Competing ports – Constanta, Gdansk, Novorossiysk, Baltic ports – increase cargo traffic by simplifying procedures, reducing port fees, improving infrastructure and attracting investors.

The structure of Ukrainian seaports cargo handling by transportation areas is shown in Fig. 2.

Table 2

Dynamics of cargo handling, thousands tons

Year	Port cargo handling						
	export	%	import	%	transit	%	total
2015	103942	72	17959	17	15904	11	144646
2016	100202	76	15976	16	10328	8	131746
2017	98517	74	20418	18	11805	8	132578
2018	99035	74	23784	18	10221	8	135171
2019	123019	77	26760	17	10321	6	160100

There are 94 port operators of various forms of organization and ownership in Ukrainian ports (table 3). Most of them are focused on the processing of specific goods, mainly for export purposes. The largest contribution to transshipment is made by the Ukrainian agricultural sector. Grain cargo and oil accounted for more than a third (37,7 %) of the total cargo flow in Ukrainian ports. Compared to 2018, grain transshipment increased by 32 % to 54,6 million tons. Ore transshipment

became the second largest – 37,3 million tons per year – more than 9 million tons (+ 33 %) than in 2018. The three leaders among cargoes in 2019 are closed by containers – more than 1 million TEU.

Port operators business models are built on the basis of their own or existing freight traffic in Ukrainian export. Most of these cargoes are products of agriculture, processing industry or metallurgy. That is, a large number of different goods in transit are almost not processed by Ukrainian operators, bypassing the territory of Ukraine.

Table 3

Ukrainian ports profile (2019)

Sea Port	Cargo turnover, millions tons	Main cargo	Main cargo types	Port operators	Number of handled vessels
1	2	3	4	5	6
Berdiansk Sea Port	1,8	Bulk – 1,6 dry bulk – 0,2	Constriction – 29 % Grain – 43 % Famous metal – 1 % Other – 17 %	3 SE «Berdiansk CSP» «Ascet Shipping» LTD JSC «BZPTO»	229
Bilhorod-Dniestrovskiy Sea Port	0,2	Dry bulk	Timber – 78 % Chem. and min. fertilizer – 6 % Construction – 7 % Other – 9 %	3 PE «SV» PE «Senat stevedoring company» SE «Bilhorod-Dniestrovskiy CSP»	85
Izmail Sea Port	4,7	Bulk – 0,18 dry bulk – 4,2 tare-pieces – 0,27	Ore – 68 % Cod – 16 % Famous metal – 4 % Other – 12 %	6 SE «Izmail CSP», «Vile Forte Ukraine» Ltd., «Agency Trayton Service Ukraine» Ltd. «Izmail Elevator» Ltd. «New energy» Ltd. «Serviceport» Ltd.	3900
Chornomorsk Sea Port	21,5	Bulk – 1,6 Dry bulk – 14,5 tare-pieces – 5,4 containers – 1,7	Grain – 43 % Ore – 9 % Containers – 8 % Sunflower oil – 7 % metal – 5 % Other – 28 %	13 SE «Chornomorsk CSP», «TransBulkTerminal» European Agro Investment Ukraine «Trans-Service» Ltd. «Chornomorsk Stevedoring Company Ltd.	1424
Mariupol Sea Port	5,9	Dry bulk – 1,7 tare-pieces – 4,2	metal – 70 % coal – 9 % construction – 8 % grain – 7 % Other – 6 %	2 SE «Mariupol CSP» «SRZ» Ltd.	490
Mykolayiv Sea Port	29,2	Bulk – 2,9 dry bulk – 23,2 tare-pieces – 2,9	Grain – 45 % Ore – 17 % Metal – 10 % Sunflower oil – 9 % Other – 19 %	21 «SSP Nika-Tera» Ltd., JSC «Nikolaev alumina plant» «DSSC» Ltd. «NEC» Ltd. «Oil Transshipment» Ltd., «Nibulon» Ltd.	1726

Continuation Table 3

Sea Port	Cargo turnover, millions tons	Main cargo	Main cargo types	Port operators	Number of handled vessels
1	2	3	4	5	6
Odessa Sea Port	21,7	Bulk – 1,4 Dry bulk – 8,5 tare-pieces – 11,7 containers – 7,5	Containers – 35 % Grain – 32 % metal – 18 % Oil – 3 % Other – 12 %	15 SC «СТО» SE «Prista Oil Ukraine» «Brooklyn Kyiv» Ltd. «Brooklyn Kyiv-Port» Ltd. PJSC «SFGCU» OGT «Synthes Oil» «Ukrelevatorprom» «MetalsUkraine Corp» Ltd., «Novolog» Ltd. «Novotek-Terminal» Ltd. «Odessa Port Refregerator» Ltd. «Olimpex Coupe Int.» Ltd. «UNSK» Ltd.	1313
Reni Sea Port	1,3	Dry bulk	Grain – 53 % Chem. and min. fertilizer – 11 % Other – 36 %	9 SE «Reni CSP» PE «Reni-Lis» «Reni elevator» «Agro Reni» Ltd.	539
Kherson Sea Port	3,1	Dry bulk – 2,4 tare-pieces – 0,7	Construction – 16 % Grain – 11 % Metal – 9 % Petroleum products – 4 % Other – 60 %	11 SE «Kherson CSP» «Khersones» Ltd. «Dnipro Cargo Limited» Company «Dniprovsky terminal»	715
Yuzhniy Sea Port	42,7	Bulk – 3,8 Dry bulk – 34,3 tare-pieces – 4,6	Ore – 41 % Grain – 18 % Coal – 15 % Metal – 7 % Other – 18 %	11 SE «Yuzhniy CSP» SE «Si Side» «OPP» «All seeds Black Si» Ltd.	976

Source: own development on the materials of USPA

In Ukraine, the trend of increasing the share of private terminals in general cargo handling continues. In 2017, state stevedores processed 34,7 million tons, and private – 97,8 million tons, in 2018 – 33,4 million tons and 101,7 million tons, respectively. That is, the state form of government and the generalized approach should be changed to build an effective business model of a single port operator.

The existing approach to building a business model of a port operator is relatively simple. Regardless of the nature of the business or the type of cargo, it is based on existing cargo flows and existing material base, resulting in the formation of different cost centers and numerous revenue streams, which are clearly expressed. A detailed study of each business driver allows you to adjust or replace products in order to reduce costs in each business unit by increasing margins and maximizing overall profits. Next, a system of efficiency management and reinvestment back into the business is built, which further reduces costs or differentiates products. In the traditional business model of the port operator, the cost is usually created by massive investments in terminals and equipment. This creates a certain obstacle in the form of economies of scale.

There are five main strategic reasons for changing the business model of the enterprise:

1. The possibility of attracting potential consumers through radical innovation, which are completely closed from the market, because existing solutions are too expensive or difficult for them (democratization of products in emerging markets).

2. The possibility of using new technology, on the basis of which a new business model will be built.

3. Performing work where it does not yet exist. That is, focusing on products or consumer segments and improving existing products and increasing commercialization.

4. The need to compete with the new generation of enterprises.

5. The need to respond to changes in the basis of competition. Inevitably, what determines the acceptable solution in the market will change over time, which will lead to the commercialization of major market segments.

The first and second will stimulate more enterprises in hightech industries. The emergence of a third port operator is the beginning of diversification, which automatically necessitates building new or transforming existing connections, ie transforming the business model into new processes. The last two circumstances have significantly changed the market of port services recently and become an important factor influencing the need to change the business models of Ukrainian port operators. There are also reasons specific to the national market, partly related to structural changes due to the war in the East, and partly to the reorientation of economic relations.

Conclusions. This study proves the need to revise the concepts of port operator business models, move away from the traditional approach «Product-Model» and business model innovations as a competitive advantage needed by Ukrainian port operators to increase the competitiveness of Ukrainian transit routes. Market changes, technological advances and globalization will soon

force even the largest port operators to change their value chains and transform their business models to be competitive. In addition, the business model becomes the basis of the company's competitive advantages, as it is much more difficult to copy than a product or service. Due to the visibility with which technological advances occur, the concept of the value chain is no longer relevant, as most value chains are gradually becoming virtual or significantly reduced.

The results of the study emphasize that the management of port operators should look for ways to transform either individual blocks of the business model (Customer Segments, Channels, Revenue Streams, Key Activities, Cost Structure) or the business model as a whole not only as a source of value but also as a source of sustainable competitive advantage. The business models return on innovation significantly exceeds the results of innovation in products and

processes. Transforming the port operator's business model can reduce costs and risk associated with their business.

Finally, building a new or transforming an existing port operator's business model is a complex process that is significantly different from finding product or process innovations, but the benefits are more significant and long-term. Before looking for new opportunities, it is very important for management to analyze the existing business model of the operator to understand its limitations. Each core component of the business model should be evaluated, and managers should check how the current model combines with industry trends, as well as its advantages and disadvantages over competitors. For port operators operating in a volatile cargo or flow environment or in a time of recession, business model innovations can be more valuable than ever.

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