

ASSESSMENT OF THE DIGITAL TRANSFORMATION LEVEL OF AVIATION ENTERPRISES

*Molchanova K.M.
National Aviation University*

It focuses on the method of digital transformation assessment of digital economy and enterprises in general. An index approach to estimating the level of digitalization of aviation enterprises is described.

Today, the world economy is inextricably linked with digital technologies. We can say that today digitalization is a global trend. However, it should be noted that the processes of digital transformation are heterogeneous in industries as well as geographically. For example, Finland's digital economy is significantly different from Ukraine's digital economy. Assessing the degree of digital economies development in different countries makes it possible to compare them. Today the following methodology exist to evaluate the level of digitalization: Network Readiness Index (NRI), E-Government Development Index (EGDI), UNCTAD B2C E-commerce Index, Global ICT Development Index (IDI), Digital Economy and Society Index (DESI), Global Digital Readiness Index (GDRI) [1]. These methods are based on different sets of indicators and evaluation criteria. According to various indices, the countries of northern Europe have the highest level of digitalization (Table 1).

Table 1. Rank and scores of different global indexes

Rank NRI 2021	Score	Rank UNCTAD B2C ECI 2020	Score	Rank EGDI 2020	Score
1. Netherlands	82,06	1. Switzerland	95,9	1. Denmark	0,97
2. Sweden	81,57	2. Netherlands	95,8	2. South Korea	0,95
3. Denmark	81,24	3. Denmark	94,5	3. Estonia	0,94
...
53. Ukraine	55,7	51. Ukraine	71,2	69. Ukraine	0,71

Source: [2-3]

According to the presented indices, Ukraine has average positions in the rating. This indicates that our economy is gradually transforming into a digital one.

Most of these indices are used to compare national economies and a kind of benchmarking. Attempts are currently being made to develop digital indices for individual sectors of the economy and individual enterprises. There are many methods to assess the level of digitalization of enterprises. Their difference lies in the set of groups of indicators, the formation of evaluation, methods of evaluation (self-evaluation, expert evaluation, comparative evaluation, etc.). The most famous and used of them are as follows: Evaluation of Digital Transformation by MIT Center for Digital Business, Model of Digital Maturity by Deloitte, Digital Transformation Index by Arthur D. Little, Digital Ability Assessment Model by KPMG, Digital Piano by Global Center for Digital Business Transformation, Evaluation of Digital Transformation by Ionology, Industry Maturity Index 4.0 by Acatech. Assessing the level of digital transformation at the enterprise level on the one hand allows the company to analyze its activities, and on the other hand allows us to assess the industry to which enterprises belong.

Speaking about the aviation industry as one of the most technological, we can say that digital technologies play a very important role here. One of the important goals of using digital technologies in aviation is to ensure the interaction of both aviation enterprises with each other and to ensure interaction with customers.

The main new technologies that revolutionize the flight experience and are tools for digital transformation in the aviation industry are the following: blockchain, augmented and virtual reality, artificial intelligence, beacons technology, robotics and biometric. Analysis of various aspects of the digital transformation of production and commercial activities of airlines and airports shows that new technologies are a necessary tool that helps optimize business processes, increase efficiency and customer satisfaction. The system of indicators of the digital development level of aviation enterprises can be a necessary tool for identifying factors that affect the level of information interaction between them.

It is proposed to use an index approach to assess the level of digitalization of production and commercial activities of aviation enterprises. The assessment is based on three indices, namely digital

activity, digital maturity and digital interaction [5]. Let's describe them in more detail.

1. Digital activity index is a dynamic index, which allows us to track the evolution of digital technology to optimize the internal business processes of the enterprise in order to ensure business flexibility and reflects the level of acceptance of digital technologies by the aviation enterprise. May include such evaluation criteria as the level of enterprise information systems integration, the level of business process automation, the level of communication quality, the level of corporate strategy integration of digital development of the enterprise, employees' understanding of the goals, significance and ways of digital development of the enterprise, improving the skills of employees working with modern digital technologies.

2. Digital maturity index reflects the processes of value creation for staff, customers and other stakeholders of the airline, determined by a set of digital tools used by stakeholders for communication within the company and with the external environment. May include such evaluation criteria as the level of compliance of the airline's website with consumer requirements, the level of digitalization of services for passengers, the level of digital services for freight customers, the level of digitalization of sales channels, the level of digital activity of clients, the level of digitalization of communication channels with customers.

3. Digital interaction index displays the degree of use of digital services to ensure interaction and partnership in the service chains of passenger and freight customers. May include such evaluation criteria as the level of use of digital settlements, the level of automation of information exchange (electronic document management), the level of use of integrated information solutions for coordination with other actors in the air transport market.

Quantitative evaluation of any indicator can be carried out directly from the results of its measurement, or, if such an assessment cannot be established, through expert evaluation. The next step after determining the three indices is to calculate the integrated index of digital transformation of aviation enterprise.

Monitoring the dynamics of changes in digitalization indices helps to identify problems in the management system of aviation enterprises interaction in order to eliminate information asymmetry and increase the degree of synchronicity in the management of air

transport organization and implementation, as well as perform benchmarking of Ukrainian airlines with foreign ones.

Aviation companies are complex organizational structures in which each business process is characterized by the use of a particular information system. In addition, the interaction of aviation companies with the external environment is characterized by a tendency to automate information exchange. This, in turn, requires coordinated information interaction between the information systems of all participants in the transportation process. Given the diversity of information systems used by both airlines and airports, and the fact that even within enterprises the information exchange between systems is not always established, the formation of a single information environment is seen as a necessary means to improve customer service standards. An important step in building a single information environment is to identify factors that affect the level of information interaction between them. A necessary tool for this is a system of indicators of the level of digital development of aviation enterprises. Assessing the level of digital development of aviation enterprises allows to identify bottlenecks and areas where it is necessary to focus efforts on digital transformation of the enterprise.

References:

1. Molchanova K. Methods for Evaluation the Development of the Digital Economy. *Професійний менеджмент у сучасних умовах розвитку ринку*: матеріали наук.-практ. конф. (м. Харків, 1 листопада 2019 р.). Харків: Монограф, 2019. С. 309-311.
2. Network Readiness Index. URL: <https://networkreadinessindex.org/> (дата звернення 28.04.2022).
3. The UNCTAD B2C E-Commerce Index 2020. *United Nations Conference on Trade and Development*. URL: https://unctad.org/system/files/official-document/tn_unctad_ict4d17_en.pdf (дата звернення: 28.04.2022).
4. -Government Survey 2020. *United Nations. Department of Economic and Social Affairs*. URL: [https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20Survey%20\(Full%20Report\).pdf](https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20Survey%20(Full%20Report).pdf) (дата звернення: 28.04.2022).
5. Молчанова К.М. Механізм управління взаємодією авіапідприємств в умовах цифрової економіки: автореф. дис. ... канд. екон. наук : 08.00.04 / Ін-т екон. пром.-ті НАН України. Київ, 2021. 24 с.