

Ensuring the sustainable development of the aviation enterprise in the context of forming innovative potential using digital technologies

Serhii Smerichevskiy^{1,†}, Zarina Poberezhna^{1,*†}, Oleksii Mykhalchenko^{1,†}, Yuliia Petrova^{1,†} and Vitalii Smilyanets^{1,†}

¹ National Aviation University, Liubomyra Huzara Ave., 1, Kyiv, 03058, Ukraine

Abstract

The paper research issues related to the description of innovative activities of aviation enterprises to ensure the sustainable development in the context with the use of intelligence technologies. We proved that the innovative activities are considered as a set of resources, tools and technologies, market opportunities for effective innovative activities, securing a competitive position on the market, implementing innovations. Digital technologies contribute to the formation of the innovative potential of the aviation enterprises, and are directly related to the sustainable development of its functioning, in particular with respect to aspects such as safety, decreasing the drawbacks and impact on the environment, and the introduction of modern Industry 4.0 technologies. The paper deals with new methodology of innovation potential level estimation for the aviation enterprise taking into account integral indicators and components of innovation potential, as well as choosing a strategy for further development depending on the existing level of innovation potential. The obtained results show the importance of increasing the level of innovative potential of aviation enterprises, which will ensure the sustainable development of its functioning. The considered methodology of innovative potential level estimation takes into account the ability of aviation enterprises to generate innovative ideas and form the innovative value of the offer on the air transportation market, to ensure the process of developing an innovative offer, to effectively implement innovative offers on the air transportation market.

Keywords

aviation enterprise, innovative potential, digital technologies, sustainable development, information technologies

CMSE'24: International Workshop on Computational Methods in Systems Engineering, June 17, 2024, Kyiv, Ukraine

* Corresponding author.

† These authors contributed equally.

✉ serhii.smerichevskiy@npp.nau.edu.ua (S. Smerichevskiy); zarina_www@ukr.net (Z. Poberezhna); oleksii_mykhalchenko@npp.nau.edu.ua (O. Mykhalchenko); panijulia.p@gmail.com (Y. Petrova); 7772637@stud.nau.edu.ua (V. Smilyanets)

ORCID 0000-0003-2102-1524 (S. Smerichevskiy); 0000-0001-6245-038X (Z. Poberezhna); 0000-0002-3389-9361 (O. Mykhalchenko); 0000-0002-3768-7921 (Y. Petrova); 0000-0002-9204-6123 (V. Smilyanets)



© 2024 Copyright for this paper by its authors. Use permitted under Creative Commons License Attribution 4.0 International (CC BY 4.0).

1. Introduction

The current market conditions lead enterprises to the widespread implementation of the concept of sustainable development using digital technologies. The use of digital technologies encourages the emergence of new business models, forming a modern view of the functioning of enterprises.

The aviation market is no exception, as it tends to globalize and integrate, and is one of the backbone elements of the global economy, providing fast and comfortable transportation of passengers and various types of cargo. Increased integration of the global economy and the need for transport interaction between certain regions has led to significant economic growth in international air transportation. To operate successfully, aviation enterprises are forced to apply new management methods using innovative digital technologies. The process of digitalization of an aviation enterprise contributes to the formation of its innovative potential, which will improve the quality of service provided to passengers, develop customer focus, which will subsequently increase its competitiveness in general and ensure sustainable development of its operations.

The level of competition in the aviation sector forces aviation enterprises to constantly adapt their innovative value propositions to the needs of customers, improve them, monitor changes in customer demands, market conditions, current and potential situations, and be able to effectively manage dynamic decision-making processes in response to such changes. For aviation companies, the formation of innovation potential is the main prerequisite for effective market functioning, and determines their market position and competitive status.

Digital technologies contribute to the formation of the innovative potential of an aviation enterprise and are directly related to the sustainable development of its operation, in particular with regard to such aspects as safety, minimization of negative impact on the environment, and the introduction of modern Industry 4.0 technologies. Thus, the formation of the innovative potential of aviation enterprises using digital technologies is based on a systematic description of the impact of internal (production, financial, investment, corporate, sales, scientific and technological) and external (institutional, socio-cultural, information and digital, resource, sectoral and market) factors. This makes it possible to formulate the main directions and targets for intensifying the development of the innovative potential of an aviation enterprise in order to ensure a sustainable environment for its operation.

2. State of the art for the problem of research

In recent decades, the air transportation market has been actively involved in the development of innovation potential in various areas - from innovations in services, pricing to innovations that meet the paradigm of sustainable development - environmental and safety technologies. Periods of macroeconomic instability, transformation of markets and market factors, development of scientific and technological progress, and the emergence of new digital technologies contribute to the search for

innovative solutions for aviation enterprises that can ensure their adaptation to a changing environment.

Digital transformation differs from traditional forms of strategic change in that digital technologies accelerate the pace of change in the context of ensuring a sustainable development for the operation of aviation enterprises. It should be noted that sustainable development is aimed at solving environmental, cultural, and socio-economic problems in the long term.

Scientific research devoted to the theoretical and methodological foundations of the development of the innovative potential of the enterprise is considered by domestic and foreign scientists. Thus, in the paper [1], the author describes the innovation potential as a set of tangible and intangible assets involved in innovation activities. Such an interpretation allows applying a cost approach to assessing the value of innovation potential, but does not reveal its change under the influence of market factors and its effectiveness. According to the authors of [2], the innovative potential of an enterprise should be positioned as a strategic ability to realize the accumulated innovative resources.

The problems of innovative development of aviation enterprises are highlighted in [3], the author of which notes that the formation of the foundations of business modeling of aviation enterprises will play the greatest role in the value proposition, customers and customer focus, interaction with stakeholders, and profitability of the model.

The paper [4] emphasizes the importance of using innovative technologies to ensure the sustainability and competitiveness of transport enterprises.

It is possible to note the importance of using innovations in the aviation industry, which are presented in [5], namely, the system of indicators of efficiency and determinism of innovations in the development processes of aviation enterprises has been improved.

Despite the large number of scientific papers on the research and development of the innovative potential of aviation enterprises, the issues of ensuring a sustainable development of an aviation enterprise in the context of developing innovative potential using digital technologies remain unaddressed, and this is of particular relevance.

Therefore, this paper examines the task of ensuring the sustainable development of an aviation enterprise using digital technologies. The main attention is paid to new mathematical ratios for evaluating the innovative potential of the aviation enterprises and choosing priority strategies.

3. Materials and methods

Aviation is a complex and dynamically developing industry with diverse stakeholders and high stakes in flight safety. That is why aviation companies are always interested in implementing innovations, making a significant contribution to the global development of trade and the economy [6].

That is why the development of the innovation potential of aviation enterprises can contribute not only to their economic growth, but also to the overall economy of the country and global international cooperation. Aviation enterprises that constantly introduce new technologies and innovations will allow them to occupy one of the leading places in the world in terms of innovative development in the future [7].

The new goals for aviation enterprises in the implementation of innovations and which in the future provide for the formation of innovative potential are:

- personalized in-flight service and entertainment (marketing performance and relevance indicators);
- formation of customer value and convenience of service for the customer;
- multifunctionality and differentiation of services [8, 9].

It is worth noting that in order to form the innovative potential of aviation enterprises, there is a need of factors identification that directly affect it:

- financial and investment (the cost and availability of investments forms the cost of innovation potential, as well as the profitability of innovative products in the market);
- regulatory and institutional (the legal framework for managing innovation potential that meets the principles in the existing markets or states);
- organizational and managerial (acting as mechanisms of innovative search, diffusion of innovations, adaptation of the enterprise to new technologies);
- factors of social responsibility (include social and environmental conditions and requirements that project economic consequences and impacts of innovation potential on the environment);
- technical and technological;
- information and digital (implementation of digital technologies to promote innovation, as well as requests for strategic guidelines).

Thus, the formation of the innovative potential of an aviation enterprise is considered as a set of resources, tools and technologies, market opportunities for effective innovation, ensuring a competitive position in the innovative market environment, implementing innovations through market communications and forming consumer values of innovation.

Based on modern approaches to typologizing the innovation potential of aviation enterprises, the following types can be distinguished [10]:

1. Product innovation potential (opportunities to activate and modernize the production and marketing systems of an aviation enterprise to create a new product and form a new market niche).
2. Innovative potential of technological modernization (by means of technological innovations, the aviation enterprise gains access to new scientific research or to the creation of new technologies that are more resource efficient, energy efficient, environmentally friendly, etc.).
3. Market innovation potential (the potential for developing and applying new sales and supply methods, creating value and loyalty to services).
4. Innovative potential of the staff (corporate policy and branding of the aviation enterprise, staff loyalty and image, communication with consumers at their request).

5. Innovative potential of financing and resource supply (by means of branding, the aviation enterprise increases its market value and investment attractiveness. This allows attracting investment funds, if necessary, and implementing a financial strategy).
6. Innovative potential of business processes (modernization of internal business processes and communication with the external environment, implementation of institutional regulators of market standards and innovative technologies for organizing business processes).

For aviation companies, the use of digital technologies plays a crucial role in the following aspects:

- digital applications are being actively implemented (for in-flight entertainment, games and movies, as well as for passenger information and service);
- there is a growing trend in the air transportation services industry to integrate sensor and biosensor technologies, which makes it possible to offer more interactive and attractive content for passengers during flights;
- beacon technology upon arrival at the airport and updating important flight details.

The main strategies for applying digital technologies in the formation of the innovative potential of an aviation enterprise are the creation of data-driven platforms, such as data management platforms (DMP), customer data platforms (CDP). The integration of digital solutions with corporate systems and the provision of data to resource innovation is done through CRM platforms. In general, commonly used tools of Data-driven marketing (based on the analysis of big data about consumers and their online queries) and Database marketing (creation, maintenance and use of consumer databases to maintain regular contact with them) allow creating targeted content, communicating with customers, and forming a marketing strategy based on analytical reports.

In particular, data-driven marketing is necessary for understanding consumer preferences and matching offers with their expectations. The advantages of using it are:

- increased value for stakeholders;
- increasing the level of customer satisfaction;
- assessment of new market opportunities and market growth;
- competitive advantages on a global scale by developing new products and services, offering personalized solutions through big data marketing [11].

Another type of marketing proposed to be used in the formation of innovation potential is Growth-Hacking marketing, which has become widespread over the past decade and focuses on identifying opportunities for company growth through new products.

The stage of generating an innovative idea in Growth-Hacking marketing is aimed at finding answers to customer requests. The following tools are used for this purpose:

- warm maps to understand user interaction with the website;
- competitor analysis for company positioning;

- conversion analysis from tests.

Digital technologies also enable the aviation enterprise to shape the pricing and revenue management process by analyzing and forecasting demand and costs for each flight. This process results in actual price adjustments in real time – continuous pricing that mitigates the risk of over – or underbooking, optimizes revenues, and generally improves resource management and competitiveness. Companies can benefit from offering new services or improving existing business processes. Business processes are considered as activities aimed at creating a product [12].

It has been established that business processes at an enterprise can increase the efficiency and effectiveness of the enterprise by improving and implementing innovations [13]. Technology has a significant impact on product development in terms of customer feedback and market preferences [14].

The introduction of digital technologies and the automation of business processes by aviation enterprises increase material efficiency and provide better customer service, as well as ensure the sustainable development of the aviation enterprise's operations. The main types of digital technologies implemented by aviation enterprises are: Internet of People (IoP), Internet of Services (IoS), Internet of Data (IoD), blockchain technologies, and others.

The use of digital technologies by aviation enterprises allows them to offer and develop automation of their core and additional business processes.

The main purpose of using the above digital technologies is to ensure both physical processing of material and related information flow in a sustainable development of the aviation enterprise.

Intelligence technologies such as the Internet of Things (IoT), big data (BIG DATA), artificial intelligence (AI), machine learning (ML), virtual and augmented reality (AR/VR), and BIM technologies are also very important, and therefore, the overall planning and design of an aviation enterprise's activities is a prerequisite for ensuring its sustainable development in the market.

Therefore, the use of these new digital technologies can be the cause of increase in the aviation enterprise's profitability, improved customer service, equipment modernization, as well as environmental friendliness, optimization of CO₂ emissions, as well as internal corporate management and search for energy efficiency.

The increasing adoption and use of digital technologies to build innovation capacity is one of the most important indicators of a sustainable development for an aviation enterprise. In this regard, the use of Industry 4.0 principles will lead to the replacement of manual labor and increase labor productivity, as well as unprecedented transparency of production processes, which has a positive impact on the level of professionalism of the staff.

Blockchain technologies are being used to distribute data and improve the security of passenger services. These technologies can be used to track sustainability-related indicators of an aviation enterprise, such as resource allocation, and provide them to stakeholders and decision makers. Blockchain also offers the creation of a digital contract

that is protected from deletion and tampering and maintains transparency for public access [15].

Thus, the use of digital technologies by aviation enterprises ensures their sustainable development, both in the environmental and social dimensions. We can note the benefits of introducing digital technologies in customer interaction to ensure a customer-centered approach and improve the quality of service:

- creating advantages for customer retention;
- isolation from the influence of competitors;
- reduction of costs for order placement/processing and personnel;
- increased recommendations and reduced costs of attracting new customers;
- development of customer loyalty.

Thus, for aviation enterprises, the formation of an effective business model for development is greatly influenced by four main components: value proposition, market segmentation, value chain, and profit structure [16].

The authors propose a methodology for assessing the level of innovative potential of aviation enterprises, taking into account mandatory indicators and components of innovative potential, as well as choosing a strategy for further development in accordance with the level of existing innovative potential. We suggest evaluating the innovation potential of an aviation enterprise by allocating its three components – production potential (P), market potential (M), and managerial potential (A).

The level of innovation potential (IP) of an aviation enterprise is defined as the sum of the integral indicators of its component potentials:

$$IP = I_P + I_M + I_A.$$

The methodology of innovation potential level estimation of the aviation enterprise consists of the following stages:

Stage 1. It is proposed to allocate components for each of the blocks of innovation potential.

1. Production potential (P), which includes the following components: x_1 – human resources component; x_2 – material and technical component; x_3 – financial component; x_4 – resource component.

2. Market potential (M), which includes the following components: b_1 – organizational component; b_2 – marketing component; b_3 – investment component, level of investment; b_4 – market component, market share.

3. Managerial potential (A), which includes the following components: z_1 – information component; z_2 – innovation component, structure of innovations and digital technologies; z_3 – level of competitiveness of products (services); z_4 – intellectual component.

Stage 2. Comparison of the values of each indicator of the aviation enterprise for each type of potential (production, market, management) with the benchmark:

$$P_1 = \frac{x_1}{x_{max}}; P_2 = \frac{x_2}{x_{max}}; \dots, P_i = \frac{x_i}{x_{max}}.$$

$$M_1 = \frac{b_1}{b_{max}}; M_2 = \frac{b_2}{b_{max}}; \dots, M_i = \frac{b_i}{b_{max}}.$$

$$A_1 = \frac{z_1}{z_{max}}; A_2 = \frac{z_2}{z_{max}}; \dots, A_i = \frac{z_i}{z_{max}}.$$

where P_i, M_i, A_i are the indicators for each type of potential compared to its reference value; x_i, b_i, z_i are the values of the indicator of potentials for each component i ; $x_{max}, b_{max}, z_{max}$ are the values of the reference indicator.

Stage 3. Calculation of the integral indicator by types of innovation potential of the enterprise (production, market, management):

$$I_P = \sqrt{\frac{1}{n} \sum_{i=1}^n P_i^2}, \quad I_M = \sqrt{\frac{1}{n} \sum_{i=1}^n M_i^2}, \quad I_A = \sqrt{\frac{1}{n} \sum_{i=1}^n A_i^2}.$$

where I_P, I_M, I_A are the integral indicators of the components of innovation potential; P_i, M_i, A_i are the indicators for each type of potential compared to its reference value; n is the number of indicators.

Stage 4. Calculating the level of innovation potential of the aviation enterprise and determining its level depending on the obtained indicator. The scale for assessing the level of innovation potential of the aviation enterprise and choosing the further optimal development strategy is given in Table 1.

Table 1

Scale for assessing the level of innovation potential of an aviation enterprise and its development strategy

The level of innovation potential of the aviation enterprise	The value of the integral indicator of innovation potential	The choice of development strategy
High	0.67 – 1.0	Strategy of the innovation generator (S1)
Medium	0.34 – 0.66	Strategy of the innovator (S2)
Low	0 – 0.33	Imitator strategy (S3)

The assessment scale was substantiated on the basis of determining industry averages and calculating confidence intervals.

Thus, the average industry values for the studied indicators were as follows:

- for I_P , the average value is 0.53, with a standard deviation of $\sigma_{I_P} = 0.15$;
- for I_M the mean value was 0.48, with a standard deviation of $\sigma_{I_M} = 0.17$;
- for I_A , the average value is 0.49, with a standard deviation of $\sigma_{I_A} = 0.16$.

Based on the industry average, we first calculated the confidence interval for the average level of innovation potential:

$$P\{I \in [I_{min.opt}; I_{max.opt}]\} \geq 0.7,$$

where $I_{min.opt} = \frac{\sum_{k=1}^3 I_k}{3} - \frac{\sum_{k=1}^3 \sigma_k}{3} = 0.34$, $I_{max.opt} = \frac{\sum_{k=1}^3 I_k}{3} + \frac{\sum_{k=1}^3 \sigma_k}{3} = 0.66$.

Accordingly, the interval $(0, I_{min.opt})$ corresponds to a low level, and the interval $(I_{max.opt}, 1]$ to a high level of the aviation enterprise's innovation potential.

4. Results and discussions

Nineteen airlines were analyzed to assess the impact of market space on the formation of innovation potential: Air Canada, AirAsia, Alaska Airlines, American Airlines, British Airways, Cathay Pacific Airways, Delta Air Lines, EasyJet, Emirates, jetBlue Airways, Korean Air, Lufthansa, Norwegian, Qantas Airways, Qatar Airways, Ryanair, Singapore Airlines, United Airlines, and Wizz Air.

The results of the calculations in Table 2 show that almost all airlines prioritize the implementation of the innovation generator strategy, with the exception of Ryanair and Norwegian, for which the imitator strategy is a priority.

Table 2

Results of calculating the priority of implementation of strategic guidelines by airlines

Airline	Innovation generator strategy (S1)	Innovator strategy (S2)	Imitator strategy (S3)
Air Canada	0.82		
AirAsia	0.74		
Alaska Airlines	0.93		
American Airlines	0.68		
British Airways	1.01		
Cathay Pacific Airways	0.91		
Delta Air Lines	1.02		
EasyJet		0.55	
Emirates	1.17		
jetBlue Airways	0.68		
Korean Air	0.80		
Lufthansa	0.92		
Norwegian			0.07
Qantas Airways		0.56	
Qatar Airways	1.04		
Ryanair			0.12
Singapore Airlines	1.18		
United Airlines	0.93		
Wizz Air	0.80		

The obtained results give possibility to formulate strategic guidelines for further development for each aviation enterprise, depending on the level of innovation potential and strategy, which are presented in Table 3.

Table 3

Strategic guidelines for development of the innovation potential of aviation enterprises

Airlines	Strategy	Strategic benchmarks
Air Canada, AirAsia, Alaska Airlines, American Airlines, British Airways, Cathay Pacific Airways, Delta Air Lines, Emirates, jetBlue Airways, Korean Air, Lufthansa, Qatar Airways, Singapore Airlines, United Airlines, Wizz Air	Generator strategy – maximize the motivation for innovation generation in all blocks of the functional model (S1)	<ul style="list-style-type: none"> – develop a big data system for marketing analysis and innovation planning capabilities; – automation of information systems; – development of digital technologies for analyzing customer identity, their segmentation to ensure accurate transmission of information about requests for products and services; – research and development of creative innovative products and services to meet customer needs; – focus on customer segmentation; – actively promoting knowledge exchange with business partners developing innovations, cooperation with international and government agencies to develop the generation of innovations.
EasyJet and Qantas Airways	Innovator's strategy – creating new knowledge, increasing the level of innovation activity, technical capital of the airline (S2)	<ul style="list-style-type: none"> – analysis of strengths, weaknesses, opportunities, and threats to improve innovation strategies; – research and development of innovative products and services to meet customer needs; – focus on customer segmentation, increasing sensitivity to customer needs through social media platforms; – strategic partnership with business partners who develop innovations.
Norwegian and Ryanair	Imitator strategy – focused on imitation of existing innovations in case of acquisition of patents, licenses (S3)	<ul style="list-style-type: none"> – development of marketing strategies for imitation of innovations suitable for a changing economic environment; – analyzing competitors' innovative products and services that better meet the needs and preferences of consumers and acquiring relevant patents and licenses for their implementation; – cooperation with business partners to assess competitors and study the strategies and technologies used by competitors; – exchange and joint use of resources and capabilities with business partners to enhance competitiveness; – establishing a service culture policy.

The suggested methodology of innovation potential level estimation is based on prioritizing the strategies: generator of innovations, innovator and imitator of innovations in the air transportation market. The implementation of the methodical approach is based on the formation of components of innovation potential and their evaluation.

5. Conclusions

The obtained results show the importance of increasing the level of innovation potential of aviation enterprises, which will ensure the sustainable development of its functioning. In today's global economy with a high level of competition, the introduction of digital technologies in the management of innovation potential is becoming a decisive factor in ensuring competitive advantage. The suggested methodology of innovation potential level estimation takes into account the ability of aviation enterprises to generate innovative ideas and form the innovative value of the offer in the air transportation market, ensure the process of developing an innovative offer, and effectively implement innovative offers in the air transportation market.

Solving the problems of ensuring a sustainable development for the operation of an aviation enterprise is impossible without the use of digital technologies in the context of building innovation potential. The formation of the innovative potential of the aviation enterprise provides more opportunities for making management decisions, increases the efficiency of activities, and ensures the increase of staff intellectualization in achieving the strategic sustainability of aviation enterprises. It is important to establish the nature and objectives of the goals that will allow the management of the aviation enterprise to make decisions on the introduction of innovations and digitalization of business processes aimed at implementing programs for the development of its activities.

References

- [1] A. V. Hrynyov, Evaluation of the innovative potential of the enterprise, *Problems sciences* 12 (2003) 12–17.
- [2] L. M. Gaevska, Innovative potential of the enterprise and its assessment, *Global and national economic problems* 15 (2017) 192–196.
- [3] O. I. Maslak, O. V. Kolomytseva, N. E. Grishko, Y. Yu. Yakovenko, Competitiveness of business models of aviation enterprises: innovative aspect, *Collection of scientific papers of the Cherkasy State Technological University, Series: Economic Sciences* 62 (2021) 45–52.
- [4] S. Smerichevskiy, O. Mykhalchenko, Z. Poberezhna, I. Kryvovyazyuk, Devising a systematic approach to the implementation of innovative technologies to provide the stability of transportation enterprises, *Eastern-European Journal of Enterprise Technologies* 3 (13 (123)) (2023) 6–18. doi: 10.15587/1729-4061.2023.279100.
- [5] A. Pereira, G. Lohmann, L. Houghton, Innovation and value creation in the context of aviation: A systematic literature review, *J. Air Transport Management* 94 (102076) (2021). doi: 10.1016/j.jairtraman.2021.102076.

- [6] R. Ahmad, K. Salah, R. Jayaraman, H. Hasan, I. Yaqoob, M. Omar, The Role of Blockchain Technology in Aviation Industry, *IEEE Aerospace and Electronic Systems Magazine* 36 (2021) 4–15.
- [7] S. Smerichevskiy, Z. Poberezhna, S. Gura, Development of the theoretical and methodological foundations of the formation of the innovative potential of the aviation enterprise, *Economy and society* 59 (2024) doi: 10.32782/2524-0072/2024-59-41.
- [8] Top 7 innovations by airlines in 2020-2021, 2024. URL: <https://www.qoco.aero/blog/top-7-innovations-by-airlines-in-2020-2021>.
- [9] 30 innovative airline services, 2024. URL: <https://www.trendhunter.com/slideshow/airline-services>.
- [10] V. V. Smilianets, Theoretical principles of management of innovative potential in the conditions of application of the marketing paradigm, *Economic Bulletin of the Dnipro Polytechnic. Scientific journal* 1 (77) (2022) 147–154. doi: 10.33271/ebdut/77.148
- [11] B. Grandhi, N. Patwa, K. Saleem, Data-driven marketing for growth and profitability, *EuroMed Journal of Business* 16 (4) (2021) 381–398.
- [12] S. Appel, P. Kleber, S. Frischbier, T. Freudenreich, A. Buchmann, Modeling and execution of event stream processing in business processes, *Information Systems* 46 (2014) 140–156. doi: 10.1016/j.is.2014.04.002.
- [13] T. Schmiedel, J. vom Brocke, J. Recker, Development and validation of an instrument to measure organizational cultures' support of Business Process Management, *Information & Management* 51 (1) (2014) 43–56. doi: 10.1016/j.im.2013.08.005.
- [14] G. C. Robert, The drivers of success in new-product development, *Industrial Marketing Management* 76 (2019) 36–47.
- [15] M. Iansiti, K. Lakhani, The truth about blockchain, *Harvard Business Review* 2 (2017) 118–127.
- [16] Y. Sengur, F. K. Sengur, Airlines define their business models: a content analysis, *World Review of Intermodal Transportation Research* 6 (2) (2017) 141–154. doi: 10.1504/writr.2017.082732.