SAFETY MANAGEMENT SYSTEM IN AVIATION: COMPARATIVE ANALYSIS OF SAFETY MANAGEMENT SYSTEM APPROACHES IN V4 COUNTRIES

Michaela KEŠEĽOVÁ, Monika BLIŠŤANOVÁ, Peter HANÁK, Ľubomíra BRŮNOVÁ
Technical University of Kosice

Abstract:
The article aims to support the Safety Management System's implementation in the Visegrad Four (V4) countries by introducing supporting documentation at the national level or national legislation. The research subjects are the V4 countries (Poland, Hungary, the Czech Republic, Slovakia), where 39 air carriers operate. Safety management in today's world is already necessary, yet introducing a Safety Management System (SMS) is voluntary in many areas, including some transport modes. In air transport, it is mandatory, and the general principles and guidelines of this system are set out in the International Civil Aviation Organization (ICAO), which has issued several regulations and recommendations. The lists of ICAO standards and essential translations can be considered a minimum, which is also approached by different authorities. The article points out the primary differences in SMS in individual V4 countries and presents which country provides the strongest support in implementing this system.

Key words: ICAO, Regulations and Recommendations, Safety Management System

INTRODUCTION

Air transport has become an integral part of life with a growing trend, but in 2020 the COVID world pandemic stopped its expansion. Despite the fact, International Air Transport Association (IATA) published a scenario analysis that over the next 20 years, global air passenger growth could plausibly be in the range between 3.2% and 5.3% [1]. With the increase in aviation accidents and incidents and environmental threats, aviation safety came to the forefront of interest. The main reason was that aviation safety is a critical factor in passenger trust of an airline, reputation, and international prestige. According to [2], aviation safety determines the state in which risks connected with aviation activities, linked to, or indirect support of aircraft operation, are reduced and controlled to an acceptable level. Regulation (EU) No 996/2010 transposes international standards and recommended practices described in Annex 13 to the Chicago Convention on International Civil Aviation. It sets out an obligation for each Member State of the European Union to establish an independent permanent national civil aviation safety investigation authority, which shall investigate accidents and serious incidents to improve aviation safety and prevent future occurrences without apportioning blame liability [3, 4].

In November 2006, the International Civil Aviation Organization (ICAO) demanded the Contracting States establish a safety program to accept and oversee the safety service providers' safety management system. Recently, the emerging era of the 'Total Aviation System Approach' requires all aviation stakeholders and their interfaces to be understood and managed for safety performance, resulting from an increasing level of maturity in aviation safety [5, 29]. From the first point of view, the purpose of safety management is to make sure that the amount of accidents and incidents is kept as low as possible or as low as is reasonably practicable. From a second perspective, the purpose of safety management is to ensure that as much as possible goes right, in the sense that everyday work achieves its objectives [6, 26, 30].

LITERATURE REVIEW

A Safety Management System (SMS) provides a framework of methodologies, requirements, and tools that support and organisations in understanding safety principles, constructing and customising a management framework that is ideal for achieving each organisation's necessary safety outcomes. Although safety management was a priority used as a tool to improve occupational health and safety, it has emerged into a much more comprehensive

system embracing psychological, organisational, social, and technological approaches to safety and systems thinking [7, 28]. Another definition describes a safety management system as an approach to harmonise, rationalise, and integrate management processes, safety culture, and operational risk assessment [8]. Modern SMS could be defined as an arbitrary collection of activities deemed necessary actions to discharge responsibilities under the new age of the delegated responsibility of self-regulation [9]. The definitions of SMS in air transport vary depending on the system's approach, the main definitions being given in (Table 1).

Table 1
Definitions of SMS

SOURCE	DEFINITION
ICAO	A safety management system is a systematic approach to managing safety, including the necessary organisational structures, accountabilities, policies, and procedures [5].
Transport Canada (TC)	A Safety Management System is an explicit, comprehensive, and proactive process for managing risks that integrates operations and technical systems with financial and human resource management for all activities related to a Civil Aviation Document (CAD) [10].
Civil Aviation Safety Authority Australia (CASA)	A safety management system is a systematic approach to managing safety, including organisational structures, accountabilities, policies, and procedures. An SMS is scalable, so it can be tailored to the size and complexity of the organisation [11].
Federal Aviation Administration (FAA)	A Safety Management System is the formal, top-down, organisation-wide approach to managing safety risk and assuring the effectiveness of safety risk controls. It includes systematic procedures, practices, and policies for the management of safety risk [12].
UK (Civil Aviation Authority) CAA	A Safety Management System is a systematic and proactive approach to managing safety risks. Risk management activities are at the heart of SMS, including the identification of safety issues, risk assessments and risk mitigation. It is supported by a strong assurance function that monitors compliance and performance as well as managing changes [13].

The SMS is a system whose primary purpose is to ensure that safety is managed and regulated in all aspects of life. To maintain the required safety level, the effective identification of all risks is a precautionary measure [14]. The safety management framework has gradually evolved into a core subject for safety sciences since 1973 [15]. An SMS is generally defined as the processes, components, and management activities that seek to enhance an organisation's safety efficiency [9]. This system is no more than a systematic and explicit approach to managing safety – just

as a quality management system is a systematic and explicit approach to improving the quality of a product to meet the customer's requirement [16]. This sophisticated and high-quality system has broad applicability in air transport. It is also one of the main requirements [17] that an air carrier must meet to obtain an Aircraft Operating Certificate (AOC). A specific modification of the requirement is Commission Regulation (EU) No. 965/2012. It is a comprehensive regulation laying down general and detailed air operations rules, including SMS, airborne vehicles, aeroplanes, helicopters, balloons, and gliders.

The safety management system for 193 ICAO member countries is regulated by ICAO Annex 19, first published in July 2013. ICAO Annex 19 provides standards for implementing and maintaining a State Safety Program (SSP) by States and providing a Safety Management System (SMS) by applicable service providers involved in the various services and industries in aviation [18]. Table 2 shows the Overview of Annex 19.

Table 2
Overview of Annex 19

Overview of Annex 19
emphasises the importance of security management at the national level;
increases safety by consolidating safety management provisions applicable to several areas of aviation;
facilitates the development of safety management provisions; represents an opportunity further to support the implementation of the SMS and SSP provisions;
Supports the process set out for the analysis of Annex 19 feedback and the implementation of safety management.

ICAO Annex 19 are supplemented by [18]:
− Safety Management Manual (ICAO) for Safety (Doc 9859),
− Guidance Material (GM) to Annex III Organization requirements for air operations, in this case, ORO.GEN.200,

with recommendations for other manuals [18]:
− Manual for the Oversight of Fatigue Management Approaches (Doc 9966)
− Manual on Laser Emitters and Flight Safety (Doc 9815)
− Manual on Remotely Piloted Aircraft Systems (RPAS) (Doc 10019)
− Manual on the Competencies of Civil Aviation Safety Inspectors (Doc 10070)
− Manual on the ICAO Bird Strike Information System (IBIS) (Doc 9332)
− Airport Services Manual (Doc 9137), Part 3 – Bird Control and Reduction
− Air Traffic Services Planning Manual (Doc 9426)
− Airworthiness Manual (Doc 9760)
− Global Aviation Safety Plan (GASP) (Doc 10004)
− Manual of Aircraft Accident and Incident Investigation (Doc 9756)

The ICAO Safety Management Manual (SMM) [5] has undergone four revisions, the last of which was in 2018. The

current edition is supplemented by an e-book with references to supporting documents not only from ICAO but also from other organisations such as European Union Aviation Safety Agency (EASA), Transport Canada Civil Aviation (TC), Airport Council International (ACI), Safety Management International Collaboration Group (SM ICG) and others.

ICAO provides a framework in [5, 18] representing the minimum requirements for implementing and maintaining an SMS by an organisation, which includes the four components and twelve elements as shown in Table 3.

Table 3 ICAO SMS framework components and elements

SMS framework components	SMS framework elements
1. Safety policy and objectives	1.1 Management commitment and responsibility 1.2 Safety accountabilities 1.3 Appointment of key safety personnel 1.4 Coordination of emergency response planning 1.5 SMS documentation
2. Safety risk management	2.1 Hazard identification 2.2 Risk assessment and mitigation
3. Safety assurance	3.1 Safety performance monitoring and measurement 3.2 The management of change 3.3 Continuous improvement of the SMS
4. Safety promotion	4.1 Training and education 4.2 Safety communication

Aviation authorities in many countries have already mandated the institution of SMS for all their airlines. The degree and method of implementing ICAO Annexes vary in each State [2]. Numerous countries went from the common forms of safety oversight by large numbers of inspections to one that is focussed on monitoring the SMS using safety performance indicators. [19].

For instance, Canada is one of the countries with the highest security/safety awareness (similar to the USA, UK or Australia), and SMS has a long tradition there, which is evident in the system's overall perception and quality. Therefore, it is considered for this article as a model illustrating the same or very similar approach as applied in other developed countries of the world. Transport Canada (TC) has a considerable number of safety-related documents designed as operational guidelines for defining, developing and implementing an SMS within the flight, maintenance operations and small aviation operations. It can be mentioned the most recent Advisory Circular (AC) No. 107-001 – Guidance on Safety Management Systems Development [20] was published as guidance on SMS's ways to be implemented in large, complex organizations. This guidance material interprets the application of the SMS regulatory requirements. It contains valuable examples and models of how the elements that make up an SMS might be achieved and gives an evaluation tool for understanding whether an organization reaches the regulatory requirements. TC also published Advisory Circular (AC) No. 107-002 – Safety Management System Development Guide for Smaller Aviation Organizations [21] to help small-sized aviation organizations implement an

SMS. It has the same content as a guide for large organizations but related to small ones. TC also covers a lot of training and workshops in this area and provides sufficient support to all air carriers.

The problem with the implementation of SMS is that there is no recognised standard for defining a typical SMS, for example, ISO standards, and therefore, it is necessary to adopt best practice from other industries in order to provide guidelines for those parts of the aviation industry that are required to implement a formal SMS [4].

METHODOLOGY OF RESEARCH

The article is mainly based on datasets publicly available through the ICAO and aviation national representatives websites. The first step of the qualitative research was to collect existing data related to safety and safety management system. The search was performed using widely used online scientific literature research tools. The second part of the research was focused on Commission Regulation (EU) requirement No. 965/2012, which is typical for all four countries. Plus, research focused on collecting, analyzing, and understanding SMS's concept given by ICAO and presented and supported by the V4 countries. It was searched and examined international and national regulation and national representatives' websites to find national support mechanisms or tools. The main goal is to compare the approach of individual national authorities, as the issue of air safety is very important and the issue of SMS is not as common as other management systems. Comparison criteria were chosen to achieve the goal in two categories, namely legislative and others. Legislative criteria:

- a list of all ICAO standards and recommendations for other supporting documents to which ICAO refers,
- translation of ICAO standards into the national language,
- national guidelines.

Criteria for the area other support were compiled based on study from other countries, and the following criteria were included:

- the existence of a separate department for safety management system at the national authority,
- organisation or recommendation for training,
- organisation or recommendation for conferences,
- publishing safety reports.

RESULTS OF RESEARCH

V4 countries (Figure 1) are considered high-income countries with a very high Human Development Index with constant economic growth [27]. From this perspective, it is possible to view all countries as similar in economic and social development levels. Regional cooperation is growing for more than 20 years in sectoral and cross-sectoral areas, and it is possible to find many standard features in approaches.
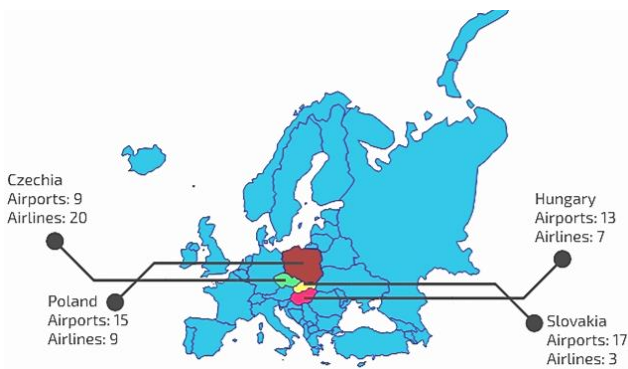
Fig. 1 Selected countries of V4

Poland

The total land area of Poland is 306,230 km^2 and is the largest country in the V4 countries. According to United Nations statistical data, Poland population was estimated at 37,846,611 people in 2020. In Poland, there are a total of 112 airports, of which 12 is international. Poland's leading airline is LOT Polish Airlines, which flies over 120 destinations across Europe, Asia, and North America. The list of airlines operating in Poland is shown in Table 4.

Table 4
List of airlines in Poland

List of airlines	No.	Name
Scheduled	1	LOT Polish Airlines
Charter	6	Buzz, Enter Air, LOT Charters, Skytaxi, SprintAir, Smartwings Poland
Cargo	2	Exin, SprintAir Cargo

Civil aviation in Poland is subject to international, EU and national legislation. In Poland, ICAO safety regulation documentation, including annexes, requires implementation in national law. Civil aviation's main national rules are defined in the Aviation Act and implementing regulations issued by relevant ministers. Poland is a country from the V4 group with the highest awareness of safety, evidenced by the processing of relevant documents in this area. All documents are entirely or at least partially (e.g. further ICAO standards) translated into the national language, which improves the system's overall perception and implementation. Safety in Poland is covered by the Safety Management Bureau and is ensured by regular safety conferences and training. In Polish national language is Annex 19 known as Załącznik 19 and Doc 9859 (SMM) as Podręcznik Zarządzania Bezpieczeństwem [22]. Załącznik 19 is a 40-page document that contains definitions of basic terms, determines system implementation methods, responsibilities, and work with security information.

Hungary

Hungary's total land area is 90,530 km^2 and the population is estimated at 9,6 million people. In Hungary, there are a total of 80 airports with five international airports. Hungary's The leading airline is Wizz Air, legally incorporated as Wizz Air Hungary Ltd (Table 5).

Table 5
List of airlines in Hungary

List of airlines	Number	Name
Scheduled	1	WizzAir
Charter	3	Budapest Aircraft Service, SmartWings Hungary, Ronan Air
Cargo	3	Air Max Cargo, ASL Airlines Hungary, Fleet Air

Operations in the airspace of Hungary governed by Act 1995. évi XCVII. Törvény a légiközlekedésről. Hungary appears to be a one of the country from the V4 group with the lowest safety awareness from a prepared standards point of view, although every operator has to implement SMS. Operators must develop and regulate their safety management system, but that is not supported by any supplementary material or translated existing documents relating to the SMS. On the other hand, the country's safety is partially covered by the safety bureau and rarely supported by complementary training.

Czech Republic

The Czech Republic's total area is 78,866 km^2, and the country has a population of 10,7 million in 2020. There are a total of 98 airports with five international airports. The primary Czech airline is Czech Airlines CSA, with a long tradition. The list of airlines operating in the Czech Republic's is shown in Table 6.

Table 6
List of airlines in the Czech

List of airlines	Number	Name
Scheduled	2	Czech Airlines, Smartwings
Charter	18	ABS Jets, Air FISCHER, G-JET, Silver Air, Van Air Europe...

In the Czech Republic territory, air transport's legal framework is regulated by Act No. 49/1997 Coll. on civil aviation. The main document that addresses safety management is Annex 19 Safety Management [23] which is translated into the national language. The Czech Republic has developed auxiliary material [24] Directive CAA-FOD-01/2013, a more detailed elaboration of the requirements arising from Annex 19 as guidance material to the requirement

It is a directive that describes the Management System's requirements, the policy and objectives, safety risk management methods, the verification of the level of risk, and the support of safety. Safety in Czech is partly covered by the Safety Management Bureau and is ensured by irregular safety conferences and complementary training.

Slovakia

Slovakia is the smallest country in the Visegrad group, with a total area of 49,035 km^2 and the country has a population of 5,45 million in 2020. There are a total of 29 airports with seven international airports. There is currently no national airline in Slovakia. The list of airlines operating in Slovakia is shown in Table 7.

Table 7
List of airlines in Slovakia

List of airlines	Number	Name
Charter	3	Aero Slovakia, AirExplore, Smatwings Slovakia

In Slovakia, air transport performance is regulated by Act no. 143/1998 Coll. on Civil Aviation (Civil Aviation Act) and Amendments of Some Acts. The safety management system requirements are in the Slovak regulation L 19 (representing Annex 19) – Safety management system [25], as standards and recommendations of the International Civil Aviation Organization ICAO. This regulation has come into force since 2015 and emphasises the introduction of a proactive system with risk management. Slovakia does not currently have a complete translation of Annex 19, nor has it developed any other supporting material or methodology for the above legislation. However, the country's safety is partially covered by the safety bureau and rarely supported by complementary training. Slovakia also seems to be a one of the country from the V4 group with the lowest safety awareness from a prepared standards point of view.

DISCUSSION

The analysis of support for the implementation of safety management was focused mainly on the availability of international regulations and recommendations in the national language and other support from national authorities. Attention was focused on Annex 19 [18] and the Safety Management Manual (Doc 9859) [5] as primary documents.

In all countries, the trend dominated by the primary ICAO safety management documents dominates. Based on the results presented in Table 8 and Table 9, Poland is a country that provides the best support in this area. All relevant documents are translated into the national language, and organize complementary training and, also, conferences are organized to improve the understanding and setting of the safety management system. Additionally, aviation safety in Poland is covered by Safety Management Bureau and publishes safety reports. There is no such strong support in any other Visegrad country.

In terms of quality support, national authorities in Poland followed by the Czech Republic. Although they have only partial translations of documents, they have created their supporting document [24] – Directive CAA-FOD-01/2013 consistent with them. The Directive describes all management system topics in detail, including specific examples and terminology. In the Czech Republic, safety is partly covered by the safety bureau and irregularly supported by complementary training and conferences.

Table 8
Overview of national legislative

Country	List of ICAO standarts	List of ICAO ecomendation	Annexe 19 (full translation)	Annex 19 (partial translation)	(Doc 9859) (translation)	Additional directive
Poland	party		✓		✓	✓
Czech Republic	partly			✓		✓
Slovakia				✓		
Hungary						

Table 9
Overview of other support

Country	Safety Management Bureau	Recommended training	Conferences	Safety reports
Poland	✓	regularly	regularly	✓
Czech Republic	partly	irregularly	irregularly	
Slovakia	partly	rare	rare	
Hungary	partly	rare	?	

In Slovakia, according to the ICAO system, the safety management system is developed only marginally, and the procedure, the principles of its use and not even established terminology are not precisely defined. In Slovakia, safety is partly covered by the safety bureau and rarely supported by training and conferences. In Hungary, operators must develop and regulate their safety management system. Safety is partly covered by the safety bureau and rarely supported only by training. Authorities refer to ICAO regulations; national documents are not processed. In terms of the number of airports and airlines, it is the strongest country, followed by Poland and Hungary.

In terms of the number of international airports and the number of airlines, the strongest country in the Czech Republic is followed by Poland and Hungary. Slovakia is a country that does not even have a national airline and due to the availability Slovaks use airports and airlines in the surrounding countries. Nevertheless, safety has the most support from the authorities in Poland. It is difficult to say a clear reason, given that there is not enough information and study e.g. in the field of security/safety awareness in Europe.

CONCLUSION

Safety in transport, but especially in air transport, is considered a priority, as evidenced by the fact that it is also regulated. Nevertheless, a systems approach to air safety management can still be considered a relatively new approach, a mandatory formal matter for many airlines. As already mentioned, the Safety Management System is not nearly as standard in practice as the Quality Management System or the Environmental Management System. Therefore the issue of support for introducing a safety management system in critical air transport by the state was analysed.

According to ICAO, the Visegrad Group countries differ significantly from the point of view of national support for implementing and maintaining the safety management system. While Annex 19, except for Hungary, is translated into the national language in other countries, the safety manual has its translation only in Poland. In other countries, airlines need to be more active and look for the necessary information on their own.

ACKNOWLEDGMENT

REFERENCES

[1] International Air Transport Association. 20 Year Passenger Forecast. International Air Transport Association: Montreal, Canada, 2020.

[2] Batuwangala, Eranga; Silva, Jose; Wild, Graham. "The regulatory framework for safety management systems in airworthiness organisations." *Aerospace*. Vol. 5, No. 4, Aug. 2018, https://doi.org/10.3390/aerospace5040117

[3] Yeun, R., Bates, P., Murray, P. „Aviation safety management systems." *World Review of Intermodal Transportation Research*, Vol. 5, No. 2, Feb. 2015, https://doi.org/10.1504/WRITR.2014.067234

[4] Jharko, E., Sakrutina, E. „Towards the Problem of Creating a Safety Management System in the Transportation Area." *FAC PapersOnLine*, Vol. 50, No. 1, pp. 15610-15615, Jul. 2017, https://doi.org/10.1016/j.ifacol.2017.08.1895

[5] International Civil Aviation Organization. Doc 9859 – Safety Management Manual (DRAFT), 4th ed. International Civil Aviation Organization: Montreal, Canada, 2017.

[6] Hollnagel, Erik. *Safety-I and safety-II: the past and future of safety management*. (1st edition). CRC Press. 2018.

[7] Stolzer, A.J. Mcd Halford, MJJ Goglia. *Safety Management Systems in Aviation*. Routledge: Abingdon, UK, 2017.

[8] Waddington, J.G., Lafortune, J.F., Duffey, R. "Institutional failure: are safety management systems the answer?" *The 30th Annual Canadian Nuclear Society Conference and 33rd CNS/CNA Student Conference,* Calgary, Alberta. 2009.

[9] Thomas, M.J. "*A Systematic Review of the Effectiveness of Safety Management Systems (AR-2011-148)*". Retrieved from Australian Transport Safety Bureau. Canberra, Australia: Australian Transport Safety Bureau, 2012.

[10] Transport Canada. Guidance on Safety Management Systems Development. Transport Canada: Ottawa, Ontario, Canada, 2008.

[11] Civil Aviation Safety Authority Australia. Safety Management Systems for Regular Public Transport Operations CAAP SMS-01 v1.1. Civil Aviation Safety Authority Australia: Woden, Australian Capital Territory, 2018.

[12] Federal Aviation Administration. Safety Management Systems – ORDER 8000.369C. Federal Aviation Administration: Washington, DC, 2020.

[13] UK Civil Aviation Authority. Safety Management System (SMS) guidance for organisations – CAP 795. UK Civil Aviation Authority: Kingsway, London, 2015.

[14] Ignac-Nowicka, Jolanta. "Application of the FTA and ETA method for gas hazard identification for the performance of safety systems in the industrial department." *Management Systems in Production Engineering*. Vol. 26, No. 1, pp. 23-26. 2018, DOI: 10.2478/mspe-2018-0003.

[15] Kysor, H.D. "Safety management system. Part I: the design of a system." *National Safety News,* Vol. 108, pp. 98-102, 1973.

[16] Hsu, Y.L., Li, W.C., Chen, K.W. "Structuring critical success factors of airline safety management system using a hybrid model." *Transp. Res. Part E: Logist. Transp. Rev.* Vol. 46, No. 2, pp. 222-235, 2010. http://dx.doi.org/10.1016/j.tre.2009.08.005

[17] COMMISSION REGULATION (EU) NO. 965/2012. European Union Aviation Safety Agency Standard. 2012.

[18] International Civil Aviation Organisation. Annex 19 – Safety Management, 1st ed.; International Civil Aviation Organization: Montreal, QC, Canada, 2013.

[19] Roelem, A., L., C., Klompstra, M.B. „The challenges in defining aviation safety performance indicators." *PSAM 11 & ESREL 2012*, 25-29 June 2012, Helsinki, Finland

[20] Transport CANADA. Advisory Circular (AC) No. 107-001 – Guidance on Safety Management Systems Development. Transport Canada: Ottawa, Ontario, Canada, 2008.

[21] Transport CANADA. Advisory Circular (AC) No. 107-002 – Safety Management System Development Guide for Smaller Aviation Organizations. Transport Canada: Ottawa, Ontario, Canada, 2016.

[22] Urząd Lotnictwa Cywilnego. Załącznik 19. Urząd Lotnictwa Cywilnego: Waszawa, Polska, 2016

[23] Ministerstvo dopravy České republiky. L 19 Řízení bezpečnosti. Ministerstvo dopravy České republiky: Praha, Česko. 2013.

[24] Úřad pro civilní letectví. Směrnice CAA-FOD-01/2013. Poradní materiál k požadavku oro.gen.200 systém řízení. Úřad pro civilní letectví: Praha, Česká republika. 2013.

[25] Ministerstvo dopravy a výstavby Slovenskej republiky. L 19 Systém riadenia bezpečnosti. Ministerstvo dopravy a výstavby Slovenskej republiky: Bratislava, Slovensko. 2017.

[26] Hollnagel, Erik. "Is safety a subject for science?" *Safety science*. Vol. 67, pp. 21-24, 2014, https://doi.org/10.1016/j.ssci.2013.07.025.

[27] Broadberry, Stephen; Klein, Alexander. „Aggregate and Per capita GDP in Europe, 1870-2000: Continental, Regional and National data with changing boundaries. 2011.

[28] Baryshnikova, N., Kiriliuk, O., Klimecka-Tatar, D. "Enterprises' strategies transformation in the real sector of the economy in the context of the COVID-19 pandemic", *Production Engineering Archives*, vol. 27, no. 1, 2021, pp. 8-15. https://doi.org/10.30657/pea.2021.27.2

[29] Drljača, M., Petar, S., Raad, M., Štimac, I. "The role and position of Airport City in the Supply Chain", *Production Engineering Archives*, vol. 26, no. 3, 2020, pp. 104-109. https://doi.org/10.30657/pea.2020.26.21

[30] Bednarova, L., Chovancova, J., Pacana, A., Ulewicz, R. "The analysis of success factors in terms of adaptation of expatriates to work in international organizations", *Polish Journal of Management Studies,* 17(1), 2018, pp. 59-66.

Michaela Kešeľová
ORCID ID: 0000-0002-3643-6880
Technical University of Košice
Faculty of Aeronautics
Deparment of Air Transport Management
Rampova 7, 041 21 Kosice, Slovakia
e-mail: michaela.keselova@tuke.sk

Monika Blišťanová
ORCID ID: 0000-0003-0349-1864
Technical University of Košice
Faculty of Aeronautics
Deparment of Air Transport Management
Rampova 7, 041 21 Kosice, Slovakia
e-mail: monika.blistanova@tuke.sk

Peter Hanák
ORCID ID: 0000-0003-3440-855X
Technical University of Košice
Faculty of Aeronautics
Deparment of Air Transport Management
Rampova 7, 041 21 Kosice, Slovakia
e-mail: peter.hanak@tuke.sk

Ľubomíra Brůnová
ORCID ID: 0000-0003-1736-8920
Technical University of Košice
Faculty of Aeronautics
Deparment of Air Transport Management
Rampova 7, 041 21 Kosice, Slovakia
e-mail: lubomira.brunova@tuke.sk