

DAUGAVPILS UNIVERSITĀTE  
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DAUGAVPILS UNIVERSITĀTES ZINĀTŅU DAĻA  
SCIENCE DEPARTMENT OF DAUGAVPILS UNIVERSITY

**DAUGAVPILS UNIVERSITĀTES  
67. STARPTAUTISKĀS ZINĀTNISKĀS  
KONFERENCES RAKSTU KRĀJUMS**

**PROCEEDINGS OF THE  
67<sup>th</sup> INTERNATIONAL SCIENTIFIC  
CONFERENCE OF DAUGAVPILS UNIVERSITY**

**B. DAĻA. SOCIĀLĀS ZINĀTNES**

**PART B. SOCIAL SCIENCES**

DAUGAVPILS UNIVERSITĀTE  
AKADĒMISKAIS APGĀDS „SAULE”  
2025

Apstiprināts Daugavpils Universitātes Zinātnes padomes sēdē 2025. gada 10. decembrī, protokols Nr. 13 /  
Approved in the meeting of Daugavpils University Science Council on December 10, 2025; minutes No 13

Kokina I., red. Daugavpils Universitātes 67. starptautiskās zinātniskās konferences rakstu krājums. B. daļa "Sociālās zinātnes" = Proceedings of the 67<sup>th</sup> International Scientific Conference of Daugavpils University. Part B "Social Sciences". Daugavpils: Daugavpils Universitāte, 2025.

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Daugavpils Universitātē docētāju un studējošo zinātniskās konferences notiek kopš 1958. gada. Konferencēm ir starpdisciplinārs raksturs un tajās piedalās gan studējošie, gan docētāji, gan arī zinātnieki no dažādām pasaules valstīm. Daugavpils Universitātes 67. starptautiskās zinātniskās konferences pētījumu tematika bija ļoti plaša – dabas, veselības aprūpes, humanitāro un mākslas un sociālo zinātņu jomās.

Zinātnisko rakstu krājumā *Daugavpils Universitātes 67. starptautiskās zinātniskās konferences rakstu krājums = Proceedings of the 67<sup>th</sup> International Scientific Conference of Daugavpils University* apkopoti 2025. gada 10.–11. aprīlī konferencē prezentētie materiāli.

The annual scientific conferences at Daugavpils University have been organized since 1958. The themes of research presented at the conferences cover all spheres of life. Due to the facts that the conference was of interdisciplinary character and that its participants were students and outstanding scientists from different countries, the subjects of scientific investigations were very varied – in the domains of natural sciences, health care science, the humanities and art, and social sciences.

The results of scientific investigations presented during the conference are collected in the collection of scientific articles *Proceedings of the 67<sup>th</sup> International Scientific Conference of Daugavpils University*.

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# EKONOMIKA UN MENEDŽMENTS / ECONOMICS AND MANAGEMENT

## DIGITAL TOURISM RESEARCH: A GLOBAL BIBLIOMETRIC ANALYSIS

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### Abstract

#### **Digital tourism research: A global bibliometric analysis**

**Key Words:** *Digital Tourism, Bibliometric Analysis, Artificial Intelligence (AI), Virtual Reality (VR), COVID-19, Global Research Trends*

This study conducts a global bibliometric analysis of digital tourism research, revealing key trends, developments, and future directions. Driven by technological advances, policy initiatives, market dynamics, and changing consumer behavior, digital tourism has grown rapidly, with the COVID-19 pandemic further accelerating digital transformation through innovations such as AI, VR, and smart tourism solutions. Analyzing literature from 2015 to 2024, the study maps citation networks, co-authorship patterns, and keyword trends to identify emerging themes. Results highlight a surge in research after 2021, particularly from Asia and Europe, while noting persistent challenges in cross-disciplinary and international collaboration. The findings emphasize the sector's growing role in economic development, especially through digital marketing, user experience enhancement, and smart tourism applications. Future research should focus on integrating marketing, service design, and digital innovation to bolster resilience and sustainability in tourism.

### Kopasvilkums

#### **Digitālā tūrisma pētījumi: globāla bibliometriskā analīze**

**Atslēgvārdi:** *Digitālais tūrisms, bibliometriskā analīze, mākslīgais intelekts (AI), virtuālā realitāte (VR), COVID-19, globālās pētniecības tendences.*

Šajā pētījumā veikta digitālā tūrisma pētījumu bibliometriskā analīze pasaulē, atklājot galvenās tendences, attīstību un nākotnes virzienus. Digitālais tūrisms ir strauji attīstījies tehnoloģiju attīstības, politikas iniciatīvu, tirgus dinamikas un mainīgās patērētāju uzvedības ietekmē, un COVID-19 pandēmija vēl vairāk paātrina digitālo transformāciju, izmantojot tādas inovācijas kā mākslīgais intelekts, VR un viedie tūrisma risinājumi. Analizējot literatūru no 2015. līdz 2024. gadam, pētījumā ir kartēti citēšanas tīkli, līdzautorības modeļi un atslēgvārdu tendences, lai noteiktu jaunās tēmas. Rezultāti liecina par pētījumu skaita pieaugumu pēc 2021. gada, jo īpaši no Āzijas un Eiropas, vienlaikus norādot uz pastāvīgām problēmām starpdisciplinārās un starptautiskās sadarbības jomā. Secinājumos uzsvērta nozares pieaugošā loma ekonomikas attīstībā, jo īpaši ar digitālā mārketinga, lietotāju pieredzes uzlabošanas un viedo tūrisma lietojumprogrammu starpniecību. Turpmākajos pētījumos galvenā uzmanība būtu jāpievērš mārketinga, pakalpojumu dizaina un digitālo inovāciju integrēšanai, lai stiprinātu tūrisma nozares noturību un ilgtspēju.

### Introduction

Digital tourism refers to using digital technology to enhance all aspects of the tourism industry, including information access, booking, experience, and feedback. In recent years, digital tourism has been growing rapidly across the globe. According to industry analysts (China Bgao,2023), the global digital travel market has exceeded \$10 trillion and is still growing rapidly.

The main reasons for the development are 1) Epidemic impact: the 2020 outbreak of the new crown epidemic accelerated tourism product innovation and promoted the development of digital marketing and services. Efthimiou (2024) highlights that the COVID-19 pandemic has profoundly disrupted the global

tourism industry, leading to economic losses and operational challenges. In response, the sector has undergone a significant transformation, with a stronger emphasis on sustainability, resilience, digital integration, and community engagement to adapt to evolving traveler demands

2) Policy support: Governments are also responding to the times and actively promoting digital tourism as a tool for the development of the tourism economy.

3) Market competition: Tourism enterprises have also discovered the huge profits of digital tourism, and are increasingly focusing on the impact of digital transformation on the overall development of their business. For example, Gonçalves et al. (2022) highlight that digitalizing cultural routes in Tavira has enhanced tourism, strengthened local identity, and boosted the regional economy by integrating technology and fostering local engagement.

4) Changes in consumer demand: Recent studies underscore significant shifts in contemporary tourism demand, driven by global disruptions such as the COVID-19 pandemic and evolving consumer priorities. Notably, travelers now prioritize domestic and localized experiences, as international mobility restrictions and heightened health concerns have redirected interest toward exploring proximate destinations (Efthimiou, 2024; Goenadhi & Rahadi, 2020). Concurrently, sustainability and health-conscious tourism have emerged as critical demand drivers, with tourists favoring eco-friendly accommodations, wellness-oriented retreats, and destinations adhering to stringent hygiene protocols by OECD and UNWTO (Gössling, S., et al. 2021:1-20). Demographically, Millennials and Generation Z dominate demand trends, valuing authenticity, cultural immersion, and unique experiences—evidenced by their heightened responsiveness to digital campaigns like Indonesia's "Wonderful Indonesia" promotional videos, which boosted travel intentions by 60.7% post-exposure (Goenadhi & Rahadi, 2020; ETC, 2021). These shifts collectively reflect a redefined tourism landscape where localization, sustainability, digital innovation, and experiential authenticity dominate consumer priorities. Also, there are authors who believe that in tourism development, technological advancement drives human demand, and at this stage, there is more technology and less but personalized customer service, which needs adjustment in the future (Carlisle, Ivanov & Dijkmans 2023). They suggest developing 'human-centered tourism high technology.

The current research direction of 'digital tourism' mainly focuses on how to promote the development of the tourism economy through technological application innovation, and the economic effectiveness and social impact of the upgraded tourism industry.

While existing studies have explored the immediate and potential long-term impacts of COVID-19 on digital tourism development, this study focuses on the medium-term effects, as observed through publication trends and thematic evolution up to 2024. This study also aims to guide future research efforts and make effective recommendations for the sustainability of digital tourism. Through an extensive

review of the systematic literature review over the past five years, we shed light on the main areas encompassing digital tourism, highlighting its applications and potential impacts. By reviewing the current state of research and progress in the field, we provide insights into the current state of development of digital tourism, shedding light on the challenges faced and what positive impacts have been brought about. Another aim of this study is to reveal emerging research avenues in the field of digitization.

Based on the proposed objectives, the research questions are as follows:

Question 1: What are the key themes, strengths, and limitations of digital tourism identified in the existing literature and limitations of digital tourism are?

Question 2: How can digital tourism lead to tourism economic development, and in what ways?

Question 3: Based on the existing literature and current trends in the field, what are the future trends and potential research directions for digital tourism?

Although there have been many studies related to digital tourism, my study makes a unique contribution. Unlike previous studies, we used a “bibliometric analysis” approach, which detects emerging trends: through citation networks, co-authorship patterns, and keyword analysis, bibliometric analysis can identify nascent research areas, enabling researchers to stay ahead of emerging topics. Through this method, we can not only review individual studies, but also synthesize the findings of multiple reviews, thus providing a more comprehensive picture of the development of digital tourism around the world. This approach fills a gap in previous reviews and contributes to the existing literature, thus increasing the differentiation and value of our study.

The paper is structured into four parts: the first part is the introduction, which describes the background of the study and identifies the relevant research questions, the second part is the methodology, which explains the qualitative methodology employed, the third part is the results, which summarizes and discusses the results, and the fourth part is the conclusion, which summarizes the results and shortcomings of the study and makes recommendations for further research.

### **Theoretical background and methodology of the research**

The research method selected in this paper is bibliometric analysis, which is very suitable for application in the research field of large amount of information and review literature, and can effectively refine the key content and systematic summarization, reflecting the current situation can also provide guidance for future development.

This research method was chosen for four advantages.1) Provide an integrated perspective: in some research areas, there have been multiple reviews that have systematically analyzed different aspects.”

bibliometric analysis” can synthesize these reviews to provide a more comprehensive perspective and avoid fragmentation. 2) Identify research gaps: By analyzing the coverage, topics, and methods of existing reviews, it is possible to identify issues that have not yet been fully explored in the research field. 3) Improve information efficiency: In the face of a large number of literature reviews, it is more efficient to directly summarize and integrate the results of these reviews than to analyze the original research one by one, especially when it involves a multidisciplinary and complex field. 4) Verify the consistency of the review: Comparing the consistency of conclusions between reviews can test the consistency of research findings and the consistency of findings. Also, it can test the degree of consensus or points of controversy in the research field.

The goal of bibliometric analysis is to synthesize a large amount of data and present it in a format that is easy for the user to view. Therefore, bibliometric analysis is playing an increasing role in facilitating decision-making and knowledge application as a valuable knowledge synthesis product (Michelle Pollock et al., 2016)

Inclusion criteria:

- 1) Core Themes—Tourism Economy, Digital Tourism, Digital Economy. 2) Timeframe: Selecting literature from the last 5 to 10 years. 2015-2023: for analyzing the current state of affairs and the latest technologies, such as big data in tourism. 2010-2015: for tracing the background and early theories of the rise of digital tourism.
- 3) Source and authority: Choose the Scopus database for its broader coverage of journals, conference papers and patents. Citation analysis tools are abundant and convenient for analyzing research performance.
- 4) Geographical and case diversity: try to select literature covering different regions (e.g., Europe and the United States, Asia, and the Middle East), reflecting the characteristics of globalization.
- 5) Topic Relevance: the content of the literature must revolve around the intersection of digitization and the tourism economy. Explore e.g. discuss the economic impact of digital technologies on the tourism industry. Present the current status of smart technologies (e.g. AI, VR,) in the tourism industry. Off-topic articles were not considered, such as literature that exclusively explored the digital economy or traditional tourism without combining the two.

According to the American Economic Association (AEA)’s founding purpose of "the encouragement of economic research", requires intellectual and professional integrity. Integrity demands honesty, care, and transparency in conducting and presenting research; disinterested assessment of ideas; acknowledgement

of limits of expertise; and disclosure of real and perceived conflicts of interest. (American Economic Association, 2018)

Research in economics itself needs to be guided by the ethical standards of academic research, especially in ensuring objectivity and transparency in data collection, analytical methods and research reporting.

Since the methodology used in this article is the “literature summarization method”, the primary objective is to ensure that the data are authentic, legal and accurate.

Therefore, I have made the following efforts, firstly to ensure the legitimacy of the data sources, the data are collected from official databases and follow all relevant legal and ethical standards. Secondly, to avoid any distortion of the research results due to bias in data selection or subjective analysis, and to ensure the fairness and reliability of the research results. Finally avoiding cultural bias, this study is a cross-country comparative study, I minimize the possibility of unfair judgments or interpretations of economic phenomena in other countries or cultures due to their nationality background.

## **Results**

A search of the Scopus database in December 2024 with the keywords “digital” and “tourism” yielded 6,289 articles that met the criteria. Next, the literature for the years 2015-2024 was selected, and the number of articles was narrowed down to 936 by choosing “Economics, Econometrics & Finance” as the field of articles. The number of articles was further reduced to 884 by eliminating “undefined” for country sources. Finally, only articles in “English” were selected. Also, the source is only a “journal” excluding books and proceedings from official organizations.

Finally, for the purposes of the study, only 224 documents remained, excluding books and proceedings from official bodies.

The following is a graphical analysis of the literature data by year, nationality, and type.

Based on the Figure 1, we can summarize the following points:

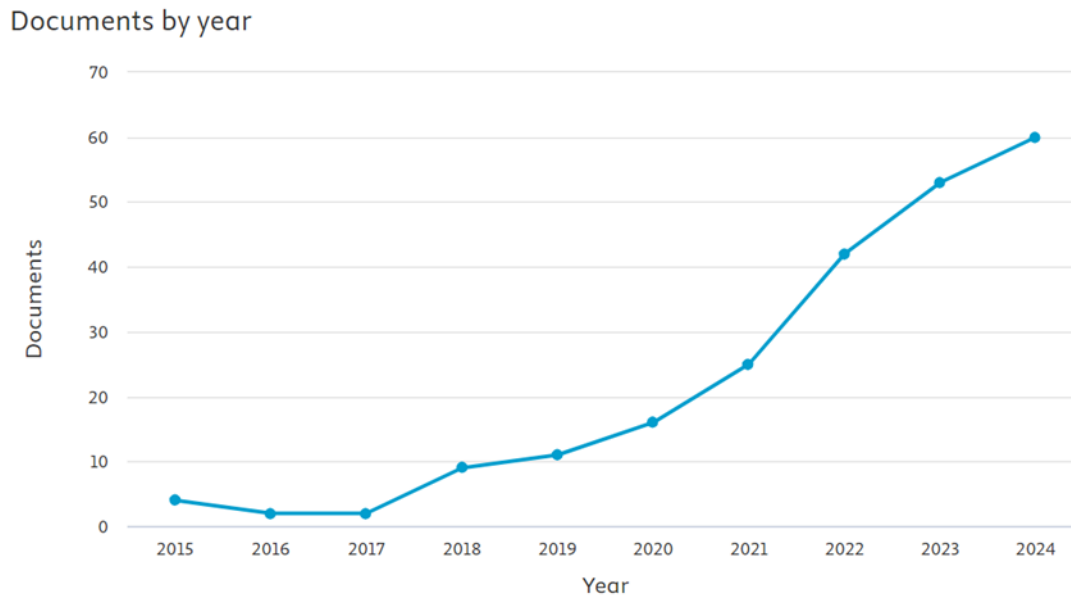
### 1. rapid increase in the heat of the research field

From 2015 to 2020, the number of literatures grows slowly, indicating that research related to digital tourism has a low level of interest or is only in the initial stage of development. However, from 2021 onwards, there is a significant increase in the number of literatures, indicating a rapid rise in the heat and importance of research in this area.

2. In 2024, the number of literatures reaches a peak of 60 and there is no downward trend in the curve, indicating that the research in this area still has a high and sustained potential.

Figure 1

### Annual Trend of Document Publications from 2015 to 2024



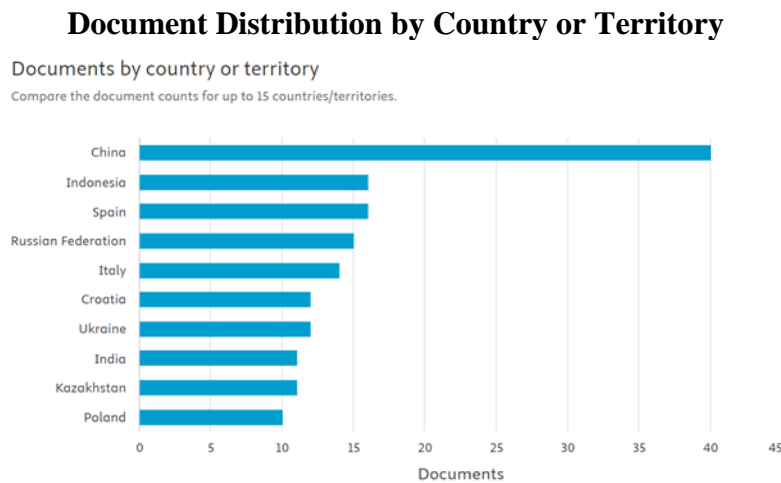
Source: the author's own compilation based on data from Scopus.

Figure 2 shows that research in the field of digital tourism shows a clear geographical distribution, with Asia (China, India, Indonesia, Kazakhstan) and Europe (Spain, Russia, Italy, etc.) being the main contributing regions. China is the mainstay of research in this field, with a literature of nearly 40 articles. Indonesia, Spain, and Russia ranked second and third, respectively, with literature counts ranging from 15-20 articles. It shows that these two countries have high research participation in this field. North America (Canada and the United States) and South America were found to be less involved.

There are also several reasons for the different levels of national academic development: 1) Different economic structures. China, India, Indonesia, and Southern European countries (e.g., Spain, Italy, Greece) have a high share of tourism in their GDP (e.g., tourism accounts for more than 12% of GDP in Spain). Tourism is the backbone of their economy, driving the urgent need for digital tourism (e.g., online booking optimization, virtual travel experience). 2) Digital transformation pressure: Emerging Asian countries need to digitally address the lack of tourism infrastructure (e.g., India is bridging the gap in heritage preservation through AR guided tours), while Southern European countries need to address the competitive pressure of traditional tourism models (e.g., Greece is attracting young people to travel through VR recreations of ancient sites). While digital applications in the United States are more business-led (e.g., Airbnb, Expedia), academic research is focused on business models rather than technological innovation, resulting in less academic output. 3) Policy-driven and capital investment: Asia has a policy dividend. China's "14th Five-Year Plan" clearly lists "smart tourism" as a priority,

India launched the “Swadesh Darshan” digital tourism program, Indonesia through the “Blueprint for Digital Transformation of Tourism 2023-2045” to provide financial support to directly stimulate the output of academia, which directly incentivizes the output of academia. The European Union's Digital Europe Program has tilted funding to Southern European countries for cultural heritage digitization and tourism sustainability projects, stimulating academic research. North America is market-oriented, with more research funding going to corporate R&D (e.g., Disney's MagicBand), and academics relying on corporate collaborative projects, with less independent theory building.

Figure 2



Source: the author's own compilation based on data from Scopus.

Although China, Indonesia, Spain, and Italy are all prolific in digital tourism research, their thematic orientations diverge significantly, reflecting national priorities (Figure3): China focuses on sustainability through advanced technologies, Indonesia on smart visitor management, Spain on strategic smart destination development, and Italy on the digital enhancement of cultural heritag.

Figure 3

**Comparative Summary: Focus Areas of Digital Tourism Research (2015–2024)**

Country/Region	Main Research Focus	Representative Topics
<b>China</b>	Technology-driven sustainable tourism	Big data, AI, smart scenic areas
<b>Indonesia</b>	Smart services and visitor management	IoT, intelligent service hubs
<b>Spain</b>	Smart tourism destination development	DTI model, policy coordination
<b>Italy</b>	Digital integration in cultural tourism	Cultural heritage digitization, generative AI

Source: the author's own compilation based on thematic analysis of literature.

Comparing the causal relationship between national policies and tourism development in four countries: China, Indonesia, Spain and Italy (Figure 4). Spain and Italy are found to be the most dependent on national policies for tourism development, while China and Indonesia are less dependent. The Spanish Government has long promoted tourism through national strategic planning. In recent years, it has published the National Comprehensive Tourism Plan (PNIT) 2012-2015 (Ministerio de Industria, Energía y Turismo, 2012), the Spanish Sustainable Tourism Strategy 2030 (Secretaría de Estado de Turismo, 2020) and the Tourism Modernization and Competitiveness Plan (2021). The aim is to enhance the competitiveness and profitability of the tourism industry through quality improvement and digital transformation. Italy created a specialized Ministry of Tourism in 2021 and in 2023 published the National Tourism Strategy 2023-2027: focusing on sustainable tourism, innovation and high-end tourism for economic and social growth. Tourism development in China relies more on market-driven and local government initiatives, with relatively little strategic planning at the national level. Indonesia, on the other hand, focuses more on “tourism branding”

Figure 4

**Policy-Driven Development of the Tourism Industry: A Comparative Overview**

Country/Region	Level of Policy Involvement	Key Features
ES Spain	Very High	Long-term strategic planning, strong focus on sustainability and competitiveness
IT Italy	High	Central–regional collaboration, focus on innovation and high-end tourism
ID Indonesia	Moderate	Policy adjustments in response to overtourism, but lacking a long-term national strategy
CN China	Moderate to Low	Mix of top-down support and market-driven growth; national-level strategic planning less prominent

Source: the author's own compilation based on thematic analysis of literature.

Figure 5 shows that there is an overwhelming majority of journal articles, totaling 212. This indicates that most of the research results were published in journals in the form of scholarly articles. Reviews a total of 12 articles, accounting for a relatively small proportion. This indicates that there are fewer comprehensive analyses and summaries of existing research in this field.

Figure 5

**Document type**

Document type ↑	Documents ↓
Article	212
Review	12

Source: the author's own compilation based on data from Scopus.

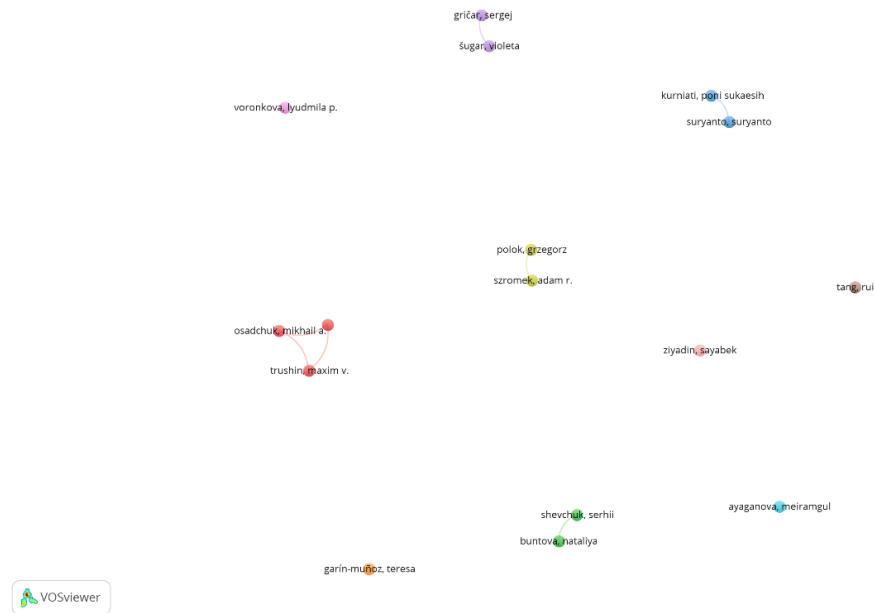
Combined with the three tables, the annual trend graph shows an exponential growth of the literature in the field from 2021 onwards, especially reaching a new peak in 2023-2024. Combined with the distribution of literature types, the large number of journal articles (212) suggests that the field is rapidly accumulating original research results. It is reasonable to speculate that it is a combination of technological drivers (e.g., VR, AR, AI) and societal needs (e.g., post-COVID-19 digital transformation) that are driving the research explosion in the field of digital tourism.

The distribution of literature types shows that review articles account for only 5.4% of the total (12/224). Combined with the annual trend graph, it can be seen that research is still in a period of rapid growth, with researchers focusing more on original research and a relative lack of systematic summarization of existing research. It is hypothesized that the theoretical framework of the field has not yet been fully developed.

After identifying 224 publications, the data were analyzed using VOS viewer to systematically reveal research hotspots, trends, core authors, collaborative networks, and theoretical sources in the field.

Figure 6

### Visualization of Co-authorship Relationships Among Researchers



Source: the author's own compilation via VOS Viewer.

From Figure 6, we can see that it can be divided into ten clusters. In terms of time nodes, the yellow nodes from 2021-2023 represent the most recent active authors (e.g., Tang Rui in the upper right corner) focusing on more emerging digital tourism topics, such as meta-universes and virtual reality applications in tourism. And virtual reality in tourism. Blue-green nodes represent earlier active authors (e.g., garín-muñoz, teresa) exploring grounded theory or early technology applications. In the red cluster, the author with the largest nodes and densest connections is Osadchuk, Mikhail A., a core author. And checking his findings, Osadchuk, Mikhail A. in *Geriatric Problems in Medical Tourism* explores the problems faced by older people in medical tourism, which, although focusing mainly on medical tourism, deals to some extent with digital management and service optimization in the tourism sector (Osadchuk, 2021) .

There is almost no connectivity between the clusters in the graph, suggesting that these author teams collaborate less or are completely independent of each other. It can also further show that the digital tourism field currently suffers from the following problems: inter-disciplinary segregation: technologists, management scholars, and user behavior researchers may conduct their research in their small circles, with less cross-disciplinary collaboration. Geographical segregation: some clusters may represent researchers from specific countries or regions, e.g: East or Southeast Asian scholars (e.g. kurniati, poni



The visualization was generated using VOS viewer based on co-occurrence analysis of keywords from bibliographic data. The size of the nodes represents the frequency of keywords, while the thickness of the lines indicates the strength of co-occurrence relationships. The color of nodes reflects the average publication year, providing a timeline of research trends.

This keyword co-occurrence network map by VOS viewer shows that 1) the keyword tourism is located at the center of the network, which is the core of the whole research area. Digital tourism, digital transformation, and digital economy are the core digital themes, that are closely related to tourism. Digital tourism, digital transformation, and digital economy are core digitalization themes that are closely related to tourism. Innovation and technology indicate the key role of innovation and technology in digital tourism. The COVID-19 pandemic is also strongly connected, reflecting the impact of the pandemic on digital tourism.

2) Changes in the time dimension, early research hotspots (dark blue-green, around 2021) The foundational themes of the digital economy and tourism market are widely discussed in 2021, indicating an early research focus on the digital economy and market transformation. Recent hotspots (yellow, after 2022) The keywords digital transformation and social media indicate that recent research has focused more on the transformation process, and the impact of social media on the tourism industry. COVID-19 pandemic and open innovation suggest that the pandemic promoted the exploration of new and innovative approaches.

3) The transition from dark blue to yellow reflects the temporal evolution of research attention. Keywords such as digital economy and tourism market (in blue-green) peaked in earlier years (2021), indicating foundational interest, while keywords like digital transformation and social media (in yellow) represent current and emerging focus areas (post-2022). This gradient visually demonstrates the shift in research interest toward transformation and user-centric digital engagement. Grouping of keywords and research hotspots, green clusters: directly related to the tourism industry. The keywords tourism industry, hospitality, and tourism market are clustered to show how digitalization is applied in the tourism industry and its market. These studies may involve online platforms, booking systems, smart hotels, etc. (Cardoso, Sohn, Ferasso, & Pereira Júnior, 2024) . Duarte Sampaio de Almeida (2024) studied the application of digital twin technology in tourism-cultural heritage digitalization, virtual tourism, experience enhancement through mobile phones or AR glasses to provide interactive information and found that the technology is mainly used in cultural tourism and destination management. Currently, digital twins have the potential to enhance tourist experience and resource management, but there are still challenges of data synchronization and application scope (Almeida, Abreu, & Boavida-Portugal, 2025) .

Blue cluster: technology-enabled digitalization, keywords such as digitalization, digital technologies, digital marketing, etc. illustrate the impact of digital technologies (e.g., big data, AI) on tourism. Abate discussed the readiness of tourism industry firms in adopting digital marketing by combining TOE and TAM models in the context of the Ethiopian economy. It was found that managerial commitment, regulatory support, and customer demand drove digital marketing readiness among tourism firms in emerging economies, but surprisingly, factors such as security concerns and resource availability were less influential". social media and smart tourism reflect the importance of technology in user experience and information dissemination (Abate, Ukpabi, & Karjaluo, 2024) .

Yellow cluster: emerging trends and innovation, digital transformation, innovation, open innovation illustrates that digital transformation and innovation are hotspots for continuous research. covid-19 pandemic shows that the epidemic has promoted digital innovation, such as no-touch services, virtual tourism.

4) Cross-disciplinary collaboration: Keywords such as digital marketing and hospitality suggest that future research could further explore the integration of marketing and service design. Post-pandemic transformation: research related to the COVID-19 pandemic is likely to continue, with a focus on how digitalization can be used to increase the resilience of the tourism industry. Combining technology and people: The intersection of social media and innovation suggests the need to explore how digital technologies can meet the deep experiential needs of tourists. As Stors, Baltes investigates how digital platforms reconfigure urban tourism spaces by analyzing 960 Airbnb listings in two neighborhoods of Berlin (city west and Kreuzkölln). The study debunks the old notion of ‘tourist space = attraction + amenities’ and emphasizes that it is the result of social/digital co-construction. Moreover, digital tourism has already penetrated the traditional tourism industry through social media, etc., and has enabled more urban citizens (Airbnb hosts) to participate in the construction of urban tourism space (Stors & Baltes, 2018). While “Fronzetti Colladon demonstrated that semantic and social interaction metrics derived from TripAdvisor travel forums significantly enhance the accuracy of tourism demand forecasts, outperforming even models based on Google Trends data.”(Fronzetti & Guardabascio & Innarella 2019). It is also easy to see the potential for interdisciplinary collaboration and the important role that social media plays in the development of digital tourism.

Overall, it can be seen from the figure that the digital tourism research area focuses on three aspects: technology-driven, industrial application and transformation and innovation.

This study also has some limitations. First, due to the adoption of bibliometric analysis methods, keyword extraction and trend identification are mainly based on article metadata, which does not involve in-depth

analysis of the full-text content of the articles, and some potential research themes and semantic information may be missed. Future research can introduce AI tools such as natural language processing (NLP) and sentiment analysis to improve the depth and precision of literature analysis. Secondly, the current research in the field of digital tourism suffers from an obvious split in cooperation, with a lack of systematic cooperation between different countries and disciplines, which affects the integration of knowledge and the construction of theoretical frameworks. Finally, the existing literature is still insufficient in answering the question of ‘how digital tourism promotes the development of tourism economy’, and lacks systematic research perspectives and empirical analyses, which are needed for subsequent studies.

Current research suffers from a ‘technology-management-user’ divide. In the future, we can encourage cross-border cooperation among tourism, information science, user experience design and other disciplines. For example, the second question raised in this paper is that there is no systematic research on how digital tourism can directly promote economic benefits. Future research can use quantitative models or empirical research to explore how AR/VR, AI tours, online platforms specifically affect tourism revenue, consumer behavior and other economic indicators. Meanwhile, most of the current studies are country-based and lack a systematic comparison of elements such as policy context, cultural differences, and market acceptance. For example, it explores the differences in the paths between China and Europe in the promotion of digital cultural heritage tourism, or the differences in the strategies of developing regions in the construction of smart tourism infrastructure.

## **Conclusions**

Overall, the study provides an overview of what changes and key developments characterize academic research on topics related to digital tourism after 2015. First, by summarizing and assessing the existing literature, we identified recurring themes, strengths, and limitations in digital tourism. These findings can guide researchers in identifying areas for further research and formulating more effective research questions

Insufficient cooperation between authors from different countries on the topic of digital tourism was also identified, and relevant recommendations were made such as 1) Cross-regional cooperation: to promote exchanges and cooperation between scholars from different regions (e.g., East Asian and European scholars). 2) Cross-disciplinary cooperation: research that combines technology and social sciences is more likely to produce innovations, e.g., inviting user-experience researchers to work together with technologists in the development of new tools for digitization in tourism.

Notably, certain emerging concepts such as metaverse or virtual tourism do not appear prominently in the current network, suggesting that although these terms are gaining popularity in industry discourse, they have not yet been widely adopted in academic literature. This indicates a potential gap and opportunity for future research exploration. Similarly, there is room for further research on how smart tourism can boost the tourism economy. Virtual tourism experience or tourism recovery after the epidemic digital tools as innovative products in the tourism economy, what specific economic effects have been brought about, and the level of development in each region are also topics worthy of study.

In addition to theoretical contributions, this study also offers practical implications for policy makers and practitioners in the tourism industry: at the policy level, attention should be paid to the development trend of digital tourism technology, especially the application prospect of cutting-edge technologies such as AR/VR, and relevant supporting policies should be formulated to promote the implementation and innovative application of the technology; at the industry level, tourism enterprises can optimize their marketing strategies and customer experience design according to the current digitalization trend, such as enhancing online interaction and intelligent guiding services to enhance user engagement and satisfaction. At the industrial level, tourism enterprises can optimize their marketing strategies and customer experience design based on the current digital trend, such as enhancing online interaction, intelligent guides and other services, in order to improve user participation and satisfaction.

### **Acknowledgments**

I would like to express my deepest gratitude to my supervisor, Vera Komarova, for her expert guidance, critical insights, and unwavering support throughout this research. Also, I extend my thanks to my family and friends for their constant encouragement and patience during the completion of this study.

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# LEGAL AND PSYCHOLOGICAL ASPECTS OF MOBBING IN WORK ORGANIZATIONS

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## Abstract

### **Legal and psychological aspects of mobbing in work organizations**

**Key Words:** *mobbing, types of mobbing, legal and psychological aspects of mobbing, recommendations for mobbing prevention*

Aim – The aim of this study is to examine the legal and psychological aspects of mobbing in different countries and to develop recommendations that would enable the identification and reduction of mobbing manifestations in workplaces. A healthy, lawful, and supportive work environment is the foundation of an individual's working life. Mobbing has not been extensively studied in the Latvian context and is not explicitly defined in the Labour Law; however, psychological safety is increasingly recognized as an essential factor in the development of organizational culture.

Within the framework of this article, the experience of various countries is analyzed, taking into account both legal and psychological aspects of mobbing. In the international context, effective solutions have been identified, highlighting the importance of learning from other countries' practices in developing mobbing prevention measures. For example, the experience of Scandinavian countries and Australia clearly demonstrates that a well-defined and structured legal framework, combined with systematic preventive measures, not only ensures effective employee protection but also contributes to the successful prevention of mobbing in the workplace.

In contrast, the example of Japan shows that even with limited legal protection, the work environment can be improved through the development of internal organizational culture based on respect, openness, and employee well-being. Time spent in the workplace significantly affects individuals' physical and psychological health and is directly linked to work productivity, which in turn influences organizational efficiency and overall national well-being. Conversely, the presence of mobbing leads to reduced work efficiency, increased costs, additional economic burdens on the healthcare system, and damage to organizational reputation.

## Introduction

People should feel safe, valued, respected and supported in the workplace. A favourable work environment that supports mental and emotional health is very important not only for employees' well-being, but also for work productivity. Key elements that characterise such an environment and can influence productivity are emotional and physical safety, respect, appreciation, openness and communication, opportunities for development, and a reasonable balance between work and private life. Employees need to be confident that they can express their ideas and opinions without fear of sanctions or ridicule. This fosters creativity and innovation, which in turn can increase productivity.

The work environment must ensure compliance with occupational safety and health requirements, reducing the risk of accidents and work-related illnesses that may impair employees' ability to work. Employees should feel appreciated, as this can strengthen their motivation and commitment to achieve higher results. When employees see that their contribution is recognised, they are motivated to invest more energy in their work. Fairness and equality are among the key aspects of a healthy work

environment. Employees must be confident that everyone is assessed according to the same criteria and that legal and ethical principles are observed in employment relationships.

Difficulties in communication, its absence, and unclear tasks and goals can lead to a decrease in work productivity. Adequate communication between management and staff must be ensured. An open communication climate helps to solve problems more quickly and effectively, and also improves cooperation within the work group. Ensuring mutual communication also means that employees have the opportunity to express their ideas, which can help the organisation improve work processes, working conditions and productivity. Opportunities for employee development support long-term cooperation and loyalty, foster personal growth, and thereby increase job satisfaction and work quality.

Naturally, remuneration and reward mechanisms cannot be ignored. Payments and rewards linked to employee performance can motivate them to invest more in their work. When employees receive pay that corresponds to their contribution, it enhances their satisfaction and the quality of their work (Armstrong, 2020). Achieving a balance between work and personal life is an equally important factor in building a successful work culture. If employees are forced to sacrifice their personal lives for work, this can lead to burnout and reduced productivity. Therefore, it is important that employees have sufficient time for rest and family life.

Work productivity is directly related to well-being at work, job satisfaction and upward career development. If people feel good in their workplace, they are more motivated to invest in their work and achieve higher results. Employees who feel supported and valued are less exposed to stress and burnout, which allows them to maintain high productivity in the long term. A supportive work environment promotes cooperation between employees, which can lead to more effective solutions and more productive work processes. Satisfied employees are often more loyal to the organisation, which reduces staff turnover and maintains the organisation's productivity in the long term. Overall, when employees feel valued, safe and supported, they are much more productive and motivated, which contributes to the organisation's overall success and development (Nacionālā enciklopēdija, 2025).

Monitoring trends in job satisfaction and mood among people in employment in Latvia, the research company Kantar conducted a study in 2022 to determine employees' overall satisfaction with both life and work, as well as to identify changes in the dynamics of these indicators. The results of the study show that two thirds (67%) of employees in Latvia are generally satisfied with their current job, including 13% who are very satisfied and 54% who are rather satisfied. At the same time, one third (31%) of respondents indicated that they are not satisfied with their job (6% – completely dissatisfied, 25% – not very satisfied). The survey data suggest that employee job satisfaction in Latvia is relatively low. This

satisfaction is closely linked to the overall assessment of quality of life and working life. In the context of the European Union, the situation is more positive. Comparing the EU population's life satisfaction indicators with the survey data for employees in Latvia, a clear trend emerges – 86% of EU residents are generally satisfied with their life, while only 63% of employees in Latvia express a similar view (Kantar, 2022).

A study published in 2023 on the prevalence of mental disorders and suicidal behaviour in Latvia found that:

- clinically significant depressive symptoms are present in 6.4% of the Latvian population;
- generalized anxiety – in 3.9%;
- alcohol use disorders – in 13.1%;
- the study data revealed a relatively high prevalence of suicidal thoughts and self-harm behaviour – 10.6%.

One of the key findings of the study is that many people do not recognise symptoms of depression and do not seek help. Suicide in the workplace is a very serious issue that affects both individual and public health (Veselības ministrija, 2023).

Since 2010, 14 suicides have been registered in workplaces in Latvia, which corresponds to an average of one to two cases per year. In recent years, there have also been other similar incidents; for example, in 2018 in Ogre, an employee committed suicide on company premises. In 2021, a tragedy shook the staff of Riga East University Hospital (RAKUS), when an employee of the Rehabilitation Clinic committed suicide while on sick leave. The incident was investigated both by the police and by the hospital itself, as the administration had received several submissions from employees regarding an unhealthy work environment in the team where the deceased had worked. These cases may be related to different factors, including work-related stress, personal problems and other individual circumstances. Therefore, it is essential that employers pay attention to employees' mental health, provide support and create a supportive work environment (Valsts darba inspekcija, 2018).

Analysing the statistics of the State Labour Inspectorate on the number of complaints reviewed in connection with possible violations of Sections 7, 29, 34, 60 and 95 of the Labour Law of Latvia during the period from 2020 to 2024, the following can be observed: in 2020 – 69 complaints, in 2021 – 44 complaints, in 2022 – 66 complaints, in 2023 – 82 complaints, and in 2024 – 100 complaints.

In recent years, there has been a gradual increase in the number of complaints examined, especially between 2022 and 2024, which may indicate growing awareness and more active reporting of labour law violations. Complaints submitted to the State Labour Inspectorate regarding possible unequal treatment

at work mostly describe situations in which mobbing, bossing and emotional violence are revealed, for example, emotionally abusive colleagues or managers who behave aggressively and make offensive and humiliating comments, use their higher position of power to worsen the situation of a particular employee, for instance, through the allocation of working hours, the granting or non-granting of a certain number of teaching hours, decisions on awarding bonuses, etc.

During the Covid-19 pandemic, complaints were received concerning unequal treatment based on compliance with epidemic restrictions, for example, bonuses or financial rewards not being paid to employees who were not vaccinated, emotional pressure to be vaccinated, as well as different treatment in relation to the introduction of remote work. The Labour Inspectorate also reports that, regarding possible violations of Sections 7, 29, 34, 60 and 95 of the Labour Law, the State Labour Inspectorate provided 79 consultations in 2020; 238 consultations in 2021; 157 consultations in 2022; 138 consultations in 2023; and 391 consultations in 2024 (Valsts darba inspekcija, 2024).

Intentional self-harm as a cause of death in Latvia remains one of the highest in the European Union – in 2020 it was 60% higher than the EU average. Data included in the information report “Reducing Mortality Due to External Causes of Death (ECD) 2024” prepared by the State Chancellery show that suicide is the most common external cause of death in the 25–74 age group, while in the 15–24 and 75+ age groups it is the second most common cause.

According to 2021 data from the Organisation for Economic Co-operation and Development (OECD), Latvia is among the countries with the highest per capita alcohol consumption. Moreover, unlike in many other countries, alcohol consumption in Latvia has increased over the past ten years (Valsts kanceleja, 2024).

Although direct statistics on the prevalence of alcoholism specifically in relation to working conditions in Latvia are not widely available, it is clear that the work environment and workload can affect employees’ health and habits. Therefore, it is essential that employers promote a healthy work environment and, where necessary, provide support to employees who are facing addiction problems.

Summarising the numerous factors that directly affect people’s health, well-being and satisfaction, it can be concluded that the statistical data are not encouraging, and it is possible that difficulties in the workplace are also a contributing factor in the broader context of people’s dissatisfaction.

### 1. The Concept of Mobbing and Bossing

Mobbing is a term used to describe systematic harassment or aggressive behaviour directed at an employee in the workplace. This behaviour may take various forms, such as: verbal aggression – offensive comments, insults or mocking behaviour; psychological harassment, which manifests as

threats, manipulation, constant humiliation or emotional abuse; isolation – exclusion from the work group or team, isolation from work tasks or other colleagues; physical aggression – although rare, mobbing may also include elements of physical violence; spreading gossip and rumours – false statements about an employee that may damage their reputation (Einarsen, Hoel, Zapf, & Cooper, 2011).

Mobbing can have serious consequences for both psychological and physical health. It can lead to stress, anxiety, depression, suicide attempts and even physical illnesses. Mobbing can also cause reduced work productivity, staff turnover and deterioration of the social work environment.

The term bossing is derived from English and may be understood as “to attack, to scold”. Bossing denotes psychological terror exercised by a manager towards their subordinates, whereas mobbing refers to emotional violence coming from the collective. It reflects distorted human resource management, an inability to build professional relationships while maintaining collective goals, and an inability to provide employees with the opportunity to act and achieve objectives with interpretative freedom and the possibility to work and be individual. By belittling and failing to understand employees, managers effectively deny them the opportunity to contribute to achieving the organisation’s goals. The situations in which an organisation finds itself when pursuing its objectives may vary, just as employees’ individual characteristics influence the results that can be achieved.

In Latvia, the concept of mobbing was initially associated with manifestations of violence among schoolchildren and young people – particularly in the second half of the 1990s. Since 1998, the State Police has undertaken active preventive work in schools to promote a favourable microclimate in educational institutions. By contrast, the microclimate of the work environment remained largely outside the focus of attention for a long time. The situation has changed significantly over the last decade – the Ombudsman began to pay increased attention to the improvement of regulatory frameworks and conducted studies in the field of mobbing. The year 2012 became a significant turning point in the understanding of mobbing in Latvia, when the Free Trade Union Confederation of Latvia published a report on the recognition, prevalence and possible solutions of mobbing in workplaces. This report formed the basis for further discussions and measures.

Since then, mobbing as a concept has become embedded both in scientific literature and in public discourse. An increasing number of employees are aware of the consequences of mobbing and understand the importance of the work environment for human well-being, job satisfaction and overall productivity, which in turn affects the development of the national economy (Tiesībsargs, 2022; Einarsen, Hoel, Zapf, & Cooper, 2011).

## 2. Legal Aspects in Latvian and European Legislation

At present, Latvian legislation does not contain specific legal acts that directly regulate bossing and mobbing as separate forms of workplace risk. However, the general framework of labour law protection includes provisions that protect employees from psychological and emotional violence, discrimination and threats to occupational safety.

Employees who experience psychological violence in the workplace have the right to apply to the employer, the State Labour Inspectorate or other competent institutions. Although there is no separate law on mobbing or bossing, the Labour Law of Latvia serves as the basic regulatory framework in which these issues are indirectly addressed.

- Section 29 of the Labour Law provides that the employer has a duty to ensure safe and healthy working conditions for employees.
- Section 49 of the Labour Law stipulates that the employer must protect employees from psychological and physical harm during working time (Labour Law, 2001).

The Law on Equal Opportunities (2025) prohibits discrimination in the workplace in any form, including discrimination that may manifest as psychological violence – for example, unequal treatment, exclusion from the collective or systematic ignoring of an employee. This law protects employees against discrimination based on gender, age, race, nationality and other protected characteristics. Although the law does not explicitly mention mobbing or bossing, its provisions can be interpreted as applicable to cases of emotional violence in the work environment (Ministru kabinets, 2024).

The problem of mobbing and bossing is also reflected in the Occupational Safety and Health Law, which stipulates that the employer must ensure a work environment that does not harm employees' health. This obligation covers not only physical but also psychological health. Thus, the Occupational Safety and Health Law is one of the most important regulatory acts that can serve as an instrument for ensuring psychological safety in workplaces (Occupational Safety and Health Law, 2001).

The supervision of employment relations in Latvia is ensured by the State Labour Inspectorate, whose task is to monitor compliance with labour law, as well as to review submissions and complaints concerning possible instances of mobbing, bossing and other forms of psychological violence in the work environment (State Labour Inspectorate, 2025).

As a Member State of the European Union, Latvia complies with EU legal acts relating to occupational safety and equal treatment. Various EU Directives on working conditions and the prevention of discrimination support the creation of a favourable and safe work environment and protect employees from psychological and emotional violence as well (European Parliament and Council, 2006).

European Union legislation establishes the rights of workers and promotes the limitation and elimination of psychological violence, mobbing and bossing in workplaces. One of the international documents that indirectly regulates this issue is the European Convention on Human Rights (ECHR). It is an international legal instrument that sets out fundamental human rights and freedoms and is implemented in the member states of the Council of Europe, including Latvia. The Convention entered into force in 1953, and its implementation is supervised by the European Court of Human Rights (ECtHR), based in Strasbourg, France. Latvia acceded to the Convention in 1997. It is one of the key documents in the field of human rights protection and is also applicable in employment relations where there are violations of dignity, equality or safety.

Article 14 of the Convention, “Prohibition of discrimination”, prohibits any discrimination on the grounds of sex, race, religion, political opinion, national origin or other status. This provision may also be applied in situations where emotional violence, including bossing, is identified in the workplace, if it is linked to a protected characteristic or a violation of human rights. Although the ECHR does not explicitly define mobbing or bossing, Articles 3, 8 and 14 can be applied in cases where the work environment has become psychologically unbearable or an employee’s dignity is threatened. The European Court of Human Rights has examined a number of cases related to psychological safety and violations of dignity in the workplace – for example, situations in which an employer or colleagues systematically humiliate an employee or create a toxic environment (European Convention on Human Rights, 1950).

According to data from the State Labour Inspectorate, 67 complaints about unequal treatment in the work environment were received in 2022, 20 of which contained a direct reference to mobbing or emotional violence. As a result of the examination, suspicions were confirmed in 8 cases, while in 48 cases they were found to be unfounded. Based on these cases, two administrative penalties were imposed (State Labour Inspectorate, 2024).

In accordance with Latvian court practice, an employee or official may also object to mobbing in the workplace by bringing an action in court. If a dispute arises between a state institution and an official (for example, a civil servant), the case is examined by an administrative court. Disputes between an employer and an employee are examined by courts of general jurisdiction.

As early as 2012, the Administrative Cases Department of the Supreme Court mentioned mobbing in its judgment (SKA-150/2012), referring to an article on psychological terror by Jānis Neimanis, published in 2004 in the journal “Jurista Vārds”. In this judgment, the Supreme Court annulled the decision of the lower court and emphasised the need for the court to examine the totality of indicators identifying

mobbing, rather than assessing the case formally. The Supreme Court also referred, in the context of mobbing, to Article 94 of the Constitution, which provides that everyone has the right to liberty and personal inviolability (Supreme Court of the Republic of Latvia, SKA-150/2012).

Although the Labour Law does not explicitly mention mobbing, in 2017 the Civil Cases Department of the Supreme Court held (SKC-1267/2017) that in cases of mobbing in the workplace, Section 9(1) and Section 29(1) and (9) of the Labour Law are applicable. In addition, the court defined mobbing as follows: “Mobbing is psychological terror that involves systematic hostile and unethical communication by one or more persons (a superior or a group of colleagues) directed mainly against one individual, with the aim of alienating and excluding them from the collective, creating conditions in which they leave their job.” (Supreme Court of the Republic of Latvia, SKC-1267/2017).

In a 2020 judgment (SKC-276/2020), the Civil Cases Department of the Supreme Court held that “in the case of mobbing, the principle of equal rights is violated and it is to be qualified as a breach of Section 7(1) and Section 28(2) of the Labour Law”. In this judgment, the court explained that mobbing must be assessed on the merits and that there is no fixed time period by which certain actions can be defined as mobbing or not. Given that, by definition, one of the preconditions of mobbing is long-term conduct or action, this decision is an interesting example of court practice. Furthermore, the court held that in cases of mobbing, the injured person is entitled to compensation for non-pecuniary (moral) damage (Supreme Court of the Republic of Latvia, SKC-276/2020).

In 2017, in case SKC-308/2017, the Civil Cases Department of the Supreme Court ruled that if an employee terminates their employment contract due to mobbing, they may terminate the employment relationship without delay; that is, mobbing constitutes “a circumstance which, based on considerations of morality and fairness, does not allow the continuation of the employment relationship” (under normal conditions the employment contract is terminated by giving 30 days’ notice). The court also noted that in cases where an employee indicates circumstances or actions by persons that prima facie suggest mobbing, the burden of proof regarding compliance with the principle of equal treatment shifts to the employer (Supreme Court of the Republic of Latvia, SKC-308/2017).

<b>Case number</b>	<b>Definition of mobbing</b>	<b>Sanction / Legal outcome</b>
<b>SKA-150/2012</b>	Mobbing is defined as the necessity to assess the presence of mobbing indicators rather than evaluating the case in a purely formal manner.	The judgment of the lower court was annulled, and the need to assess the identifying features of mobbing was emphasised.

Case number	Definition of mobbing	Sanction / Legal outcome
SKC-1267/2017	Mobbing is defined as psychological terror involving systematic hostile and unethical communication aimed at excluding an individual from the collective.	No specific sanction was imposed; however, Sections 9 and 29 of the Labour Law were applied.
SKC-276/2020	Mobbing is defined as a violation of the principle of equal rights, which must be assessed on the merits without a fixed time limitation.	Compensation for non-pecuniary (moral) damage was awarded to the injured person.
SKC-308/2017	Mobbing is defined as a circumstance that prevents the continuation of employment relationships based on considerations of morality and fairness.	Recognised as grounds for the immediate termination of the employment contract, with emphasis on the employer's burden of proof.

Fig. 2.1. Interpretation and punishability of mobbing in Latvian court judgments (prepared by the authors)

The authors conclude that although cases of bossing adjudication in Latvia are still relatively new and rare, emerging trends indicate a growing judicial interest in recognising this problem. This is particularly evident in situations where an employee is forced to terminate employment following prolonged negative treatment by management or colleagues. Courts are increasingly acknowledging that employers have an obligation to implement preventive measures to avert psychological violence in the workplace. Although Latvian case law concerning mobbing and bossing is still at a developmental stage, there is clear potential for improving the regulatory framework and strengthening judicial practice in this field. A broader understanding of the psychological and physical impact of bossing on employees is required, alongside the development of more effective occupational safety systems capable of preventing such situations. These may include educational initiatives within organisations, stricter labour inspection controls, and the further development of judicial practice.

### 3. The Importance of the Emotional Environment in Work Organizations

The work environment is not only a physical space but also an emotional one in which relationships, trust, and a sense of belonging are formed. An emotionally supportive environment is essential for

employees' well-being, motivation, and long-term performance. When tension, fear, or indifference dominate the workplace, both employee health and overall organizational effectiveness suffer.

An article published in the *Journal of Vocational Behavior*, Volume 158 (2025), titled "Reasons for Job Change Are More Complex Than 'People Leave Their Bosses'", analyses job changes from an approach–avoidance perspective to examine whether avoidance-related reasons (e.g., problems with supervisors) are indeed more significant than approach-related reasons. The results indicate that employees primarily seek to avoid stress arising from work overload. Moreover, employees often report multiple reasons for changing jobs, including both the pursuit of better career opportunities and the desire to avoid problematic relationships with supervisors. The study also highlights that approach-related reasons are more prominently expressed in exit interviews, whereas avoidance-related reasons dominate anonymous surveys and online employer reviews. The findings emphasize that job-change motives can be better understood through appropriate research approaches, offering new perspectives for future research on employee turnover (Hommelhoff, Keller, & Stemmler, 2025).

An article published in *Organizational Behavior and Human Decision Processes*, Volume 183 (July 2024), titled "The 'Abusive' or the 'Tough Love' Leader? The Role of Leader Performance in Employee Labeling of Abusive Supervision", reveals that employees who experience oppressive supervision do not always categorize their supervisor as abusive. High leader performance reduces negative perceptions, and employees are more likely to interpret the leader's behaviour as strict but beneficial to their development. Overall, the study provides valuable insights into how employees interpret abusive supervision and how these interpretations influence their behaviour and professional development, while also offering recommendations for future research to further clarify these processes (Lount, Choi, & Tepper, 2024).

In *Japan and the World Economy*, Issue 48 (December 2018), an article titled "Good Boss, Bad Boss, Employee Mental Health and Productivity: Evidence from Japan" concludes that, even after controlling for individual fixed effects and other job characteristics, effective communication and managerial competence significantly improve employees' mental health. Insufficient communication and a lack of professional skills increase the risk of employment termination. The study provides important policy implications for workplace practices, emphasizing the role of leadership in employee well-being and productivity, and highlights that leadership training and the adoption of appropriate management styles are effective measures for improving the work environment (Kuroda & Yamamoto, 2018).

Based on the literature review, it can be concluded that the boundary between strict leadership and manifestations of bossing or mobbing is not easily distinguishable. It is necessary to consider the overall

context, individual characteristics among colleagues, ethical considerations, and emotional intelligence. Research confirms that leaders' behaviour, communication, and managerial skills significantly affect employees' emotional state, productivity, and attitudes toward work. Studies also indicate that reasons for job change are multifaceted and that employees' attitudes toward supervisors depend on various factors, including leadership performance and communication skills (Hommelhoff, Keller, & Stemmler, 2025).

#### 4. Evaluation of Best Practices in Preventing Mobbing and Bossing in Different Countries

The Danish Working Environment Authority (WEA) Guidelines No. 4.2.1 on high emotional demands in work involving people describe mechanisms for identifying bossing and outline preventive measures. The guidelines emphasize the necessity of reporting systems. All Scandinavian countries have mechanisms that allow employees to report bossing in the workplace. Specialized internal complaint and support systems have been established, enabling employees to report suspected bossing. The establishment of reporting systems is unequivocally the first step in the identification process. In the United Kingdom, bossing is recognized as a concept, and guidelines have been developed at the national level to address and limit the problem. Particular attention is paid to mediation measures aimed at resolving conflicts at the organizational level (Arbejdstilsynet, 2023).

In the United Kingdom, employment legislation such as the Equality Act 2010 prohibits discrimination and mobbing in the workplace. Consequently, employers are required to implement measures to prevent bossing as a breach of occupational safety. Organizations must educate employees about their rights and available protective measures. Workplace risk assessments must be conducted regularly to identify potential risks of mobbing or bossing. Employees must have the opportunity to provide anonymous feedback and information about the work environment.

Clear policy development and the establishment of support systems are identified as primary measures for eliminating bossing in the United Kingdom. Organizations must develop clear anti-mobbing policies that explicitly include bossing. These policies must be understandable to all employees and specify investigation procedures and applicable sanctions in confirmed cases. Secure and confidential reporting channels must be available. A secondary but essential element is leadership training, focusing on emotional intelligence, effective communication, conflict resolution, and responsibility for improving the work environment. Anonymity must be ensured to protect employees from retaliation and negative consequences. Organizations are required to conduct objective investigations upon receiving reports of bossing (ACAS, 2025).

The literature review highlights key aspects of the Australian approach to reducing bossing. Australia has a comprehensive legal framework ensuring labour protection. The Work Health and Safety Act at both federal and state levels obliges employers to provide a safe and healthy work environment, including protection against psychological violence. Employers must identify and mitigate psychosocial risks, including mobbing and bossing. The Fair Work Act 2009 prohibits discrimination and abusive conduct in the workplace. Employees experiencing bossing may apply to the Fair Work Commission to resolve disputes or seek compensation, and they are protected against retaliation. Employers are legally required to implement preventive measures, including regular psychosocial risk assessments, employee surveys, consultations, and workplace analyses. Most organizations have internal policies outlining reporting procedures and action plans for addressing psychological violence. Mediation plays a central role in conflict resolution, with services often provided by the Fair Work Commission. Training programs for managers and employees focus on conflict management and prevention of psychological violence (Fair Work Ombudsman, 2025).

In the United States, there is no federal law specifically addressing mobbing or bossing; however, several legal instruments protect employees from discrimination, retaliation, and psychological violence in the workplace. Employees may report mobbing or bossing if it is related to protected characteristics such as gender, race, or disability, and may file complaints with agencies such as the Equal Employment Opportunity Commission (EEOC) or pursue legal action (U.S. Equal Employment Opportunity Commission, 2024).

Japan's anti-mobbing policy is based on strict legal standards that place responsibility on employers to prevent mobbing and ensure a safe work environment. Recent legislation, guidelines, and internal organizational policies serve as key measures for reducing mobbing. Japan promotes a positive workplace culture grounded in respect and support, aiming to create a work environment that is both physically and psychologically healthy. Employers are required to conduct regular workplace assessments to identify and mitigate conditions that may foster mobbing, including excessive stress and toxic atmospheres. Regular training programs focus on social behaviour, stress management, and conflict resolution. At the national level, managers receive training to recognize and prevent mobbing and to foster harassment-free and non-discriminatory workplace cultures. Given Japan's traditionally hierarchical work culture, emphasizing respect, harmony, and support is considered essential in preventing mobbing and maintaining a positive organizational climate (Umeda, 2020).

Country	Mobbing policy	Recommendations for prevention
<b>Latvia</b>	In Latvia, mobbing is recognised as psychological terror; however, it is not explicitly mentioned in the Labour Law.	Education on mobbing in the workplace through improved training for employees and managers. Workplace support, including counselling and psychological assistance.
<b>Scandinavia</b>	In Scandinavian countries (Sweden, Norway, Denmark), there is extensive legal regulation addressing mobbing in the workplace, which is recognised as a serious issue.	Preventive measures such as the development of internal policies, employee training, and the implementation of effective complaint systems. Education on the consequences of mobbing in workplaces.
<b>United States</b>	There is no federal law in the United States that directly protects against mobbing; however, many states have introduced their own regulations. Mobbing is often considered a potential form of workplace discrimination.	Strengthening employee rights protection through employment contracts. Education and workplace training on mobbing prevention. Improvement of support systems is recommended.
<b>United Kingdom</b>	In the United Kingdom, mobbing is prohibited within the framework of employment law and is considered a form of discrimination protected by legislation.	Workplace consultation and support systems. Strengthening legal protection and employee education. Encouraging reporting and whistleblowing mechanisms.
<b>Australia</b>	Australia has specific legislation protecting employees from psychological violence and mobbing in the workplace, particularly under the Work Health and Safety legislation (2011).	Establishing clear workplace policies on mobbing and aggressive behaviour. Promoting employee support and providing psychological assistance. Regular training for employees.
<b>Japan</b>	In Japan, mobbing is regarded as a social problem, and increasing attention is being paid to employees' psychological well-being. However, legal protection remains limited.	Improving workplace culture by promoting openness and respect. Implementing stricter internal regulations and strengthening protection against mobbing. Increased use of

Country	Mobbing policy	Recommendations for prevention
		employee assistance programmes is also recommended.

Table 4.1. Comparison of Mobbing Policies in Different Countries (prepared by the authors)

## 5. Recommendations for the Prevention of Mobbing and Bossing

According to the recommendations of the World Health Organization, the prevention of mobbing includes several possible solutions, such as management training that encompasses workplace health and safety, as well as awareness of the consequences of inappropriate behaviour that may lead to psychological violence in the workplace. In order to prevent mobbing and bossing at work, organizations must comply with existing legal frameworks that regulate liability in cases where an employee becomes a victim of emotional abuse. Only a well-structured legal system is capable of regulating the relationship between the harm caused and the imposition of sanctions.

Employees within organizations must be aware of the consequences that may arise from working in an environment characterized by bossing; they must be able to recognize such behaviour and know to whom and in what manner it should be reported. Among the recommendations, the World Health Organization also emphasizes the establishment of support systems in workplaces where employees can receive counselling and assistance.

The World Health Organization further notes that mobbing and bossing can be identified by paying attention to employees' emotional well-being, physical and psychological manifestations, and workplace-related problems that may lead to psychological pressure and violence. Management training, secure reporting mechanisms, and support systems are essential measures for preventing such situations and mitigating their impact on employees (International Labour Office et al., 2002).

Based on an analysis of the recommendations of the Latvian Ombudsman for employers and employees on avoiding mobbing and bossing, the authors of this article have summarized the following recommendations:

### For Employers

1. Comply with all external and internal regulatory acts governing employment relationships, occupational safety, remuneration, and related matters.
2. Ensure the existence of clear and up-to-date internal regulations and their consistent implementation in practice.
3. Maintain high standards of corporate culture and good governance.

4. Promote employee well-being by actively developing feedback mechanisms.
5. Practice openness and clarify ambiguous issues for employees.
6. Do not ignore problems; address conflicts promptly and effectively.
7. Ensure an effective conflict resolution system and respond appropriately to employee complaints.
8. Educate employees on mobbing and emotional intelligence, and provide psychological support.
9. Protect organizational values by fostering empathy and tolerance.

#### For Employees

1. Comply with internal and external regulations, as well as standards of courtesy and professional ethics.
2. Treat colleagues as they would like to be treated themselves.
3. Demonstrate loyalty and avoid intrigue and escalation of conflicts.
4. Do not remain passive observers; support colleagues who are experiencing psychological violence.
5. Contribute to the creation of a work environment in which well-being is a shared responsibility and a collective effort.

The authors summarize the workplace well-being strategy in a diagram.



Fig. 5.1. Workplace Well-Being Strategy (developed by the authors, based on “Practical Guide on the Well-Being of Staff Involved in Asylum and Reception”) (European Union Agency for Asylum, 2022).

#### Conclusions

In Latvia, the topic of mobbing and bossing remains insufficiently researched. Given the relevance of the issue, it can be concluded that the research field in this area is broad and has the potential to make a significant contribution to improving organizational culture, strengthening legal protection, and

enhancing the internal microclimate within organizations. Mobbing and bossing constitute serious workplace risks that affect employees' mental health, well-being, and work productivity. They may be directly associated with mental disorders and increased work incapacity.

There is no specific law in Latvia that directly regulates mobbing and bossing; however, existing legal provisions indirectly protect employees. Data from the State Labour Inspectorate for 2024 indicate increasing employee awareness and a growing number of complaints related to potential emotional violence and discrimination in the workplace. Statistics on sickness absence, occupational diseases, and mental health disorders in Latvia point to a high impact of workplace stress on employees, highlighting employers' responsibility to ensure a psychologically safe work environment.

European Union directives and international human rights instruments may also be applied in cases of mobbing and bossing, particularly where employees' fundamental rights are violated. An analysis of international practices in preventing mobbing and bossing highlights the experience of Scandinavian countries, Australia, and the United Kingdom, as these countries offer the most comprehensive approaches to prevention. In these contexts, legal regulation is complemented by specific preventive mechanisms, such as reporting systems, mediation, and leadership training, which contribute to the creation of a safe and inclusive work environment. At the same time, the experience of Japan demonstrates that even under conditions of limited legal protection, positive changes in the workplace can be achieved through the targeted development of internal organizational culture, leadership training, and regular workplace monitoring. Emphasis on mutual respect, emotional intelligence, and preventive measures, including training and the reduction of work-related stress, are key elements of Japan's strategy for effectively preventing psychological violence in the workplace.

To effectively prevent mobbing and bossing, it is necessary to develop more specific regulatory frameworks, advance judicial practice, and establish preventive mechanisms, including education, management training, and support systems within organizations. Preventing mobbing and bossing in the workplace requires the cultivation of an open, ethical, and supportive organizational culture. By fostering mutual respect, empathy, and open communication, it is possible to significantly reduce the risks of mobbing and bossing and to promote a healthy, safe, and productive work environment.

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# MANAGEMENT OF COUNTERACTING THE SMUGGLING OF SPECIMENS OF SPECIES PROTECTED BY THE CITES CONVENTION ON THE BORDERS OF THE REPUBLIC OF POLAND – CONDITIONS, DYNAMICS AND IMPLICATIONS FOR ENVIRONMENTAL SECURITY

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## Abstract

**Management of counteracting the smuggling of specimens of species protected by the CITES Convention on the borders of the Republic of Poland – conditions, dynamics and implications for environmental security**

**Key Words:** *CITES, cross-border smuggling, protection of endangered species, Customs and Tax Service, illegal trade in fauna and flora.*

The article discusses the issue of illegal smuggling of plant and animal specimens protected under the Washington Convention (CITES), focusing on the area of the eastern borders of the Republic of Poland. The aim of the study is to show the scale, structure and dynamics of this phenomenon in the context of the functioning of Poland as a member state of the European Union, constituting the external border of the Community. On the basis of the analysis of statistical data for the years 2015–2023 as well as legal regulations and control practice of the Customs and Tax Service, the main forms of smuggling, the most frequently detained categories of goods and the environmental and systemic risk were assessed. The article indicates the need to intensify control activities, develop international cooperation and implement prevention and educational strategies in order to more effectively protect biodiversity and prevent environmental crime.

## Kopsavilkums

**Saskaņā ar CITES Konvenciju par Polijas Republikas robežām aizsargāto sugu īpatņu kontrabandas apkarošana – apstākļi, dinamika un ietekme uz vides drošību**

**Atslēgvārdi:** *CITES, pārrobežu kontrabanda, apdraudēto sugu aizsardzība, Muitas un nodokļu dienests, nelegāla faunas un floras tirdzniecība.*

Rakstā aplūkots jautājums par augu un dzīvnieku īpatņu nelikumīgu kontrabandu, kas aizsargāti saskaņā ar Vašingtonas konvenciju (CITES), koncentrējoties uz Polijas Republikas austrumu robežu teritoriju. Pētījuma mērķis ir parādīt šīs parādības mērogu, struktūru un dinamiku saistībā ar Polijas kā Eiropas Savienības dalībvalsts, kas veido Kopienas ārējo robežu, darbību. Balstoties uz statistikas datu analīzi par 2015.–2023. gadu, kā arī Muitas un nodokļu dienesta tiesisko regulējumu un kontroles praksi, tika izvērtēti galvenie kontrabandas veidi, visbiežāk aizturētās preču kategorijas un vides un sistēmiskais risks. Rakstā norādīta nepieciešamība pastiprināt kontroles darbības, attīstīt starptautisko sadarbību un īstenot profilakses un izglītības stratēģijas, lai efektīvāk aizsargātu bioloģisko daudzveidību un novērstu noziegumus pret vidi.

## Introduction

As a result of human activity related to trade and cross-border movement of rare, often endangered species of animals and plants, they are irretrievably lost. This brings serious depletion of the natural environment.

Obtaining valuable specimens is often associated with killing animals to obtain their specimens, as well as inhumane and illegal transport across the border, which very often leads to their death. Uncontrolled exploitation of rare plant species and wild animals caused by international trade and

smuggling is becoming a widespread international phenomenon (Ignatowicz 2017:77). This is confirmed by the number of thwarted attempts to smuggle endangered species of fauna by officers of the National Tax Administration at the external borders of the European Union, with particular emphasis on the Polish-Ukrainian state border.

The article *The phenomenon of smuggling specimens of species protected by the CITES convention on the borders of the Republic of Poland – conditions, dynamics and implications for environmental safety* is an analysis of the issue of illegal movement of endangered species across the external borders of the Republic of Poland. The subject of the study is the phenomenon of smuggling of specimens of flora and fauna protected under the CITES Convention and its impact on the ecological and environmental security of Poland as a member state of the European Union.

The main objective is to show the scale, dynamics and nature of illegal trade in endangered species and to indicate the threats resulting from this practice, both for environmental protection and for border security. Specific objectives include, m.in, presenting the legal basis under the Washington Convention, characterizing the smuggling methods used, analyzing statistical data on the number of arrests in 2015-2023, as well as assessing the risks associated with the introduction of invasive species into the national ecosystem.

In the analysis, the authors used the analysis of normative and legal documents, including both acts of international law (CITES Convention), as well as EU and national law. The analysis of statistical data obtained from the Ministry of Finance and the Customs and Tax Service played a key role. Thanks to this, it was possible to capture the scale of the phenomenon and its variability over time. The authors also used case studies, presenting specific examples of revealed smuggling attempts at individual sections of the borders, and used inductive reasoning, leading to the assessment of threats and the formulation of final conclusions of a general nature.

### **Material and methods**

This study uses an interdisciplinary approach, combining elements of legal, statistical and operational analysis in the context of management of counteracting smuggling of protected species. The research was based on the analysis of empirical data, normative documents and source materials made available by public institutions.

The empirical material consisted of statistical data from the Ministry of Finance and the National Tax Administration on the seizures of specimens covered by the CITES Convention at the external borders of the Republic of Poland in the years 2015–2023. These data concerned the number of

smuggling cases, the type structure of the detained specimens, as well as the directions and frequency of attempts to transport them through border crossings. Particular attention was paid to the analysis of the Polish-Ukrainian border, which is one of the key transit sections. The research methods included:

- analysis of the content of normative acts regulating the trade and protection of endangered species – including the Washington Convention (CITES), EU regulations and national regulations,
- statistical analysis of numerical data on the number of seizures and the number of seized specimens broken down by year and category of goods,
- case studies of selected smuggling incidents, in order to identify the methods of operation of smugglers and the effectiveness of the response of control institutions,
- inductive reasoning, allowing the results of the analysis to be extrapolated to the level of systemic conclusions and recommendations for the environmental safety management policy.

The analysis was carried out from the perspective of public and environmental management, in order to assess the effectiveness of institutional mechanisms to counteract illicit trade and to formulate recommendations for strategic actions in the field of border control and nature conservation. The context of systemic risks associated with the introduction of invasive species and threats to biodiversity is also taken into account.

### **Legal protection – Washington Convention (CITES)**

The issue of overexploitation of plant and animal species for commercial purposes is an international problem with a global reach. In order to effectively control the international trade in wild species of plants and animals, the Washington Convention (CITES) was created (Convention on International Trade in Endangered Species of Wild Fauna and Flora, done in Washington, D.C., March 3, 1973, 1973). The Convention defines a system of permits and certificates issued for the purposes of international trade in plant and animal specimens of species protected under the Convention. These species are included in three annexes to the Convention. The selection and assignment of species to individual appendices results from the degree of their threat:

Annex I covers all endangered species that are or may be traded. Trade in specimens of these species should be subject to particularly strict regulation in order to prevent further threats to their existence and may only be permitted in exceptional circumstances. Annex II includes:

- all species which are not currently threatened with extinction are nevertheless likely to become extinct if the trade in specimens of these species is not subjected to strict rationing to prevent exploitation incompatible with their conservation;

- certain species which should be regulated in order to subject to effective trade control in specimens of Annex II species in accordance with point (a).

Annex III covers all species for which one Party considers it appropriate to regulate them in order to prevent or limit the exploitation of those species and to require the cooperation of other Parties in trade control (Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington, 3 March 1973, 1973:3).

The lists included in the annexes of the Washington Convention include a total of about 35.5 thousand species, of which about 5600 are animals, and the rest are plants. Over 34.4 thousand species are included in Appendix II, while the smallest group are species published in Appendix III, about 160 endangered species regulated by one state party to the convention (Kepel, Kala 2016:13).

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In accordance with Article 2(t) of Council Regulation (EC) No. 338/97 of 9 December 1996 on the 'specimen' means any animal or plant, live or dead, belonging to a species listed in Annexes A to D, any part thereof or derived product, whether or not contained in other goods, and any other commodity which, according to an accompanying document, packaging or marking or label, or any other circumstance, is intended to contain or contain parts or derived products of animals or plants belonging to those species, unless, by express exclusion, such parts or derived products are not subject to the provisions of this Regulation or to the provisions relating to the Annex in which the species are listed, by indicating to that effect in those Annexes" (Council Regulation (EC) No 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein, 1996). According to the above-mentioned article, the specimens are, among others: live animals and plants, hunting trophies and stuffed animals, products made of horns, animal teeth and bones (ivory), jewelry, jewelry and souvenirs containing parts of protected plants and animals, furs from wild cats, leather jackets and shoes made of crocodile or snake skins, leathercraft products such as handbags, wallets, belts, made of snake skins, crocodiles, monitor lizards, etc., medicines containing powdered animal or plant fragments (so-called oriental medicine) (Chackiewicz, 2013:38-39).

### **Smuggling of protected plant and animal specimens**

According to M. Chackiewicz, smuggling of endangered species of plants and animals and their parts called specimens is:

- the specimens are transported through a border crossing not designated for this purpose;
- the specimens are transported through the designated border crossing point without reporting to customs control or without having the required documents;
- presenting false or forged documents during the inspection;
- presentation during the customs control of documents compliant with the applicable law, but issued for another specimen;

- transport of more specimens than indicated in the documents;
- transport of specimens other than those declared for customs clearance, for which the required documents have been issued,
- transport of specimens in quantities exceeding certain standards) (Chackiewicz, 2013:18).

The most important economic factors on the scale of illegal markets for endangered animal and plant species and markets related to the acquisition and control of the world's natural heritage are economic factors, which, as a result of globalization, will evolve towards illegal industries related to economic crime, which is an organized form of international crime (Plywaczewski, 2016:31). The meat industry and gastronomy are one of the most important industries using animal or plant raw materials. The main recipients are renowned hotels and restaurants using, for example, the meat of bongo antelopes, rare species of fish, chimpanzee or gorilla, caviar obtained from sturgeon, eggs of exotic birds or oils of animal and plant origin (Plywaczewski, 2016:32). Also in the pharmaceutical and cosmetics industry, the basis for the production of many dietary supplements, medicines and cosmetics are ingredients of animal origin – liquids taken from unique species of snakes are used in the production of medicines and serums (Plywaczewski, 2016:33).

In the music industry, not only wood from protected species of trees is used to build many musical instruments, but also parts of various mammals or reptiles are used to make musical instruments, e.g. white keys of pianos, pianos or accordions in the past were often made of bone. One violin bow can include parts of seven species of plants and animals, and the shaft of a good quality bow is most often made of wood from a protected tree species – fernambuk (Kepel, Kala 2016:99-100). The souvenir and jewelry industry also uses natural raw materials of animal origin for the production of their products, most often exotic shells, dried seahorses, corals or ivory (Plywaczewski, 2016:34).

One of the cross-border threats of an environmental nature is organized cross-border crime related to the smuggling of endangered species of fauna and flora (Chackiewicz, 2016:33). On 1 May 2004, Polish's accession to the European Union, and then on 20/21 December 2007, the accession to the Schengen Area, the status of the Polish border changed. The borders with Belarus, Russia and Ukraine became the external borders of the European community, while the borders with Lithuania, Slovakia, the Czech Republic and Germany were given the status of internal borders, which affected the free movement of people and goods. Therefore, Poland has become both a transit corridor through which endangered species are transported from Ukraine, Russia and Belarus to Germany, the Netherlands or France, and a country of final destination for smuggled specimens (Chackiewicz, Kostecka, 2017:132).

The subject of smuggling discovered and thwarted by the Customs and Tax Service or the Border Guard (Act of 16 November 2016 on the National Tax Administration) are exotic plants, invertebrates, reptiles, amphibians, fish, birds, mammals and products made of them, e.g. bones, skins, antelope wool or caviar (Chackiewicz, 2013:132).

Trade, introduction or movement into the EU or beyond its borders of specimens of species included in the annexes of the Washington Convention requires the presentation of appropriate documents to customs (Council Regulation (EC) No. 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade in them, 1996, Commission Regulation (EC) No 865/2006 of 4 May 2006 laying down rules for the implementation of Council Regulation (EC) No 338/97 on the protection of species of wild fauna and flora by regulating trade therein, 2006). Criminal groups involved in illegal trade and transport of endangered species of flora and fauna by falsifying, forging or altering customs and border documentation attempt illegal transport. These documents may contain inconsistent data on the number of transported specimens, species, source of origin or place of delivery. The introduction of endangered CITES species into the EU can also take place by providing false data about the transported shipment (Chackiewicz, 2013:27-28).

### **Analysis of the dynamics of smuggling of CITES specimens at the Polish borders in 2015–2023**

Statistical data on the number of arrests and the number of CITES specimens seized by the Customs and Tax Service at the borders of the Republic of Poland in the years 2015–2023 allow for the identification of significant trends in the illegal trade in endangered species. In the analysed period, significant variability of both indicators was observed – both the number of arrests and the number of specimens revealed.

The number of smuggling arrests remained at the level of 77 to 145 per year, with a wave trend. Between 2015 and 2017, there was a marked decrease in the number of arrests (from 114 to 87), which may indicate a temporary decrease in smuggling activity or its better masking. In the following years, there was an intensification of activities – in 2018, 100 arrests were made, and in 2019 this number reached the maximum of a decade – 145 arrests, which may indicate the intensification of organised smuggling on Polish's eastern borders, mainly with Ukraine.

A much more irregular course was recorded in the case of the number of retained specimens. In the years 2015–2017, this number decreased steadily (from 10,677 to 3,597), while in 2018 it almost

quadrupled – to 13,811 heads. The year 2019 saw a sharp increase in the number of specimens seized to 368,631, indicating the disclosure of exceptionally large shipments, likely containing bulk goods such as Asian medicine medicines or other processed products containing animal and plant ingredients. Such a high score may also be due to large-scale one-off operations, which disrupts the overall annual trend.

Between 2020 and 2023, further volatility in smuggling is evident. In 2020 and 2021, 20,950 and 20,928 specimens were detained, respectively – which may indicate that the number of illegal shipments has stabilized after the record year 2019. The year 2022 again brought a marked increase to 89,596 specimens, while already in 2023 a drastic decrease was recorded to 4,169 specimens detained, although the number of interventions remained relatively high (105 arrests). This may indicate that smuggling is fragmented or that its nature is changing – from large groupage shipments to smaller and more dispersed batches.

Specification of events in years	2015	2016	2017	2018	2019	2020	2021	2022	2023
Number of Stops	114	77	87	100	145	83	126	89	105
Number of detainees CITES specimens	10677	8582	3597	13811	368631	20950	20928	89596	4169

Table 1 Number of seizures and number of CITES specimens seized in Poland by the Customs Service/Customs and Tax Service in the years 2015 – 2023. Source: In-house analysis based on data obtained from the Ministry of Finance website<sup>1</sup>

The data in Table 2 illustrate the scale and structure of smuggling of various categories of specimens protected under the CITES Convention, disclosed by the Polish Customs and Tax Service in 2015–2023. The analysis allows to identify the dominant types of illegally transported specimens, the variability of smuggling intensity and the evolution of smugglers' methods of operation.

The number of detained live animals fluctuated significantly. A particularly high value was recorded in 2022 (9,270 animals), which may indicate the discovery of several large transports involving e.g. reptiles, amphibians or medicinal leeches. On the other hand, exceptionally low numbers were recorded in 2020 (10 units) and 2023 (275 units), which may be due to pandemic restrictions or changes in smuggling routes and techniques. The high number of seizures in 2016 and 2018 (4,784 and 5,551 units, respectively) indicates the recurrent nature of this practice and the possible concentration of smuggling on live specimens intended for further sale or use for pseudo-medical purposes.

<sup>1</sup> See. Statistics of CITES specimen arrests by Customs and Customs: *CITES Arrests by Customs in 2015*, *CITES Arrests by Customs in 2016*, *CITES Arrests by Customs in 2017*, *CITES Arrests by Customs in 2018*, *CITES Arrests by Customs in 2014*, *CITES Arrests by Customs in 2014*, *CITES Arrests by Customs in 2019*, *CITES arrests made by the Customs Service in 2020*, *CITES arrests made by the Customs and Tax Service in 2021*, *CITES arrests made by the Customs and Tax Service in 2022*, *CITES arrests made by the Customs and Tax Service in 2023.*, <https://www.podatki.gov.pl/clo/informacja-dla-osob-fizycznych/towary-objete-ograniczeniami-i-zakazami/cites-gatunki-zagrozone-wyginieciem/>, [20.05.2025]

Between 2015 and 2023, smuggling of live plant specimens occurred sporadically and in small quantities. The highest number of cases was recorded in 2015 (62 units/kg), while in other years the numbers were marginal (1–26 units). This phenomenon appears to be incidental, which may be due to logistical difficulties in transporting plants or effective control at the phytosanitary level.

This category stands out both in terms of the number of arrests and the rapid fluctuations in quantity. Between 2015 and 2021, drug smuggling remained stable, with a marked increase in 2020 (20,813 units). However, 2019 was an absolutely record-breaking year – as many as 368,103 units were revealed, which may be the result of one or more large smuggling operations. After this peak period, a decrease was recorded (2022 – 6,725 units, 2023 – 3,471 units), which may indicate changes in smuggling routes or preventive measures of customs services.

Despite the high market value of caviar, its smuggling was rare and in small quantities. The highest disclosure took place in 2018 (164.6 kg), while in other years the numbers did not exceed 5 kg. These data suggest that caviar smuggling may be local, often associated with single attempts to transport luxury goods.

Reef-forming corals are a constant, albeit irregular, object of smuggling. The largest acquisition took place in 2017 (18,018 kg), which was probably related to a groupage shipment. In other years, the size of acquisitions ranged from 9 to 47 kg, with the exception of 2023, where 26 kg were seized. These increases may be related to the intensification of tourism and the lack of awareness of travelers about the conservation status of souvenirs containing coral fragments.

In 2015, an attempt to smuggle as much as 555.4 kg of European eel was recorded – an unprecedented incident in the following years. Musical instruments containing protected elements appeared in the data in only three years – the largest case was 2,083 kg in 2017. Smuggling of objects made from plants appeared only in 2020 and involved 100 pieces, which indicates a new area of interest for smugglers, possible for further observation.

<b>Specification specimens seized in the years</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
<b>live specimens of animals</b>	597	4784	526	5551	137	10	1558	9270	275
<b>live plant specimens (pcs/kg)</b>	62	1	26	6	-	5	5	-	22
<b>Asian medicine medicines (pcs)</b>	9986	3721	910	8238	368103	20813	19061	6725	3471
<b>caviar (kg)</b>	1,3	4,2	4,07	164,6	0,13	-	9	-	5,1
<b>calcareous skeletons of reef-forming corals (kg)</b>	32,2	47	18018	20	30	15	9	14	26
<b>European Eel (kg)</b>	555,4	-	-	37,8	-	-	-	-	-
<b>musical instruments with the use of protected specimen elements (kg)</b>	-	-	2083	-	30	-	-	0,72	-
<b>specimens made from plants (pcs)</b>	-	-	-	-	-	100	-	-	-

Table 2 Specification of specimens seized by the Customs Service/Customs and Tax Service by type of CITES specimens in the years 2015 – 2023. Source: Own work based on data obtained from the Ministry of Finance website <sup>2</sup>.

Analyzing the dynamics of CITES crime on the land sections of the EU's external border with Ukraine, Belarus and Russia, it should be stated that Asian medicine medicines containing derivatives of endangered species are most often smuggled. China is the leader in obtaining and using unique species of flora and fauna, through extensive supply and distribution networks of necessary products, supplying the dynamically developing folk medicine industry (Plywaczewski, 2016:34). About 1700 species of plants and 50 species of animals are used in traditional Chinese medicine, of which 50 species of plants and 20 species of animals used in the production of traditional Chinese medicine are protected species included in the CITES list (Plywaczewski, 2016:249).

Live animals illegally transported across the border often travel in unacceptable conditions. To transport them, smugglers use plastic bottles, boxes, sacks, cartons, clothes equipped with specially sewn pockets or tubes sewn into the lining are also used (Chackiewicz, 2013:26). In vehicles, on the other hand, specially prepared compartments in the construction of vehicles are used for smuggling. Small items are often transported in personal luggage or are placed in luggage among other transported goods. At land border crossings with Ukraine, Russia and Belarus, the most frequently smuggled species of animals and plants are: live species of snakes and live medicinal leeches used in hirudotherapy, sturgeon fish caviar used for the needs of gastronomy, live and prepared animals – intended for collector's and commercial purposes intended for hobbyists and enthusiasts (Tusiński, 2016:7-8).

According to R. Tusiński, an expert of the Customs and Tax Service from the Customs Department at the Ministry of Finance, "Trade in endangered species is compared to drug trade or arms trade. The amount of funds and money involved by different criminal organizations is similar in these areas. It is estimated that the illegal transport of endangered species alone is worth about USD 20 billion" (Boroń 2025).

The phenomenon of smuggling of endangered species of flora and fauna not only affects the depletion of the natural resources of the country in which they were obtained, but may pose a serious threat to the country where invasive alien species have been smuggled. Invasive animals and plants spread easily and adapt to new areas, above all, they are difficult to eradicate. They cause degradation of the natural environment and threaten other species of domestic flora and fauna. Invasive animals and plants can transmit a variety of diseases not found in the national ecosystem, posing a threat to humans and animals.

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<sup>2</sup> Ibidem.

In order to counteract the occurrence of invasive species of concern for biodiversity and related ecosystem services in the European Union, a list of invasive alien species has been drawn up (Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species, Commission Implementing Regulation (EU) 2016/1141 of 13 July 2016 adopting the list of invasive alien species of Union concern in accordance with Regulation (EU) No 1143/2014 of the European Parliament and of the Council, Commission Implementing Regulation (EU) 2017/1263 of 12 July 2017 updating the list of invasive alien species of Union concern established in Commission Implementing Regulation (EU) 2016/1141 pursuant to Regulation (EU) No 1141 of the European Parliament and of the Council 1143/2014) threatening the Member States of the Union. According to Article 3(2) of the Regulation, an 'invasive alien species' means an alien species whose introduction or spread has been identified to threaten or adversely affect biodiversity and related ecosystem services.

The problem of the spread of invasive plant species in Poland was the objective of the NIK audit. The audit was aimed at establishing, verifying and evaluating legal solutions, existing state strategies and programs for combating invasive plant species, taking into account the tools for the elimination of Caucasian hogweed and the method of financing these activities. In addition, the previous activities in the field of combating Caucasian hogweed were evaluated (Supreme Audit Office 2020).

### **Conslusions**

The phenomenon of smuggling specimens of species protected by the CITES Convention is a significant challenge for the environmental and border security management system of the Republic of Poland. Analysis of data from 2015–2023 confirms that Poland – as a border state of the European Union – plays the role of both a transit and a destination country in international routes of fauna and flora smuggling. The dynamics of smuggling, its irregularity and the variety of smugglers' modus operandi point to the difficulties in effectively managing this threat through traditional control measures alone.

In the context of public governance, there is a need to move from a reactive model (based on interventions and retention) to a proactive model, in which risk management, threat forecasting and integration of the activities of various actors – both national and international – play a key role. Effective management of CITES smuggling requires better use of analytical tools, including decision support systems, predictive analytics, and databases on endangered species and smuggling routes.

The results of the research also indicate the need for continuous improvement of cooperation procedures between the Customs and Tax Service, the Border Guard, the Environmental Protection Inspectorate and international and non-governmental organizations. The current legal regulations create

an institutional framework, but they require effective implementation and appropriate human and technological facilities. Cases of large consignments of goods containing ingredients of animal and plant origin, as was the case in 2019, show that smuggling can be organised and linked to cross-border crime with a high degree of professionalisation.

Another important aspect that should be taken into account as part of anti-smuggling management is the role of education and prevention. A lack of public awareness of the consequences of the illegal trade in endangered species, including the risk of introducing invasive species into the EU, leads to increased market vulnerability to such commodities. Therefore, environmental risk management must also include an information and educational component aimed at travellers, importers, representatives of the tourism and trade industries.

To sum up, effective management of counteracting the smuggling of CITES specimens should be based on an integrated approach taking into account: (1) interdisciplinary activities, (2) cross-sectoral cooperation, (3) development of competences of border and environmental services, (4) use of modern analytical tools, and (5) education and social communication. Only in this way will it be possible to reduce the risks resulting from the illegal trade in protected species and ensure consistency of actions for the environmental safety of the European Union.

The phenomenon of smuggling of specimens of fauna and flora protected by the CITES Convention remains one of the significant problems of contemporary environmental protection and cross-border control, especially in the context of Polish's functioning as a border state of the European Union. The analysis shows that the Polish-Ukrainian border is an important route for the illegal transport of goods containing protected species, with the scale of the practice strongly varying depending on the year, the form of smuggling and the type of detained specimens.

Statistical data for 2015–2023 show the irregular nature of this practice, especially in the context of the number of specimens seized – from several thousand per year to values exceeding several hundred thousand, as was the case in 2019. Smuggling takes various forms – from the transport of live animals and plants, through processed food products and medicines of Asian medicine, to luxury items containing elements of organic origin. In particular, the smuggling of medicinal products and pseudo-medical preparations, often in the form of pills and ampoules, indicates the organised nature of the activity and a wide network of recipients.

In the light of the conducted research, it should be emphasized that the effectiveness of counteracting CITES smuggling largely depends on the quality and intensity of activities carried out by the Customs and Tax Service and cooperation with international and non-governmental institutions. The

implementation of educational solutions and raising public awareness of the environmental effects resulting from the illegal trade in endangered species also remain crucial.

The conclusions of the analysis clearly indicate that the phenomenon of smuggling CITES specimens should be treated as a challenge not only in the ecological dimension, but also in the state security policy. It is therefore necessary to further strengthen surveillance mechanisms, expand control infrastructure and implement innovative methods for detecting smuggling, including digital solutions and risk analysis. Only integrated action at national and European level can ensure effective protection of biodiversity and reduce the risks posed by the illegal trade in protected species. It should also be noted that the smuggling of endangered species of flora and fauna is associated with the risk of introducing invasive animals or plants into Polish and the European Union, causing degradation of the natural environment and threatening other species of domestic flora and fauna.

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# DEPOPULATION: CHALLENGE TO FIGHT OR ADVANTAGE TO USE

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## Abstract

### Depopulation: challenge to fight or advantage to use

*Key Words: depopulation, strategic planning, human resources, environment change*

Although the number of populations in the world continues to grow, and according to the world population census data in 2025 has already reached 8.2 billion, in a large part of the developed countries, including Latvia, the number of populations is decreasing and the population as a whole is ageing. It is Europe that is changing remarkably, and it is particularly facing falling birth rates, the ageing of society, increasing urbanization and other challenges. The unfavourable demographic situation has mainly developed in cities and regions, where the number of deaths systematically exceeds the number of births, the net reproduction rate of the population is negative, as well as economically less developed countries have lost their population due to active migration, as people have gone in search of better opportunities for living, well-being, work or education. The aim of the research is to comprehensively analyse the factors and implications of depopulation, evaluate the associated challenges and opportunities, and initiate recommendations to address these issues effectively. The article combines both qualitative and quantitative data collection methods to gain a more comprehensive understanding of the specific issue. The present paper reveals that challenges of depopulation can be influenced by complex policies, addressing different aspects of the phenomenon, based on local place and situation, which are necessary for a successful outcome.

## Kopsavilkums

### Depopulācija: kā izaicinājumus atrast priekšrocības

*Atslēgvārdi: depopulācija, stratēģiskā plānošana, cilvēkresursi, vides izmaiņas*

Lai gan pasaules iedzīvotāju skaits turpina pieaugt un saskaņā ar pasaules iedzīvotāju statistikas datiem 2025. gadā tas jau ir sasniedzis 8,2 miljardus, lielā daļā attīstīto valstu, tostarp Latvijā, iedzīvotāju skaits samazinās un sabiedrība kopumā noveco. Tieši Eiropa ievērojami mainās, un tā īpaši saskaras ar zemu dzimstību, sabiedrības novecošanos, pieaugošu urbanizāciju un citiem izaicinājumiem. Negatīvā demogrāfiskā situācija galvenokārt ir izveidojusies pilsētās un reģionos, kur mirušo skaits sistemātiski pārsniedz dzimušo skaitu, iedzīvotāju neto reprodukcijas rādītājs ir negatīvs, kā arī ekonomiski mazāk attīstītās valstis ir zaudējušas iedzīvotājus aktīvas migrācijas dēļ, jo cilvēki ir devušies meklēt labākas dzīves, labklājības, darba vai izglītības iespējas. Pētījuma mērķis ir visaptveroši analizēt depopulācijas faktorus un sekas, novērtēt saistītos izaicinājumus un iespējas, kā arī iniciēt rekomendācijas, lai efektīvi risinātu šos jautājumus. Rakstā apvienotas gan kvalitatīvās, gan kvantitatīvās datu vākšanas metodes, lai iegūtu vispusīgāku izpratni par konkrēto problēmu. Šis raksts atklāj, ka depopulācijas izaicinājumus var ietekmēt stratēģiska, daudzas jomas aptveroša politika, kas risina dažādus šī fenomena aspektus, balstoties uz konkrētām vietām un situācijām, kas ir nepieciešama veiksmīgam rezultātam.

## Introduction

Depopulation is one of the biggest challenges facing cities and regions around the world, including Latvia and Europe as a whole. Affected territories are trying to accept and address this challenge by developing planning documents and researches, as well as by identifying, analysing and adapting examples of good practice of other countries to their own needs. The unfavourable demographic situation has mainly developed in cities and regions, where the number of deaths systematically exceeds the number of births, the net reproduction rate of the population is negative, as well as economically less developed countries have lost their population due to active migration, as people have gone in search of better opportunities for living, well-being, work or education.

Despite the economic growth over the past 30 years, the number of Latvia's population during this period has continued to decrease by every year, which has long ranked Latvia among the fastest depopulation experienced countries in the world in accordance with Official Statistics of Latvia. The areas affected by these challenges are trying to accept and tackle them through the development of planning documents and different studies as well as the analysis and adaptation of good practices. Both globally and in Latvia, the tendency to solve the problem of depopulation is common: with the help of strategies aimed specifically at improving the economic situation, however, international experience increasingly shows that the causes of depopulation are much more complex to be solved. Economic factors are essential; however, it is impossible to stop the issue only by those. They need to be combined or replaced by classic investments of a social nature, such simple as in social services, healthcare, housing, lifelong learning, support for businesses and the creation of wellbeing in general. Special care must be taken for people, human resources and human-potential, generally improving their well-being by complex upgrade of the quality of life of the population.

Depopulation affects all spheres, so, looking at the topic in a complex way, a connection with any area of interest can be found. Depopulation creates a 'domino effect', as it greatly affects the insufficiency of human resources in various territories, regions and municipalities, as well as increases regional inequality and decreases the level of development. Through several decades, in a large part of the developed countries, there have been made a lot of different actions to fight this challenge of the decreasing number of populations, however, not a lot has changed. However, the problem is very relevant, as well as aging and migration in this context.

Within several years have not changed the depopulation situation and impact in Latvia. Depopulation continues to be a major challenge at all levels, which must be solved with a complex approach or a radical change of view, for example, looking for advantages. Depopulation is the biggest threat to an economy based on growth. Switching to a model, based on lower birth rates, could help fight climate change and increase prosperity. People, human resources and human-potential must be positioned as the core, around which all the essential environment for the development and sustainability must be created. Depopulation could bring positive change if it is viewed not as a problem, but as an advantage, by understanding and dealing more deeply with its causes, rather than intensively struggling with the consequences.

#### Present Situation of Population and Depopulation

In accordance with world population statistics, the current world population is 8.215.391.119 people on April 10, 2025. The net population increase this year is 18 138 926 people ('net population growth' = births minus death). The world's population continues to grow, and according to the World Census data,

it will reach 8.5 billion by 2030. The world birth rate will peak around the mid-2080s, when the population will reach about 10 billion. However, in most developed countries, especially in Europe, including Latvia, the population is decreasing and society is generally aging. So, it is clearly apparent that depopulation is not a worldwide problem, it is more regional one.

According to the United Nations the term 'population' is defined as the total population of a given country or area (province, city, metropolitan area etc.) or the population of a country or area (Osikhotsali, 2025). This gives rise to the definition of depopulation: the state or process of a decrease in population or an activity that results in fewer people living in a country or area. Depopulation is a new demographic reality in Europe and in various regions of the world.

Population decline, or depopulation, is determined by the interaction of four main factors:

- The birth rate is below the replacement level;
- Mortality is low and life expectancy is increasing, which contributes to the increase in the number and proportion of the elderly people in the total population or the ageing of the population;
- As a result of the ageing of the population and the numerical decrease of the younger generations of reproductive age, the general factors of natural increase of the population decrease, and the age structure begins to hinder the growth of the population;
- The balance of international migration is negative (Krūmiņš, Krišjāne, 2024).

At the root of depopulation are the following problems: demographic isolation leading to high transport costs, emigration, aging and low birth rates, weak economic structure and low gross domestic product, which in some places lead to poverty in smaller or even larger regions.

The consequences of depopulation are negative. First, it is a threat to the rural and regional economy, a challenge to various policy areas, loss of family values, adjustment of education policies, changes in labour market policy, social protection and health systems, housing policy issues, adjustment and improvement of the field of migration and integration. Depopulation creates a challenge to develop theories of economic, social and demographic development, models of global and territorial development, to review policies related to various demographic growth.

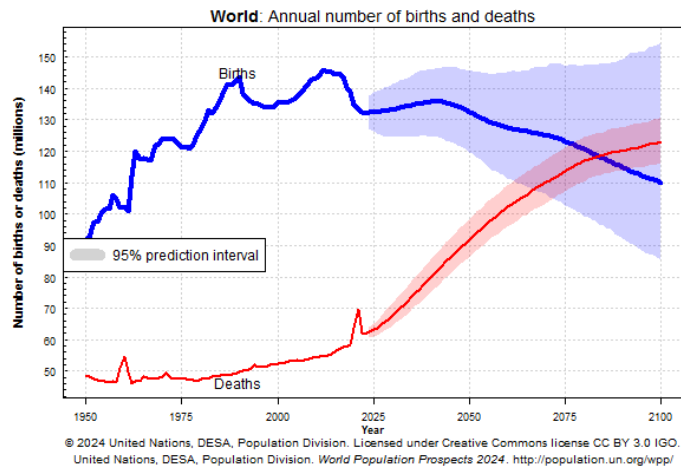


Diagram No 1. Annual number of births and deaths in the world (World Population Prospects, 2024)

Analysing the data reflected in the Diagram 1, it can be seen that a sharp decline in the birth rate could follow only after 2050. On the other hand, after 2025, the mortality rate could increase even more. Around the year 2100, this could lead to stability of birth and death rates. Depopulation will certainly not be a global problem for some time to come, at least according to current Eurostat and the United Nations’ research projections.

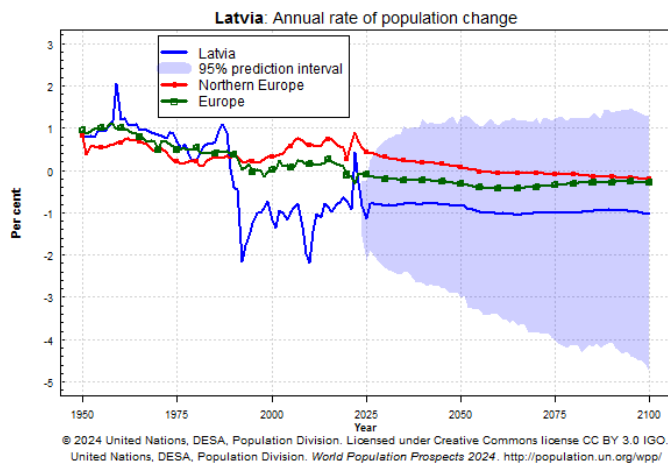


Diagram No 2. Population by age groups in Latvia 1950-2100 (World Population Prospects, 2024)

In comparing, analysing the data reflected in the Diagram 2, it can be seen the opposite tendency, which reflects the situation in Latvia in Europe, where the decline in the birth rate has started in 90’s and it continues for decades and is predicted for next decades too in accordance with Eurostat and the United Nations’ research projections.

### Nature and Challenges of the Depopulation

Although the world’s population last fell significantly during the medieval bubonic plague, which is believed to have killed about a half of Europeans, the demographic changes we live with today are in

many ways the result of huge improvements in global health, well-being, and prosperity (Zimmer, 2022). Humanity has demonstrated incredible ingenuity throughout its history, and no doubt this will create opportunities for change (Madgavkar et. al, 2025).

According to the theory of demographic transition, the force of the demographic explosion in the world as a whole will continue to decrease, but the amount of depopulation will increase. This is evidenced by forecasts made by international organizations. The United Nations Population Division predicts that by 2050, population decline will be observed in twice as many countries as today. Most likely, by the middle of the century, depopulation will also be observed in such large countries as China, Russia, Germany, Spain, Korea and others. But world population is not likely to stabilize until the first half of the next century, when population growth in sub-Saharan Africa, India, Pakistan and some other Central and South Asian countries slow (Bavel, 2022).

According M. Rowe (2025), human reproduction should be a choice, but the latest data show us that, tragically, it often is not; when faced with population changes or concerns, we often see rhetoric and policymakers turn to fertility rates as a preferred solution.

Today, birth rates are falling everywhere, yet life expectancy is increasing. In industrialized countries, society is aging. Scientists are optimistic, saying that it is very likely that a large proportion of today's physically healthy young people will live to be 100 years old; however, it is unlikely that this limit will be significantly exceeded without fundamental external intervention in the functioning of the human body. Scientists from the University of Illinois came to this conclusion after following the changes in the average lifespan of people over the centuries (Madgavkar, Noguer & Bradley, 2025).

On average, a woman born in South Korea will live to be at least 90 years old in 2030, and life expectancy for both sexes in other developed countries will increase significantly, according to a new study by the World Health Organization and Imperial College London. Among European countries where life expectancy has been studied, men born in 2030 could live the longest in Switzerland (84 years), the Netherlands (83.7), Spain (83.5), Ireland (83.5) and Norway (83.2) (Gallagher, 2017).

According to the latest available data of the Central Statistics Office, a Latvian woman born in 2015 can expect to live an average of 79.3 years, and a Latvian man - 69.7 years. These are quite good indicators in the context of Latvia and this should be used as an advantage. Just two centuries ago, the world's population was less than a billion. Now the number of people has exceeded eight billion. The rate of growth has slowed, but it continues. The fastest demographic growth is in countries with the lowest economic development. Therefore, we can even predict that by 2050, every second new-born will

see the light of day on the African continent. In this regard, the discussion about global poverty is relevant.

Earth's critical limit of the is ten billion people. United Nations demographers estimate that by 2050 another two billion will join the current eight billion. Thus, the overpopulation of the planet is no longer a matter of the distant future. Real examples can already be found in Hong Kong, Hanoi, many parts of India and Bangladesh, where many people are already forced to live in a space not much bigger than a closet (Pastors, 2018).

Today, this problem has become much more urgent. This is especially felt in the world's largest countries, such as China, Mexico, Brazil and elsewhere. There are the consequences of this global problem are varied. Most often, people in many parts of the world suffer from hunger, because all natural resources are exhausted, millions of people do not have houses, because there is simply no free space to build them. Increasingly, forests are being cut down, meadows and areas of rare plant populations are being destroyed so that people have more places to settle. Consequently, depopulation is not a global problem in a cross-section of the world. It should be studied across countries and regions, especially in Europe and the European Union, and should be done today, not planned for the distant future.

### **Population growth and Depopulation era, actions now**

Unlimited population growth is an obstacle to the economic development of the nation. In countries that are economically poor and technologically backward, population growth reduces output by reducing the availability of capital per capita. Population growth primarily worsens the economy. So, each country, each case and the current situation is very individual.

There are several examples of the challenges of population growth: it lowers the rate of capital formation, requires more investment, negatively effects per capita income, creates unemployment, food and environmental problems, poverty and more.

It is essential next to every challenge of population growth find advantage of depopulation. Of course, this, again, depends on the country, region and specific situation. It is very important to understand, that the era of depopulation continues and the future is today: it means that there is no time to plan and develop strategic documents for the future, this situation calls for action now.

Depopulation, as well as all population issues, go hand in hand with economy. However, living in today's world, one should think more broadly and act smarter. Now, more than ever, it is important to think about and take care of the environment: climate change and global warming are causing huge

changes all over the world. It is essential to educate people around the world on the basis of sustainable development.

So far, government attempts to incentivize childbearing have failed to bring fertility rates back to replacement levels. Future government policy, regardless of its ambition, will not stave off depopulation. The shrinking of the world's population is all but inevitable. Societies will have fewer workers, entrepreneurs, and innovators as well as more people dependent on care and assistance. However, the problems created by this dynamic do not always amount to a disaster. Depopulation is not a grave sentence; rather, it is a complex new context, in which countries can still find ways to thrive. Governments must prepare their societies now to meet the social and economic challenges of an aging and depopulating world (Eberstadt, 2024).

A combination of higher productivity, more work per person, effective migration, and higher fertility rates can ensure global prosperity for the future. That said, no one of those levers alone will be enough, and each presents several challenges. Bending the trajectory of the demographic shift will require society to rethink existing systems for work and retirement in ways that may compel a change in our social contract - no easy feat.

The effects of a declining population can be positive. The single best gauge of economic success is the growth of GDP per person, not total GDP, shows *The Economist*. GDP per person (also known as GDP per capita or per capita GDP) is a rough proxy for average living standards (Roser et al, 2019). A country can both increase its average living standard and grow its total GDP even though its population growth is low or even negative. The economies of both Japan and Germany went into recovery around the time their populations began to decline (2003–2006). In other words, both the total and per capita GDP in both countries grew more rapidly after 2005 than before. Russia's economy also began to grow rapidly from 1999 onward, even though its population had been shrinking since 1992–93 (Eberstadt, 2005). Many Eastern European countries have been experiencing similar effects to Russia. Such renewed growth calls into question the conventional wisdom that economic growth requires population growth, or that economic growth is impossible during a population decline.

It is generally believed throughout the world that the higher the proportion of urban residents in a country and its regions, the higher the level of socio-economic development and quality of life. Latvia is an exception (Vaidere, Vanags, Vilka, 2006). Unfortunately, all planning regions, all cities and counties of the republic have had negative natural growth for years.

Effective education and sustainable education of human resources at work of all spheres and lifelong learning is on the top of the list of developed countries. Smart, educated and experienced employees can handle high economic rates.

The growth of the population puts pressure on society to innovate and serve the masses in the best way possible, so the development of innovations is essential too.

Social services are also a cornerstone of wealthy society; it should be developed to the level that each citizen feels safe, cared and inclusive in the society in such environment the work contribution and fullness in the private life will be at the highest level.

Human resources, or the personnel of a certain institution or company with specific knowledge, skills, and abilities, are the basis for successful and productive work. The more suitable, more selected human resources are used, the higher the labour productivity and the desired achievable results. Unfortunately, with depopulation, there are fewer people left, and there are also fewer “valuable” or in-demand employees on the labour market; employers must either settle for the existing supply or look for methods and tools to provide themselves with employees who will be maximally consistent with the relevant work duties. This does not sound promising, so the issue should be solved.

Patrick Gerland, chief of the Population Estimates and Projection Section at the United Nations’ Population Division emphasizes that paying people more is also not enough: it needs a combination of holistic and local actions – local child care, maternity and paternity leave, flexible work patterns, housing and transport – measures that aren’t just for a few months but support the family until the children grow up (Rowe, 2025). France, Switzerland and the Nordic countries are nations that manage to get close to the replacement level by implementing such policies.

Depopulation refers to a process in which the population density of an area decreases steadily over time. Increased human population is certainly a threat to environmental sustainability, but local phenomena of depopulation may be seen also as threats to local environmental sustainability. They will become more and more frequent as the researches of the United Nations shows. (MacDonald, Crabtree, Wiesinger, Dax, Stamou, Fleury, Gutierrez Lazpita, Gibon, 2000).

This process of depopulation provokes a range of environmental impacts. It can actually increase negative environmental pressures on biodiverse agricultural production through increased soil erosion and invasions by pests and weeds, leading to reduction of biodiversity. As people leave an area, one dominant habitat comes to take over from the diverse mosaic of human-maintained landscapes. This ‘ecological homogenisation’ can lead to a decrease in biodiversity at a local level. Other ecological impacts include soil degradation resulting from inadequate terrace maintenance in mountainous areas, as

is the case across large swathes of Mediterranean and Southeast Europe. (EJOLT, 2025). An economy fuelled by limitless population growth makes it increasingly difficult to address environmental crises. Communities are already struggling in the face of worsening droughts, extreme weather and other consequences of climate disruption, and population pressure makes adaptation even harder. Slow decline and all that goes with it, we can ultimately reduce our pressure on the environment, adapt to climate change, and protect enough places for wildlife to find refuge and potentially recover. Everyone knows that a slowdown in growth is coming, and it makes sense to prepare for it; however, for various reasons, in the face of dramatic population decline, regional leaders and even world leaders are still not actively preparing for aging population and all the problems it will create.

Every person on the planet needs food, water, energy and a place to call home. And, if we want to increase wealth equity and quality of life - as we should - the demands per person will increase, even with the best-case scenario for sustainable development (Feldstein, 2023).

If the community with a particular place is arguing about the empty streets and declining population, it should be introduced into an overpopulation scenario, where there is nowhere to live, no air to breathe, and no space to develop individually.

People in Europe, the EU and Latvia should appreciate where they live and how they live, but policymakers should feel more empathize for the well-being of those living in specific places, regions and cities now, rather than striving for something more in the future. Prosperity, an ideal place to live, study, raise a family, and work, must be created now, for the people who are present right now. People need to feel the government's concern, and this, for the most part, is as simple as it is complex: social guarantees, welfare, a protected environment, development opportunities, lifelong learning, and other issues may seem too simple or too specific, but they could solve the problems of depopulation in a specific place.

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# INTERNATIONAL COOPERATION IN THE MANAGEMENT OF THE EUROPEAN UNION'S BORDER SECURITY

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## Abstract

### International cooperation in the management of the European Union's border security

**Key Words:** *Integrated border management (IBM), Frontex, Schengen Information System (SIS II), border security, cooperation of border services*

The article discusses the issue of cooperation of European services in the management of the security of the European Union's borders in the context of the functioning of the Integrated Border Management (IBM) system. The aim of the study was to determine to what extent operational, institutional and technological cooperation between Member States and EU agencies (such as Frontex, eu-LISA) affects the effectiveness of the protection of the EU's external borders in the face of contemporary threats, including migration, hybrid and terrorist threats. It has been hypothesized that enhanced integration and harmonisation of activities contributes to increased efficiency of crisis response and cross-border risk management. The article uses theoretical research methods: analysis of legal acts and strategic documents of the EU, review of scientific literature and case studies of joint border operations. Particular attention is paid to the organizational, technological and policy challenges that limit the full implementation of IBM. The discussion highlighted the importance of interoperability of IT systems, common risk analysis and financial solidarity as key conditions for system effectiveness. The conclusions indicate that further development of IBM requires deepening political integration, standardization of procedures, expanding the use of technology (AI, drones, prediction) and maintaining a balance between security and protection of human rights. The article provides recommendations for further harmonization of EU border management mechanisms in the conditions of growing geopolitical pressure and complexity of threats.

## Kopsavilkums

### Starptautiskā sadarbība Eiropas Savienības robežu drošības pārvaldībā

**Atslēgvārdi:** *integrēta robežu pārvaldība (IBM), Frontex, Šengenas Informācijas sistēma (SIS II), robežu drošība, robežu dienestu sadarbība*

Rakstā aplūkots jautājums par Eiropas dienestu sadarbību Eiropas Savienības robežu drošības pārvaldībā integrētās robežu pārvaldības (IBM) sistēmas darbības kontekstā. Pētījuma mērķis bija noteikt, cik lielā mērā operatīvā, institucionālā un tehnoloģiskā sadarbība starp dalībvalstīm un ES aģentūrām (piemēram, Frontex, eu-LISA) ietekmē ES ārējo robežu aizsardzības efektivitāti, saskaroties ar mūsdienu draudiem, tostarp migrācijas, hibrīddraudiem un terorisma draudiem. Ir izvirzīta hipotēze, ka uzlabota darbību integrācija un saskaņošana veicina krīzes reaģēšanas un pārrobežu riska pārvaldības efektivitāti. Rakstā tiek izmantotas teorētiskās pētniecības metodes: ES tiesību aktu un stratēģisko dokumentu analīze, zinātniskās literatūras pārskats un kopīgo robežoperāciju gadījumu izpēte. Īpaša uzmanība tiek pievērsta organizatoriskajiem, tehnoloģiskajiem un politiskajiem izaicinājumiem, kas ierobežo pilnīgu IBM ieviešanu. Diskusijā uzsvērts, cik svarīga ir IT sistēmu sadarbība, kopēja riska analīze un finansiālā solidaritāte kā galvenie nosacījumi sistēmas efektivitātei. Secinājumi liecina, ka IBM turpmākai attīstībai ir nepieciešama politiskās integrācijas padziļināšana, procedūru standartizācija, tehnoloģiju izmantošanas paplašināšana (AI, droni, prognozēšana) un līdzsvara saglabāšana starp drošību un cilvēktiesību aizsardzību. Rakstā sniegti ieteikumi turpmākai ES robežu pārvaldības mehānismu saskaņošanai pieaugoša ģeopolitiskā spiediena un apdraudējumu sarežģītības apstākļos.

## Admission

Today's threats to the security of the European Union's (EU) borders – whether of a migration, criminal or terrorist nature – require integrated and coordinated action by Member States and EU institutions. The EU's external borders, which are also the borders of the Schengen area, are not only geographical dividing lines, but also sensitive points of contact between the internal security of the

Community and external geopolitical challenges. In an era of growing international tensions, destabilisation of neighbouring regions, an increase in the scale of illegal migration, organised crime, as well as hybrid threats and cyberattacks, the EU's borders are becoming not only physical barriers, but also a symbolic and practical line of defence for European values, the legal order and the security of citizens.

In this context, border management cannot be limited to actions carried out at the level of individual countries. Close cross-border, operational and institutional cooperation is necessary, including information exchange, joint patrols, training, as well as prevention and crisis response. The development of modern technologies – including border control systems, satellite surveillance, artificial intelligence and interoperable databases – that enable rapid detection of threats and effective decision-making also plays a key role. This process requires not only appropriate technical and human resources, but also building trust and common standards of operation between various formations and services responsible for border security.

For this reason, cooperation between the border, police, customs and migration services of the EU Member States is becoming an indispensable element of the Community's security system. The integration of the activities of these services not only enables more effective control of the flow of people and goods, but also strengthens the European Union's resilience to crisis situations – such as sudden waves of migration, attempts at political destabilization by external entities or terrorist threats penetrating the EU's external borders. However, this requires continuous improvement of cooperation mechanisms and elimination of legal, organizational and operational barriers that may limit the effectiveness of joint activities.

## **Material and methods**

The aim of the article is to analyze international cooperation in the management of the security of the European Union's borders and to answer the research question: How does the cooperation of border services and EU institutions affect the effectiveness of the security management of the EU's external borders? It has been hypothesized that enhanced, integrated operational and information cooperation between Member States' border services and EU agencies significantly increases the effectiveness of border protection against contemporary cross-border threats.

The article uses theoretical research methods, including the analysis of the literature on the subject, institutional studies and legal and strategic documents of the EU. A comparative analysis of cooperation mechanisms between selected Member States and a case study of joint border operations

were also carried out. The analysis is complemented by a review of available reports and statistics published by Frontex, the European Border and Coast Guard Agency and the European Court of Auditors.

The study allows not only to better understand the institutional architecture of border security in the EU, but also to identify practical barriers and factors conducive to effective cooperation of border services in the face of a dynamically changing international security environment.

### **Institutional and legal basis for cooperation between services in the field of EU border protection**

The security of the European Union's external borders is one of the cornerstones of the Community's internal security policy. In the face of growing threats, such as uncontrolled migration flows, an increase in cross-border crime, or terrorist and hybrid threats, the need to strengthen cooperation between Member States and to strengthen the institutional and legal framework has become one of the priorities of EU policy.

The legal foundation for cooperation between EU countries in the field of border protection are the provisions of the Treaty on the Functioning of the European Union (TFEU), in particular Articles 77, 78 and 79. Article 77(1)(b) TFEU indicates the need to establish a common policy for the management of the external borders, including the introduction of integrated border management. Article 77(2)(d) allows for the establishment of the measures necessary for the gradual introduction of an integrated border management system (Treaty on the Functioning of the European Union). A single area without internal border controls – the Schengen area – also requires a common external border management policy. Article 3(2) TEU calls for appropriate measures to be taken with regard to external border control (Treaty on European Union). The EU is therefore seeking to establish common standards for the control of its external borders and to gradually introduce an integrated system for managing these borders (External Border Management, Thematic Notes on the European Union, European Parliament). These rules demonstrate the need for solidarity in the actions of EU Member States. In addition, they set out the objectives of the policy in the field of border control, asylum and immigration, indicating that it is to contribute to the abolition of restrictions at the EU's internal borders, while ensuring the control of persons and surveillance at the external borders (Trubalska 2017: 107).

The abolition of internal border controls under the Schengen Agreement and the creation of a common area of free movement of persons has led to a significant strengthening of the protection of external borders, which has forced the harmonisation of Member States' policies and actions. One of the key legal acts in this area is the Schengen Borders Code (Regulation (EC) No. 562/2006 of the European Parliament and of the Council of 15 March 2006), which sets out detailed rules for border control,

procedures for dealing with emergency situations and the powers of border officers. Member States are required to systematically check, using appropriate databases, all persons crossing the external borders, including EU citizens and their family members who have the right to free movement under EU law. The Schengen Information System (SIS) and the Interpol database containing information on stolen or lost travel documents are used for verification. The control obligation applies to all types of borders – land, sea and air – and applies both when entering and leaving the EU.

In order to monitor the effectiveness of the application of the Schengen rules, a special evaluation mechanism was launched in November 2014, established by Council Regulation (EU) No 1053/2013. The mechanism included a five-year evaluation programme that ran until the end of 2019 and provided a comprehensive analysis of the implementation of the Schengen acquis by Member States. Not only the border controls themselves were evaluated, but also the compliance of activities with EU regulations, with particular emphasis on respect for fundamental rights. The scope of the evaluation also covered other aspects related to the functioning of the system, such as visa policy, judicial and police cooperation, the functioning of the SIS and the protection of personal data.

In parallel, IT systems supporting border management are being developed – such as SIS II (Schengen Information System), VIS (Visa Information System), EES (European Registration System for Travellers) or ETIAS (Travel Authorisation System), which enable quick verification of travellers' data and identification of risks. The implementation of these tools requires technological and organisational compatibility between Member States and continuous coordination at EU level.

Frontex, the European Border and Coast Guard Agency, plays a central role in the border management system. Initially set up as a coordinating body, the agency has over the years gained an increasingly broad operational mandate, including the ability to conduct its own operations, deploy a standing corps of officers, provide technical support and conduct risk analyses. Frontex works with Member States, but also with EU bodies such as Europol, EASO, OLAF or Eurojust, to create a complex system for information exchange and strategic planning (Marin 2020). This agency not only supports border controls, but also participates in search and rescue operations in the Mediterranean, training officers and activities against people smugglers (Nowicka, Ciekanowski, Żurawski 2023: 183).

In addition to Frontex, the European Commission and the Council of the EU also have important functions. The Commission is responsible for initiating legislative proposals and monitoring the implementation of legislation by Member States, as well as coordinating policies and strategies on border security. The Council of the EU, on the other hand, as a forum for cooperation between the governments of the Member States, shapes political priorities and adopts legal acts regulating joint activities. Both

institutions also play an important role in financing programmes related to border protection and migration management.

The Community approach to border protection is based on the concept of Integrated Border Management, which includes both aspects of prevention, control and crisis response (Gajda 2020: 56). This approach assumes close international cooperation, interoperability of systems, joint training, standardization of procedures and flexibility in action in the event of sudden and dynamic threats (Hobbing 2006). In practice, the implementation of this concept encounters a number of difficulties – differences in the level of equipment and competence of services of individual countries, legislative limitations, lack of consistent standards or problems with real-time data exchange.

In conclusion, the institutional and legal foundations of cooperation in the field of border management in the EU provide a solid foundation for building a common security system. Nevertheless, in the face of growing and complex threats, such as the pandemic that has restored borders in the EU and introduced a new border policy and significantly complicated the lives of people living in border regions (Bohm 2021), further consolidation of this cooperation, elimination of barriers and investment in new technologies and operational capabilities become a necessity. Only harmonized and solidarity-based actions of the services of the Member States and EU institutions are able to ensure effective protection of the European Union's borders.

### **Operational mechanisms and practice of cooperation between border services of EU countries**

One of the most important manifestations of this cooperation is the joint operations coordinated by the European Border and Coast Guard Agency Frontex, which are carried out on the most sensitive sections of the external borders. Examples of such activities include Operation Poseidon on Greece's maritime borders, Themis off the coast of Italy and Indalo in the Alboran Sea. These operations involve supporting Member States through the deployment of officers from different countries, technical resources (such as vessels, unmanned aerial vehicles, mobile analytical centres) and joint tactical and analytical coordination (Kruszyński 2024:57). Their aim is not only to increase the effectiveness of border protection, but also to counter illegal migration and save lives at sea.

An important pillar of cooperation are also integrated data exchange systems that support operational activities in real time. The second generation Schengen Information System (SIS II), the Visa Information System (VIS) and EURODAC (Asylum Seekers' Fingerprint Database) provide the basis for decision-making on border controls, the identification of suspects and cooperation on return. Information

sharing is based on common protocols and interoperable access systems, which reinforces the uniformity of approach to border controls across the Schengen area.

An important component of cooperation is also the joint risk analysis, coordinated by Frontex through the EUROSUR system and through reports prepared by the European Centre for Risk Analysis (ETRAC). EUROSUR consists of the following components:

- coordination centres;
- national situational pictures;
- communication network;
- situational picture;
- the common pre-frontier situational picture;
- common use of surveillance tools (Targońska 202: 9).

This allows for ongoing threat forecasting, identification of the so-called "hot spots" and taking preventive measures before mass migration movements or other cross-border incidents occur. At the same time, a common return policy is being developed through the so-called Joint Return Operations, under which member states organise joint return flights with the logistical support of Frontex, which increases the efficiency and reduces the costs of repatriation operations. The Agency can only provide support:

- formal request from a Member State;
- on its own initiative, but always with the agreement of the Member State(s), concerned;
- to government bodies of the EU Member States;
- in connection with the return of third-country nationals who do not exercise their right of residence, legal residence or international protection to the territory of the EU Member States ([www.frontex.europa.eu](http://www.frontex.europa.eu)).

eu-LISA (European Union Agency for the Operational Management of Large-Scale IT Systems in the Area of Freedom, Security and Justice) plays an important role in the integrated border management of the European Union. Its tasks focus on the management and development of large-scale IT systems that support the activities of border services, police and migration authorities of the Member States. In the context of operational mechanisms and the practice of border services interoperability, eu-LISA acts as a technical integrator and coordinator of information exchange, providing the basis for the interoperability of the EU's internal security systems (Gajda 2023: 120).

With the establishment of eu-LISA, the operational management of large-scale information systems in the AFS was entrusted to an EU agency, thus putting an end to the situation where such

management was provided by EU Member States or the European Commission (Trauttmansdorff, Felt 2021:11).

Despite significant successes, the practice of cooperation is not free from challenges. These problems include, m.in, inequalities in the involvement of individual Member States, differences in the level of training and technical resources, as well as legal and political barriers to the full integration of actions. For example, in some cases, countries restrict the transfer of operational data for reasons of internal security or sovereignty concerns. In addition, the lack of uniform standards of action in the field of identification of migrants, granting international protection or conducting return operations affects the coherence of the entire border management system.

An analysis of the above mechanisms shows that effective cooperation between the border services of EU countries is based on a dynamic balance between solidarity and sovereignty, between the community interest and national security strategies. While IBM's Integrated EU Border Management (IBM) system is well advanced, further harmonisation and modernisation of operational structures remains necessary to respond effectively to complex and evolving cross-border threats.

### **Challenges and prospects for the development of integrated EU border management**

In the light of the above, the analysis was aimed at showing to what extent formal cooperation structures translate into real operational effectiveness in the conditions of increased migration pressure and growing hybrid threats. Integrated Border Management (IBM), although it is one of the pillars of the European Union's security policy, faces a number of challenges, both structural and resulting from the dynamically changing international environment. One of the main problems remains the lack of full harmonization of operational and legal activities between Member States. Despite common institutional frameworks such as Frontex, SIS II and EUROSUR, many countries still have different procedures for identifying migrants, exchanging information and responding to border crises.

These problems are exacerbated by differences in the level of technological sophistication, infrastructure and human resources between Member States. While some countries – such as Spain, Greece and Italy – have developed border monitoring systems and advanced crisis management structures, others, especially the new EU members, still struggle with limited access to financial and technological resources. This disparity leads to uneven levels of external border security, which affects the overall integrity of the IBM system. In addition, internal political tensions and growing anti-immigration sentiment in some EU countries limit the willingness to cooperate and share responsibility for border protection.

Wojna w Ukrainie oraz zagrożenia hybrydowe, jakie wynikają z działań aktorów państwowych i niepaństwowych, jeszcze bardziej unaocznily potrzebę głębokiej reformy mechanizmów zarządzania granicami (Elak, Oskierko, Żurawski 2024: 93). Przypadek The Belarusian regime's use of migration as a tool of political pressure in 2021 showed that external actors can instrumentalise migration flows in order to destabilise the EU's security structures. Such activities require not only an operational response, but also institutional resilience and the ability to conduct multifaceted risk analysis, taking into account demographic, information and military aspects.

In response to these challenges, the European Commission and Frontex are proposing a series of reform actions to increase the interoperability of systems, create permanent staff reserves, develop joint analytical capabilities and strengthen financial solidarity. It is also postulated that modern technologies will be used more widely in border protection – from drones, through artificial intelligence, to predictive analytics supported by Big Data. Such solutions would enable earlier detection of threats, precise tracking of people flows and efficient deployment of operational resources.

Despite the potential benefits, the implementation of the technology is associated with the risk of excessive surveillance, algorithmic errors and restrictions on human rights. It will therefore be crucial to strike a balance between efficiency and respect for legal and ethical standards, in particular the principles of personal data protection, privacy and equality before the law. In this context, not only a technological framework is needed, but also a new approach to the training of border officers, which should include elements of ethics, data analysis and information threat response.

The prospects for the development of integrated EU border management therefore depend on several fundamental conditions: further legislative harmonisation, strengthening operational capabilities, building trust between Member States, and developing a common security culture based on European values. Only then will it be possible to transform IBM into a real, coherent and flexible system capable of responding to both migration crises and complex hybrid security challenges. At the same time, this requires political courage, stable sources of funding and the leadership of EU institutions capable of overcoming particular national interests.

The future of effective EU border management lies in further deepening institutional integration, investing in interoperable digital tools, increasing foresight capacities and building trust between Member States. Only then will the community be able to meet the challenges of the 21st century, while maintaining its fundamental values – solidarity, security and respect for human rights.

## Discussion

The European Union's Integrated Border Management (IBM) is currently one of the most complex and dynamic elements of the community's security policy. The analysis shows that despite significant progress in formalising cooperation structures and implementing operational tools, the system still faces fundamental organisational, technological and political barriers. A particular challenge remains the lack of full synchronisation of activities between Member States – both at the level of migration policy and in terms of the ability to jointly respond to hybrid threats.

It is worth noting that IBM's effectiveness largely depends on the real willingness of member states to share sovereignty in the area of border security. While Frontex has a broad mandate and growing resources, its activities continue to depend on the level of cooperation and agreement from each country. Practice has shown that in crisis situations – such as during migration pressure on the Belarusian-Polish border – solidarity mechanisms prove insufficient or delayed, resulting in unilateral reactions and political tensions within the EU.

On the other hand, the development of technological tools, such as integrated information exchange systems (SIS II, VIS, EURODAC) or the use of artificial intelligence in risk analysis, can significantly improve the predictive and operational capabilities of border authorities. However, the implementation of such solutions raises new challenges related to ethics, data protection and social acceptance of surveillance measures. This issue must be treated with the utmost attention to avoid violations of fundamental rights – especially in the context of the application of solutions automating administrative decisions with regard to foreigners.

The issue of the balance between security policy and asylum policy and human rights also needs to be discussed. Too much focus on technical and protective aspects can lead to the dehumanisation of the EU's migration policy, while the principles of the Charter of Fundamental Rights and the Geneva Convention should be the cornerstone of action in the area of borders. Only a sustainable approach – combining operational efficiency with respect for European values – can ensure the long-term sustainability of your IBM system.

In the light of these findings, the need to redefine some of Frontex's competences, to create mechanisms for genuine democratic oversight of border operations and to strengthen political integration within the framework of the common internal security policy should be discussed. The discussion should also include ways to increase the participation of local border communities and NGOs in the process of monitoring and implementing IBM's strategy. Otherwise, despite the increasing formalisation and

digitalisation of the system, the European Union may not achieve the expected level of resilience and agency in border security management.

### **Applications**

The analysis of cooperation mechanisms and challenges related to the functioning of the integrated border management of the European Union leads to several important conclusions. First, IBM is an indispensable part of the EU's internal security system, but its effectiveness is still uneven and largely depends on the degree of involvement of individual Member States. Joint border operations, interoperable IT systems and actions coordinated by Frontex show the real potential of integrated operations, but the constraints of legislative, technical and political differences significantly affect the coherence of the system.

Second, the dynamic changes in the security environment – such as the migration crisis, hybrid threats, the war in Ukraine, or attempts by state and non-state actors to destabilise external borders – require the EU to increase operational resilience, but also adaptive flexibility. The current model of border management does not always allow for a rapid and uniform response to new forms of threats, which undermines the EU's ability to protect both its borders and its own credibility as a geopolitical actor.

Thirdly, the prospects for the development of the IBM system should focus not only on technological modernization (implementation of artificial intelligence, drones, predictive analytics), but also on deepening political and legislative integration. It is necessary to unify operational standards, simplify cooperation procedures and increase the human and logistical resources of the common border services. At the same time, it is important to ensure that new solutions do not lead to restrictions on human rights or violations of the rule of law.

Finally, building mutual trust between Member States, increasing solidarity in bearing the costs of external border protection and developing a common strategic security culture is a key condition for the further development and effectiveness of integrated border management. Only in conditions of full shared responsibility and transparency will it be possible to transform the IBM system into a coherent, resilient and effective mechanism for protecting European borders in the face of the challenges of the 21st century.

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# IZGLĪTĪBAS ZINĀTNES, PSIHOLOĢIJA / EDUCATIONAL SCIENCES, PSYCHOLOGY

## PEDAGOGY AS A SCIENCE IN THE EDUCATIONAL SYSTEM OF THE UNIVERSITY OF LATVIA

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### Abstract

#### **Pedagogy as a science in the educational system of the University of Latvia**

**Key Words:** peculiarities of the subject of pedagogy, didactic bases, humanitarian and moral bases

In the 21st century, profound social and cultural changes have made the human factor a key component of social development. In accordance with these changes, the educational process in schools must focus on the individual, emphasizing spiritual enrichment, cultural development, and the personal, social, and professional self-determination of students. These trends should be reflected in pedagogy as a science. In this regard, the replacement of the term “pedagogy,” traditional in the history of pedagogy at University of Latvia, with the term “education science” is scientifically limited, does not meet the modern trends of society development and human nature. **The research problem** concerns the methodological justification for the status of pedagogy as a science within the educational system of the University of Latvia. **The aim** is to identify the peculiarities of the subject of pedagogy as a science in accordance with contemporary trends of society development and restore the status of pedagogy as a science at University of Latvia. **Research methods** - theoretical analysis. **Results of the research** reveal the peculiarities of the subject of pedagogy as a science in modern society, covering both didactic foundations (knowledge, skills, and abilities) and humanitarian-pedagogical foundations (interpersonal relationships, universal values). Thus, the subject of pedagogy is human upbringing. It is concluded that pedagogy as a discipline represents Latvia’s historical and cultural heritage. This forms the basis for restoring the status of pedagogy as a science at the University of Latvia.

### Kopsavilkums

#### **Pedagoģija kā zinātne Latvijas Universitātes izglītības sistēmā**

**Atslēgvārdi:** pedagoģijas priekšmeta īpatnības, didaktiskie pamati, humanitārie un morālie pamati.

21. gadsimtā cilvēciskais faktors kļūst par galveno sabiedrības attīstības dzinējspēku, pateicoties fundamentālajām sociālajām un kultūras pārmaiņām. Atbilstoši šīm pārmaiņām izglītības procesam skolā ir jābūt orientētam uz indivīdu, akcentējot viņa garīgo attīstību, kultūras izaugsmi, kā arī personīgo, sociālo un profesionālo pašnoteikšanos. Šīs tendences būtu jāatspoguļo arī pedagoģijas zinātnē. Šajā kontekstā Latvijas Universitātes pedagoģijas vēsturē tradicionālā termina “pedagoģija” aizstāšana ar jēdzienu “izglītības zinātne” ir metodoloģiski ierobežota un neatbilst mūsdienu sabiedrības attīstības tendencēm un cilvēka dabai. **Pētījuma problēma** – pedagoģijas zinātnes statusa metodoloģiskais pamatojums Latvijas Universitātes izglītības sistēmā. **Pētījuma mērķis** – noteikt pedagoģijas zinātnes priekšmeta īpatnības, kas atbilst mūsdienu sabiedrības attīstības tendencēm, un veicināt pedagoģijas zinātnes statusa atjaunošanu Latvijas Universitātē. **Pētījuma metodes** – teorētiskā analīze. **Pētījuma rezultāti** – ir noteiktas pedagoģijas zinātnes priekšmeta īpatnības mūsdienu sociālajos apstākļos; izklāstīta pedagoģijas priekšmeta saturiskā struktūra (didaktiskie pamati: zināšanas, prasmes, iemaņas) un humanitārie pedagoģiskie pamati (attiecību sistēma, universālas vērtības). Tādējādi pedagoģijas priekšmets ir cilvēka audzināšana. Izdarīts secinājums, ka pedagoģijas zinātne ir Latvijas vēsturiskais un kultūras mantojums, kas veido pamatu pedagoģijas zinātnes statusa atjaunošanai Latvijas Universitātē.

#### **Peculiarities of pedagogy as a scientific discipline**

In The Great Didactic (Коменский 1982) Jan Amos Comenius defined the subject of pedagogy as the upbringing of man as the highest being on Earth — a humanistically oriented definition. By the late 20th

century, profound social and cultural changes made the subject of pedagogy more complex, emphasizing the connection between didactic foundations (knowledge, skills, and abilities) and humanitarian-pedagogical foundations (a system of relationships). In the 21st century, humanitarian and pedagogical foundations play a system-forming role in human development. When a person is considered as a productive force, didactic foundations (knowledge, skills and abilities) prevail in the subject of pedagogy. Similarly, in the concept of “education science,” didactic foundations dominate. However, in modern reality, this approach is insufficient, failing to meet contemporary demands and adequately support student development. It is important to remember: “The mind is not a vessel to be filled, but a fire to be kindled.” (Plutarch 1927:201), these words metaphorically define the role of humanistic-pedagogical foundations in the upbringing of a child. The modern student should enter life not as a faceless individual, but as a person free from the psychology of consumerism, not as a technocrat, but as someone with a great culture and broad outlook.

Man is the highest value, a microcosm (Коменский 1982). J. A. Comenius underscored the multidimensional complexity of the subjective world of man. This statement defines the goal of upbringing - the moral and spiritual development of man, expressed through the formation of ethical relations between the individual and the world, others, and themselves, ultimately determining self-realization. The importance of upbringing is undoubtedly in the preservation of moral values in society. However, in modern society, the meaning of upbringing and education has changed. Upbringing has lost its depth, and the standard has become a means of updating knowledge, skills and abilities rather than the cultivation of spirituality, good manners, and ethical principles. As a result, the system-forming pedagogical process has shifted away from its natural focus on the spiritual development of the individual.

J.A. Comenius was the first to become aware of the existence of objective laws governing human development. The learning process should align with the nature of the child. The principle of education in harmony with nature, which he identified, made it possible to determine the direction of the pedagogical process toward the formation of a person. This allowed Comenius to define the purpose of the school as a workshop for people, a workshop for humanity, where people become truly human — wise in mind, virtuous in actions, and pious at heart. (Коменский 1982). These are the humanitarian and pedagogical foundations of the educational process in schools. The humanitarian and pedagogical foundations contribute to the development of the student and the cultivation of universal human values.

However, at present, some researchers consider education as a universal category that includes both teaching and upbringing. They argue that teaching and upbringing are two sides of a single educational process. From this, the conclusion follows that pedagogy is the science of education.

The origins of this perspective can be identified as follows:

- The peculiarities of the modern use of the term "education" in different languages; for example, in English, a single term — Education — is used.
- The lack of a methodologically appropriate differentiation of levels of upbringing.
- The mechanical substitution of the subject of pedagogy (Chekhlova 2005).

Education cannot be considered the subject of pedagogy because, first, it cannot fully achieve the goal of a democratic society — raising a free and self-sufficient individual — since its focus is on knowledge, skills, and abilities. Therefore, it does not fully reflect the regularities of this process. The broad interpretation of education has led to the limitation of pedagogical phenomena such as teaching and upbringing, viewing them merely as components of education. As a result, the connection between education, teaching, and upbringing has been weakened, leading to a distorted understanding of the essence of the pedagogical process and its regularities. Upbringing should be regarded at the methodological level as the subject of pedagogy. The subject of pedagogy is the upbringing of a person. The uniqueness of pedagogy as a meta-subject allows us to assert that upbringing, at the methodological level, acts as a general category that includes teaching, education, and development. This is the methodological foundation of pedagogy. As a methodological foundation, the subject of pedagogy can be seen as a meta-subject that determines the characteristics of all pedagogical phenomena and processes. Based on this concept, defining the subject of pedagogy as the educational process, (Bordovskaya, Rean 2000) is insufficient. This definition does not fully reflect the subject of pedagogy but only represents its functional aspect.

### **Current trends in the evolution of educational and developmental practices in school.**

In the 21st century, the entire course of global development placed humanity before the need to solve a number of the most important problems of modern life: ecological balance, seismology, meeting growing energy needs, etc. All this requires building up the intellectual and moral potential of society. Without solving the problem of personal improvement, it is impossible to transform society (Ross 2006). Abandoning established thinking patterns and practices, having a clear understanding of new challenges, acquiring comprehensive theoretical and practical training, demonstrating high professional adaptability,

and encouraging creative activity — these are the demands of the time for individuals as subjects of activity and relationships.

The leading trends in the social and cultural development of modern society — democratization (diversification and differentiation of all structures) and humanization (attention to the individual, dialogue as a means of integrating different ideas, views, and concepts) create conditions for the development of a creative personality, as they **correspond** with human nature. Therefore, the educational process must shift its focus toward the individual, toward the spiritual enrichment of personality, and toward the personal, social, and professional self-determination of students (Chekhlov 2011).

It is important to note two trends in the development of the teaching process at school. The first trend is based on the perception of a person not as the primary value of society but as its main productive force. This has led to the inadequacy of existing teaching and upbringing methods in relation to the nature of the developing personality and, as a result, has caused a misalignment between the goals and results of teaching and upbringing. Such an approach to goal-setting has shaped the nature of the educational process — promoting authoritarian relationships between teachers and students, prioritizing the acquisition of knowledge, skills, and abilities, enforcing uniformity in activity organization, and lacking a creative foundation. As a result, conditions were not established for individuals to realize their potential or satisfy their need for self-actualization. This led to a disconnect between goals and motivation, as well as the erosion of socially significant values and ideals. It has become clear that such a system of personality development, which was not aimed at revealing the human essence in a person but merely fulfilled the social demand for preparing a productive workforce, does not correspond to the natural historical development of humans and society. A person, shaped to be a passive implementer, cannot serve as the foundation for the progressive development of society. Economic and spiritual progress can only be ensured by active, free individuals — vivid personalities capable of thinking unconventionally, making independent decisions, and creatively implementing them. This has created a need for a *humanized school*, where the person becomes the central focus of the educational process. The school takes on an *anthropocentric* character. The deep social significance of school transformations is determined by a humane and highly moral goal. In a democratic society, this goal is not the reproduction of an abstract subject of activity but the development of an authentic individual — the development of all human capacities as such, without reference to any predetermined framework (Aliyev 2021).

Here, the second modern trend in the development of the educational process emerges — the *humanistic, humanitarian approach*. “The mind is not a vessel to be filled, but a fire to be kindled” (Plutarch 1927:201). These wonderful words perfectly express the humanistic tendency in the development and upbringing of a person. The pedagogy of a *humanized school* is a *humanistic pedagogy*, based on cooperation and creativity, where the student in the learning process is not only an object but, above all, a subject of activity and relationships, a subject of their own development. The teacher’s role is to help the students become themselves — to become unique individuals (Chekhlov, Chekhlova, Rassolova 2014).

Humanistic pedagogy corresponds to human nature, making it reasonable to conclude that *humanistic pedagogy is a universal human value*, rooted in human nature and ultimately transcending ethical, ideological, and class differences. It is therefore natural that in the 21st century pedagogy is viewed not just as a social science but as a *social and humanitarian science* with a predominant humanitarian component (Aliyev, Chekhlova, Chekhlov, Kevisha 2022). This is the result of the development of pedagogical methodology.

In this regard, defining pedagogy as education science in the Latvian education system limits the field of study, denies its humanitarian component, and impoverishes its scientific potential. This definition does not match the main trends in the development of modern society and does not harmonize with human nature.

### **Preserving historical and cultural tradition in defining the status of pedagogy as a science in Latvia.**

#### **Traditions through the centuries.**

For several centuries, the concept of "pedagogy" has existed as a science in the scientific system of Latvia. However, in the concept of "education science" the authors narrowed the concept of pedagogy to its didactic foundations, which led to the dilution of the humanitarian and pedagogical essence of pedagogy as a science. Ancient philosophers formulated a remarkable principle about preserving traditions, emphasizing that it is not about worshipping ashes, but about kindling the fire. The act of kindling the fire serves as a metaphor for the development of pedagogy as a science. The most significant achievement of pedagogical science in Latvia in the 20th century is the development of the pedagogical theory of activity. Personality began to be considered in relation to a holistic analysis of its activities.

As early as 1990, the International Standing Conference on Activity Theory Research (JSGRAT) was established in Lahti, Finland, with the following objectives:

1. supporting and intensifying research aimed at developing activity theory,
2. encouraging international contacts, information exchange, and collaboration among educators working in the field of activity theory,
3. developing activity theory as a foundation for international cooperation and the integration of theory and practice.

A substantial body of research has been accumulated in global psychology and pedagogy on the development of personality through activity, particularly in the context of learning. The common theoretical position among authors is that learning and educational activity are fundamental to human psychological development and social formation (Abulkhanova-Slavskaya 1980, Vygotsky 1991, Leontiev 2009, Rubinstein 1976, Shchukina 1982) and others.

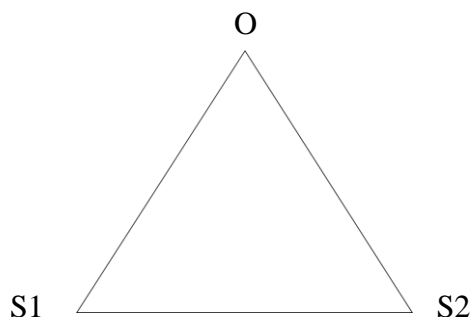
The discussion of activity as the foundation of personality development in the educational process is based on three factors:

1. the existence of general theoretical foundations,
2. the achieved level of research in the psychology of activity and its specific form —educational activity,
3. the advancement of the pedagogical theory of activity.

Educational activity should be considered as a process in which participants interact as equal subjects with the aim of acquiring knowledge, methods of activity, and communication. The result of this process is the improvement of activities and the system of relationships among participants in educational activities, as well as the cultivation of universal human values. The existence of subject-subject-object relationships requires a reconsideration of the established understanding of the object of activity in psychology and pedagogy. Many researchers of educational activity (Vygotsky 1991, Rubinstein 1976, Shchukina 1982) point out that the object of educational activity is not limited to the content of scientific concepts (knowledge, skills, and abilities) but also includes the system of relationships between students and teachers. This is primarily because the entire process of mastering an object-related action holds meaning for the child through the relationships they establish with adults. Therefore, the formation of a specific system of relationships within the learning process is crucial — a humanistic type of relationship, where the student becomes its creator. Thus, the object of activity encompasses a system of relationships: the student's relationship with the teacher and the teacher's relationship with the student as a subject. This system becomes a key mechanism in the development of motivation. Students take on the role of subjects of activity, relationships, and their own development. It is essential not only that adolescents act as

subjects of activity but also that they become aware of themselves as such, based on corresponding positive social recognition.

In Latvia, research on the methodological problems of pedagogy has been continued. Based on this, new pedagogical theories of activity have been developed. One of these theories focuses on the structure of educational and cognitive activity and the conditions for student development within this process. The structure of educational and cognitive activity is based on a key methodological principle: while the teacher and the student engage in different learning tasks, they share a common focus — the development of the student's personality. It has been established that at the core of this activity are *S1-S2* - relationships and communication, where both the teacher and the student are subjects of activity and relationships. Based on this, a model of educational and cognitive activity has been developed (Chekhlova 2002).



- O Object of activity
- S1 – A teacher
- S2 - A Student
- S1-O- Teacher’s activity
- S2 –O-Student’s activity

Figure 1. The structure of educational activity (Chekhlova 2002).

The development of activity and relationships is possible only with the active participation of the students themselves, who act as subjects in this process. The attitude towards the student as a subject becomes a mechanism for the development of motivation. An active, creative attitude to educational activities is encouraged by the teacher, a group of students, which gives rise to new mechanisms for the formation of motives in adolescents. It is important that an adolescent not only acts as a subject of the activity but also recognizes himself/herself as a subject based on the existing positive public attitude towards learning. In the motivation of the adolescent, the process of personal self-determination appears very clearly (Chekhlova, Chekhlov, Kevisha 2024). To prove the decisive role of subject-subject relations in the educational process, experimental work was carried out. During the study of the nature of pedagogical conflict, interpersonal conflict, and the development of positive motivation among students, three surveys

were carried out in three schools: the Classical State Gymnasium, the First State Gymnasium, and the Third State Gymnasium. The number of students was 150. The questionnaire included sections on “Attitude of Older Students towards Conflict”, “Teaching Motivation”, and “Students' Preference for Teachers”.

Researchers have found that conflicts are more frequent in environments where subject-subject relationships are violated, where interactions with students are authoritarian, and where the student is treated as an object. Students prefer to learn from teachers who are creative, humanistic, and focused on communication with students while preserving their role as subjects in the learning process (Aliev, Chekhlova, Chekhlov, Kevisha 2022). Another pedagogical theory has been developed: the cycle of educational and cognitive activity has been formulated and theoretically justified as both a unit of organizing the learning process and a unit of analyzing the educational process (Chekhlova 2002). A cycle represents a complete behavioral act of activity. This theory is based on Vygotsky's methodological conclusion that the learning process has its own internal structure, sequence, and logic of development (Vygotsky 1982). Based on this, Chekhlova concluded that a procedural and dynamic approach is necessary for studying the development of activity and personality within its process. When creating a model of the functional structure of educational and cognitive activity, the author relied on the fundamental characteristics of a system: integrity, structure, and hierarchy. The research is based on the idea of the cyclic nature of the process as its general regularity and rhythm as a generalizing concept of the dialectic of stability and change. We consider the cycle of educational and cognitive activity as a unit of the learning process, which allows it to be accepted as a unit of pedagogical research into both the learning process and the student's development within it. Based on the identified functional structure of activity, an elementary model of the cycle of educational and cognitive activity was created. The purpose of this elementary model is to serve as a tool for further structuring activity and for building specific conceptual frameworks of activity at a higher level. The elementary model contains a minimum set of dialectically interconnected components, allowing for diverse structuring of real educational activity. This foundation enables the development of more advanced models of the learning process.

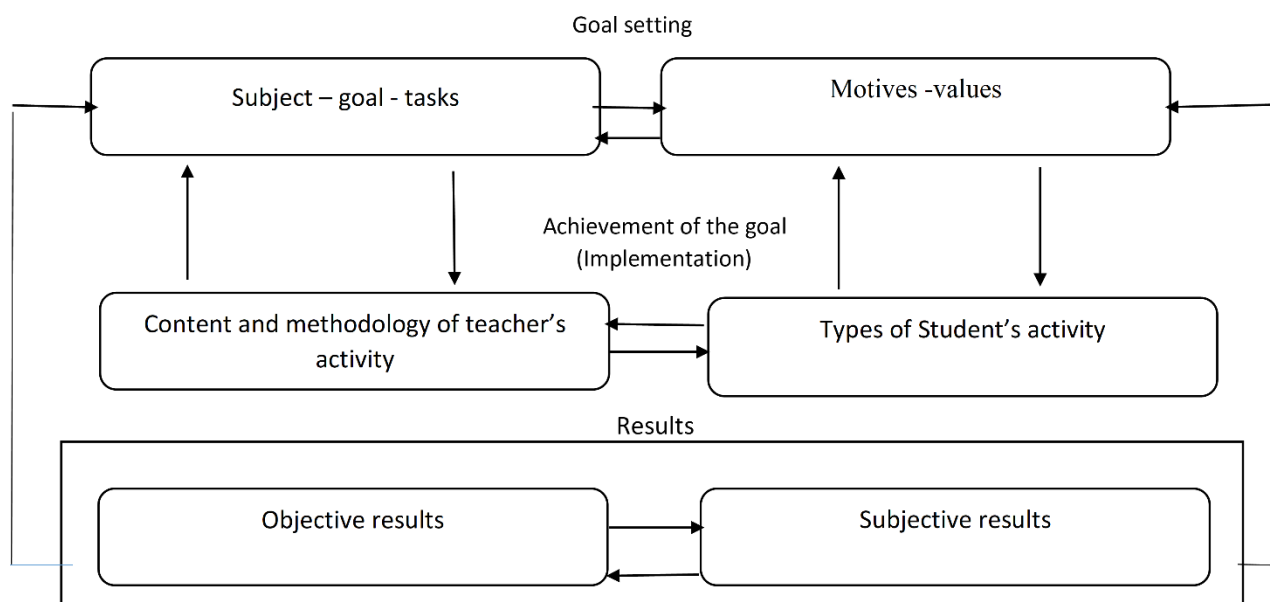


Figure 2 Cycle of pedagogical activity (Čehlova 2002)

These pedagogical theories are widely used in Latvia and across Europe. They have been published in scientific collections and monographs in Latvia, the United Kingdom, France, Lithuania, Poland, the Czech Republic, Hungary, Austria, Greece, and Portugal. These theories were tested at the CiCe (Children, Identity, and Citizenship Education) conference, a scientific project based in London. Alistair Ross, a professor at the University of London, leads the project. These ideas have also been further developed in the dissertations of young Latvian researchers, such as Marina Marchenko and Mikhail Chekhlov, who continued the development of activity theory and student development within this process. The result – the creation of a humanitarian model of education. Author – M. Chekhov (Chekhov 2011).

The substantive framework of education as a science is insufficient to encompass the pedagogical theory of activity, as this theory is grounded in a system of relationships and values. An analysis of methodological problems, along with the development of pedagogical theories based on them, confirms the need to reintroduce pedagogy as a scientific discipline into the educational system of the University of Latvia.

### Conclusion

In the 21st century, due to profound social and cultural changes in society, there is a need to reform the educational process at school. School needs a turn towards a person, towards the spiritual enrichment of the individual, towards the personal, social and professional self-determination of the student. In this regard, the methodology of pedagogy as a science has changed. The content and structure of the subject

of pedagogy as a science have been redefined. The subject of pedagogy represents the relationship of didactic foundations (knowledge, skills, and abilities) and humanitarian and pedagogical foundations (system of relationships). Humanitarian and pedagogical foundations become system-forming in human development. In this regard, pedagogy is considered not just a social, but also a humanitarian science. Analysis of methodological problems of pedagogy is the basis for the development of new pedagogical theories. A model of educational and cognitive activity has been created, a cycle of activity has been developed as a principle for organizing the educational process and its analysis, and a humanitarian model of education has been formulated. Analysis of methodological problems and development of pedagogical theories based on them confirm the need to reintroduce pedagogy as a science into the educational system of the University of Latvia.

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# CROSS-SUBJECT LINKS IN SAMPLES OF THE PHYSICS AND MATHEMATICS CURRICULA OF PRIMARY EDUCATION IN LATVIA

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## Abstract

**Cross-subject links in samples of the physics and mathematics curricula of primary education in Latvia**

**Key Words:** *cross-subject link, physics, mathematics, primary education, graphic organizers, mnemonics*

To develop students' deeper understanding of the relationship between physical objects in the real world and abstract mathematical structures, interdisciplinary links between mathematics and physics should be strengthened already at the primary education level. Such an approach fosters students' analytical thinking and facilitates the integration of knowledge across different subjects. The aim of this study is to analyse which aspects of cross-subject links are emphasized in samples of the physics curriculum in Latvian primary education and how they correspond to the mathematics curriculum. A content analysis was conducted on the current curricula of physics for Grades 8 and 9, as well as mathematics for Grades 1–9 in Latvia. The results indicate that there is alignment between the two curricula; however, the practical implementation of cross-subject links largely depends on individual teachers' approaches and the organization of the teaching process. The article, based on scientific and methodological literature, provides a more detailed analysis of the use of graphic organizers and the mnemonic device "formula triangle". Such an analysis provides teachers with insights into the advantages and limitations of the strategies recommended in the methodological commentary (from a sample of the physics curriculum for Grades 8 and 9).

## Kopsavilkums

**Starppriekšmetu saikne Latvijas pamatizglītības fizikas un matemātikas mācību priekšmetu programmas paraugos**

**Atslēgvārdi:** *starppriekšmetu saikne, fizika, matemātika, pamatskola, grafiskie organizatori, atgādnes.*

Lai veidotu skolēniem dziļāku izpratni par saistību starp fiziskajiem objektiem reālajā pasaulē un abstraktajām matemātiskajām struktūrām, jau pamatskolas līmenī ir jāstiprina starpdisciplinārās saites starp matemātiku un fiziku. Šāda pieeja veicina skolēnu analītiskās domāšanas attīstību un zināšanu integrāciju dažādās jomās. Pētījuma mērķis bija analizēt, kādi starppriekšmetu saiknes aspekti tiek akcentēti Latvijas pamatizglītības fizikas mācību priekšmeta programmas paraugā un kā tie atbilst matemātikas mācību programmas saturam. Tika veikta kontentanalīze pašreizējiem Latvijas 8. un 9. klases fizikas, kā arī 1.–9. klases matemātikas mācību priekšmeta programmu paraugiem. Rezultāti liecina, ka starp abām programmām pastāv atbilstība, tomēr starppriekšmetu saišu praktiskā realizācija lielā mērā ir atkarīga no skolotāju individuālās pieejas un mācību procesa organizācijas. Rakstā, balstoties uz zinātnisko un metodisko literatūru, sīkāk tiek analizēts grafisko organizatoru un atgādnes "formulu trīsstūris" lietošana. Šāda analīze skolotājiem dod ieskatu par metodiskajos komentāros (no 8. un 9. klases fizikas mācību priekšmeta programmas parauga) ieteikto stratēģiju izmantošanas priekšrocībām un trūkumiem.

## Introduction

Cross-subject link is one of the essential aspects of contemporary educational processes, enhancing students' ability to connect knowledge acquired across different subjects and apply it to solving real-life problems. A particularly strong and logically grounded link exists between physics and mathematics, two subjects that complement each other and together form the basis for understanding natural sciences.

The article's relevance is linked to the general emphasis on interdisciplinary and cross-curricular connections within the Latvian education system, as determined by the "Skola2030" initiatives. The aim of the study is to analyse which aspects of cross-subject link are emphasized in the sample curriculum for physics in Latvia's primary education, how they align with the content of the mathematics curriculum.

*Methodology of research.* A competency-based curriculum in Latvia was established by the 2018 Cabinet of Ministers Regulation No. 747 regarding the State Basic Education Standard and Model Basic Education Programs (the Standard) (MK 747 2018). Aspects of cross- subject links are analysed based on the Standard and the current Latvian curricula for physics in Grades 8 and 9 (Latvian Physics Curriculum, LPC) and mathematics in Grades 1 through 9 (Latvian Mathematics Curriculum, LMC), employing qualitative content analysis. Additionally, quantitative indicators were used to identify specific trends, such as comparing the number of topics (Mārtinsons, Pipere, Kamerāde 2016). The results of this analysis are categorized in tables according to predefined criteria. For each physics topic, the total number of learning outcomes was recorded, specifically highlighting those that require mathematical knowledge or skills. The analysis distinguishes between physics topics where a cross-subject link with mathematics is explicitly stated in the LPC and those where such a connection exists implicitly but is not formally indicated. Furthermore, potential interdisciplinary connections were identified and mapped to the corresponding topic numbers within the LMC.

The results of the study confirm that the most significant cross-curricular links between mathematics and physics within the LPC involve unit conversion strategies, the algebraic isolation of variables, and the characterization of relationships through analytical or graphical methods. The mathematical foundation is essential, as eleven out of twelve primary school physics topics demonstrate strong interdisciplinary links with mathematics. While most mathematical concepts are introduced before they are applied in physics, "Vectors" is a notable exception, appearing in the LMC only after it is required in physics. Given that teachers have the autonomy to adjust their teaching schedules, these findings underscore the critical need for collaboration between physics and mathematics educators to synchronize topic delivery.

An understanding of the advantages and limitations of mathematics strategies, described in the methodological comments of the LPC, can help physics teachers more effectively adapt the implementation of cross-subject links to specific lesson objectives. Therefore, based on scientific and methodological literature, this article provides a more detailed analysis of the use of the “formula triangle” as a mnemonic aid and the use of graphic organizers to improve students’ understanding of physical concepts and laws.

### **Theoretical Background of the Implementation of Cross-Subject Links**

To understand the relationship between physical objects in the real world and abstract mathematical structures, it is essential that the state education system strengthens cross-subject links between physics and mathematics already at the primary education level. This approach is integrated into the LPC, as

defined by the Standard (MK 747 2018). The regulation emphasizes the interdisciplinary nature of science education, underscoring the importance of collaboration among teachers of science-related subjects (MK 747 2018).

Interdisciplinary learning is based on the prior knowledge and skills acquired in each individual subject, which are further developed through experiential learning, doing, creating, experimenting, investigating, and solving problems (Oganišjana, Ozola 2020; Oganišjana 2015). However, cross-subject links refer more specifically to the content-based connections between different school subjects, where knowledge and strategies learned in one subject are meaningfully applied in another, even though each subject is taught separately (Skujiņa 2000). Physics, as a scientific discipline, incorporates a multitude of mathematical relationships and their interpretation through abstract models (Kiray 2012). Consequently, the integration of mathematics within the physics curriculum ought to be meticulously aligned with the mathematics curriculum. However, curriculum alignment alone does not ensure successful practical implementation. The effective practical implementation of cross-subject links depends largely on teachers' individual approaches and their organization of the teaching process.

Even before the 2020/2021 academic year, when Latvia implemented competency-based education, it was suggested that a key benefit of the updated curriculum and approach would be the promotion of collaboration among teachers of different subjects, as well as the development of coordinated subject curricula and teaching materials (Anspoka, Kazaka 2019). However, educators still lack the supporting materials necessary for the effective implementation of cross-subject links. Teachers must invest a lot of effort and imagination to develop their own materials. For example, collections of complex tasks in physics for primary school are still needed. Since complex tasks are an essential means of developing students' integrated skills (reproduce, transfer, and generalize) (Reihenova 2019), these tasks should not be more complicated, but rather require thinking skills, such as analysis, synthesis, and evaluation (Mencis, Kumerdanka 2021). Information found in Latvian media includes specific lesson examples that illustrate the practical implementation of cross-subject links, it is emphasized that such connections must not be artificial, and that continuous collaboration between teachers of different subjects is essential (Kuzmina 2022; Skola2030 2019). However, there is still a lack of good examples from Latvian schools specifically demonstrating the implementation of cross-subject links between mathematics and physics.

For physics teachers to more effectively integrate and adapt cross-subject links with mathematics in practice, it is crucial to understand the strengths and limitations of different mathematical strategies. This article, informed by scientific and methodological literature, offers an examination of two particular

mathematical strategies: the employment of graphic organizers and the mnemonic device "formula triangle".

The most critical references highlight the use of the 'formula triangle' mnemonic. Authors agree that this strategy is procedural, gimmicky and error-prone, and, moreover, contradicts the modern educational emphasis on conceptual understanding and meaningful learning (Foster 2021). For this reason, the “formula triangle” should not be the first method introduced for isolating variables from a given equation (Southall 2016). This method may only be used if students have accurately memorized the placement of variables within the triangle (Foster 2021; Beveridge 2014).

Typically, a “formula triangle” is used for physics equations with three variables. However, this visual mnemonic can be adapted for use with equations containing more variables. Let's demonstrate how to isolate variables from Newton's second law,  $F = m \cdot a$ , which involves three variables: F denotes the force acting on an object, m is the mass, and a is the acceleration. Each variable is placed in a specific position, with F at the top, and the other two variables, m and a, in the bottom two sections (see Figure 1). For example, if the force and mass are known but the acceleration needs to be found, students cover the unknown variable a with their hand. The positions of the remaining variables, F and m, indicate the required operation:  $a = \frac{F}{m}$ , as illustrated in the second triangle in Figure 1.

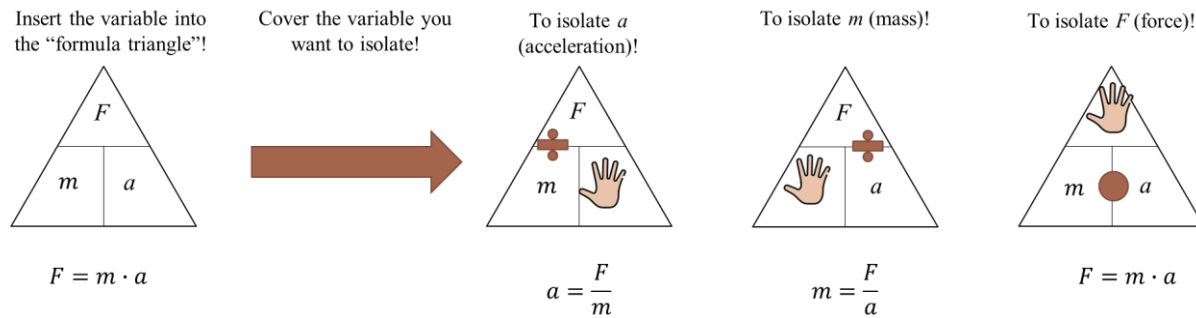


Figure 1. The use of “formula triangles” for isolating variables from Newton's second law.

If students follow such visual schemes mechanically, without understanding the reasoning behind each step (e.g., why force is divided by mass to calculate acceleration), it may not effectively support the ability to analyse physical processes. Teachers should **complement visual aids with clear, step-by-step explanations** of formula transformation. This approach, rooted in an understanding of algebraic operations, is crucial because **students must grasp how and why an answer is obtained** (Karam, Krev 2015).

The formula triangle has several advantages that explain its widespread use in the teaching of physics. It is visually simple and easy to memorize, which helps students quickly recall the structure of a formula; therefore, this approach can be effective as an initial support tool for students with a visually oriented learning style or as a reminder during assessments (Koenig 2015).

In physics, the ability to read graphs, one of the key types of graphic organizers, is essential (Bayarcal 2025). Graphic organizers enable the concise communication of large amounts of information (Zucker, Staudt, Tinker 2015) Therefore, the ability to use graphic organizers is particularly important in science education (Oliņa et al. 2018). As graphic organizers help bridge the gap between concrete and abstract mathematical representations various types of graphic organizers are introduced relatively early in the mathematics curriculum (Becker et al. 2023). As noted by researchers from the Republic of Croatia, when evaluating students' ability to analyse graphs in kinematics, knowledge of mathematical strategies does not guarantee the successful transfer and application of these procedures in physics (Planinic et al. 2012). Therefore, additional explanatory work is required by physics teachers to improve students' understanding of graph interpretation. To develop students' graph-reading skills, consistent practice is needed, gradually progressing from simple to more complex forms of analysis (Zucker, Staudt, Tinker 2015). If the necessary equipment is available, teachers should offer students the opportunity to record and analyse their own motion graphs. For example, a student moves forward and backward at different speeds, while a computer connected to a motion detector generates the corresponding kinematic graphs (Hale 2000).

Many studies have confirmed that, on the one hand, the compact delivery of information is the greatest strength of graphs, but on the other hand, students often struggle to interpret such information (Hariroh et al. 2024; Susac et al. 2018; Vaara et al. 2019). In the case of kinematic graphs, for example, students frequently fail to connect lines and their different slopes to real-life motion scenarios, as graphs are abstract visual representations that require interpreting information that is not directly observable (Planinic et al. 2012). Students often struggle to interpret motion graphs due to a lack of attention to graph shapes and an inability to differentiate between motion types (Hariroh et al. 2024). Furthermore, many overlook axis units, failing to recognize how the meaning of the data changes when switching between displacement and velocity representations (Planinic et al. 2012).

## **Results**

The LPC includes cross-subject links not only with mathematics but also with biology, technology, and other subjects, emphasizing the relevance of skill transfer between disciplines (LPC 2018). The LPC and LMC have many common principles. For example, inquiry and modelling are considered typical

skills to be developed, fostering students’ reasoning and allowing them to engage in discovery and construct their own understanding (LPC 2018; LMC 2018).

In this study, each of the twelve LPC topics is examined to identify the number of learning outcomes (LOs) closely related to mathematical knowledge or skills. Particular attention is paid to whether the cross-subject link with mathematics is explicitly stated in the curriculum, or whether it can be inferred from the content without being formally marked. This approach enables a more accurate assessment of the degree of integration between physics and mathematics, and highlights those physics topics where a connection to mathematics exists but is insufficiently emphasized in the curriculum.

Table 1 indicates the specific **Learning Outcomes (LOs)** related to mathematics within physics topics 8.2., 8.4., 8.6., 9.1., 9.2., and 9.5., and whether the cross-subject link is explicitly indicated in the LPC (see Table 1). This table is part of a larger dataset that covers all physics topics. Physics topics 8.2., 8.4., 8.6., 9.1., and 9.2. have explicitly stated cross-subject links with mathematics (see Table 1). While an explicit cross-subject connection with mathematics is not officially stipulated for topic 9.5, the learning outcome for this topic necessitates familiarity with diverse data representation methods. This inherently implies a connection to mathematics. Accordingly, in Figure 2, topic 9.5. is marked as having one learning outcome related to mathematics, despite the absence of an explicitly stated cross-subject link in the LPC.

**Table 1. Cross-Subject Links Between Physics and Mathematics in Grades 8–9**  
 (compiled by the authors based on LPC 2018)

<b>Topic (Total Number of LOs)</b>	<b>Learning Outcomes related to cross-subject links with mathematics</b>	<b>Indicated cross-subject links with mathematics</b>
8.2. (4)	<ul style="list-style-type: none"> <li>• Analyses uniform and non-uniform motion using graphic representations of motion parameters (distance, speed, time).</li> <li>• Compares uniform and non-uniform motion, as well as linear and curvilinear motion.</li> </ul>	<p><i>Unit conversions are based on strategies previously learned in mathematics.</i></p> <p><i>Graph plotting uses material from Grade 7, Topic 3 on graph construction.</i></p>
8.4. (4)	<ul style="list-style-type: none"> <li>• Explains interactions between objects by illustrating forces (indicating direction, magnitude, and point of application) and changes in motion using the concepts of resultant force and inertia; identifies friction, gravitational force, and weight.</li> <li>• Provides practical examples to explain how measuring scales are constructed and why calibration is necessary.</li> </ul>	<p><i>Uses mathematics-acquired skills to read data from graphs.</i></p> <p><i>Recalls strategies for isolating variables in formulas, as practiced in mathematics.</i></p>

8.6. (3)	<ul style="list-style-type: none"> <li>• Explains changes in energy (kinetic, potential, total mechanical) in motion using mathematical formulas for kinetic and potential energy and bar charts.</li> <li>• Identifies relationships between work, energy, and power by comparing different forms of energy (mechanical and thermal), using physical concepts, units, notations, and mathematical formulas.</li> </ul>	<i>Uses skills and visualizations from Grade 4 mathematics, Topic 1, to construct bar charts.</i>
9.1. (8)	<ul style="list-style-type: none"> <li>• Explains thermal processes (heating, cooling) and applies mathematical relationships to calculate heat quantity; with examples, explains that in certain processes (melting, solidifying, evaporation, condensation), temperature remains constant.</li> <li>• Compares states of matter by representing particle arrangements and explains phase transitions and temperature changes over time through graphs.</li> </ul>	<i>When drawing graphs for thermal processes, uses knowledge from Grade 7, Topic 3 on graphing.</i>
9.2. (7)	<ul style="list-style-type: none"> <li>• Explains electrical processes using mathematical relationships between electrical parameters (current, voltage, resistance).</li> <li>• Describes processes and phenomena using abstract ideas, concepts, relationships, mathematical tools (symbols, graphs), and scientific terminology.</li> </ul>	<i>Uses visualizations and strategies from Grade 7, Topic 3 in mathematics to describe relationships between variables.</i>
9.5. (4)	<ul style="list-style-type: none"> <li>• Understands various methods of data representation (including digital/online) and applies them to effectively achieve a goal.</li> </ul>	<i>No direct cross-subject connection with mathematics.</i>

Figure 2 presents information for all physics topics, including the total number of learning outcomes per topic, the number of learning outcomes with an explicitly stated cross-subject link to mathematics in the LPC, and the number of learning outcomes that require mathematical skills, although these links are not formally indicated as such in the LPC. (see Figure 2).

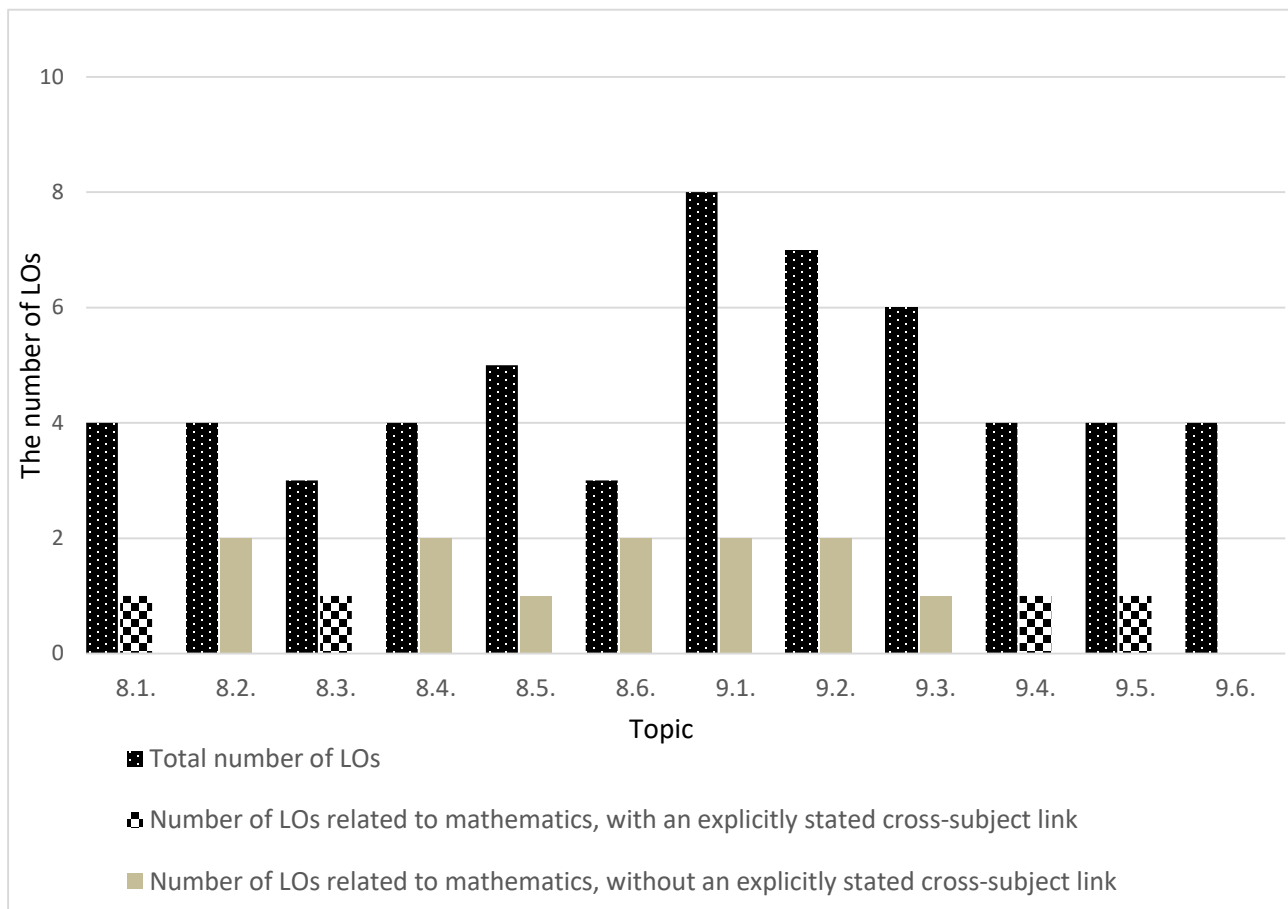


Figure 2. **Number of LOs related to mathematics in physics topics 8.1–9.6**

(compiled by the authors based on the LPC 2018)

It can be observed that for seven out of twelve topics, a cross-subject link with mathematics is explicitly stated in the LPC **but** for an additional four topics, such a link exists but is not formally indicated (see Figure 2). Only topic 9.6. does not contain any cross-subject connections with mathematics (see Figure 2). This analysis clearly demonstrates that the majority of physics topics for Grades 8 and 9 rely, either directly or indirectly, on the application of mathematical strategies. It highlights the need to represent these connections more explicitly and purposefully in the curriculum, so that teachers can more effectively prepare physics lessons in which the revision of mathematics topics must be additionally planned.

The following table (Table 2) provides additional guidance for physics teachers by showing how specific LOs from the LPC relate to mathematical concepts. This structure supports teachers in

recognizing meaningful cross-subject links between physics and mathematics. The Table 2 includes the corresponding topic numbers from the LMC that align with the identified physics LOs for those 11 topics in which, according to the summary in Figure 2, a cross-subject link with mathematics is present.

**Table 2. Linking Physics Learning Outcomes to Related Mathematics Topics**

(compiled by the authors based on LPC 2018 and LMC 2018)

Topic	LOs from the LPC	Topics from the LMC that relate to LOs from the LPC
8.1.	<ul style="list-style-type: none"> <li>•Transforms written information using symbols, notations, formulas, graphic representations, and equations, selecting the most appropriate strategy.</li> <li>•Is able to convert between different systems of units.</li> <li>•Determines the physical meaning of expressions.</li> </ul>	1.6.; 2.5.; 2.7.; 2.8.; 3.2.; 5.8.; 7.7.; 7.8.; 8.2.; 8.7.
8.2.	<ul style="list-style-type: none"> <li>•Calculates average speed.</li> <li>•Develops and applies strategies and reminders for simple and compound unit conversions.</li> <li>•Draws distance-time and speed-time graphs, analyses multi-stage motion speed graphs and describes them verbally. Compares graphs.</li> </ul>	5.7.; 5.8.; 7.3.; 7.7.; 8.2.; 8.7. Grade 8: Data Processing (integrated topic);
8.3.	<ul style="list-style-type: none"> <li>•Extracting information from a graph.</li> <li>•Concluding the functional relationship between period and frequency.</li> <li>•Concluding the relationship between frequency and pitch, and between amplitude and loudness of sound.</li> <li>•Converts units.</li> </ul>	5.8.; 7.3.; 7.7., 8.2.
8.4.	<ul style="list-style-type: none"> <li>•Defines similarities and differences between the concepts of “weight,” “mass,” and “gravitational force,” e.g., using a Venn diagram.</li> <li>•Actions with forces.</li> </ul>	2.1.; “Vectors and motion” from Mathematics I
8.5.	<ul style="list-style-type: none"> <li>•Expresses density as a functional relationship between mass and volume, determines it experimentally, and finds it in various information sources.</li> </ul>	5.8.; 7.3.
8.6.	<ul style="list-style-type: none"> <li>•Converts energy units from kcal to joules.</li> <li>•Investigates with examples how an object’s energy <math>E_k = \frac{mv^2}{2}</math> changes depending on mass and speed.</li> <li>•Concludes on the functional relationship between work, time, and power.</li> </ul>	1.6.; 2.7.; 3.2.; 7.3.; 7.7.
9.1.	<ul style="list-style-type: none"> <li>•Identifies the independent, dependent, and fixed variables.</li> <li>•Draws graphs of thermal processes.</li> <li>•Develops an understanding of whether temperature has upper and lower limits or whether it can be infinite.</li> </ul>	5.8.; 7.3.; 7.9.
9.2.	<ul style="list-style-type: none"> <li>•Explains electrical processes using mathematical relationships between electrical parameters. Compares visual representations of electrical interactions.</li> <li>•Describes processes and phenomena using abstract ideas, concepts, relationships, mathematical tools (symbols, graphs), and scientific terminology.</li> <li>•Records data in a measurement table.</li> </ul>	5.8.; 7.3.

9.3.	<ul style="list-style-type: none"> <li>• Explains processes and phenomena using abstract ideas, concepts, relationships, and mathematical tools (such as symbols and graphs).</li> </ul>	5.8.; 7.3.; 8.7.
9.4.	<ul style="list-style-type: none"> <li>• Identifies common properties of electric, magnetic, and gravitational fields, such as direction of action, attraction and repulsion, and the dependence of field strength on the distance from the source.</li> </ul>	2.1.
9.5.	<ul style="list-style-type: none"> <li>• Understands various methods of data representation.</li> <li>• Recognizes and explains common characteristics.</li> <li>• Builds diverse models to explain processes and phenomena.</li> <li>• Concludes that the angle of incidence equals the angle of reflection.</li> </ul>	2.1.; 4.3.; 7.2.; 7.3.; 8.7.; Grade 8: Data Processing (integrated topic);

As Table 2 illustrates, the **LOs** from the **LPC** confirm that topics 8.1, 8.3, and 9.4 each include at least one mathematics-related learning outcome, even though this is not explicitly stated in the LPC. Topic 8.1. of the physics curriculum introduces students to the use of abstract mathematical models. Students are expected to understand complex scientific texts, interpret and reformulate what they read, and use symbols, notations, formulas, graphic representations, and equations, as well as choose the most appropriate strategy (LPC 2018). Topic 8.3 requires students to **grasp the concept of an inverse proportional relationship between oscillation period and frequency** (LPC 2018). The Euler-Venn diagram is a valuable tool in Topic 9.4. for visually representing the commonalities and differences among electric, magnetic, and gravitational fields, such as the direction of force, attractive or repulsive, and how field strength depends on the distance from the source (LPC 2018).

The mathematics topic 7.3. “How can relationships between variables be described?” is referenced in eight physics topics, accounting for 67% of all topics (see Table 2). This mathematics topic is essential for analysing many key physical concepts and processes, for example:

- analysing uniform and non-uniform motion using graphic representations of motion parameters (distance, speed, time);
- explaining electrical processes using mathematical relationships between electrical quantities (current, voltage, resistance);
- explaining heat processes (heating, cooling) and using mathematical relationships to calculate the amount of heat, while understanding that, during phase transitions such as melting, freezing, boiling, or condensation, the temperature remains constant as heat is absorbed or released;
- Determining how an object’s energy changes depending on mass and velocity by using a given formula, without the need to explain how the formula was developed;
- drawing conclusions about the functional relationship between work, time, and power (LPC 2018).

The compiled information from Table 1 and Table 2 shows that, in most cases, mathematics serves not only as a support tool for understanding physics concepts, but also as a necessary foundation for developing scientific thinking (see Table 1 and Table 2).

The required mathematics topics are mostly scheduled before the corresponding physics topics. Only the mathematics topic “Vectors and Motion” appears after it is required in physics, as vectors are included in the upper-secondary mathematics curriculum, while already in grade 8, topic 8.4., students begin to study vector quantities in physics (LPC 2018).

## **Conclusions**

The analysis of the literature and curriculum content confirms that primary school physics needs to integrate complex tasks that cultivate students' analytical, synthesizing, and evaluative skills, moving beyond simply increasing task difficulty. Graphic organizers have proven to be effective tools for visualizing relationships between variables, structuring scientific knowledge, and supporting students' understanding of abstract physical and mathematical concepts. Despite their pedagogical value, research indicates that students often lack graph literacy skills, which suggests the need for early and systematic development of these competencies through targeted instructional approaches. The use of the "formula triangle" should be critically assessed and complemented by instructional approaches that foster mathematical reasoning and a deeper understanding of proportional relationships.

An analysis of the LPC and LMC reveals that the cross-subject link between physics and mathematics is essential and systematically integrated into the majority of physics topics. Out of the twelve topics included in the LPC, eleven demonstrate a connection with mathematics. Of these, the link is explicitly stated in seven topics, while in four topics the connection is clearly evident through content analysis of the LPC, even though it is not formally indicated in the curriculum.

One of the most significant mathematics topics that is frequently integrated into physics is 7.3.: “How can the relationship between variables be described?”. This topic forms the foundation for understanding motion, electrical, and thermal processes by representing them through functions and graphs. Of equal importance are mathematical skills such as isolating variables in formulas, as practiced in mathematics, either with or without the use of the “formula triangle”, and converting units between different systems, all of which significantly influence students' ability to solve physics problems. In some cases, the skills required in the physics curriculum precede topics not yet covered in mathematics, such as working with vectors. The study reveals that in most cases, mathematics serves not only as a support tool for understanding physics concepts but also as a necessary foundation for developing scientific thinking.

These findings underscore that the effective implementation of cross-subject links between physics and mathematics is not limited to the formal identification of links in the curriculum, but rather depends on deliberate and structured pedagogical collaboration. Planned cooperation among subject teachers plays a crucial role in ensuring coherent learning progressions, where mathematical knowledge is introduced and revisited in meaningful scientific contexts. This requires not only aligned topic sequencing and the use of shared teaching resources, but also joint planning of instructional strategies that foster conceptual connections between subjects.

However, there is still a lack of good examples from Latvian schools specifically demonstrating the implementation of cross-subject links between mathematics and physics. This gap highlights the need to develop and share practical interdisciplinary teaching strategies that reflect the curriculum's intentions.

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# ADAPTATION AND VALIDATION OF THE SHORT VERSION OF THE NATURE RELATEDNESS SCALE (NR-6) IN LATVIAN

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## Abstract

### Adaptation and validation of the short version of the Nature Relatedness Scale (NR-6) in Latvian

**Key Words:** factor analysis, measurement validation, nature, nature relatedness, well-being

**Introduction.** Nature relatedness refers to an individual's cognitive, affective, and experiential connection with the natural environment, and is considered a relatively stable personality trait linked to well-being and pro-environmental behaviour. The study aimed to adapt the short version of the Nature Relatedness Scale (NR-6) into Latvian and evaluate its psychometric properties within the Latvian cultural context.

**Materials and methods.** The study builds upon previous work on the full-version adaptation of the Nature Relatedness Scale, using the existing item translations. Psychometric evaluation included exploratory factor analysis, internal consistency reliability, and correlations with theoretically related construct, such as well-being, measured using the World Health Organization Well-Being Index (WHO-5). The sample consisted of 401 participants aged between 18 and 65 years.

**Results.** The Latvian NR-6 demonstrated good internal consistency and a one-factor structure consistent with the original version. Statistically significant positive correlations were found between NR-6 scores and well-being indicating good construct validity.

**Conclusions.** The NR-6 adaptation offers a reliable tool for assessing nature connectedness. Preliminary evidence supports its validity and relevance for research in Latvia. Future studies should continue to examine scale's validity and applicability across diverse populations.

## Kopsavilkums

### Piederības izjūtas dabai skalas īsās versijas (NR-6) adaptācija un validēšana latviešu valodā

**Atslēgvārdi:** daba, faktoranalīze, labbūtība, mērinstrumenta validēšana, piederības izjūta dabai

**Ievads.** Piederības izjūta dabai raksturo indivīda kognitīvo, emocionālo un pieredzē balstīto saikni ar dabas vidi. Tā tiek uzskatīta par salīdzinoši stabilu personības iezīmi, kas saistīta ar labbūtību un videi draudzīgu uzvedību. Šī pētījuma mērķis bija adaptēt Piederības izjūtas dabai skalas īso versiju (NR-6) latviešu valodā un novērtēt tās psihometriskās īpašības Latvijas kultūrvidē.

**Materiāli un metodes.** Pētījums balstīts uz iepriekš veikto Piederības izjūtas dabai skalas pilnās versijas adaptāciju, izmantojot esošo pantu tulkojumu. Psihometriskajā novērtēšanā tika iekļauta izpētošā faktoru analīze, iekšējās saskaņotības pārbaude un korelācijas ar teorētiski saistītu konstrukt – labbūtību, kas tika mērīta ar Pasaules Veselības Organizācijas Labbūtības indeksu (WHO-5). Izlasi veidoja 401 dalībnieks vecumā no 18 līdz 65 gadiem.

**Rezultāti.** NR-6 latviešu valodas versija uzrādīja labu iekšējo saskaņotību un viena faktora struktūru, kas atbilda oriģinālajai versijai. Starp NR-6 rezultātiem un labbūtību tika konstatētas statistiski nozīmīgas pozitīvas korelācijas, kas liecināja par labu konstrukta pamatotību.

**Secinājumi.** NR-6 adaptācija piedāvā drošu instrumentu piederības izjūtas dabai novērtēšanai. Sākotnējie rezultāti apstiprina skalas pamatotību un piemērotību izmantošanai pētījumos Latvijā. Skalas pamatotība un piemērojamība dažādām iedzīvotāju grupām būtu jāturpina izvērtēt turpmākos pētījumos.

## Introduction

A growing body of research highlights the significant benefits of contact with nature for human health and well-being. Regular exposure to green and blue spaces is associated with improved mental, physical, and cognitive health outcomes (White et al. 2021). Spending time in nature has been linked to reduced stress, depression, anxiety, and negative affect, alongside enhanced mood and psychological functioning, underscoring their value for public health and mental health promotion (Nejade et al. 2022). However, as urbanisation increases globally, there is growing evidence of disconnection from nature in

modern societies, raising concerns about the long-term implications for individual and collective well-being (Swami et al. 2024).

This disconnection has prompted increased interest in understanding the psychological bond between individuals and the natural environment, often conceptualised as nature relatedness or nature connectedness (Beery et al. 2023). Research suggests that this bond may represent a basic psychological need (Baxter & Pelletier 2019) and is critical for promoting sustainable behaviour and emotional resilience.

Nature relatedness refers to an individual's cognitive, affective, and experiential connection with the natural environment, and is considered a relatively stable personality trait linked to well-being and pro-environmental behaviour (Nisbet et al. 2009). Various instruments have been developed to assess this construct, including the Nature Relatedness Scale (Nisbet et al. 2009), the Connectedness to Nature Scale (Mayer & Frantz 2004) and the Inclusion of Nature in Self Scale (Schultz 2002). The short version of the Nature Relatedness Scale (NR-6; Nisbet & Zelenski 2013) stands out for its brevity and robust psychometric performance. Its concise format makes it particularly valuable in applied settings or large-scale surveys where respondent burden must be minimized (Tam 2013).

## **Aim**

The aim of the study was to adapt the short version of the Nature Relatedness Scale (NR-6; Nisbet & Zelenski 2013) into Latvian and to evaluate its psychometric properties within the Latvian cultural context. The specific objectives were: (1) to assess the appropriateness of item translations based on the previously adapted full version of the Nature Relatedness Scale in Latvian, (2) to conduct an exploratory factor analysis of the NR-6, and (3) to evaluate the scale's psychometric properties including construct validity.

## **Material and Methods**

The study was approved by the Research Ethics Committee of Rīga Stradiņš University as part of a broader research initiative (Decision No. 2-PĒK-4/366/2024; approval date: April 22, 2024). Prior to participation, all respondents provided informed consent electronically.

The study sample included 401 respondents aged between 18 and 65 years ( $M = 29.11$ ,  $SD = 10.64$ ). The majority of participants were female (87.8%) and lived in urban areas (70.1%).

Measurements used in the present study included the Nature Relatedness Scale, the World Health Organization Well-Being Index (WHO-5; WHO Regional Office for Europe 1998), and a questionnaire designed to collect respondents' sociodemographics.

The short version of the Nature Relatedness Scale (NR-6) is a brief, unidimensional self-report measure developed by Nisbet and Zelenski (2013) to assess individuals' subjective sense of connection with the natural environment. The scale consists of six items rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher average scores indicating stronger nature relatedness. An example item is: "I always think about how my actions affect the environment." The NR-6 has demonstrated good internal consistency across diverse populations, with Cronbach's  $\alpha$  ranging from .84 to .88 in validation studies with Canadian samples.

The World Health Organization Well-Being Index (WHO-5; WHO Regional Office for Europe 1998) is a brief self-report instrument designed to assess subjective psychological well-being. It comprises five positively worded items rated on a 6-point Likert scale, ranging from 0 (at no time) to 5 (all the time), producing a total score between 0 and 25. Higher scores indicate greater well-being, while scores below 13 may suggest possible depression and signal the need for further evaluation (WHO Regional Office for Europe 1998). An example item is: "I have felt cheerful and in good spirits." A systematic review by Topp et al. (2015) confirmed the scale's strong psychometric properties, including high internal consistency across populations (Cronbach's  $\alpha = .88-.89$ ) and its validity as both a depression screening tool and an outcome measure in clinical and research contexts. The Latvian adaptation of the WHO-5 was developed by Boļšakova and Perepjolkina (2023), with the Latvian version also demonstrating high internal consistency (Cronbach's  $\alpha = .89$ ).

Finally, the sociodemographic questionnaire collected information on participants' gender, age, level of urbanicity of their place of residence, and current employment status or engagement in higher education.

The procedure included a review of the item translations and data collection in an adult sample. In the first step, three bilingual experts in psychology reviewed the items of the NR-6. As the original authors of the Nature Relatedness Scale recommended avoiding the existence of multiple versions of the scale in the same language (personal correspondence with E. Nisbet), the present study considered using existing item translations from the full version adaptation (Šperliņa 2021) for the short version. In the current study, using a consensus-based evaluation, the expert panel confirmed both the clarity and relevance of the existing translations for subsequent application. Data were collected via an online survey. The information was distributed via social media and email communication to relevant institutions. Participants accessed the questionnaire via a link provided in the social media post or email. The data were processed using IBM SPSS Statistics, version 30.0.

## Results

To evaluate the suitability of the data for exploratory factor analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett’s test of sphericity were conducted. The KMO value was .846, which exceeds the recommended threshold of .80, indicating a meritoriously adequate sample for factor analysis. Bartlett’s test of sphericity was statistically significant,  $\chi^2(15) = 1087.003, p < .001$ , suggesting that the correlations between items were sufficiently large to justify factor analysis.

To assess internal consistency, Cronbach’s alpha ( $\alpha$ ) was calculated, yielding a coefficient of .852, which indicates strong reliability of the scale. Item means ranging from 3.48 to 3.91 ( $SD = 1.030$ – $1.240$ ; see Table 1) suggest that respondents generally reported a moderate to high level of nature relatedness, with moderate variability in responses. All scores fell within the acceptable range of item difficulty indices (1.8–4.2), suggesting appropriate item endorsement.

Exploratory factor analysis was conducted using principal axis factoring as the extraction method to examine the underlying structure of the NR-6 scale. All six items loaded strongly on a single factor, with loadings ranging from .566 to .878 (see Table 1), indicating a coherent unidimensional construct. The retained factor had an eigenvalue above 1 and explained 58.78% of the total variance, demonstrating that a substantial proportion of the variance was accounted for by a single latent dimension.

**Table 1**

*Descriptive statistics and factor loadings for the short version of the Nature Relatedness Scale*

Scale	Descriptive statistics				Factor loadings
	Mean	SD	Min	Max	
<b>My ideal vacation spot would be a remote, wilderness area</b>	3.48	1.240	1	5	.566
<b>I always think about how my actions affect the environment</b>	3.61	1.097	1	5	.663
<b>My connection to nature and the environment is a part of my spirituality</b>	3.59	1.180	1	5	.850
<b>I take notice of wildlife wherever I am</b>	3.91	1.030	1	5	.788
<b>My relationship to nature is an important part of who I am</b>	3.73	1.160	1	5	.878
<b>I feel very connected to all living things and the earth</b>	3.63	1.140	1	5	.808
<b>NR-6</b>	3.67	.860	1	5	

*Note:* N = 401. NR-6 – short version of the Nature Relatedness Scale. Extraction method: principal axis factoring. Total variance explained = 58.78%.

To assess the construct validity of the NR-6, its correlation with the World Health Organization Well-Being Index (WHO-5) was examined. The analysis revealed a statistically significant positive correlation between the two measures ( $r = .344$ ,  $p < .01$ ). This moderate association suggests that individuals with higher levels of nature relatedness tend to report higher psychological well-being.

## **Discussion**

In this study, the short version of the Nature Relatedness Scale (NR-6; Nisbet & Zelenski 2013) was adapted into Latvian. The adapted version demonstrated good internal consistency, and the one-factor structure aligned with the original model, supporting its reliability as a concise measure of nature relatedness. The results of correlation analysis support the theoretical assumption that a stronger connection with nature is positively associated with mental well-being, thereby providing evidence for construct validity.

To situate the findings of the Latvian adaptation within the broader measurement literature on the NR-6, it is important to acknowledge ongoing discussions regarding its dimensional structure and validation across different cultural contexts. Notably, the NR-6 does not fully capture the multidimensional structure of the original scale. It comprises three theoretical components: the “self” dimension (identity with nature), the “perspective” dimension (attitudes and behaviours), and the “experience” dimension (physical familiarity and attraction to nature). The authors note that the short version reflects the “self” and “experience” components (Nisbet & Zelenski 2013). Furthermore, recent critique by Luong (2022) raises concerns regarding the NR-6’s factor structure, measurement equivalence across gender groups, and overall construct validity. These findings underscore the importance of cautious interpretation and the need for further validation of the NR-6 across diverse populations and contexts. Simultaneously, a recent adaptation of the NR-6 (Moreira et al. 2022) confirms the unidimensionality of the construct.

The present findings contribute to the growing body of cross-cultural research on nature relatedness by confirming the psychometric soundness of the NR-6 in the Latvian context. By replicating the unidimensional structure and confirming a significant association with well-being, this study supports the NR-6 as a useful tool for psychological research.

Certain limitations of this study must be acknowledged. The gender imbalance, characterized by a predominance of female participants, may have influenced the outcomes. Additionally, the uneven distribution of respondents across age groups limits the generalizability of the results to broader populations. The limited availability of instruments measuring nature relatedness adapted into Latvian

constrains the ability to assess convergent validity. Future studies should examine the scale in more demographically balanced samples in terms of gender and age distribution. Moreover, further research is needed to explore the associations between nature relatedness, nature exposure, and pro-environmental behaviours.

## Conclusions

In conclusion, the Latvian adaptation of the short form of the Nature Relatedness Scale (NR-6) demonstrates good internal consistency and replicates the one-factor structure of the original version, supporting its reliability as a brief measure of nature relatedness. The NR-6 offers a practical and efficient tool for use in psychological research, particularly where brevity is essential. Its availability in Latvian is expected to stimulate further research in fields such as ecopsychology and health psychology, by providing a valid pathway for exploring the role of nature relatedness in well-being as well as nature-related health behaviour and self-care. Future studies should continue to evaluate its validity across diverse populations and examine its predictive value in relation to mental health and pro-environmental outcomes.

## Acknowledgements

The authors wish to thank Mg. psych. Janeta Šperliņa for the opportunity to become acquainted with her adaptation of the full version of the Nature Relatedness Scale into Latvian, which provided the foundation for this study. The current study was conducted within the framework of the Erasmus+ cooperation partnership “GreenTouch: EcoMind Development for Higher Education Future” (project ID 2023-1-LV01-KA220-HED-000154847).

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## TIESĪBU ZINĀTNES / LAW

### WITNESS IMMUNITY OR THE RIGHT TO BE EXEMPTED FROM THE DUTY TO TESTIFY IN CRIMINAL PROCEEDINGS

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#### Abstract

##### **Witness immunity or the right to be exempted from the duty to testify in criminal proceedings**

**Key Words:** *criminal proceedings, duties and rights of a witness, exemption of a witness from giving testimony, witness*

Witness immunity or the right to be exempted from the duty to testify in criminal proceedings is one of the current theoretical and practical challenges in criminal proceedings, which must be addressed by the person directing the proceedings, concerns granting an individual the status of a witness and adhering to procedural conditions for obtaining witness testimonies. The implementation of this issue is linked to the fact that, from the perspective of argumentation theory, witness testimony is considered as a type of personal evidence. Consequently, for various reasons (both objective and subjective), there are risks of transformation of witness testimonies or even risks of repeated unavailability of the witness during the course of criminal proceeding. The article examines the rights of a witness to be exempted from the obligation to testify, which can be earmarked as the witness's immunity from the duty to testify, and the current legal regulation and application of this in Latvia's criminal procedure. The problems of the application of procedural rights for the exemption of a witness from the obligation to testify are summarized and the ways of resolving them are proposed. Conclusions have been drawn, including that witness immunity can be expressed as a complete exemption from giving testimony in criminal proceedings and immunity depending on objective circumstances.

#### Kopsavilkums

##### **Liecinieka imunitāte jeb tiesības uz atbrīvošanu no liecināšanas pienākuma kriminālprocesā**

**Atslēgvārdi:** *kriminālprocess, liecinieks, liecinieka atbrīvošana no liecību sniegšanas, liecinieka pienākumi un tiesības*

Liecinieka imunitāte jeb tiesības tikt atbrīvotam no pienākuma sniegt liecības kriminālprocesā ir viens no aktuālajiem teorijas un prakses izaicinājumiem kriminālprocesā, kas jārisina procesa virzītājam, un ir saistīts ar liecinieka statusa piešķiršanu personai un liecinieka liecību ieguves procesuālo nosacījumu ievērošanu. Šī jautājuma īstenošana saistīta ar to, ka no argumentācijas teorijas viedokļa liecinieka liecības tiek uzskatītas par personisko pierādījumu veidu. Līdz ar to dažādu iemeslu (gan objektīvu, gan subjektīvu) dēļ pastāv liecinieka liecību izmaiņu riski vai pat riski, ka liecinieks atkārtoti nebūs kriminālprocesā pieejams. Rakstā tiek aplūkotas liecinieka tiesības tikt atbrīvotam no pienākuma sniegt liecību, ko var raksturot kā liecinieka imunitāti no pienākuma sniegt liecību, un tā pašreizējo tiesisko regulējumu un piemērošanu Latvijas kriminālprocesā. Tiek apkopotas procesuālo tiesību piemērošanas problēmas liecinieka atbrīvošanai no pienākuma sniegt liecības un tiek piedāvāti to risināšanas veidi. Izdarīti secinājumi, t.sk. ka liecinieka imunitāte var nozīmēt kā pilnīgu atbrīvošanu no liecināšanas procesuālā pienākumu, tā arī atbrīvojumu saistībā ar objektīvo apstākļu konstatēšanu.

#### Introduction

The problem of procedural immunity is constantly reflected in the legal literature, and this secures the place of this problem as one of the urgent problems of criminal proceedings. The importance of the witness as an indispensable participant in the process has also been reflected in several articles (example, Rus 2024). In the literature, certain issues of procedural immunity are investigated. For example, the problem of the emergence and termination of advocates' immunity in criminal proceedings in Latvia and Lithuania (Bičiunas, Bulgakova 2014) and other aspects of the problem.

The article examines the issue of the institution of witness immunity both in the regulation of this institution in the Criminal Procedure Law (hereinafter CPL), and the implementation of law in the judicial practice of Latvia. In one of her publications, the author addressed the problem of witness immunity, analyzing the right of a witness not to testify against themselves or their close relatives (Bulgakova 2014).

The purpose of the study is to analyze the right of a witness to be exempted from the obligation to testify, i.g. the immunity of a witness from the obligation to testify, in the current CPL and in the decisions of the judicature of the last five years. The research is based on the provisions of Chapter 8 of the Constitution (Satversme), Sections 7 and 8 of the Criminal Procedure Law, as well as opinions expressed in doctrinal sources and conclusions drawn in case-law rulings (2018–2024).

*Material and Methods.* Witness immunity or the right to be exempted from the obligation to testify in criminal proceedings can be considered one of the topical problems of criminal procedure in Latvia. This thesis can be confirmed in the Concept of the Draft Criminal Procedure Law of 2001 (Concept of the Draft Criminal Procedure Law, 2001), as well as in the legal literature of the opinions expressed (Kūtris 2001). The broader issue of immunity in general are contained in the conclusions of doctrinal sources, such as the Commentaries on Articles 116-122 of the Criminal Procedure Law (CPL Comments 2019).

The research is based on the following normative legal acts: the provisions of Articles 90, 92 of Chapter 8 of the Constitution of the Republic of Latvia (Satversme 1922) and comments to these articles (Commentary on Section 8 of the Constitution, 2011), the norms of the second normative acts of the European Union (specifically, Directives 2013/48/ES, Directives 2010/64/ES), the provisions of the CPL (including Articles 7 and 8 of the CPL), the Concept of the Draft Criminal Procedure Law (2001), and the sources of legal literature of Latvia and other countries of the European Union (hereinafter referred to as the EU) and the views expressed in these sources. The author's practical experience is also used.

The following methods were used in conducting the research: literature analysis, synthesis, induction, as well as the method of sociological observation.

Literature analysis was also applied in the *Discussion* section to reflect the opinions of authors, provisions of the CPL, as well as directives of the European Council and Parliament. The author analyzes the application of specific articles of the CPL, including Article 116 and Part 2 of Article 151 of the CPL. In formulating the research conclusions, the method of sociological observation and the practical experience of the author of this article were utilized.

The article draws conclusions on the legal prerequisites for the release of witnesses from the obligation to testify, including for various reasons (profession, age, health status, physical characteristics, guarantees provided for by law), on the legal impact of procedural errors in ensuring such rights on the exercise of the rights of a particular individual - a witness, as well as in general their possible impact on the fair settlement of criminal legal relations in criminal justice.

### ***Discussion***

Several scientific publications have studied the procedural aspects of witness immunity (for example, Meikališa 2019; Abdullajeva 2024; Dikaryov 2012). In the opinion of the author of this article, it is more appropriate to analyze the issue of the concept of immunity with regard to exemption from testimony. But also of interest is the subject of law that has the authority to resolve the issue of witness immunity.

The resolution of immunity issues, including witness immunity, falls within the competence of the person directing the proceedings. In this regard, it is necessary to emphasize one of the fundamental principles of criminal proceedings – criminal procedural obligation, which is defined by the provisions of Article 9 of the CPL. The general rule implies the obligation of each person involved in the process to comply with the procedural requirements of the person authorized to conduct the proceedings and to comply with the criminal procedural order (Article 9, Part 1 of the CPL) (CPL, 2005: Article 9 Part 1).

Only persons who have been granted procedural immunity (Article 9 Part 3 of the CPL) have the right to an exception to this rule (CPL 2005: Part 3 of Article 9).

Procedural immunity of a participant in the proceedings, including a witness, in providing testimony, as one of the types of immunity, based on the provision of Part 1 of Article 117 of the CPL, can be divided into two types: 1) complete exemption from testifying and 2) partial exemption from testifying (CPL 2005: Part 1 of Article 117).

Departing from the direct subject of the study, it should be clarified that, according to the provision of Part 1 of Article 10 of the CPL, immunity from criminal proceedings may prohibit or restrict the right to prosecute an individual, impose compulsory measures against them, conduct investigative actions on premises under their possession, and extradite documents and objects.

The issue of authority in criminal proceedings is decided on the basis of the stage (phase) of the criminal process/criminal case and which of the participants in the process has the status of a person directing the proceedings (in Latvian: procesa virzītājs). This opinion is based on the norm of Part 1 of Article 27 of the CPL, which specifically states: *The person directing the proceedings shall be the official or court that leads the criminal proceedings at the specific moment* (CPL 2005: Part 1 of Article 27).

In legal literature, the institution of *witness immunity* is proposed to be distinguished from the institution of *exclusion from testimony*. In the first case, the legislator gives the right to a person invited as a witness to decide whether to give or refuse to testify, and in the case of exclusion from testimony, the law prohibits the person directing the proceedings (investigator, prosecutor, judge, court) to receive testimony. For example, such an opinion was expressed by I.S. Dikaryov (Dikaryov 2012).

Referring to the Latvian CPL, the term of *witness immunity*, as well as the term of *exemption from testimony*, is not directly regulated in the norms of the CPL. According to the regulation of the issue of immunity in Article 116 of the CPL, procedural immunity is related to four main criteria, including the status of a person in criminal proceedings (criterion of paragraph 3 of Part 2 of Article 116 of the CPL), as well as based on kinship (criterion of paragraph 4 of Part 2 of Article 116 of the CPL). The issue of regulation of the norms of Article 116 of the CPL is commented on in the Commentary of the CPL (Commentary of the CPL, 2019), but the issue of witness immunity is only touched upon in this source and is mainly related to the status of a person entitled to procedural protection, linking the commentary of Article 116 with the commentary of Article 309 of the CPL (Commentary of the CPL 2019: Commentary on Article 116, paragraphs 1-11).

With the introduction of a norm in the CPL prohibiting further interrogation of a witness if the witness is found to have grounds for the status of a person entitled to protection, the practice of involving a witness in criminal proceedings has undergone positive changes. The practice of involving a witness in criminal proceedings has also undergone positive changes. Amendments to Part 2 of Article 151 have been introduced since 2017 (Law “On Amendments to the Criminal Procedure Law” 2017: Part 2 of Article 151).

The adoption of such amendments to the CPL was directly influenced by the provisions of Directive 2013/48/EU of the European Parliament and of the Council of 22 October 2013, which provides, among other things, for the right to defend a witness from testifying against himself or herself and the right to remain silent. Directive “On the right of access to a lawyer in criminal proceedings and in European arrest warrant proceedings, and on the right to have a third party informed upon deprivation of liberty and to communicate with third persons and with consular authorities while deprived of liberty” covers the rights of natural persons involved in the proceedings (Directive 2013/48/EU of the European Parliament and of the Council 2013).

It is in paragraph 21 of this Directive 2013/48/ES that the issue of ensuring the termination of a witness interrogation is addressed when it is determined that a change in procedural status of that person to a

person entitled to protection is necessary. This is also pointed out by Prof. A. Meikališa Ā. (Meikališa 2019: Commentary to Article 151, paragraph [5]).

Another aspect of the regulation of witness immunity is related to the sources of law in which this institution is regulated. The provision of the second sentence of Part 1 of Article 111 of the CPL states: *The right to not testify is held only by the persons to whom such procedural immunity has been granted by the Constitution (Satversme), this Law, and international treaties binding to Latvia (CPL 2005: Part 1 of Article 111).*

The norm of Article 90 of the Constitution of the Republic of Latvia (Satversme) states: *Everyone has the right to know about his or her rights (Satversme 2011: Article 90).* This provision serves as a safeguard for the rights of individuals, including a witness's right in criminal proceedings to refrain from testifying against themselves or their relatives.

In the practice of the Constitutional Court (decision of 20.12.2006) it is recognized that "...*only a person* who knows his or her rights, is able (Latvian - spēj) to effectively exercise them and, in case of unjustified infringement of rights, to defend them in a fair trial..." (Judgment of the Constitutional Court 2006-12-01: paragraph 16).

At the same time, the literature points to the theoretical problem of non-regulation of *the lack of regulation* of the right to know one's rights in the main international human rights normative acts – in the Universal Declaration of Human Rights of 1948, in both UN International Covenants of 1966, in the Convention on Human Rights and Fundamental Freedoms of 1950. The exception is the Helsinki Final Act of 1975, Article VII of which emphasizes the obligation of the participating countries to observe "the right of the individual to know about his or her rights and obligations recognized in the field of fundamental rights by the Final Act. However, this act is not an international treaty, but a political declaration (Latvijas Republikas Satversmes komentāri 2011: 62).

J. Rudevskis emphasizes the importance of Article 90 of the Constitution (Satversme) in the criminal law context (Rudevskis 2011).

The right to witness immunity is considered as an integral part of the procedural rights of the individual, which are based on the norm of Article 92 of the Constitution (Satversme). This norm is of key importance in the implementation of procedural rights to a fair trial. The Commentary to Article 92 of the Constitution (Satversme) emphasizes the importance of the exercise of rights by active participants in the proceedings, namely by accused and the victim. Witness immunity is indirectly referenced in the description of evidence assessment in the context of witness protection, as a means of ensuring an ultimate procedural protection (Latvijas Republikas Satversmes komentāri 2011, paragraph 60: 136).

It must be pointed out here on a certain contradiction in the norms of the CPL, which may lead to different law enforcement practice in some cases. In 2014, the author of this article already briefly addressed this issue (Bulgakova 2014: 137).

After 11 years, the problem, although not so acute, has not lost its relevance. Thus, a special provision of paragraph 2 of part three of Article 110 defines the right of a witness not to testify against himself and his relatives. The issue of a witness's right not to testify against himself or a close person as one of the manifestations of witness immunity has been expressed in the norm of law. The provision of paragraph 2 of part three of Article 110 of the CPL, which clearly regulates the right of a witness not to testify against himself or his or her close person (Latvian – tuvinieks), directly protects the right of a witness to witness immunity in such cases. The term “*close person*” in criminal proceedings means a whole range of people, specifically: a bride and a fiancé (a person with whom a party to the proceedings is officially recognized as betrothed), spouse, parents, grandparents, children, grandchildren, brothers or sisters of such person, as well as the person with whom the relevant natural person is living together and with whom he or she has a common (joint) household (CPL, Part 5 of Article 12). And here it is necessary to pinpoint one circumstance, that in some norms of the CPL the term *kinship* (Latvian – radniecība) is used, which is undeniably broader than the term of a “close person” (Latvian – tuvinieks). For example, the general rule of Article 116 of the CPL (Grounds for criminal procedural immunity) in paragraph 4 of part two of this article contains one of the grounds for immunity – *if the immunity criminal proceedings arises from the kinship of a person*. In turn, the general concept of kinship is not defined in the current version of the Criminal Procedure Law and has not been included since the law's inception in 2005. And this means that the law enforcement officer will obviously turn to the basic principles of the process for an answer. And within the framework of one of the basic principles – the principle of guaranteeing human rights, the term *of a close person is defined*, and this understanding coincides with the norm of the article of paragraph 2 of part three of article 110 of the Criminal Procedure Law (CPL, paragraph 2 of part 3 of article 110, 2005). And dealing with the regulation of other legal institutions, such as special procedural protection, it should be clarified that in case of a threat to the health or life of a witness (as well as of another participant in the proceedings – a natural person), the right of a person not to testify may extend in cases of especially serious or especially serious crimes not only to his/her close relatives, but also to persons (other relatives or even persons who are not relatives or close relatives of the witness – the person to whom procedural protection is applied, but if the threat to the health and life of whom is a threat to the witness) (CPL, Article 299). The provision of Article 111 of Part One determines that the right of witness

immunity applies only to those persons whose procedural immunity is enshrined in the Constitution (Satversme 1922), the CPL and international treaties binding on Latvia.

And if the person invited as a witness uses the right of witness immunity (i.e., the right granted by the provision of paragraph 2 of part three of Article 110 of the CPL), then its use / or non-use is determined by the person invited as a witness. If a person invited as a witness chooses to exercise this right, he or she is not required to provide reasons or circumstances for invoking his/her right not to testify. However, in order for a person to be able to fully use this right and, before giving testimony, to have the opportunity, including within a reasonable time, to decide for himself whether he wants to exercise the right not to testify against himself and/or his close person, he must first of all be familiar with these rights and these rights must be explained, and then the person directing the criminal proceedings must make sure that the witness understands his rights. That is, the prerequisite for the full use of the right to testify in the event that the person invited as a witness is a close person of the person involved in the process and entitled to defence or in any other status is the right to know about such rights prescribed by law.

The importance of observing witness immunity is also indicated by the provision of Article 501<sup>1</sup> of the CPL. This norm was introduced into the law in 2024, replacing the right to read out previously given testimony, regulated by Article 501, paragraph 4 of old version, if a person during the trial nevertheless uses the right not to testify in the event that he did not wish to use the right of witness immunity earlier in the pre-trial process. Specifically, the norm of paragraph 2 of Article 501<sup>1</sup> of the Criminal Procedure Code determines that the testimony of any person given earlier in the process may be used in proving if the person refuses to testify. And there is no basis for reading them out. This problem was pointed out by a judge of the Riga Regional Court at a seminar for lawyers on the assessment of evidence in criminal proceedings on May 22, 2025 (Sturis 2025). It should be emphasized that the norm of Article 501<sup>1</sup> (as well as the norms of Article 501) is not imperative, and the judge/court has the freedom to make a decision. And therefore, in such a situation, it is not possible to exclude cases of different interpretation of the norm and, as a consequence, its different application.

But if the person, due to the lack of clarification/insufficient explanation for the witness, and/or if the person directing the proceedings, after familiarizing the witness with his rights, fails to ensure that the witness fully understands their rights – especially the right to witness immunity – there is a risk of violating the witness's rights. The consequences of such a violation may extend to the assessment and use of the witness's testimony in the evidentiary process.

Additionally, there is an issue of differing interpretations of Paragraph 2 of Article 501<sup>1</sup> regarding the use of such testimony and the evaluation of evidence from the perspective of witness immunity, if the

circumstances granting a person the right not to testify were already present during the pre-trial stages. This highlights yet another reason why the person directing the criminal proceedings must carefully respect the immunity of witness.

The issue of ensuring witness immunity is also present in judicial practice. A judge of the first instance, as well as the composition of the appellate court, must inform the witness of their rights and explain them. In practice, the court typically asks a control question: *“Does the witness understand the rights that have been read out?”* For professional lawyers – prosecutors and defense attorneys – this question may seem self-evident or, in some cases, merely a procedural formality. However, at this point the court confirms whether the summoned witness truly understands their rights, including the right not to testify against themselves or their close relatives. In the practice of the Criminal Cases Department of the Senate of the Supreme Court, the issue of ensuring a witness’s procedural immunity has been addressed in numerous rulings (decisions). Among them, one particularly noteworthy ruling should be highlighted SKK-60/2017 of 22.11.2017. (SKK-60/2017 2017).

The CPL also contains a number of special rules guaranteeing the right of a witness to exercise witness immunity. The provision of paragraph 5 of part one of Article 27 of the CPL defines the obligation of the person directing criminal proceedings to ensure the opportunity for persons involved in criminal proceedings to exercise their rights provided for by law (CPL, 2005: paragraph 5 of Part 1 of Article 27). Also, the provision of Part 2 of Article 110 of the CPL, which defines the right to receive information about one’s rights, obligations and responsibilities, should also be considered a special norm that guarantees the realization of the right to witness immunity [..]. (CPL, 2005, Part 2 of Article 110). An additional guarantee of ensuring the right to witness immunity is the norm of Part 1 of Article 151, which stipulates that before interrogation, a witness must be informed of their rights and obligations (CPL, 2005: Part 1 of Article 151).

As another pressing problem of procedural conditions for obtaining witness testimony is the observance of the rights of the witness to information about his or her rights, including the witness immunity, provided and explained to the witness in a language he or she understands – literally (it has to be ensured that the witness understands the rights), as well as it has to be ensured that the witness understands the very essence of these rights

When granting a person the status of a witness and the witness immunity, the person directing the proceedings is obliged to comply with the procedural conditions for obtaining witness testimony. This is both necessary for implementation of the right and compliance with the norms of the law and has practical significance for achieving a fair settlement of legal criminal relations in criminal proceedings. These

conditions are as follows: 1) provision of information about the rights of the witness before the commencement of interrogation or questioning (in accordance with the norm of Section 110 Paragraph 2 of the Criminal Procedure Law); 2) the person directing the proceedings is obliged to make sure that the witness has understood the rights in a language understood by him or her and also understood the essence thereof, taking into account the level of education, age of the witness, as well as individual psychological personality characteristics; 3) if a person wishes to exercise the right to receive legal assistance (in accordance with Section 112 of the Criminal Procedure Law), the implementation of this right is subject to satisfaction in any case, since, in accordance with the main norm of the Constitution – Section 92, 4<sup>th</sup> sentence: *Everyone has a right to the assistance of counsel* (Satversme, 1922: Section 92).

And in this regard, it is extremely important that the person directing the criminal proceedings has both knowledge in the field of human rights and knowledge of the scope of the rights of a witness provided for by the Criminal Procedure Law. It is obvious that the cases where a person is summoned by a subpoena and has no idea/is not familiar with his or her rights before arriving at the investigation authority, or the investigator comes to the witness's place of residence and does not provide the witness with information about his or her rights before the commencement of the interrogation, or the investigator or the person conducting the interrogation does not explain the rights to the witness, especially the right to witness immunity, before the commencement of the interrogation, should be considered incorrect practice "harmful" to the proceedings as a whole, because in such a case there is a high risk of violating the witness's right to not testify, if a basis for that is present. And such a practice should cause concern at least for specialists in the theory of criminal proceedings, while in general it should attract the attention of both the law enforcement themselves and supervising prosecutors, prosecutors for criminal prosecution, as well as judges. And in each such case, a response is necessary, within the framework of competence, to such violations of the rights of a witness. Why? The answer is obvious: as with any investigation activity, and especially with carrying out the interrogation, new information may be obtained in a criminal case within the framework of the subject of proof. And if, when carrying out such interrogation, the rights to witness immunity were violated (including the right to not testify against oneself and one's relatives), then later in the process this violation may cause irreversible consequences that will be extremely difficult to eliminate at the next stages of the proceedings. Thus, the circumstances of the interrogation as a witness must be verified in the court instances in the case, especially if the person's procedural status was changed later in the proceedings to the status of a person entitled to defence. Such a verification in the court of cassation took place in case SKK - 60/2017 of the Department for Criminal Cases of the Senate of the Supreme Court dated 30 May 2017 in case No. 15830000615

(SKK-60/2017, 2017). According to the applicant of the cassation appeal – the defence attorney, both courts of lower instances unreasonably recognised the testimony of the person A, which he gave as a witness, as admissible evidence to be used in proving, since the mentioned testimony was obtained in violation of Section 130 Paragraph two Clause 4 of the Criminal Procedure Law – i.e., compliance with the principles of criminal proceedings stipulated by the norms of Section 15 (the right to have a case considered in a fair, objective and independent court) and Section 20 (entitlement to defence) of the Criminal Procedure Law was not ensured. The Senate, having analysed the materials of this case, established that the person was interrogated as a witness and then as an accused, i.e., as a person entitled to defence, and the Senate concluded that, in order to determine whether information obtained during the interrogation of the accused as a witness corresponds to Section 130 of the Criminal Procedure Law, admissible and usable in evidence, it is essential to comprehensively assess the circumstances determining the actual connection of the person with the criminal act and whether the person was reasonably interrogated as a witness (Judgment SKK-60/2017, 2017: clause [6.5]). The court established a violation and this was one of the reasons for cancellation of the judgment of the Regional Court and returning the case to the previous instance for elimination of violations.

The problem of the consequences of the failure to observe the right or any aspect of the procedure for applying witness immunity may lead to negative consequences for the entire criminal proceedings. In detailing this idea, the author wishes to emphasise that even if later in the proceedings the testimony of a witness obtained by violating the right to witness immunity is recognised as inadmissible evidence, the circumstances may arise for the proceedings that will be extremely difficult for the court to eliminate. This thesis, in the author's opinion, is especially relevant for judicial practice, since in such a case there may be a need for an extremely detailed analysis if, on the basis of the information received from a witness with violations of witness immunity, new evidence is obtained, on the basis of which the next procedural (also investigative) actions are carried out. I. e., if the interrogation of a witness is not stopped in a situation where there are obvious grounds for changing the status of a witness to the status of a person entitled to defence, but additional actions are already taken with obtaining new evidence on the basis of information obtained in violation (before such evidence is recognised as inadmissible), then the goal of resolving criminal legal relations without unjustified interference in private life may become just a declaration and an illusory prospect. One aspect of this problem was extremely acute in law enforcement practice before the amendments to Section 151 Paragraph two of the Criminal Procedure Law came into force. Specifically, amendments that determined the obligation of the person conducting the proceedings to stop the interrogation of a witness if, during the interrogation of the witness, it is established that there

are grounds for changing the status of the witness, determining the witness's status as a person entitled to defence only came into force in 2016 (CPL, Section 151 Paragraph two). The amendments to the mentioned section did not come into force by chance; this was facilitated by the Directive 2013/48/EU adopted by the European Parliament and the Council on 22 October 2013 on the right to counsel assistance in criminal proceedings and in European arrest warrant proceedings, on the right to inform a third party after deprivation of freedom and on the right, while a person is deprived of freedom, to communicate with third parties and consular authorities, specifically the norm of the Preamble of this Directive and the norm of Article 21 (Directive 2013/48/ES: paragraph 21).

This issue was also analysed in the case law of the Department for Criminal Cases of the Senate of the Supreme Court. Thus, in the judgment dated 30 May 2017 in case No. 15830000615 (SKK-60/2017), the court substantiated the following thesis: in order to determine whether information obtained during the interrogation of an actual accused person as a witness is admissible and usable in evidence, pursuant to Section 130 of the Criminal Procedure Law, a comprehensive assessment of the circumstances, which is determined by the actual connection of the person with a specific criminal act, and whether the person was reasonably interrogated as a witness, is essential (SKK-60/2017, 2017: thesis).

In turn, in the judgment SKK-333/2018 in case No. 1213001210 dated 25 September 2018, the Department for Criminal Cases of the Senate of the Supreme Court assessed the admissibility and use in proving the information that the accused provided as a witness in another proceedings. And the Court established that the Court is obliged to assess the testimony of the accused given by him as a witness in another criminal proceedings from the point of view of admissibility of use thereof in the case under consideration, including to assess the information about the factual connection with the criminal proceedings in which he was interrogated as a witness, the duration of the witness status and the validity of this status throughout the entire period, as well as the attitude to the amount of testimony in the context of the right to not testify (SKK-333/2018: thesis).

The Department for Criminal Cases of the Senate of the Supreme Court also analysed this problem in case No. 1130033320 in the judgment SKK-482/2022 dated 22 December 2022 and established the problem of ensuring the right to not testify if it is established during interrogation that the person is entitled to defence (SKK-60/2017, 2022: thesis). The Senate did not agree with the findings of the court of appeal instance and established that the court of appeal instance, having rejected the defence attorney's argument, unreasonably came to the conclusion that the findings of case No. SKK-60/2017 do not apply to the legal situation in the case under consideration. The Senate discovered that the court of appeal instance substantiated the conclusion on the admissibility of the witness's testimony, that the witness had

been explained her rights and that the person conducting the proceedings had no information about her possible connection with the cultivation of plants containing marijuana before interrogation of the witness, but it did not assess the actual connection of witness B with the criminal act with which she was charged on 7 July 2020 (SKK-60/2017, C.4, clause [6.3]).

Another aspect of the witness immunity problem is related to ensuring additional guarantees of the rights of a minor witness. In relation to a minor witness, all norms of the rights of an adult witness provided for by law are applicable, as well as additional guarantees of the rights of a child invited as a witness. In accordance with the norm of Section 6 Paragraph one of the Law on the Protection of the Children's Rights, the rights of a child are paramount in all legal relations (Law on the Protection of the Children's Rights, 1998: Sec. 6).

As one of the most pressing problems of high-quality interrogation of a minor witness (14 to 18 years old), as well as interrogation of a minor witness (under 14 years old), the issue of explaining the rights to such a witness, including the absence of a warning of the criminal liability for knowingly giving false testimony to a person under 14 years of age, is extremely important.

And considering that if a legal representative of a minor person (the article will not analyse in detail the issue of the rights of a minor person to the participation of a legal representative) or a person not having legal capacity also participates in the proceedings, then the problem of applying witness immunity in relation to the representative may also arise. And in this case, the witness immunity of the representative must be observed by the person conducting the proceedings in relation to information received by the representative from a minor person or an incapacitated person/a person with limited capacity. And such information cannot be used against such a person – both in the general proceedings to justify changing the status of a witness to the status of a person entitled to defence, and, for example, in a special type of proceedings – the use of compulsory medical measures. It can be assumed that in the process of applying compulsory medical measures, taking into account the practice and opinions of medical specialists, about the deterioration of the mental health of society, it will further acquire relevance.

The implementation of the right to state counsel assistance to a witness in criminal proceedings is also not provided for by the legislator. I. e., the issue of inviting a counsel to provide legal assistance during a procedural action – interrogation, is directly the right of a witness, the state does not assume the obligation to provide state counsel assistance to the witness. The norm of Section 112 of the Criminal Procedure Law narrows the circle of persons who can provide counsel assistance to a witness to sworn advocates, and in this case the term “right to counsel assistance” is not interpreted broadly, since only a

sworn advocate has access to provide counsel assistance to a witness in criminal proceedings. This is a significant difference between the use of the concept of “counsel assistance” by a witness in criminal proceedings and the use of such a term in administrative or civil proceedings, where a broad interpretation is indeed applicable. Back in 2003, the Constitutional Court analysed this issue and came to the conclusion that *...the concept of “counsel” can be interpreted broadly and does not only apply to sworn lawyers and the right of the legislator to determine, taking into account the specifics of each proceedings, the circle of persons who can provide legal assistance in a specific proceeding.* (The Constitutional Court decision 2003-08-01 06.10.2003: clause 1.3-2 of the Findings).

In this regard, it is extremely important that the person conducting the criminal proceedings has both knowledge in the field of human rights and knowledge of the scope of the witness’s rights provided for by the Criminal Procedure Law.

From the point of view of the theory of evidence, witness testimony is considered a type of personal evidence. Consequently, for various reasons (both objective and subjective), there are risks of transformation of witness testimony or even risks of repeated unavailability of the witness in the course of criminal proceedings. I. e., a witness can change his/her previously given testimony for various reasons, thus it is obvious how a general theoretical recommendation to a law enforcement officer can be in the case of the presence in a criminal case and only basing on personal evidence (testimony), a search for other, material or additional evidence of a criminal act, its fragments or circumstances related to it.

### ***Conclusions***

1. Witness immunity can be expressed as a complete exemption from giving testimony in criminal proceedings and immunity depending on objective circumstances.
2. The legal prerequisites for resolving the issue of releasing a witness from the obligation to testify and the consequences in the form of applying criminal liability may vary in criminal proceedings depending on various objective factors, specifically: a) profession and belonging to certain professions and performance of duties at the time when the witness receives information which is significant in criminal proceedings; b) age (a person under the age of criminal liability); c) the mental health status of the witness and legal facts confirming the health status (conclusion of a forensic psychiatric expert examination, a court decision on limiting the capacity); d) physical characteristics of the witness; e) statutory guarantees of the rights of a representative of a witness – a minor person, an incapacitated person or a person with limited legal capacity to witness immunity in relation to the information that the representative received

from the represented witness. Also, in the current version of the Criminal Procedure Law, there is no separate section regulating the rights of a minor witness.

*Proposal 1: Include a new section in the Criminal Procedure Law – Section 110<sup>1</sup> entitled “Rights of a minor witness” and, as a result of the revision of Section 152 of the Criminal Procedure Law, transfer part of the provisions of this Section regulating the rights of a minor witness to the content of the new Section 110<sup>1</sup>. Regulate in the new section the right of a minor witness to participation of a representative in his or her questioning or interrogation and define in a separate paragraph of the Section the rights of the representative of the minor person, including the right to witness immunity: the right to not testify against the represented person.*

*Proposal 2: Include a new section in the Criminal Procedure Law entitled “Rights of a representative of an incapacitated person/a person with limited legal capacity” and include in this section a list of the rights of the representative, including the right to witness immunity, defining the right to not testify against oneself and the re[represented person as one of the rights.*

*Proposal 3: Supplement Paragraph one of Section 92 of the Criminal Procedure Law “Rights of a representative in the proceedings regarding application of compulsory medical measures” with a norm regulating the right to witness immunity against the represented person, by adding clause 8<sup>1</sup> to this Paragraph of the Section as follows: 8<sup>1</sup>) the right to not testify against oneself and the represented person.”*

3. The legal impact of procedural errors in ensuring the rights of witness immunity may negatively affect not only the implementation of the rights of a specific person – a witness, but also generally have a negative impact on the fair settlement of criminal legal relations in criminal proceedings.

4. For the effective implementation of rights by a witness, the person conducting the proceedings is obliged to provide information in writing about the rights of the witness and an explanation thereof, including the right to witness immunity, before the commencement of questioning or interrogation. In case of a planned interrogation and invitation of a witness to testify at an investigation authority/prosecutor’s office or in court, it is advisable, without exception, to provide the witness with the rights of the witness as a supplement to the subpoena.

*Proposal 1: amend the norm of Section 110 Paragraph two by providing for the witness’s right to receive information in writing about the witness’s rights with an explanation thereof. And in this regard, include the words “receive information in writing and an explanation thereof” before the words “about his or her rights” in Section 110 Paragraph two.*

*Proposal 2:* amend the norm of Section 151 Paragraph one of the Criminal Procedure Law by providing for the obligation of the person conducting the proceedings to ensure that the witness is issued information in writing about the witness's rights and an explanation thereof in a language the witness commands. *And in this regard, include the words "a list and an explanation of rights is issued in writing (with his or her consent – in electronic format)" before the words "explain his or her rights and obligations" in Section 151 Paragraph one of the Criminal Procedure Law.*

5. The practice of applying the norm of Section 110 Paragraph one (the right to provide information about the rights to a witness before the commencement of interrogation or questioning) is not uniform.

*Suggestion:* in order to achieve uniform application of this norm of the law, it is necessary to revise and/or review the guidelines previously adopted by investigation authorities and the prosecutor's office, as well as drawing attention to the problem of law enforcement practice in the handbooks of prosecutors and judges. Possibly, development of a handbook for investigators, which would subsequently be periodically (for example, once every 2 years) revised and republished.

In general, the goal of the study has been achieved. The problems of applying the procedural right of witness immunity – release a witness from the obligation to testify – have been summarised and ways to resolve them have been proposed.

#### *Acknowledgement*

The author is grateful to the organisers of the conference for the provided opportunity to publish this article.

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