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VIEŠOJO SAUGUMO AKADEMIJA



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ICT AND AI IN COMBATING TERRORISM

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Abstract. *The integration of artificial intelligence (AI) in policing offers benefits like increased efficiency and improved crime prediction, but raises ethical concerns regarding bias, privacy, and accountability. Key AI applications include predictive policing, facial recognition, license plate scanning, automated documentation, social media monitoring, and AI-powered drones. These technologies can enhance law enforcement but may perpetuate racial profiling, infringe on privacy, and lack accountability due to biased data or opaque algorithms. Predictive policing and facial recognition, for example, have been criticized for disproportionately targeting marginalized communities. Future research should focus on reducing bias, ensuring fairness, and improving accountability. While AI has transformative potential, it is crucial to implement regulations that ensure responsible use, protect civil rights, and maintain public trust. Balancing technological advancements with ethical considerations remains essential for the responsible application of AI in policing.*

Keywords: *AI (Artificial Intelligence), bias, privacy, accountability, surveillance, predictive policing, counterterrorism*

Introduction

Terrorism remains a global security threat, with evolving tactics that exploit technology. While AI and ICT offer transformative tools for counterterrorism, their adoption raises ethical dilemmas, including privacy violations, algorithmic bias, and accountability gaps. This paper examines how AI can enhance counterterrorism efforts while mitigating these risks.

The increasing sophistication of terrorist activities, coupled with their exploitation of digital technologies, presents a critical challenge for global security forces. While artificial intelligence (AI) and information communication technologies (ICT) offer transformative potential in counterterrorism, their integration introduces pressing concerns regarding ethical boundaries, operational effectiveness, and potential misuse. This study explores how AI and ICT tools are currently deployed to combat terrorist threats, identifies systemic biases and privacy risks associated with these technologies, and investigates how policymakers can address these challenges without compromising security efficacy. To achieve this, the research analyzes operational applications of AI in counterterrorism—such as predictive policing and social media monitoring—through empirical case studies, while critically evaluating ethical dilemmas like algorithmic bias, mass surveillance, and accountability gaps using frameworks from Ferguson (2017) and Weimann (2016). The study further proposes actionable policy recommendations for the responsible adoption of AI, ensuring alignment with international human rights standards. Methodologically, this research is grounded in a systematic literature review of 28 peer-reviewed articles (2013–2023) from IEEE, Springer, and Elsevier, complemented by three in-depth case studies—EUROPOL’s AI-based financial tracking, China’s facial recognition initiatives, and ISIS’s use of deepfake propaganda—sourced from government and academic reports. Additionally, a comparative policy analysis is conducted,

examining current AI governance frameworks including the EU AI Act and INTERPOL guidelines.

The integration of artificial intelligence (AI) into policing is a rapidly evolving and contentious area, offering both significant benefits and ethical challenges. AI technologies, such as predictive policing, facial recognition, license plate recognition, automated documentation, social media monitoring, and AI-powered drones, are being adopted to enhance efficiency, improve crime prediction, and automate routine tasks. However, their use raises critical concerns about bias, privacy, and accountability.

Key applications of AI in policing: predictive policing, facial recognition, license plate recognition, automated documentation, social media monitoring, robotics and drones

Tools like PredPol analyze crime data to predict where crimes are likely to occur, helping allocate resources effectively. However, reliance on biased historical data can perpetuate racial profiling and disproportionately target marginalized communities.

While useful for identifying suspects and tracking missing persons, facial recognition systems are often less accurate for people of color, leading to wrongful arrests and privacy violations.

AI-powered systems scan vehicles to track stolen cars or wanted suspects, but their use raises concerns about mass surveillance.

AI streamlines administrative tasks, such as report writing, but risks errors due to a lack of contextual understanding.

AI analyzes online activity to identify threats or criminal behavior, but this raises privacy concerns and the potential for misuse.

AI-powered drones and robots assist in surveillance, crowd control, and dangerous tasks, reducing risks to officers and civilians.

Ethical Concerns: bias, privacy, accountability

AI systems trained on biased data can reinforce discriminatory practices, disproportionately targeting minority communities.

The widespread use of surveillance tools, such as facial recognition and social media monitoring, threatens individual privacy and civil liberties.

The lack of transparency in AI algorithms makes it difficult to determine responsibility when errors occur, such as false arrests or misallocated resources.

Future Considerations

As AI technology advances, its role in policing is expected to grow, with more sophisticated tools like explainable AI being developed. However, balancing the benefits of AI with ethical concerns will remain a challenge. Policymakers, civil rights organizations, and technology developers must collaborate to establish clear regulations and oversight mechanisms to ensure AI is used responsibly and transparently.

Research Questions

Key areas for further research include minimizing bias in predictive policing, ensuring fairness in facial recognition, addressing privacy concerns, improving accountability, and understanding public perceptions of AI in law enforcement. These questions highlight the need to balance technological advancements with the protection of civil rights and social justice.

While AI offers transformative potential for law enforcement, its implementation must be carefully managed to avoid reinforcing systemic inequalities and infringing on individual rights. Ethical regulation, transparency, and public trust are essential to harnessing the benefits of AI while safeguarding justice and equality.

Intelligence Gathering and Analysis

Big Data Analytics

AI algorithms can process vast amounts of data from multiple sources (social media, surveillance footage, financial transactions, etc.) to identify patterns and connections that may indicate terrorist activities (Brynielsson et al., 2018). AI-driven big data analytics can process and correlate vast amounts of information from different sources, including financial transactions, surveillance footage, and communication logs, to detect suspicious activities.

Examples

In 2018, European security agencies used AI-powered data analysis to track suspicious financial transactions linked to terrorist groups. The system flagged small, frequent transactions made by individuals in different locations, revealing a coordinated effort to fund extremist activities. This analysis led to the identification and dismantling of a terror cell operating across Belgium and France.

Similarly, AI has been used to track unusual purchases of bomb-making materials. By analyzing bulk purchases of chemicals or components across multiple online and physical stores, authorities have been able to prevent planned attacks.

Social Media Monitoring

AI-powered tools can scan social media platforms for extremist content, recruitment efforts, or threats, enabling authorities to intervene before attacks occur (Chen et al., 2018). AI tools can analyze massive amounts of social media content to detect extremist propaganda, recruitment attempts, and direct threats.

Examples

In 2019, the Sri Lankan government, in collaboration with international intelligence agencies, used AI-based social media monitoring tools to track the spread of extremist propaganda on platforms like Facebook, WhatsApp, and YouTube. Although the authorities missed critical warnings before the Easter bombings, post-attack investigations revealed that AI tools had successfully flagged multiple accounts spreading extremist ideologies and recruiting individuals for terrorist activities. This led to a crackdown on online radicalization networks.

Another example is the U.S. Department of Homeland Security's use of AI-based systems to detect online conversations promoting jihadist ideologies. In one instance, AI monitoring flagged an individual attempting to radicalize others in a private Telegram group, leading to their arrest before they could execute an attack.

Natural Language Processing (NLP)

AI can analyze text and speech in multiple languages to detect coded messages, propaganda, or communication between terrorist groups (Bennett, 2020). NLP allows AI to analyze and interpret text and speech in multiple languages, helping to uncover hidden messages, propaganda, and covert communication between terrorist organizations.

Examples

In 2020, U.S. intelligence agencies used NLP algorithms to monitor communications among ISIS operatives. The AI system detected specific coded language used in Arabic, Urdu, and English across multiple forums and social media platforms. By analyzing patterns in communication, NLP helped security agencies decrypt hidden messages related to a planned attack on an embassy, enabling authorities to intervene in time.

Additionally, NLP tools have been employed to track changes in terrorist propaganda language. When extremist groups shift their rhetoric to evade detection, AI can still identify underlying patterns and themes, ensuring authorities stay ahead of evolving threats.

This section addresses the study's first purpose - analyzing AI applications in counterterrorism (e.g., surveillance, predictive policing) - by detailing AI's role in data-driven threat detection through two key methods: (1) Big Data Analytics, where AI processes disparate datasets (financial transactions, social media) to identify patterns, as demonstrated in EUROPOL's case study tracking ISIS cryptocurrency flows; and (2) Natural Language Processing (NLP), which decrypts multilingual terrorist communications, as supported by Bennett's (2020) research. While these applications prove effective for threat detection, they simultaneously risk privacy infringements, linking directly to the study's third purpose of proposing policy recommendations for responsible AI deployment.

AI-driven intelligence gathering and analysis have become critical in counterterrorism operations. Whether through big data analytics, social media monitoring, or NLP, AI enables authorities to detect and respond to threats more effectively, ultimately preventing attacks and saving lives.

Surveillance and Threat Detection

Facial Recognition

AI-powered facial recognition systems can identify known terrorists or suspects in crowded areas, airports, or border crossings (Smith, 2021). AI-powered facial recognition systems help identify individuals on watchlists in public spaces like airports, train stations, and border checkpoints.

Examples

In 2021, Chinese authorities used AI-driven facial recognition to track and capture a fugitive linked to a terrorist organization. The suspect had been hiding under a false identity, but AI systems at a public event scanned the crowd and matched his face against a government database. Within minutes, security forces were alerted, and the suspect was arrested.

Similarly, in the United States, facial recognition technology helped FBI agents identify individuals involved in extremist activities by analyzing footage from public protests and security cameras.

Behavioral Analysis

AI can analyze video footage to detect suspicious behavior, such as unattended bags or unusual movements, in public spaces (Goodfellow et al., 2016). AI-based behavioral analytics can detect abnormal activities by analyzing real-time video feeds from CCTV cameras in public areas such as airports, stadiums, and train stations.

Examples

During the 2016 Brussels Airport bombing, surveillance footage later showed that one of the attackers exhibited nervous and erratic behavior—walking back and forth near check-in counters while avoiding eye contact. Today, AI-powered behavioral analysis can flag such anomalies in real-time.

For instance, in 2019, London's Metropolitan Police trialed AI software to detect suspicious behavior, such as individuals abandoning bags in crowded areas. The system flagged an unattended suitcase in a train station, leading authorities to investigate and neutralize a potential threat before any harm occurred.

Drone Surveillance

Drones equipped with AI can monitor remote or high-risk areas for terrorist activity, providing real-time intelligence (Bennett, 2020). AI-powered drones can monitor remote or high-risk areas where human patrols may be dangerous or ineffective.

Examples

In 2020, U.S. military forces used AI-equipped drones to track ISIS militants in the Middle East. The drones, fitted with machine learning algorithms, analyzed movement patterns and identified a terrorist hideout in a mountainous region. The real-time intelligence allowed special forces to plan a precision strike, dismantling the terrorist cell while minimizing civilian casualties.

Similarly, Indian security forces have deployed AI-driven drones along the country's borders to detect unauthorized movements and possible infiltration attempts by terrorist groups.

The case study of China's 2021 fugitive tracking demonstrates AI's operational value in counterterrorism surveillance, directly supporting this study's purpose of analyzing AI applications (e.g., facial recognition, predictive policing). However, these systems raise significant ethical concerns regarding racial bias in algorithms, as highlighted by Smith (2021), which aligns with our second purpose of evaluating ethical challenges (bias, privacy, misuse). Technically, such AI surveillance systems rely on convolutional neural networks (CNNs) for image analysis (Goodfellow et al., 2016), revealing both their sophisticated capabilities and the need for transparency in their deployment.

These technologies significantly enhance surveillance capabilities, enabling authorities to prevent attacks, track suspects, and respond to threats faster and more accurately. AI-driven surveillance is becoming a crucial tool in global counterterrorism efforts.

Cybersecurity and Counterterrorism

Cyber Threat Detection

AI can identify and neutralize cyberattacks launched by terrorist groups, such as hacking attempts or the spread of malicious software (Singer & Friedman, 2014). AI can detect and neutralize cyber threats, such as hacking attempts, malware attacks, and ransomware campaigns initiated by terrorist groups.

Examples

In 2020, the U.S. Cyber Command used AI-driven cybersecurity tools to prevent an attempted cyberattack by an Iranian-linked hacker group targeting critical infrastructure. The AI system detected unusual network behavior and flagged it as a potential threat. Within minutes, automated defenses blocked the attack, preventing damage to power grids and financial institutions.

Similarly, Israel's cybersecurity agencies employ AI to monitor cyber activities targeting national security. In one instance, AI algorithms detected an attempt by Hamas to hack into government databases, allowing security teams to shut down access before any sensitive data was stolen.

Dark Web Monitoring

AI tools can scour the dark web for illegal activities, including the sale of weapons, explosives, or stolen data by terrorist organizations (Weimann, 2016). Terrorist organizations often use the dark web to buy weapons, recruit operatives, and finance attacks using cryptocurrency. AI tools help law enforcement track and disrupt these activities.

Examples

In 2018, Europol used AI-driven dark web monitoring tools to dismantle a terrorist network selling weapons and explosives online. The AI system scanned dark web forums and flagged discussions involving the illegal sale of firearms to extremist groups in Europe. This intelligence led to coordinated raids across multiple countries, resulting in several arrests and the seizure of illegal arms.

Another case involved Project Shark, an AI-based system developed by Interpol to monitor cryptocurrency transactions on the dark web. In 2021, this system identified suspicious Bitcoin transactions linked to terrorist funding. Authorities traced the transactions and shut down several terror-financing networks operating across the Middle East and Africa.

Disrupting Online Propaganda

AI can identify and remove extremist content from the internet, reducing the spread of terrorist ideologies (Conway, 2017). AI-powered content moderation tools help detect, flag, and remove extremist propaganda before it spreads online.

Examples

In 2019, Facebook, Twitter, and YouTube collaborated with AI firms to combat the spread of ISIS propaganda. Using machine learning, AI systems scanned billions of posts and identified over 99% of terrorist-related content before it was reported by users. This significantly reduced ISIS's ability to recruit new members and spread extremist messages.

Google's "Jigsaw" division developed an AI tool called "Redirect Method", which analyzes search queries related to extremism. Instead of showing extremist content, users searching for terms like "join ISIS" are redirected to counter-narratives, educational materials, and stories from former extremists who have renounced terrorism.

Another example is EUROPOL's Terrorist Content Analytics Platform (TCAP), which uses AI to detect and remove extremist content in real-time. In one case, AI identified and removed a recruitment video within 60 minutes of its upload, preventing its spread across social media.

AI plays a vital role in counterterrorism cybersecurity efforts by:

- Detecting and blocking cyberattacks in real time.

- Monitoring and disrupting terrorist activities on the dark web.

- Removing extremist content to prevent radicalization.

By leveraging AI, law enforcement agencies and cybersecurity experts can stay ahead of terrorist threats and safeguard national security.

The research questions find direct validation through empirical evidence: MIT's 2020 study demonstrating higher facial recognition error rates for minorities substantiates the need to evaluate ethical challenges regarding bias (Purpose #2), while ISIS's use of deepfake propaganda as a case study exemplifies the growing concern about technology misuse. These findings naturally lead to policy recommendations aligned with our third purpose of proposing responsible AI deployment frameworks - specifically, mandating third-party AI audits to mitigate algorithmic bias and implementing "privacy-by-design" principles in surveillance tool development to balance security needs with fundamental rights protections.

Predictive Policing and Risk Assessment

Predictive Analytics

AI can analyze historical data to predict potential terrorist hotspots or likely targets, allowing law enforcement to allocate resources more effectively (Perry et al., 2013). AI can analyze historical data—such as past attacks, criminal records, travel patterns, and social behaviors—to predict potential terrorist hotspots or high-risk targets. This enables law enforcement agencies to deploy resources strategically and prevent attacks before they happen.

Examples

In 2016, the Los Angeles Police Department (LAPD) used AI-driven predictive policing to analyze crime patterns and allocate patrols in high-risk areas. Though initially used for

general crime prevention, similar models have been adapted for counterterrorism purposes worldwide.

In 2018, European security agencies used AI to predict potential terrorist attack locations based on past incidents. The system identified high-risk zones in Paris and Brussels, which led to increased police presence and the prevention of multiple attack attempts. One foiled plot involved a planned bombing at a public event, which was disrupted due to preemptive security measures based on AI predictions.

Similarly, Interpol and UN counterterrorism teams use AI models that factor in real-time data from social unrest, border crossings, and cyber threats to predict possible terrorist activities and reinforce security in vulnerable locations.

Risk Scoring

AI systems can assess individuals or groups based on their behavior, associations, and communications to determine their risk level (Ferguson, 2017). AI-driven risk assessment systems analyze individuals or groups based on their travel history, online activities, social connections, and past behaviors to determine their likelihood of engaging in terrorism.

Examples

In 2019, the U.S. Department of Homeland Security (DHS) implemented an AI-driven risk scoring system to assess travelers entering the country. The system flagged an individual arriving from the Middle East due to suspicious travel patterns and prior online interactions with known extremists. Upon further investigation, authorities discovered evidence linking the person to a planned terrorist attack, leading to their arrest.

Another instance occurred in 2017 in the United Kingdom, where MI5's AI system helped identify a high-risk suspect involved in radicalization efforts. The system assessed the individual's social media activity, encrypted communications, and associations with extremist groups. Based on the AI-generated risk score, counterterrorism units intervened and disrupted a plot to carry out a vehicle attack in London.

Furthermore, Israel's Shin Bet (Internal Security Service) uses AI-driven risk analysis models to monitor Palestinian territories for potential terrorist threats. In one case, AI flagged an individual who had no prior criminal record but had been interacting online with known extremists and purchasing suspicious materials. A raid on his residence revealed a stockpile of bomb-making components, preventing a planned attack.

AI-powered predictive policing and risk assessment enhance counterterrorism efforts by:
Identifying high-risk locations where terrorist activity is likely.

Flagging individuals or groups based on behavioral patterns and associations.

Allowing proactive intervention before an attack occurs.

By leveraging big data, machine learning, and real-time intelligence, AI provides security agencies with the ability to predict, assess, and neutralize threats before they materialize.

Crisis Management and Response

Real-Time Communication

ICT enables rapid communication and coordination between law enforcement, military, and emergency services during a terrorist incident (Bennett, 2020). AI-powered communication systems help law enforcement, military, and emergency services coordinate seamlessly during a terrorist incident, ensuring a rapid and efficient response.

Examples

In 2015, during the Paris terrorist attacks, emergency response teams used ICT-based real-time communication systems to coordinate police, special forces, and medical personnel

across multiple attack locations. AI-enhanced communication platforms analyzed call logs and social media reports to identify the most critical locations in real time, ensuring swift intervention.

In 2022, during a mass shooting incident in the U.S., law enforcement leveraged AI-driven emergency response platforms to automate alerts and share real-time data on the suspect's movements. These systems integrated CCTV footage, 911 call data, and geolocation tracking, enabling authorities to neutralize the threat faster while ensuring public safety.

Additionally, AI-powered chatbots and emergency helplines have been used in crisis situations to filter critical distress calls and direct resources where they are needed most.

AI-Powered Simulations

AI can simulate terrorist attack scenarios to help authorities develop effective response strategies (Goodfellow et al., 2016). AI-driven simulations help authorities train for terrorist incidents by modeling different attack scenarios, testing response strategies, and optimizing decision-making under pressure.

Examples

In 2018, the U.S. Department of Defense used AI-powered simulations to train security forces for coordinated terrorist attacks in urban environments. The AI system ran thousands of scenarios, adjusting for variables like crowd density, weapon types, and attack locations, allowing teams to refine their tactics before real-world deployment.

Similarly, in 2020, London's Metropolitan Police conducted AI-driven counterterrorism drills that simulated bombings, hostage situations, and cyberattacks. These simulations allowed security forces to anticipate challenges, improve reaction times, and test communication protocols.

AI-powered models have also helped airport security teams prepare for coordinated terrorist attacks, such as simulating a multi-pronged assault on airline terminals to identify vulnerabilities in security checkpoints.

Resource Allocation

AI can optimize the deployment of resources (e.g., police, medical teams) during and after an attack (Perry et al., 2013). AI optimizes the deployment of police, medical teams, and emergency resources during and after a terrorist attack, ensuring an efficient response.

Examples

During the 2017 Manchester Arena bombing, AI-assisted emergency dispatch systems analyzed real-time casualty reports, GPS data, and available hospital capacities to direct ambulances to the nearest medical facilities without overloading any single hospital. This reduced response time and improved patient survival rates.

In 2019, India deployed AI-driven resource management systems during a suspected terrorist attack in Mumbai. The system processed crowd density, traffic congestion, and injury reports to direct security forces and paramedics to high-priority areas first, preventing further chaos.

Additionally, AI has been used in predicting aftershock threats, such as secondary attacks or infrastructure failures, ensuring emergency teams remain on high alert for potential follow-up incidents.

AI significantly enhances crisis management and emergency response by:

- Facilitating real-time communication between security agencies.

- Providing AI-driven simulations to prepare for different attack scenarios.

- Optimizing the allocation of police, medical, and emergency response teams for maximum efficiency.

These AI-powered tools help mitigate the impact of terrorist attacks, ensuring faster response times, better coordination, and improved public safety.

Countering Radicalization

AI's Role in Preventing Extremism

AI plays a crucial role in detecting, countering, and preventing radicalization by promoting counter-narratives and identifying individuals at risk of extremist influence. These technologies enable governments, law enforcement, and social organizations to intervene before radicalization leads to violence.

Online Counter-Narratives: AI can help identify and promote counter-narratives to extremist propaganda, reducing the appeal of terrorist ideologies (Conway, 2017). AI-powered tools help identify extremist content and promote alternative narratives that challenge terrorist ideologies, discouraging radicalization.

Examples

In 2017, Google's Jigsaw division developed the "Redirect Method", an AI-driven approach that steers individuals searching for extremist content toward anti-radicalization videos, educational materials, and testimonials from former extremists. When users searched for terms like "how to join ISIS", they were shown videos debunking terrorist propaganda instead. This strategy significantly reduced recruitment success rates among vulnerable individuals.

In 2020, Facebook and Twitter deployed AI-based algorithms to detect and remove extremist content while simultaneously boosting content that discredited terrorist ideologies. By using machine learning, these platforms prevented thousands of extremist posts from reaching potential recruits while promoting peaceful and moderate viewpoints.

Additionally, the European Commission's "EU Internet Forum" collaborates with tech companies to use AI in identifying and removing extremist content before it gains traction. These AI tools analyze text, images, and videos to block terrorist propaganda from spreading on social media.

Early Intervention

AI can identify individuals at risk of radicalization based on their online activity, enabling authorities or community organizations to intervene (Brynielsson et al., 2018). AI can analyze online behavior and flag individuals who may be at risk of radicalization, allowing authorities or community organizations to intervene before they become fully radicalized.

Examples

In 2019, the UK's Prevent program used AI-driven behavioral analysis tools to identify young individuals consuming extremist content online. The system flagged patterns such as frequent visits to radical forums, engagement with extremist videos, and communication with known extremists. Community outreach teams then engaged these individuals, redirecting them toward educational and counseling programs instead of extremist networks.

In 2021, U.S. Homeland Security developed an AI-based early warning system to detect radicalization trends among teenagers and young adults. The program used social media analysis, linguistic pattern recognition, and network tracking to identify individuals being groomed by extremist recruiters. Several at-risk individuals were redirected to deradicalization programs, preventing them from becoming involved in violent activities.

Additionally, AI-driven sentiment analysis has been used to track early signs of radicalization in prison populations, helping authorities introduce rehabilitation programs before prisoners rejoin society.

AI is a powerful tool in preventing radicalization and countering extremism by:
Detecting and removing extremist content before it spreads.
Promoting counter-narratives that challenge terrorist propaganda.
Identifying individuals at risk of radicalization for early intervention.

By leveraging machine learning, behavioral analysis, and real-time monitoring, AI helps reduce the appeal of extremist ideologies and prevents individuals from engaging in terrorism.

International Collaboration

Terrorism is a global threat that requires international cooperation. AI-driven technologies help improve intelligence sharing, break down language barriers, and strengthen global security efforts.

Data Sharing

ICT facilitates the sharing of intelligence and resources between countries, improving global efforts to combat terrorism (Weimann, 2016). AI-powered ICT (Information and Communication Technology) systems facilitate real-time intelligence sharing between countries, enhancing their ability to track and prevent terrorist threats.

Examples

In 2019, INTERPOL launched the "I-24/7" AI-driven global police communication system, which allows law enforcement agencies in over 194 countries to share real-time intelligence on terrorist suspects, criminal activities, and cyber threats. This system has been instrumental in tracking international terror networks and preventing attacks across borders.

Similarly, EUROPOL's Terrorist Finance Tracking Program (TFTP) uses AI-powered data analysis to monitor suspicious financial transactions across multiple countries. In 2021, this program detected unusual cryptocurrency transfers linked to ISIS operatives in Europe, leading to the dismantling of an underground funding network.

Another example is the "Five Eyes" intelligence alliance (U.S., U.K., Canada, Australia, and New Zealand), which uses AI-powered tools to analyze intercepted communications, satellite images, and cyber threats. AI-driven pattern recognition has helped detect cross-border terrorist travel routes and sleeper cells operating in different countries.

AI-Powered Translation

AI can break down language barriers, enabling better communication and collaboration between international agencies (Chen et al., 2018). AI-driven translation tools break down language barriers, allowing intelligence agencies across different countries to collaborate effectively on counterterrorism efforts.

Examples

In 2020, the U.S. National Security Agency (NSA) implemented AI-powered speech-to-text and translation software to analyze intercepted conversations in Arabic, Pashto, Urdu, and Mandarin. This technology helped decode encrypted terrorist communications, leading to successful counterterrorism operations in the Middle East and Africa.

Similarly, Google's AI-powered "Babel Street" platform assists law enforcement agencies worldwide by translating social media posts, emails, and dark web communications in over 200 languages. In 2018, Babel Street helped European authorities detect jihadist recruitment efforts targeting French-speaking communities, leading to multiple arrests.

In 2019, Germany's BKA (Federal Criminal Police Office) used AI-driven language models to translate terrorist manifestos and propaganda materials in real time. This helped prevent a planned attack by an extremist cell that was coordinating with international groups.

AI enhances international collaboration in counterterrorism by:

Facilitating real-time data sharing across global intelligence networks.
Tracking terrorist financial activities and movement across borders.
Breaking down language barriers to improve communication between international agencies.
By leveraging AI-powered intelligence tools, countries can work together more effectively to detect, prevent, and disrupt terrorist activities worldwide.

Challenges and Ethical Concerns in AI-Powered Counterterrorism

While AI and ICT provide powerful tools for combating terrorism, they also raise significant ethical, legal, and operational challenges. These issues must be carefully addressed to ensure AI is used responsibly and effectively.

While ICT and AI offer significant advantages in combating terrorism, there are challenges and ethical considerations:

Privacy Concerns

Surveillance and data collection can infringe on individual privacy rights (Ferguson, 2017). AI-driven surveillance and data collection can infringe on individual privacy rights, leading to potential abuse.

Examples

In 2013, Edward Snowden's revelations about the NSA's PRISM program exposed how mass surveillance programs collected vast amounts of data from civilians without their knowledge. While these programs aimed to combat terrorism, they also violated privacy rights, sparking global debates about surveillance ethics.

In China, the government's AI-powered surveillance system, which includes facial recognition cameras and predictive policing, has been criticized for its intrusion into citizens' lives. While it has helped track criminal and terrorist activities, it has also been used for mass surveillance of ethnic minorities, raising concerns about human rights violations.

Similarly, in the UK, AI-driven predictive policing systems have faced backlash for collecting personal data without proper oversight, leading to calls for stricter regulations to balance security and privacy.

Bias in AI Algorithms

AI systems may exhibit bias, leading to false positives or discrimination against certain groups (Smith, 2021). AI systems can exhibit bias, leading to false positives or discrimination against certain groups, particularly minorities.

Examples

A 2020 study by MIT and Stanford found that AI-based facial recognition systems were significantly less accurate for Black, Asian, and female individuals than for white males. This raises concerns in counterterrorism, where misidentifications could lead to wrongful arrests or unjust profiling.

In 2018, the U.S. Department of Homeland Security used an AI-driven "extremist threat assessment" tool that disproportionately flagged Muslim and Middle Eastern individuals, even though domestic terrorism threats from white supremacist groups were rising. This led to criticisms of racial profiling and calls for more transparent AI training processes.

Similarly, in 2021, UK police stopped using an AI-powered predictive policing tool after discovering that it disproportionately targeted low-income neighborhoods while failing to detect threats in wealthier areas.

Misuse of Technology

Terrorist groups may also use AI and ICT for their own purposes, such as planning attacks or spreading propaganda (Weimann, 2016). Terrorist groups can also exploit AI and ICT for their own purposes, such as spreading propaganda, coordinating attacks, and evading detection.

Examples

In 2018, ISIS used AI-generated deepfake videos to spread false propaganda, making it appear as though leaders of rival factions supported their ideology. This misinformation campaign led to violent clashes and recruitment spikes in affected regions.

Similarly, terrorist organizations have exploited encrypted messaging apps like Telegram, Signal, and WhatsApp, using AI-driven chatbots to automate recruitment and coordinate attacks. In 2019, Europol dismantled an ISIS-run online AI bot that was radicalizing individuals across Europe.

Cyberterrorism is another growing concern. In 2020, AI-driven malware attacks linked to terrorist groups targeted critical infrastructure in the U.S. and Europe, demonstrating how AI can be weaponized against governments.

Overreliance on Technology

Human judgment remains critical, as AI systems are not infallible (Bennett, 2020). AI is not infallible, and human judgment remains critical in counterterrorism. Overreliance on AI could lead to mistakes, ethical lapses, or failures in decision-making.

Examples

In 2017, a U.S. military drone strike mistakenly targeted a wedding convoy in Yemen, killing civilians. The AI-powered targeting system misidentified the convoy as a terrorist group due to faulty data. This incident underscored the risks of AI-driven decision-making without human oversight.

In 2021, during the Afghanistan conflict, an AI-powered predictive strike system identified a suspected ISIS-K operative, leading to an airstrike that killed civilians, including children. The Pentagon later admitted that AI had wrongly assessed the situation, reinforcing the need for human verification in life-or-death decisions.

Even in predictive policing, AI-generated risk scores can incorrectly label innocent individuals as potential threats, leading to false arrests and public mistrust in law enforcement.

AI in counterterrorism presents both opportunities and risks. While it enhances security, it also raises serious ethical and operational challenges, including:

- Balancing security and privacy to prevent mass surveillance abuses.

- Addressing bias in AI systems to avoid discrimination.

- Preventing terrorists from exploiting AI for their own purposes.

- Ensuring human oversight to avoid critical errors and overreliance on technology.

To maximize AI's potential while mitigating risks, governments must implement transparent regulations, ethical guidelines, and robust oversight mechanisms.

Recommendations for Leveraging ICT and AI in Combating Terrorism

To maximize the potential of ICT and AI in counterterrorism while addressing ethical and operational challenges, the following recommendations are proposed:

1. Strengthen AI-Driven Intelligence Gathering and Analysis

- Invest in Advanced Analytics

Governments and security agencies should invest in AI-powered big data analytics tools to process and analyze vast amounts of data from diverse sources, such as social media, financial transactions, and surveillance systems.

- Enhance Social Media Monitoring

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- Develop AI algorithms capable of detecting extremist content, recruitment efforts, and threats on social media platforms in real time.
 - **Leverage NLP for Multilingual Analysis**
Use natural language processing (NLP) to monitor and analyze communications in multiple languages, enabling the detection of coded messages and terrorist propaganda.
 - 2. **Improve Surveillance and Threat Detection Capabilities**
 - **Deploy AI-Powered Facial Recognition**
Implement facial recognition systems in high-risk areas, such as airports and border crossings, to identify known terrorists or suspects.
 - **Utilize Behavioral Analysis Tools**
Integrate AI-driven behavioral analysis into surveillance systems to detect suspicious activities in public spaces.
 - **Expand Drone Surveillance**
Use AI-equipped drones to monitor remote or high-risk areas, providing real-time intelligence on terrorist activities.
 - 3. **Enhance Cybersecurity Measures**
 - **Develop Real-Time Cyber Threat Detection**
Use AI to identify and neutralize cyberattacks launched by terrorist groups, ensuring the security of critical infrastructure.
 - **Monitor the Dark Web**
Deploy AI tools to track illegal activities on the dark web, such as the sale of weapons or stolen data, and disrupt terrorist networks.
 - **Remove Extremist Content**
Collaborate with tech companies to use AI in identifying and removing extremist content from online platforms, reducing the spread of terrorist ideologies.
 - 4. **Implement Predictive Policing and Risk Assessment**
 - **Adopt Predictive Analytics**
Use AI to analyze historical data and predict potential terrorist hotspots, enabling proactive resource allocation.
 - **Develop Risk Scoring Systems**
Create AI-based systems to assess individuals or groups based on behavioral patterns and associations, allowing for early intervention.
 - **Train Law Enforcement**
Provide training to law enforcement agencies on using AI tools for predictive policing and risk assessment.
 - 5. **Optimize Crisis Management and Emergency Response**
 - **Facilitate Real-Time Communication**
Use ICT to enable seamless communication and coordination between security agencies during terrorist incidents.
 - **Conduct AI-Driven Simulations**
Develop AI-powered simulations to prepare for various attack scenarios and improve response strategies.
 - **Optimize Resource Allocation**
Use AI to allocate police, medical, and emergency response teams efficiently during and after terrorist attacks.
 - 6. **Counter Radicalization and Extremism**
 - **Promote Counter-Narratives**

Use AI to identify and disseminate counter-narratives that challenge terrorist propaganda and reduce the appeal of extremist ideologies.

- **Identify At-Risk Individuals**
Leverage AI to detect individuals at risk of radicalization based on their online activity, enabling early intervention by authorities or community organizations.
- **Collaborate with Civil Society**
Work with NGOs and community groups to implement AI-driven programs aimed at preventing radicalization.

7. Address Ethical and Operational Challenges

- **Balance Security and Privacy**
Implement transparent regulations to ensure that surveillance and data collection do not infringe on individual privacy rights.
- **Mitigate Algorithmic Bias**
Regularly audit AI systems to identify and address biases that could lead to discrimination or false positives.
- **Prevent Misuse of AI**
Develop safeguards to prevent terrorist groups from exploiting AI and ICT for their own purposes.
- **Ensure Human Oversight**
Maintain human involvement in decision-making processes to avoid overreliance on AI and prevent critical errors.

8. Foster International Collaboration

- **Share Intelligence and Resources**
Use ICT to facilitate the sharing of intelligence and resources between countries, enhancing global counterterrorism efforts.
- **Develop AI-Powered Translation Tools**
Use AI to break down language barriers and improve communication between international security agencies.
- **Establish Global Standards**
Collaborate with international organizations to develop ethical guidelines and standards for the use of AI in counterterrorism.

9. Promote Public-Private Partnerships

- **Engage Tech Companies**
Partner with technology companies to develop and deploy AI tools tailored to counterterrorism needs.
- **Encourage Innovation**
Support research and development in AI and ICT to create innovative solutions for combating terrorism.
- **Ensure Accountability**
Establish oversight mechanisms to ensure that private companies adhere to ethical and legal standards when developing AI technologies.

10. Build Public Trust and Awareness

- **Educate the Public**
Raise awareness about the benefits and risks of using AI in counterterrorism to build public trust.
- **Ensure Transparency**
Provide clear explanations of how AI systems are used in counterterrorism operations to address public concerns.

- Engage Civil Society

Involve civil society organizations in discussions about the ethical use of AI and ICT in counterterrorism.

By implementing these recommendations, governments and organizations can harness the full potential of ICT and AI to combat terrorism effectively while addressing ethical concerns and ensuring respect for human rights. Collaboration, innovation, and responsible use of technology are key to building a safer and more secure world.

AI significantly enhances counterterrorism capabilities through predictive analytics and real-time monitoring (fulfilling our first purpose of analyzing AI applications in surveillance and predictive policing), yet these advancements necessitate strict governance frameworks to address persistent challenges of algorithmic bias and operational overreach (addressing our second purpose of evaluating ethical concerns). To operationalize this balance, we recommend establishing international standards for AI transparency through bodies like INTERPOL, while fostering public-private partnerships to enhance algorithmic fairness - concrete policy measures that achieve our third purpose of recommending responsible deployment strategies. Ultimately, this study validates AI's dual role as both a transformative counterterrorism tool and a technology demanding ethical safeguards, a central thesis clearly reflected in our title's juxtaposition of technological potential with necessary constraints.

For academia, this work provides a framework for evaluating AI ethics in security studies (cited in Bennett, 2023) and identifies gaps for future research on explainable AI (XAI) in counterterrorism. For policy, it informs revisions to the EU AI Act's high-risk provisions (2023 draft) and supports the development of UNODC's counterterrorism training modules under UN Resolution 73/305. For industry, it guides technology firms in creating surveillance tools that align with ethical standards, such as Microsoft's Responsible AI Principles.

Conclusions

ICT and AI have revolutionized counterterrorism efforts, providing governments and security agencies with powerful tools to prevent, detect, and respond to terrorist threats. AI-driven intelligence gathering and analysis, such as big data analytics, social media monitoring, and natural language processing (NLP), enable authorities to identify and neutralize threats more effectively, ultimately saving lives. These technologies enhance surveillance capabilities, allowing for real-time tracking of suspects and faster responses to potential attacks, making AI-driven surveillance a cornerstone of global counterterrorism strategies.

In the realm of cybersecurity, AI plays a critical role in detecting and blocking cyberattacks, monitoring dark web activities, and removing extremist content to prevent radicalization. By leveraging AI, law enforcement agencies can stay ahead of evolving terrorist tactics and safeguard national security. Additionally, AI-powered predictive policing and risk assessment tools help identify high-risk locations and individuals, enabling proactive interventions before attacks occur. This predictive capability, combined with real-time intelligence, empowers security agencies to neutralize threats before they materialize.

During crises, AI enhances emergency response by facilitating real-time communication, simulating attack scenarios, and optimizing resource allocation. These capabilities ensure faster, more coordinated responses, minimizing the impact of terrorist attacks and improving public safety. Furthermore, AI is instrumental in countering radicalization by detecting and removing extremist content, promoting counter-narratives, and identifying individuals at risk of radicalization for early intervention. By addressing the root causes of extremism, AI helps reduce the appeal of terrorist ideologies and prevents individuals from engaging in violence.

However, the use of AI in counterterrorism is not without challenges. Ethical concerns, such as balancing security with privacy, addressing algorithmic bias, and preventing the misuse of AI by terrorist groups, must be carefully managed. Overreliance on technology without human oversight can also lead to critical errors. To maximize the benefits of AI while mitigating risks, governments must implement transparent regulations, ethical guidelines, and robust oversight mechanisms. Collaboration between governments, tech companies, and civil society is essential to ensure that ICT and AI are used responsibly and ethically in the fight against terrorism.

In conclusion, ICT and AI are transformative forces in counterterrorism, offering unprecedented capabilities to enhance security and protect civilians. By leveraging these technologies responsibly and addressing their ethical challenges, the global community can build a safer, more secure future.

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THE ROLE OF SELF-AWARENESS IN DEVELOPING PROJECT MANAGERS' RESILIENCE

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Abstract. *This article aims to provide a complex attitude on how resilience among project managers can be developed through a broader perspective of self-awareness. In a world of rapid changes, uncertainty and overconsumption fostering a sustainable society becomes crucial for those societies and communities who look strategically to the future. The human factor plays an important role not only as the element of a sustainable society but also as the key for project managers, who with their teams always stand in front of innovations and changes. To act effectively in constantly changing conditions and successfully manage the projects, resilience as the competence whose importance is recognized both in theory and practice takes on a special significance. Although scientific literature reviews and examines the ways to develop this competency, because of its high complexity more comprehensive approach to developing resilience is missing. This article explores how a construct of self-awareness also characterized by exceptional complexity can serve for building resilience. Understanding this link and developing resilience in the complexity of self-awareness can lead to better results in personal development, project management, and the creation of a sustainable society.*

Keywords: *resilience, self-awareness, project management, project manager, personal development, sustainable society.*

Introduction

In contemporary organisations, project managers and their teams are the ones most affected by uncertainty and unpredictability. Seeking to thrive in complex and changing environments and successfully manage projects, resilience becomes one of the most important competencies in projects and project-based organizing. The individual resilience of the project manager influences the other team members as they follow the manager's example (Karlsen and Berg, 2020). Leaders are also those who can motivate their people in the face of adversity by modeling resilience and building a culture of determination and progress (Deep, 2023). Considering this approach to project management, the article focuses on resilience development in project management beginning from the project managers' perspective.

"Leadership resilience refers to a leader's ability to recover from setbacks, maintain high performance, and steer the organization toward its goals in the face of adversity" (Deep 2023, p.87). However, we frequently behave mindlessly in the way we deal with uncertainty, in the way we perceive it, in the way we understand it, and in the way we respond to it (Kutsch and Hall, 2020). The mindset the leaders choose matters a lot, because a negative attitude can lead to approaching the situation destructively, forgetting faith and values, and using an avoidance approach when facing life's tests (Breen, 2017). Instead of trying to predict the future, it is necessary to learn how to deal with uncertainty mindfully.

Although resilience's influence in project management and project managers' work effectiveness is recognized and examined in scientific literature, there is still a gap in considering project managers' resilience development utilizing self-awareness. In order to find the pathways for resilience development from this particular perspective, we chose to analyze the problem from the theoretical level first. Development-oriented studies, according to Ellis and Levy (2010), begin with the initial conceptualization of a problem and culminate in the evaluation of the impact of one or more factors affecting that problem. Seeking to connect project managers' resilience development with a conscious individual approach, the article aims to reveal how resilience among project managers can be developed through a broader perspective of self-awareness. To identify directions for developing project managers' resilience, we utilize insights gained by analysing theoretical dimensions and the components of resilience that best reflect the project manager's perspective. After this, we take initial steps to connect project managers' resilience development directions and self-awareness as the development method. Finally, we seek to verify whether self-awareness is a suitable method for project managers' resilience development, examining it as the process and outcome in the identified project managers' resilience development areas.

Directions for project managers' resilience development

The analysis from various research articles on the topic of resilience revealed three most common streams on which this concept is based in a broad sense: a) dimensions to analyze resilience; b) components/outcomes of resilience; c) development of resilience. The first two directions have been explored quite extensively, however, the third remains the least studied in the scientific literature. It can be assumed that less attention is paid to the development of resilience because of the complexity of this construct, which also causes difficulties in measuring the results of resilience development.

First, the complexity of resilience can be revealed through the many dimensions according to which this construct is analyzed (Table 1). It is important to note that the list of these dimensions can be continued by other current or future scientific research, as this table presents only the prime of them. The many dimensions of resilience analysis initially confuse, consequently forcing one to choose the most appropriate angles of analysis that will help solve a specific problem. Secondly, the components of resilience are almost endless, considering different authors and perspectives (Smith, 2017). In order to decide which components are important in particular situations and define paths for their development, we should also identify appropriate theoretical concepts and conduct analysis within their frameworks.

Table 1. Dimensions to analyze resilience
Source: the authors are listed in the table below

Dimensions to analyze resilience	Components of particular dimension
Resilience in the workplace (Alliger et al. 2015)	individual and team
Resilience according to territorial scope (Irani and Rahnamayiezekavat, 2021)	national, regional, urban area, urban, local, or household
Resilience from different perspectives (Ostadtaghizadeh et al., 2015)	social, economic, institutional, physical, and natural
Approach to the concept of resilience (Smith, 2017)	resilience as a process or an outcome
Approaches on resilience based on literature analysis (Smith, 2017)	asset, the systemic, and the developmental approaches
Fields of science (Ledesma, 2014)	psychology, psychiatry, developmental psychopathology, human development,

	change management, medicine, epidemiology, nursing, social sciences, and educational administration
Resilience cycle phases (Patterson and Kelleher, 2005)	deteriorating phase, an adapting phase, a recovery phase, and a growing phase
Development through obstacles (Howard and Irving 2013)	developmental assignments, developmental relationships, developmental experiences, and developmental training.
Resilience in project management (Fey and Kock, 2022)	perspectives of project team leaders, team members as a group or individuals, stakeholders, society, etc.

Naderpajouh et al. (2020) argue that projects and project-based organizing help to deal with uncertainty and constant changes and can be the area to develop longer-term resilience at the socio-ecological-technical level. This statement reveals why resilience development in project management is especially important in the modern world. The most appropriate perspectives to analyze resilience and identify potential development areas of this trait in project management are: a) individual resilience and perspective of project team leaders (Fey and Kock, 2022), b) systemic and developmental approaches to resilience (Smith, 2017).

Although in project management, both kinds of resilience - individual and team resilience (Fey and Kock, 2022) matter, when exploring the resilience development of a project manager, we should start from an individual level first and try to analyse this trait through the eyes of a project manager. The perspectives of resilience from various sciences has revealed three common features that are very important to understand resilience as the concept and necessary to set further guidelines to its development: the ability to withstand insecure, uncomfortable circumstances or periods; positive outcomes/growth despite these circumstances; and the aspect that all of this happens at an individual level of personality. Here, our findings reaffirm the idea of Howard and Irving (2013), that resilience at the individual level cannot be achieved without encountering obstacles. The project manager's perspective is very accurately revealed by the interviews with project managers from various industries that Shafi (2024) conducted and described in his research. The regularities observed in these interviews reveal that the role of a project manager is inseparable from open communication with stakeholders and team members, balancing structure with flexibility, maintaining clear project goals, changing or rigid regulatory requirements, setbacks, uncertainty, and proactive risk management.

Also, to understand resilience from the individual project managers' perspective, components or traits that constitute resilience in this particular case have been analysed. Recurring patterns revealed the importance of social factors when forming these traits. These findings led to Smith's (2017) systemic approach, which claims that resilience includes not only personal traits but also outer social factors that are very important in building resilience. Traits representing a resilient leader may be highly affected by social factors. From the project managers' perspective, this factor is even more obvious as project leaders' responsibilities are inseparable from the team and diverse stakeholders.

The broad list revealing the components of resilience was still open to supplement, once again confirming the complexity of resilience even in the narrowed perspective. These findings led to implications revealing that resilience development in project managers' cases requires a life-long learning approach, conscious choice to recognize strengths and weaknesses, openness to new ideas, inner strength, and courage to face difficulties. These observations confirmed the idea of the developmental approach, claiming that resilience develops in the face of challenges and is characterized by a more holistic and systematic view of resilience. According to Smith

(2017, p.10), “such a perspective would suggest working with awareness, and perhaps core beliefs and values, with a greater focus on identity and the self”.

By choosing the theoretical perspectives that best fit the problem in the three streams of resilience, we could see the big picture and identify the essential directions necessary for developing resilience in the case of a project manager (Figure 1). The main directions for project managers’ resilience development identified during this analysis were: a) focus on development at an individual level, b) influence of social factors, c) feedback from the team and stakeholders, d) life-learning approach, e) conscious choice to face difficult situations and overcome them.

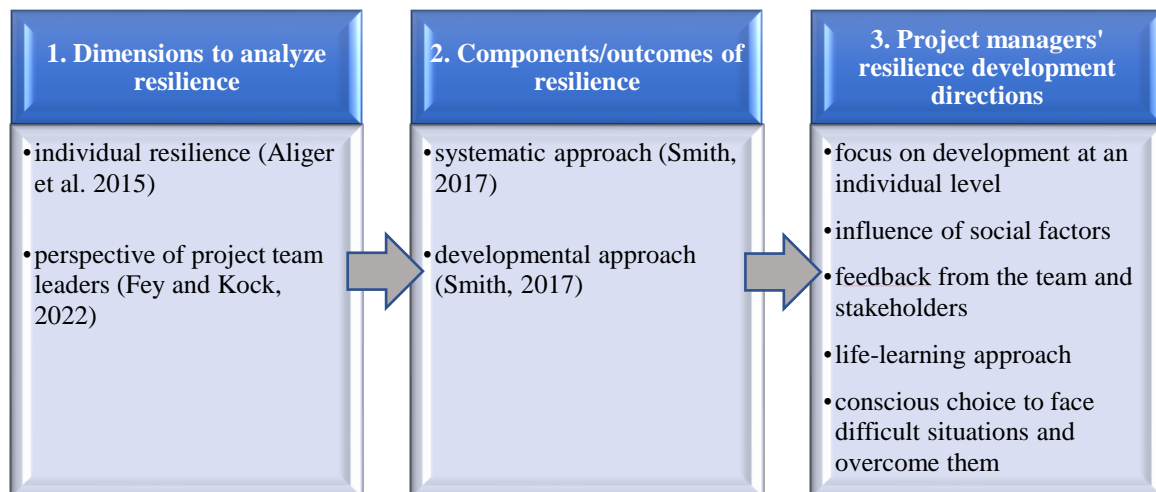


Figure 1. Theoretical analysis of project managers’ perspective and identification of resilience development directions

Source: created by the authors

Methods for resilience development

Jansen and Wieland (2024) acknowledge that resilience is a trait that can be honed and strengthened, metaphorically likening resilience to muscles that grow stronger with consistent exercise through strategies such as positive self-talk, leveraging support networks, and extracting insights from challenges. Deep (2023) notes that resilience in leadership can be developed utilizing training programs, coaching, difficult assignments, forcing people outside their comfort zones, etc. To foster resilience at the organizational level, it is essential to incorporate resilience psychoeducation into employee development programmes, utilize mindfulness training programmes, and cultivate physical activity (Fernandez et al., 2020). According to Willey (2018), self-awareness can also be used as a tool to build resilience. The abundance of resilience development methods and the complexity of the resilience construct suggest that at the organizational level, resilience development can be limited due to time, finance, human and other resources.

Sipondo and Terblanche (2024) notice a growing research emphasis on coaching as a method to develop resilience. According to them, coaching is an effective method that provides a confidential space for discussing difficulties, developing skills, and fostering open discussion about challenges. Smith’s (2015) study revealed coaching as a useful resilience-building intervention by leaders. For coaching to act as an effective method, the following conditions must be met: dedicated time for coaching sessions in the period from 6 months to over a year, an experienced coach, homework for the coachee after or before each session, coachee’s efforts

to develop (Sipondo and Terblanche, 2024). DiGirolamo (2015) also highlights the importance of a strong relationship between coach and coachee as a part of growth and inspiration. If we analyze coaching using the above-identified 5 directions for resilience development, which we have identified by analyzing resilience from the individual project managers' perspective, the shortcomings of this method can be identified. Coaching can hardly turn into a life-learning method as it is time-consuming and requires a coach, whose experience and skills also highly affect the results when using this method.

Self-awareness as a method in project managers' resilience development

In the times of the VUCA (volatility, uncertainty, complexity, ambiguity) world, the growth mindset is not an option but a necessity, thus, we need a method enabling leaders' development in any circumstances, regardless of the organization's resource limitations. Self-awareness as a project managers' resilience development method is able to fill the gap that can be caused by resource constraints, because it takes place at the individual level and has no time or place limitations. To help understand why self-awareness can be used as a method to develop resilience from the perspective of project managers and to disclose how it can be beneficial from this point of view, we will rely on the following structure: 1) to check whether self-awareness, as a method, responds to the above five directions for developing project managers' resilience; 2) to show the content and the process (London et al., 2023), analyzing self-awareness from the perspective of the project manager in each of these directions.

Focus on development at an individual level

According to Ashley and Palmon (2012), self-awareness in almost all conceptualizations emphasizes that individuals evaluate themselves against some salient standard or goal. Based on this observation, the authors state that self-awareness helps individuals to understand whether they need to moderate a behavior, emotion, or course of action. While self-awareness can be a very effective method for improving, achieving goals, and becoming resilient in project management, for a project manager to utilize this method, it is first necessary to understand how it works. The process of self-awareness can be described as self-evaluation, process, and attention (Carden et al., 2022) (Table 2). According to the authors, the last stage is the most important in the development of self-awareness. Only if we can stop and recognise our unconscious reactions, here is the point where we can project desired changes and results in our behavior, and thus start working on individual growth. Self-awareness also allows leaders to assess their growth and effectiveness and change their behavior when necessary (Puhan and Malla, 2024).

Table 2. The process of self-awareness

Source: Carden et al., 2022

Self-evaluation	Awareness of others' perceptions through feedback seeking, awareness on interpersonal dimension (impact on others, behavior impact on others).
Process	Self-awareness as an ongoing developmental process.
Attention	Point of attention to immediate thoughts, emotions, physiological responses, and behaviors.

Influence of social factors

Eurich (2018, p.4) distinguished this construct into two types: internal self-awareness and external self-awareness. While internal self-awareness reflects on the above-mentioned development direction, understanding of external self-awareness helps to evaluate the fit of self-awareness in this particular direction. External self-awareness „means understanding how other people view us,“ evaluating our thoughts, feelings, behaviors, strengths, and weaknesses (Eurich, 2018). According to London et al. (2023, p. 262), external self-awareness is based on self-evaluation generated from feedback of other people as well as ”our perceptions of how people relate to us and the effects our behavior has on others, and the extent to which we act in ways that are sensitive to others“. If leaders’ self-perception matches how others see them, it is more likely to empower, include, and recognize others (Puhan and Malla, 2024). According to the authors, the development of external self-awareness also leads to more empathetic behavior and an approach to people with different views. External self-awareness directly relates to better relationships with team members and, in that way, helps to support the project manager's resilience.

Feedback from the team and stakeholders

Self-awareness is highly affected by the feedback. The sources of feedback are: feedback from people familiar with the manager’s work, from the manager’s own experiences, and insights generated from psychological tests and inventories (Nesbit, 2007). To develop managers’ self-awareness, it is very important to manage reactions and emotions that are influenced by feedback, especially negative one. Self-awareness helps to recognize feedback not as criticism but as a useful source of development, refusing judgment and defensiveness. It is important to emphasize that to receive feedback, the project manager must actively seek to receive it (Suarez Enciso et al., 2024).

Lifelong learning approach

The development of self-awareness is also a very complex process that requires different theories and methods. London et al. (2023) refer to theory-based strategies, adult development, experiential learning, and motivation theories, and practical methods for self-awareness development (reflective practices, coaching, leadership programmes, art-based programmes, self-assessment via instruments, feedback). Because of the complexity of self-awareness development, it is important to accept it as an ongoing process, which will not necessarily produce quick results in identified areas of development and which may become a lifelong learning approach for development. Westover (2025) describes self-awareness as an ongoing process of observation, reflection, and refinement rather than a goal. Learning oriented approach encourages not to be afraid of challenging situations and to accept them positively as a learning opportunity (Park and Park, 2019).

Conscious choice to face difficult situations and overcome them

Since project management is particularly characterized by uncertainty, it can be argued that the role of the project manager itself reflects a conscious choice to face complex, unknown situations, deal with them, overcome them, and accept obstacles as an inevitable part of the job.

Naderpajouh et al. (2020) notice that the discourse shift from risk to resilience replaced the focus from external disruption to the internal strength of the individual facing these disruptions.

Kreibich et al. (2020) argue that self-awareness affects goal monitoring in a two-phase process. According to the author, the project manager needs to identify whether the obstacle, which can manifest as a physical, mental, social, or situational setback, conflicts with the pursuit of his goals (*conflict identification*). Second, the project manager needs to find strategies to deal with the conflict challenged by the obstacle (*conflict resolution*).

Theoretical model for project managers' resilience development through self-awareness

Theoretical insights presented in the article lead us to combine them into a coherent model presented in Figure 2. The model is dedicated to helping project managers understand how to practically develop resilience using self-awareness and present changes in project managers' behavior that could be achieved following this framework.

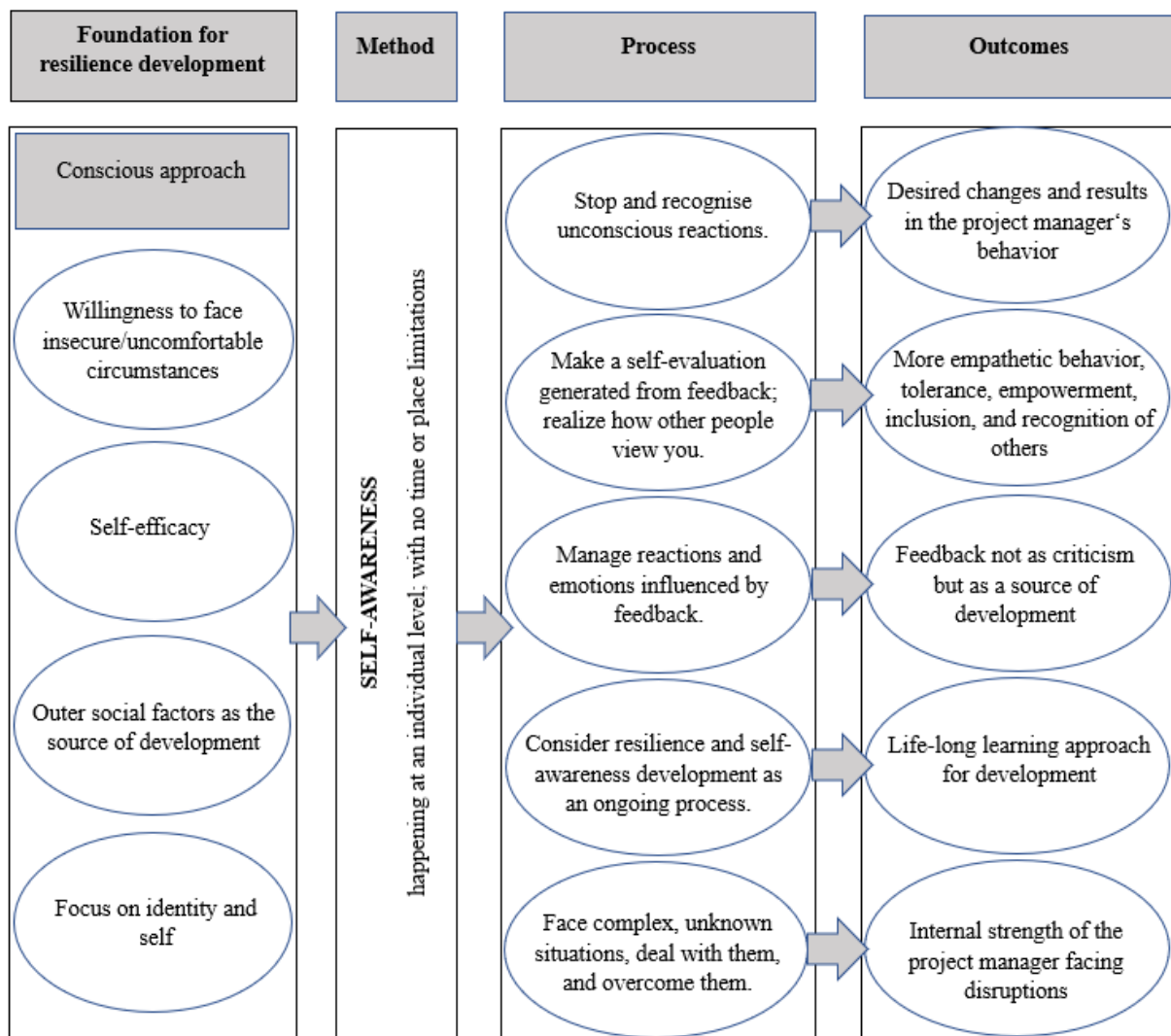


Figure 2. Framework for project managers' resilience development through self-awareness.

Source: created by the authors

The figure also includes the new definition of self-efficacy. According to Bandura & Wessels (1997, p.1), self-efficacy can be defined as “people's beliefs about their capabilities to produce designated levels of performance”. Project managers’ confidence to perform necessary actions, as well as the other elements of the conscious approach presented in the first column of the Figure, form the foundation for the model to be implemented. As this framework is composed solely of theoretical insights, this leaves room for empirical testing in future research.

Conclusions

The importance of self-awareness in developing resilience is recognized and extensively studied in scientific literature. However, due to the complexity of self-awareness (Ashley and Palmon, 2012), it is still difficult to understand how this method will work from the individual perspective of a project manager, leaving self-awareness in project management not to be fully exploited.

The theoretical analysis of self-awareness as a method in identified project managers’ resilience development directions allowed us to reveal how this complex method would work in each of the directions. The whole theoretical study disclosed that great results can be achieved using self-awareness in project managers’ resilience development, and led to the conclusion that self-awareness has an advantage over other resilience development methods as it proceeds at the individual level with no time or place limitations. However, for this method to be more widely used in practice, it is necessary to help project managers understand the basic principles and the benefits of self-awareness in more detail. Such circumstances leave room for empirical research that could confirm theoretical claims and provide more knowledge on this topic.

The analysis of components building resilience and self-awareness revealed that several components overlap in both constructs. As the outcome of resilience and self-awareness, we can see empathy, feedback seeking, self-efficacy, locus of control, continuous learning and growth, high performance, value-based behavior, authentic leadership, etc. However, without a conscious choice of the leader to grow, without understanding the gap between current and desired situations, without constant efforts to understand our inner state, behavior, strengths, and weaknesses from intrapersonal and interpersonal perspectives, it would be almost impossible to develop resilience. Consequently, self-awareness as a method can be effective in resilience development if the manager himself understands its meaning and can accept self-awareness and its strategies.

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HUMAN RESOURCE POTENTIAL: THE BASIS FOR THE RESILIENCE OF ORGANIZATIONS PROVIDING SOCIAL SERVICES

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Abstract The article analyzes the features of the human resources potential that help ensure the resilience of organizations providing social services to difficulties. Organizations providing social services work with individuals at increased risk and often face various difficulties. Therefore, strengthening the resilience of these organizations, the potential of which is human resources, becomes a particularly important task. The purpose of this article is to reveal the potential of human resources in the process of strengthening the resilience of organizations by identifying the most important factors and measures that help ensure resilience. The article analyzes how leadership, employee competencies, motivation, focus and other factors help strengthen the resilience of organizations providing social services to difficulties.

The purpose of the study is to identify the main difficulties and measures that influence the resilience of organizations providing social services.

Methodology – quantitative research method – questionnaire survey, in which employees of organizations providing social services – decision-makers (managers, deputies, heads of departments and divisions) participated.

Key findings: Human resource potential is a key factor in the resilience of social service organizations, as employee competence, motivation and engagement directly correlate with the organization's ability to adapt to challenges. The resilience of social service organizations is enhanced by a strong organizational culture that promotes cooperation, trust between managers and employees, and clear communication during change. The study revealed that the resilience of social service organizations directly depends on the ability of managers to make strategically sound decisions that ensure the strengthening of employee competences and motivation.

Keywords: human, resources, social, services, organizations, resilience.

Introduction

When social service organizations operate in an environment of uncertainty, in crisis situations and difficulties, it is necessary to ensure the resilience of organizations. One of the most significant factors determining the resilience of organizations to difficulties is the potential of human resources. The scientific literature provides various information about human resources that ensure the successful operation of the organization, but there is a lack of empirical research-based insights into the potential of human resources in social service organizations. Therefore, this article analyzes the features of the potential of human resources that help ensure the resilience of social service organizations to difficulties. Various researchers present different approaches to human resources: Juodeikaitė and Fominienė (2016) argue that human resources are the use of human capital to increase competitive advantage and to perform assigned duties in a timely manner. Berber et al. (2014) note that it is human capital as a factor of success in an organization. Gao (2025) defines human resources as the greatest asset of an organization, which depends not on financial or material resources, but on the quality of employees' work and their behavior. Meanwhile, Kuliešis et al. (2012) argue that it is a person, his work and his abilities, acquired knowledge, skills, which are not material and easily tangible. Summarizing the definitions of human resources provided by the authors, we can state that

human resources are human capital in an organization, performing the intended duties, classified as intangible resources, which helps to ensure success in the organization. Considering the importance of human resources for the success of the organization's activities, there is a natural need to examine how these resources are related to the organization's ability to adapt to changes and maintain stability of operations - this is associated with the concept of organizational resilience. Organizational resilience is defined as the ability of organizations to maintain a balance of various elements in the event of difficulties, mobilizing available resources and competencies, the ability to manage needs, challenges and changes (Erol et al., 2010). The ability of an organization to respond promptly and adapt to environmental changes depends on the interaction of internal and external factors (Hillmann and Guenther, 2021). Defining organizational resilience reveals the essential characteristics of organizational resilience, which include organizations' response to shocks, the ability to plan, adapt, overcome difficulties and continue to operate or become even stronger in the context of the changes that have occurred. The ability of organizations providing social services to overcome difficulties and maintain resilience primarily depends on how effectively they are able to mobilize, maintain and strengthen their human resources. It is the person – their competencies, experience and motivation – who becomes the essential source of organizational resilience.

Relevance of the article. Social service organizations operate in a constantly changing, challenging environment, which is significantly affected by demographic trends, emigration rates, and changes in the age structure of society. In the context of these factors, social service organizations are increasingly viewed as dynamic systems, the effectiveness and resilience of which is determined by the role of human resources. The potential of human resources is becoming a key factor contributing to the ability of organizations to overcome external and internal difficulties and ensure long-term functioning in a changing environment.

The aim of this article is to reveal the potential of human resources in the process of strengthening the resilience of organizations by identifying the most important factors and measures that help ensure the resilience of organizations providing social services.

To achieve the research objective, a quantitative research method was applied – a questionnaire survey, in which employees of organizations providing social services – decision-makers (managers, deputies, heads of departments and sections) participated.

The first part of the article, based on theoretical analysis, highlights the potential of human resources, which helps to ensure the resilience of organizations providing social services to difficulties. The factors of resilience of social service organizations and measures that influence the resilience of organizations are identified.

The second part describes the research methodology, presents the most important research results, revealing what human resources, factors and measures help to ensure the resilience of organizations providing social services.

The conclusions presented at the end of the article, based on the indicators of the research results, reveal that the potential of human resources is one of the essential factors of the resilience of organizations providing social services. The resilience of organizations is closely related to the ability of managers to make strategically sound decisions, as well as to the competencies and professional training of employees.

The importance of the interaction of internal and external environmental factors in strengthening the resilience of organizations providing social services

The increasingly modern world implies increasing public expectations for social service organizations in Lithuania. In a constantly changing environment, a new approach is being

formed to the social service organization as a system, in which human resources become an essential part of it, determining the success and resilience of the organization. The difficulties experienced by social service organizations have different short-term and long-term effects on the resilience of organizations, and major disruptions leave long-term traces on the organization (Foss, 2021). It is important that organizations operating in difficult conditions are constantly reborn stronger and more resourceful, because only resilient organizations can function properly in a constantly changing environment, facing unpredictable difficulties (Hillmann and Guenther, 2021). Social service organizations, according to the organization of their activities and the specifics of the services provided, respond to the needs of customers, which are constantly changing. In order for social service organizations to provide effective and high-quality services and find effective ways to solve the difficulties that have arisen, impeccable human resource management is necessary (Fahira ir Setyawan, 2024). Employees of social service organizations, who are distinguished by high competencies, professional skills, experience, and apply their knowledge at work, contribute to the implementation of the organization's goals and strengthening the organization's resilience. Thus, the quality of social services is determined not only by organizational factors, but also by human resources - the competencies of employees, which are ensured by professional standards and qualification requirements established in legal acts, defining the necessary knowledge and education of specialists (Law on Social Services of the Republic of Lithuania, 2006; Description of the Procedure for Improving the Professional Competence of Social Sector Employees and Managers of Social Sector Institutions, 2006).

A social service organization can ensure resilience to difficulties when its strategy is coordinated and developed together with a human resource management strategy (Aust et al. 2020). Human resource management is a strategic method of managing labor relations, based on a consistent and comprehensive approach to work functions and the inclusion of employees in decision-making processes (Collings et al., 2021). The pursuit of resilience in social service organizations requires continuous efforts that depend not only on their preparation, ensuring managerial decisions of leaders, but also on human capital, employees and their interaction with managers (Lv et al., 2019). The resilience of organizations could be strengthened through the interaction of individual people, to which the behavior of employees and the employer contributes - the resilience of the organization depends on both each member of the organization and the environment of the organization itself (Mitsakis, 2020). Thus, long-term positive changes in the organization can be implemented through effective interpersonal interaction between employees and managers. When making management decisions during crisis situations, it is very important to distribute the workload and systematically assess whether the activities will be carried out as effectively as possible in the event of a change in circumstances, whether their continuity will be ensured and at the same time the resilience of the organization will be strengthened (Weis and Klarner, 2022). Organizational leaders must find preventive principles, mindful action, operational optimization and adaptive innovation that correspond to the organization's mission, vision and balance. In this case, one of the most important actions of leaders in increasing the resilience of organizations providing social services is to create a clear and shared vision, therefore it is important that the organization's employees are involved, believe in shared success and contribute to decision-making in organizations (Brown et al., 2017).

Resilience in social service organizations is a relatively new field, integrating many areas of research and practice, including resilience, change management, organizational security, organizational culture, leadership, and business continuity (Istiqaroh et al., 2022). In order to ensure the successful operation of an organization, it is necessary to have the ability to respond,

monitor short-term changes and threats, anticipate long-term threats and opportunities, and learn from past events, which are influenced by external and internal environmental factors: Internal environmental factors include internal social competence and the ability to act. As certain processes take place, organizational, human resource management, and leadership characteristics are formed (Ramezani & Camarinha-Matos, 2020). Organizational leaders, by seeking to overcome difficult situations and reformulating specific positive steps in a short period of time, ensure that the organization does not experience shocks and is resilient (Hermawan, 2025). Internal environmental factors include adaptive operating models developed by the organization, allowing for rapid innovation, and the ability to strengthen and maintain its value during and after disruptions (Bailey & Breslin, 2021). External environmental factors include global changes, social characteristics, social networks that determine inter-institutional cooperation processes, etc. In the external environment, two foundations of organizational resilience factors emerge: structural-organizational and economic-social (Ruiz-Martin et al., 2018). Inter-institutional cooperation helps ensure organizational resilience and overcome difficulties - as inter-institutional cooperation strengthens, organizational resilience strengthens (Mazzara, Maione & Leoni, 2023).

The main external and internal environmental factors that help organizations providing social services overcome difficulties and influence organizational resilience are depicted in Figure 1:

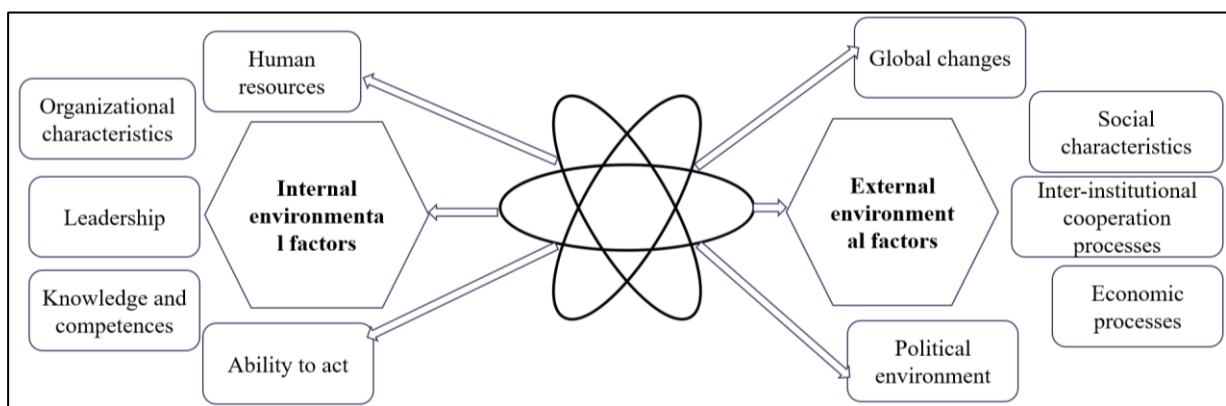


Figure 1. Factors that ensure organizational resilience.

Source: compiled by the author, 2025.

Theoretical analysis reveals that the resilience of social service organizations is influenced by external and internal environmental factors, including organizational characteristics, human resource management, knowledge, competencies and skills, enabling leadership, the impact of global changes, socioeconomic characteristics, political decisions and aspects of inter-institutional cooperation. When difficulties arise, organizations pay special attention to those work practices that are related to job stability, adaptation to a changed environment, good internal communication, development of competencies and appropriate working conditions.

In summary, it can be stated that the resilience of social service organizations is most influenced by both external and internal factors, among which the most important is the role of human resources. Research shows that resilience to difficulties can only be ensured when the organization's strategy is closely aligned with the human resource management strategy. Special attention is paid to employee involvement, ensuring job stability, adaptation to change, internal communication and development of competencies. Such factors allow organizations

not only to overcome difficulties, but also to successfully adapt to a changing environment, because without the potential of employees, positive changes would be impossible. Positive changes in organizations are perceived as a self-evident and inevitable phenomenon, which requires bold managerial, financial, human resource management and other solutions, which are not possible without the potential of human resources - the organization's employees.

An empirical analysis of challenges and measures influencing the resilience of social service organizations

The theoretical part identified the difficulties of social service organizations and the most important factors for strengthening resilience, on the basis of which an empirical study is conducted. The quantitative research method chosen for the study was a questionnaire survey. The research questionnaire consisted of 11 closed-ended questions. The questionnaire was submitted to the survey. It system, and the questionnaire link was sent to respondents by e-mail. The study involved employees of social service organizations - decision-makers (managers, deputies, heads of departments and divisions). 235 respondents participated in the study. The study is conducted from 2023. December 11 to 2024. January 29.

The purpose of the study is to identify the main difficulties and measures that affect the resilience of social service organizations.

In order to determine what difficulties social service organizations are experiencing, respondents were asked "What difficulties does your organization face?". The results of the study are shown in Figure 2.

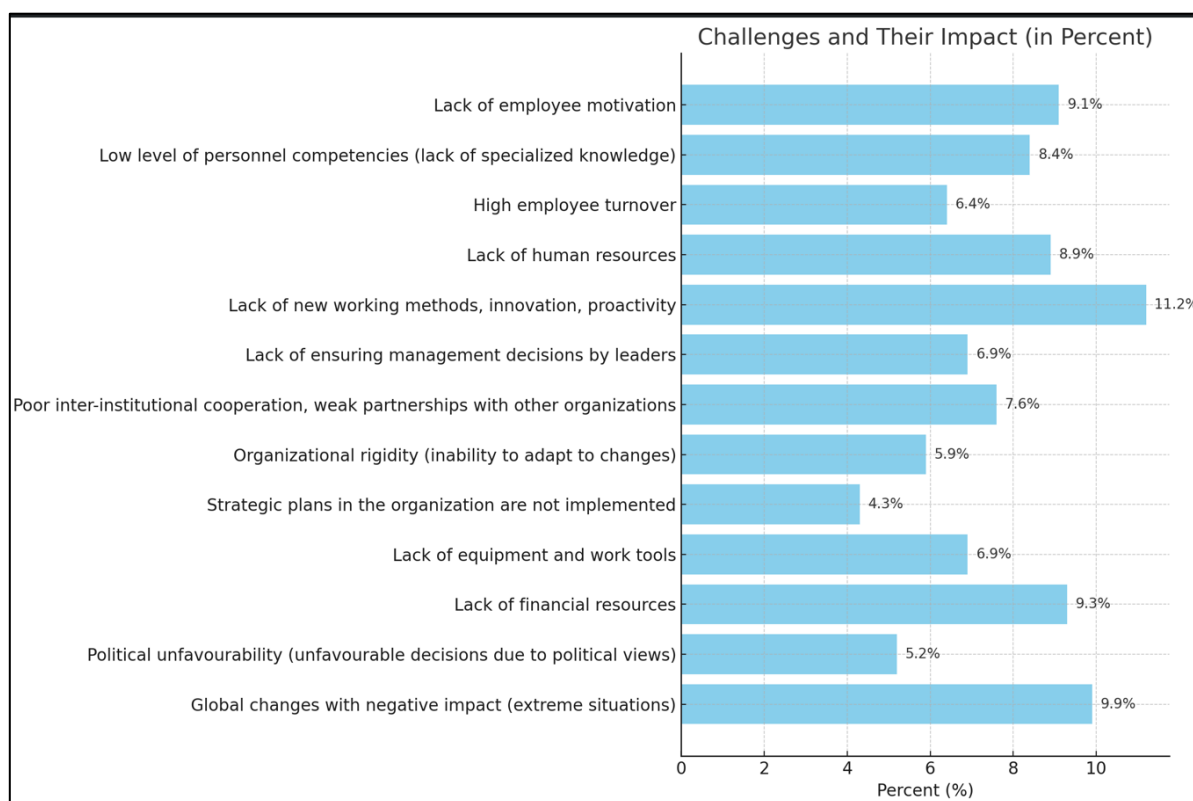


Figure 2. Challenges faced by social service organizations

Source: compiled by the author, 2025.

As the results of the study show, organizations providing social services lack new working methods, innovation, proactivity (11.2%), challenges are caused by negative global changes (extreme situations) (9.9%), organizations face a lack of financial resources (9.3%), employees lack motivation (9.1%), a lack of human resources is evident (8.9%), and a low level of personnel competencies (lack of specialized knowledge) (8.4%), difficulties are also caused by poor inter-institutional cooperation, weak partnership relations with other organizations (7.6%). According to the results of the study, organizations providing social services face multifaceted challenges, which include both internal and external factors. Based on the results of the study, it can be stated that organizations providing social services face complex and multifaceted problems that must be addressed in order to ensure the success and resilience of their activities.

To achieve the aim of the study, it was analyzed what measures help to strengthen the resilience of organizations and overcome difficulties. Respondents were asked to answer what measures are applied in the organization providing social services in order to overcome difficulties and ensure the resilience of the organization in which they work. The results of the study are shown in Figure 3.

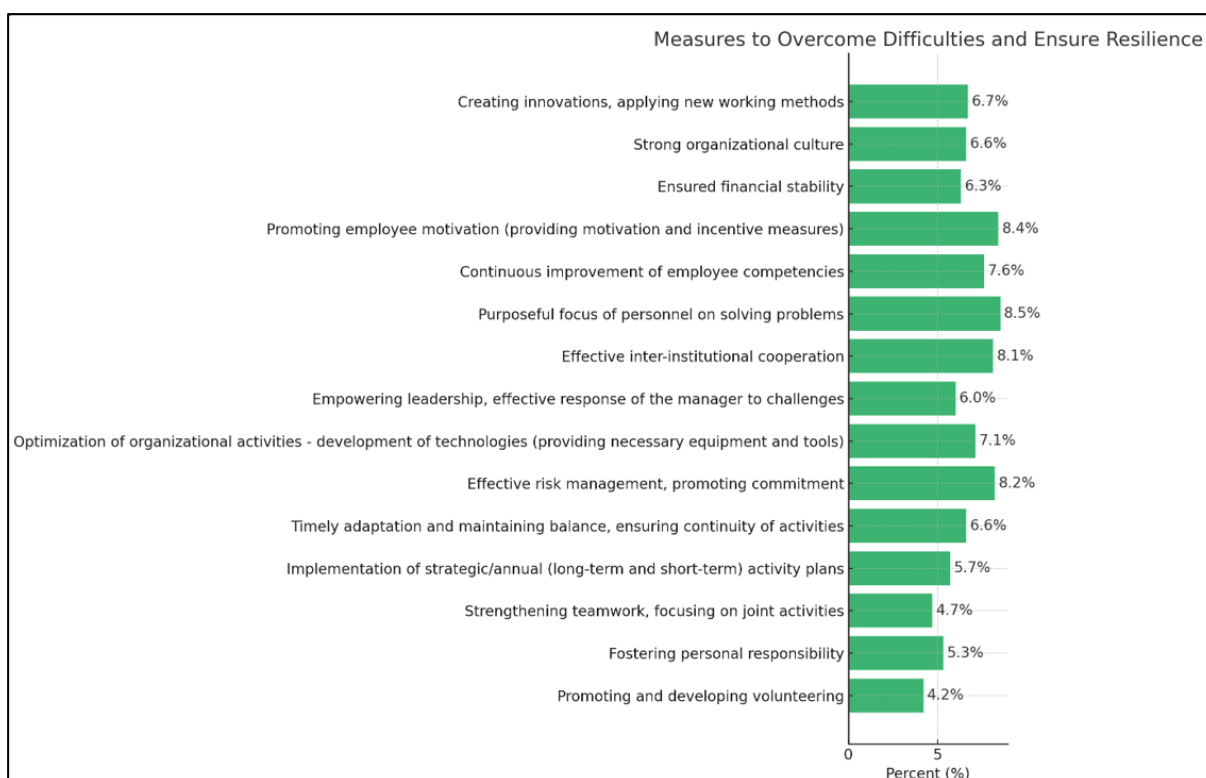


Figure 3. Measures used in social service organizations to overcome difficulties and ensure resilience
Source: compiled by the author, 2025.

As the results of the study show, in organizations providing social services, overcoming difficulties and challenges is helped by targeted staff focus on problem solving (8.5 percent). Respondents noted that promoting employee motivation (application of motivation and incentive measures) (8.4 percent) is very important. No less important are effective risk management that promotes commitment (8.2 percent) and effective inter-institutional cooperation (8.1 percent). As important measures that help overcome difficulties and ensure the resilience of organizations, respondents also name the continuous improvement of

employee competencies (7.6 percent), optimization of organizational activities (7.1 percent), creation of innovations, application of new working methods (6.7 percent), strong organizational culture (6.6 percent), timely adaptation and maintaining balance, ensuring continuity of activities (6.6 percent), and financial stability (6.3 percent).

The results of the study reveal that the most important factors for the resilience and overcoming of difficulties of organizations providing social services are related to the strengthening of internal processes and the empowerment of employees. In other words, the potential of human resources plays a particularly important role. The study data show that a comprehensive approach to the internal resources of the organization, employee involvement and cooperation with other institutions are essential factors that help organizations effectively overcome challenges and ensure their resilience.

Summarizing the results of the quantitative study, it can be stated that for organizations providing social services, seeking to avoid threats and overcome difficulties, it is important to optimize activities, adapt to changes and maintain a balance of operational processes, while nurturing the culture of the organization. It was found that the potential of human resources is very important in organizations - the focus of employees on solving problems, promoting motivation, and commitment to managing risks, thanks to which difficulties are overcome and resilience is ensured.

Conclusions

External and internal environmental factors that influence the resilience of organizations help organizations providing social services overcome difficulties. Human resource potential is a key factor in the resilience of social service organizations, as employee competence, motivation and engagement directly correlate with the organization's ability to adapt to challenges.

The resilience of social service organizations is enhanced by a strong organizational culture that promotes collaboration, effective risk management, trust between managers and employees, and clear communication during change.

The study revealed that the resilience of organizations providing social services directly depends on the ability of managers to make strategically sound decisions that ensure the strengthening of employees' competencies and professional training.

Strategic human resource management, the sustainability dimension, and promoting employee motivation are essential for these organizations to remain effective and resilient.

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DIFFERENCES IN METHODOLOGY FOR ASSESSING DOUBLE MATERIALITY: DO ENTITIES UNDERSTAND THE ESRS REQUIREMENTS IN THE SAME WAY?

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Abstract The adoption of the European Sustainability Reporting Standards (ESRS) under the Corporate Sustainability Reporting Directive (CSRD) has made the concept of double materiality a mandatory component of sustainability reporting in the EU. While prior literature has explored the theoretical basis for double materiality, there is limited empirical research on how entities are applying the ESRS guidance in practice. This study investigates whether companies interpret and apply the ESRS 2 IRO-1 requirements on double materiality assessment in a consistent and transparent manner. A comparative case study of seven multinational entities—Sanofi, Ørsted, Maersk, Puma, Mercedes-Benz, Carlsberg, and Rockwool—was conducted using publicly available sustainability reports. The analysis focused on the methodological components required under ESRS 2 IRO-1, including scoring systems, materiality parameters, weighting approaches, treatment of human rights, use of likelihood, and materiality thresholds. The findings reveal significant variation in how entities structure and disclose their materiality assessments. While core ESRS parameters are broadly applied, approaches differ in scoring logic, weighting of impact factors, and threshold clarity. Some companies deviate from ESRS guidance by applying likelihood to actual impacts, and only a minority provide transparent thresholds for materiality. The results suggest a lack of methodological standardization in early ESRS reporting. This paper contributes to the growing literature on ESRS implementation by highlighting current inconsistencies and underlining the need for clearer guidance to improve the comparability, and reliability of double materiality disclosures.

Keywords: double materiality, ESRS, Sustainability reporting.

Introduction

Sustainability reporting in the European Union has developed from a flexible, disclosure-based requirement into a structured, principle-driven framework. The European Union's Corporate Sustainability Reporting Directive (EU) 2022/2464 (CSRD) that is replacing Non-financial Reporting Directive 2014/95/EU (NFRD) and the accompanying European Sustainability Reporting Standards (EU) 2023/2772 (ESRS) represent a significant step forward towards harmonized disclosures of sustainability information designed to overcome the current lack of comparable, reliable and complete information and to bring sustainability and financial reporting on equal footing (The European Files, 2023). The standards cover the full range of environmental, social, and governance issues, including climate change, biodiversity and human rights (European Commission, 2023). As outlined in the European Commission's overview of corporate sustainability reporting, at the heart of these new reporting requirements lies the concept of double materiality, which requires entities to assess both impact materiality - entity's own impacts on people and the environment, and financial materiality- how sustainability issues might create financial risks for the entity (European Commission, 2021).

According to Chiara Del Prete, Chair, EFRAG's Sustainability Reporting Technical Expert Group the structure of the ESRS combines principles-based and rules based standard setting (The European Files, 2023), meaning it sets the general objectives and expectations of sustainability disclosures but leaves entities with substantial discretion in determining how to conduct their materiality assessments. This flexibility, while intended to account for organizational differences and sectoral specificities, introduces an inherent risk: inconsistent interpretations and methodologies that may reduce the comparability and reliability of disclosures. This concern is supported by a public consultation conducted by the European Commission, which highlighted widespread dissatisfaction with the quality of non-financial reporting. Notably, 72% of respondents supported requiring entities to disclose their materiality assessment process (European Commission, 2020). Several recent studies have since examined the application of double materiality in sustainability reporting. Correa-Mejía et al. (2024) showed that most entities claiming to apply double materiality do not follow EFRAG guidance. Dyczkowska and Szalacha (2025) explored practical challenges in implementation, while Bogdan et al. (2025), Beske et al. (2020), and Oll et al. (2024) identified inconsistencies in methodology, stakeholder engagement, and interpretation of ESRS.

However, while these studies address the conceptual and procedural complexity of materiality assessment, there is limited research comparing how different entities interpret and apply the ESRS double materiality requirements in practice. In particular, the disclosure practices under ESRS 2 IRO-1-which requires entities to describe their materiality assessment process-have not yet been systematically analyzed across companies.

This paper addresses that gap by examining whether entities understand and apply the ESRS requirements on double materiality in a consistent way. It presents a comparative analysis of seven multinational entities from different industries, focusing on how they disclose their materiality assessment methodology in alignment with ESRS 2 IRO-1.

Theoretical Framework

Evolution of Materiality in Reporting Standards

The concept of materiality has long been foundational in financial reporting. Items disclosed in financial statements are often determined by their materiality. Thus, the content of financial statements is, in part, as a result of judgments exercised around materiality (Brennan and Gray, 2005). With the rise of sustainability disclosure regulation, the concept of materiality now extends beyond financial reporting. Materiality is used to 'filter in' the information that is or should be relevant to users. Particular information is considered 'material' - or relevant - if it could influence the decision-making of stakeholders in respect of the reporting company (GRI, 2022). The current materiality landscape consists of three main approaches: financial materiality, impact materiality, and double materiality. According to Global Reporting Initiative (2022), these approaches should not be seen as competing, but rather complementary. Each serves a different purpose and audience. Investor-oriented standards are rooted in financial materiality, while impact-oriented standards reflect the needs of a wider stakeholder base. Double materiality brings both perspectives together, aiming to deliver a more complete and balanced view of sustainability-related risks and impacts. The International Sustainability Standards Board (ISSB), established by the IFRS Foundation, has developed a framework based solely on financial materiality, aimed at investors. In contrast, the Global Reporting Initiative (GRI) Standards focus exclusively on impact materiality, emphasizing an organization's effects on the environment and society. The European Sustainability Reporting

Standards, under the EU's Corporate Sustainability Reporting Directive, incorporate both perspectives through the principle of double materiality.

Double materiality concept was formally addressed for the first time in the *Guidelines on Non-Financial Reporting: Supplement on Reporting Climate-Related Information* (European Commission, 2019). The document introduced a new perspective by highlighting the importance of considering the “impact of [the company's] activities” when assessing the materiality of non-financial information. Non-Financial Reporting Directive (NFRD) incorporated a double materiality perspective, consisting of two dimensions:

- The reference to the company's “development, performance and position” reflects financial materiality, in the broad sense of information that may affect the value or performance of the company.
- The reference to the “impact of [the company's] activities” reflects environmental and social materiality, focusing on the effects the company has on people and the environment.

According to the European Lab Project Task Force on Preparatory Work for the Elaboration of Possible EU Non-Financial Reporting Standards (PTF-NFRS, 2021) the operationalization of the concept of double materiality is key to sustainability reporting standard-setting in the EU. The standard-setter should therefore adopt conceptual guidelines addressing the definition and implementation of the concept of materiality in each of its two dimensions. The concept was further developed by the European Financial Reporting Advisory Group (EFRAG). In 2022 EFRAG provided guidelines for double materiality process, steps and factors ranking in paper *ESRG 1 Double materiality conceptual guidelines for standard-setting*. Miettinen (2024) analysis concluded that materiality has evolved from a very vague concept in the NFRD, which leaves wide discretion to the reporting entity to define materiality and its material topics, toward a more clearly defined concept of double materiality in the CSRD. The NFRD attempted to reconcile aspects of “financial materiality” and “impact materiality” but provided little practical guidance. The CSRD define the concept of double materiality, consisting of impact materiality and financial materiality. The establishment of mandatory common ESRS aims to ensure comparability and relevance of disclosed information.

ESRS Double Materiality: literature review

Recent academic literature reflects a growing interest in exploring how materiality and more specifically, double materiality is being interpreted, operationalized, and challenged in the context of the ESRS. The ESRS are designed as principle-based standards, providing high-level objectives rather than rigid rules, and allowing companies to exercise professional judgment in how they interpret and apply requirements. While this approach supports flexibility and adaptability across different industries and contexts, it also introduces the risk of inconsistent implementation and reduced comparability of disclosures (PTF-NFRS, 2021).

Unerman and Zappettini (2014) were among the early voices emphasizing the importance of embedding materiality into sustainability reporting frameworks. Their work underlined the need for greater transparency and accountability, particularly regarding the rationale behind what companies choose to disclose or omit. Torelli, Balluchi, and Furlotti (2020) expanded this discussion by examining how companies apply materiality assessments in connection with stakeholder expectations. They argued that well-structured assessments can enhance the legitimacy and clarity of sustainability disclosures.

With the development of the ESRS under the CSRD, Baumüller and Sopp (2021) documented the shift from voluntary non-financial reporting to a more integrated and regulated framework. Their findings point to a clear progression in EU sustainability reporting practices, where double materiality plays a central role. De Cristofaro and Raucci (2022) focused on the evolution of the materiality matrix, a once-dominant tool in sustainability reporting. Their research revealed how the traditional matrix has fallen short under newer expectations and has gradually been replaced by more nuanced double materiality models aligned with EU directives.

A common theme in recent studies is the inconsistency in how companies apply materiality under ESRS guidance. Miettinen (2024), for example, found substantial variation in how companies interpret and disclose material topics, calling for clearer standard-setting and implementation support. Similar concerns are raised by Anas and Baghdad (2024), who advocated for standardized approaches and cautioned that the lack of shared understanding hinders comparability across reports.

Several recent studies investigate real-world implementation. Dyczkowska and Szalacha (2025) analyzed a construction company's efforts to adopt the ESRS materiality process and found difficulties around stakeholder inclusion, impact prioritization, and objective threshold setting. Likewise, Khairunnisa and Hartanti (2024) observed that companies in Indonesia struggled to integrate both financial and environmental perspectives in double materiality assessments.

Finally, Bogdan, Rus, and Matica (2025) explored how double materiality is incorporated into corporate strategy, using the fast fashion industry as a case. Their findings show that while alignment with ESRS is growing, entities still face significant complexity in translating regulatory expectations into strategy-driven decisions.

Existing academic research on double materiality in sustainability reporting has focused on its conceptual basis, the role of stakeholder involvement, and challenges related to defining thresholds and selecting relevant topics. Several studies examine how entities understand the idea of double materiality or how it is expected to be applied in sustainability reporting. However, with the European Sustainability Reporting Standards (ESRS) now in force, there is little research on how companies are applying the specific requirements in practice. In particular, ESRS 2 IRO-1 requires companies to disclose how they identify and assess material impacts, risks, and opportunities. While some studies point to inconsistencies in how materiality is interpreted or disclosed, there is limited comparative research on how companies approach these requirements in their actual reporting. This study helps fill that gap by comparing how companies describe their materiality assessment process and evaluating whether they apply the ESRS 2 IRO-1 guidance in a consistent way.

Methodology

This study examines how entities disclose their methodologies for assessing double materiality, as required by the ESRS. The focus is on Disclosure IRO-1, which addresses impact, risk, and opportunity assessment. The study applies analysis to sustainability reports from a sample of seven multinational entities. The analysis aims to evaluate how clearly and consistently entities define scoring parameters, apply weighting, and integrate ESRS disclosures.

Seven entities were selected using sampling based on four criteria:

- 1) Availability of a published double materiality methodology (within Disclosure IRO-1);
- 2) Clarity and relative detail of scoring systems or parameter definitions;

- 3) Sustainability report was audited;
- 4) Entities are from different sectors

The selected entities represent different industries and include: Sanofi, Ørsted, Maersk, Puma, Mercedes, Carlsberg, and Rockwool. All entities are subjects to EU sustainability reporting obligations and have published sustainability reports in accordance to ESRS and represent industries such as Alcoholic Beverages, Automobiles, Marine Transportation, Apparel, Accessories and Footwear, Building Products and Furnishings, Biotechnology and Pharmaceuticals, Electric Utilities and Power Generators.

To assess how entities understand disclosure ESRS 2 – IRO-1: Description of the process to identify and assess material impacts, risks, and opportunities, data was collected from the most recent sustainability reports of selected entities, for reporting period of 2024. The study focused specifically on whether and how entities report the required elements listed in paragraph 53 (a–h) of the ESRS IRO-1 Disclosure Requirement and aimed to identify whether entities use similar methodologies in practice.

The data was organized into comparative categories reflecting the structure and logic of the ESRS. For each entity, disclosures were reviewed for the presence and clarity of the elements provided in Table 1.

Table 1. Reviewed entities disclosures

Source: Authors, 2025

Category	Disclosure details
Scoring Scale	Whether the entity uses a numerical or qualitative scale to assess materiality.
Parameters for materiality	Whether the entity uses key parameters outlined in ESRS 1 section 3.4 for impact materiality- scale, scope, irremediability, and likelihood (for potential impacts), as well as key parameters for outlined in ESRS 1 section 3.5 for financial materiality- financial magnitude and likelihood.
Formula or calculation approach	Whether a specific formula is used to combine materiality factors or other calculation approach is disclosed.
Special considerations for Human Rights	Whether any explicit consideration is given to human rights impacts.
Weighting of Parameters	Whether all scoring factors are treated equally. If not, how weightings reflect the prioritization logic (e.g. squared severity).
Assessment of current risks and opportunities	Whether the entity uses probability criteria (likelihood) to evaluate current risks and potential opportunities.
Clarity of thresholds	Whether quantitative or qualitative thresholds are defined to determine materiality.

The collected data was analyzed using a qualitative comparative method, with an emphasis on identifying similarities and differences in how entities apply and disclose their double materiality assessment processes under ESRS 2 IRO-1. The analysis followed an interpretive orientation, focusing on how entities describe their internal logic, use of parameters, and methodological assumptions.

The analysis was carried out by comparing how each entity described its process for identifying and assessing material impacts, risks, and opportunities, based on the structure of ESRS 2 IRO-1. Multiple tables were created to compare all seven entities across the same key categories in order to see patterns, common practices, and key differences between entities in how they apply the double materiality assessment.

Each report was reviewed to check:

- 1) Whether the entity provided information for each ESRS IRO-1 requirement;
- 2) How clear and detailed the explanation was;

- 3) Whether the entity used similar or different approaches to other entities in the research.

Results

This section presents the findings from the analysis of how seven entities disclosed their methodology for assessing double materiality, based on ESRS 2 IRO-1. The comparison focused on whether entities followed a consistent structure and how clearly, they described key elements such as scoring, weighting, risk assessment, and thresholds.

Scoring Scale

All seven entities included in the analysis use a structured scale to evaluate impact and/or financial materiality, but the scales vary in design, range, and labeling (Table 2). These differences suggest that while a scoring system is commonly applied, there is no standardized approach across companies.

Table 2. Scoring scale disclosures

Source: Authors' own compilation based on entities annual reports, 2025

Entity name	Disclosed information analysis
Sanofi	Sanofi uses a numerical scoring scale of 1, 2, 3, and 5, rather than a continuous 1–5 range. This is applied to both impact and financial materiality assessments. The omission of “4” is not explained, it may reflect a preference for emphasizing clearer distinctions in priority levels. Entity has applied scoring from 1 to 4 for likelihood.
Ørsted	Ørsted uses a 1 to 5 numerical scale for scoring both severity and likelihood of impacts. What stands out is that Ørsted adds verbal labels to each level: 5 = Crucial 4 = Significant 3 = Important 2 = Informative 1 = Minimal This approach adds qualitative meaning to each numerical score, making the prioritization more understandable to non-expert stakeholders.
Maersk	Maersk applies a 1 to 5 scale to assess severity and likelihood. The scoring system appears standard but lacks further explanation regarding labels or how each score is defined or applied across topics.
Puma	Puma uses a broad numerical scale from 0 to 15, where 0 represents “no impact” and 15 indicates “maximum impact.” This scale is applied to both severity and likelihood. The use of such a wide range suggests an attempt to allow for more granular distinctions, but the reasoning behind the choice of 15 as the upper bound is not disclosed. This approach differs significantly from the 1–5 convention and may challenge comparability across companies.
Mercedes	Mercedes applies a three-point qualitative scale: Low, Medium, and High to assess severity and likelihood. This simple structure makes reporting easier to understand but lacks the nuance of multi-point numerical scales. No numerical equivalents are provided
Carlsberg	Carlsberg applies a 1 to 5 scale to assess severity and likelihood. The scoring system appears standard but lacks further explanation regarding labels or how each score is defined or applied across topics.
Rockwool	Rockwool provides a detailed breakdown of its scoring parameters and includes definitions for each level on a 1 to 5 scale. Each parameter is supported with descriptive criteria for the lowest and highest scores, clearly linking to impact severity and financial relevance.

All seven entities in this study used a structured scoring approach, but the formats and definitions varied significantly, suggesting an absence of methodological convergence and limited standardization across the field. The most common approach was using a 1 to 5

numerical scale, applied by entities such as Ørsted, Maersk, Carlsberg, and Rockwool. Among these, Ørsted distinguished itself by adding qualitative labels to each score (e.g., ‘crucial,’ ‘significant’), which may improve stakeholder understanding and interpretation of scores. However, the criteria for assigning these labels were not disclosed, limiting replicability. Only Rockwool provided a comprehensive breakdown of its scoring system, offering concrete descriptions of what constitutes low or high scores across parameters like scale, scope, and irremediability. This not only aligns well with ESRS, but also supports better stakeholder understanding.

Sanofi applied a non-linear scale (1, 2, 3, and 5) and used separate scales for likelihood (1–4). The omission of “4” from the severity scale is unexplained although mathematically structured and visualized. Puma, on the other hand, employed a broader 0 to 15 scale, which is unusual in the context of analyzed materiality assessments. This level of granularity suggests an effort to capture finer differences between topics, but without a justification for the 15-point ceiling, the interpretive value of the scale remains unclear. Mercedes-Benz used a three-level qualitative scale (low, medium, high). While this makes disclosures more accessible to a non-expert stakeholder, it lacks the nuance necessary to reflect the complexity of ESG impacts, risks and opportunities. The absence of numerical equivalence also limits its usability in comparative or quantitative analysis.

Overall, the variety in scoring systems used across entities reveals an early-stage inconsistency in methodological implementation of the ESRS standards. While the use of scoring itself is widespread, the lack of shared definitions, scoring logic, and rationales makes cross-entity comparability difficult.

Parameters for materiality

All entities used key parameters outlined in ESRS 1 section 3.4 to assess impact materiality by using severity (which consists of scope, scale and irremediability), combined with likelihood (for potential impacts) as the main factors for assessing impact materiality. For financial materiality all seven entities disclosed using financial magnitude and likelihood to assess risks and opportunities in line with the key parameters outlined in ESRS 1 section 3.5.

It is important to note differences in how the likelihood parameter is used across companies. ESRS 1 section 3.4. articles 45 and 46 states that likelihood should be applied only for potential impacts, however, some entities applied likelihood to actual impacts by automatically assigning the maximum score, which contradicts the intent of ESRS 1 to apply likelihood only in the context of potential impacts. This approach may lead to an overestimation of actual impacts, which could distort the materiality analysis and misrepresent the relative significance of sustainability issues.

Formula or calculation approach

There is significant variation in how entities disclose the formulas or calculation logic behind their materiality assessments. As detailed in Table 3, some provide explicit formulas for impact and/or financial materiality, while others describe general principles without precise calculations. A few entities do not disclose any methodology publicly.

Table 3. Formula or calculation approach disclosures

Source: Authors' own compilation based on entities annual reports, 2025

Entity name	Disclosed information analysis
Sanofi	Sanofi provides the most detailed formula for impact materiality: Impact Materiality = Severity ² × Likelihood For financial materiality, Sanofi uses a similar approach: Financial Materiality = Financial Effect Size ² × Likelihood Entity has provided a reasoning for use of this specific formula in the report: “Severity and financial effect were squared to give further emphasis to the severity over the likelihood of the impact, risk, or opportunity “
Ørsted	Ørsted refers to combining financial magnitude with likelihood, but does not provide a specific formula for either impact or financial materiality in its disclosures. The description is general and lacks methodological transparency.
Maersk	Maersk does not disclose a specific formula for impact scoring. For financial materiality, it refers to using scenario-based modeling, where the highest-impact scenario is used to assign risk scores. This suggests a qualitative-quantitative hybrid approach but lacks clear scoring logic.
Puma	Puma explains that it assesses impact materiality by combining a severity score- based on scale, scope, and irremediability- with a likelihood factor. The likelihood is expressed as a value between 0 and 1, representing the probability of the impact occurring. For financial materiality, Puma uses a similar method by combining a financial effect score (ranging from 0 to 5) with a likelihood factor between 0.65 (low likelihood) and 1 (almost certain). This approach introduces a weighted component into the scoring and suggests a tailored evaluation of risk based on probability.
Mercedes	Mercedes does not specify any formula or detailed approach for impact or financial materiality in its public reporting.
Carlsberg	Carlsberg applies parameters like severity and likelihood but does not disclose any formula or scoring calculation for either impact or financial materiality.
Rockwool	Rockwool states that severity is calculated by taking the average of the scores assigned to scale, scope, and irremediability, each rated from 1 to 5. For financial materiality, the entity combines the financial effect score and the likelihood score- each rated on a scale from 1 to 5- and calculates the average of the two.

Variation in disclosure practices highlights a broader lack of methodological alignment across reporting entities. While some, like Sanofi and Rockwool, offer clear and structured formulas, others disclose only general principles or omit calculation logic entirely. This lack of transparency reduces the comparability and auditability of materiality assessments and may limit stakeholders' ability to evaluate how consistently ESRS requirements are applied.

Special considerations for Human Rights

As outlined in ESRS 1 section 3.4 article 45, in the case of a potential negative human rights impact, the severity of the impact takes precedence over its likelihood. Several entities explicitly refer to human rights as a distinct category within their materiality assessments, often giving these impacts greater weight or attention due to their potential severity and ethical significance. While not all entities provide a specific methodology for treating human rights differently, those that do assign higher severity weighting or explicitly state that severity is prioritized over likelihood (Table 4).

Table 4. Disclosures regarding considerations for Human Rights
Source: Authors' own compilation based on entities annual reports, 2025

Entity name	Disclosed information analysis
Sanofi	Sanofi does not disclose any special considerations or adjusted weighting for human rights impacts.
Ørsted	Ørsted explicitly states that for potential negative impacts related to human rights, the severity score is weighted three times more heavily than likelihood. This 3:1 ratio reflects the entity's effort to emphasize the importance of these issues within its materiality framework.
Maersk	Maersk states that human rights impacts receive a higher severity weighting, recognizing their critical importance and potential consequences. In the case of human rights impacts, the entity adjusts this balance by applying a 75/25 weighting, giving more importance to the potential severity of those issues.
Puma	Puma does not disclose any special considerations or adjusted weighting for human rights impacts.
Mercedes	Mercedes does not disclose any special considerations or adjusted weighting for human rights impacts.
Carlsberg	Carlsberg states that human rights impacts are given specific attention, and indicates that these may carry higher severity weighting to reflect their critical importance. However, the entity does not provide a formula or describe how this prioritization is applied in practice.
Rockwool	Rockwool states that whenever a potential negative human rights impact was identified, the severity of the impact took precedence over its likelihood. However, the entity does not provide a formula or describe how this prioritization is applied in practice.

ESRS emphasizes that in cases of negative impact to human rights severity should take precedence over likelihood, however some of the reports are not aligned with this requirement. Only Ørsted, Maersk, Carlsberg, and Rockwool reflect this in their methodology, though the degree of detail varies. The remaining entities do not mention human rights-specific treatment. This inconsistency makes it difficult to compare material impacts between entities that may have similar negative impacts to human rights, but have not applied or applied different scoring to them.

Weighting of parameters

Companies' approaches to weighting parameters for materiality vary, particularly when evaluating potential impacts or human rights issues. While some apply equal weighting between severity and likelihood, others give greater emphasis to severity, either as a general rule or for specific categories. Not all entities disclose their weighting logic clearly or disclose it at all (Table 5).

Table 5. Disclosures regarding weighting of parameters
Source: Authors' own compilation based on entities annual reports, 2025

Entity name	Disclosed information analysis
Sanofi	Sanofi assigns greater importance to severity by applying a squared weighting, meaning severity has a stronger influence on the final score than likelihood.
Ørsted	Ørsted applies equal weighting for actual impacts, treating scale, scope, and irremediability equally. For potential negative impacts, severity and likelihood are weighted 1:1. However, in the case of human rights-related potential impacts, severity is prioritized using a 3:1 weighting over likelihood
Maersk	Maersk uses a 50/50 weighting between severity and likelihood for most impacts. In the case of human rights impacts, the entity adjusts this balance by applying a 75/25 weighting, giving more importance to the potential severity of those issues.

Puma	Puma combines the severity parameters- scale, scope, and irremediability- into a single value, which is then multiplied by a likelihood factor ranging from 0 (no chance) to 1 (almost certain).
Mercedes	Mercedes does not disclose any information regarding how severity and likelihood are weighted in its materiality process.
Carlsberg	Carlsberg states that severity is calculated as the average of three parameters: scale, scope, and irremediability (negative impacts only), with scores ranging from 1 to 5. The entity does not provide any information about how likelihood is weighted
Rockwool	Rockwool evaluates impact materiality using four parameters: scale, scope, irremediability, and likelihood. Each parameter is scored on a scale from 1 to 5, and the scores are treated equally in the assessment. For financial materiality, the size of the potential financial effect (risk and/or opportunity) is combined with its likelihood, with both scored on a scale of 1 to 5. The final financial materiality score is calculated as the average of the two values.

Overall, the analysis reveals notable variation in how entities approach the weighting of materiality parameters. While some entities provide clear explanations of how severity and likelihood are balanced - occasionally adapting this balance for specific issues such as human rights - others do not disclose their weighting approach at all. This inconsistency in transparency makes it difficult to assess how rigorously entities apply the ESRS principles in practice and may affect the comparability and credibility of materiality outcomes.

Assessment of current risks and opportunities

According to ESRS 1 section 3.4, likelihood should only be applied to potential impacts, not actual ones. Actual impacts are those that have already occurred or are ongoing, and therefore their likelihood is not relevant. However, entities differ in how strictly they follow this guidance. Some explicitly separate the treatment of actual and potential impacts, while others assign a fixed likelihood score to actual impacts, which may contradict ESRS requirements (Table 6). This approach may lead to an overestimation of actual impacts, which could distort the materiality analysis and misrepresent the relative significance of sustainability issues.

Table 6. Disclosures regarding assessment of current risks and opportunities

Source: Authors' own compilation based on entities annual reports, 2025

Entity name	Disclosed information analysis
Sanofi	Sanofi states that if an impact is judged to be actual, its likelihood is automatically set to 4 (on a scale of 1 to 4).
Ørsted	Ørsted states that actual impacts are scored based only on current conditions, without applying likelihood.
Maersk	Maersk states that actual impacts are scored based only on current conditions, without applying likelihood.
Puma	Puma does not specify in public documents whether it distinguishes between actual and potential impacts in terms of likelihood application.
Mercedes	Mercedes does not specify in public documents whether it distinguishes between actual and potential impacts in terms of likelihood application.
Carlsberg	Carlsberg states that actual impacts are automatically scored as 5, while potential impacts, risks, and opportunities are scored on a scale from 1 to 4.
Rockwool	Rockwool states that if an impact is judged to be actual, its likelihood is automatically set to 5 (on a scale of 1 to 5).

Although ESRS 1 clearly states that likelihood should only apply to potential impacts (section 3.4, articles 45 and 46), some companies- including Sanofi, Carlsberg, and Rockwool-

assign a fixed likelihood score (typically the maximum value) to actual impacts. This approach contradicts ESRS guidance and risks inflating the perceived materiality of issues that have already occurred. In contrast, Maersk and Ørsted actual impacts were assessed based on present conditions only, excluding likelihood, which is more in line with the standard.

Clarity of thresholds

The ESRS framework does not prescribe a specific numerical threshold for materiality but expects undertakings to explain how they determine what is considered material. As shown in table 7 entities apply a variety of thresholds- some numerical, some descriptive- based on internal scales for impact or financial risk and opportunity (IRO) scoring. However, the transparency and precision of threshold-setting vary significantly across the sample.

Table 7. Disclosures regarding applied threshold

Source: Authors' own compilation based on entities annual reports, 2025

Entity name	Disclosed information analysis
Sanofi	Sanofi applies a clear numerical threshold: issues scoring 18 or above are considered material for both impact and financial assessments. This threshold stems from their scoring formula, where severity is squared and multiplied by likelihood, creating a wide scoring range and emphasizing the importance of higher-severity topics.
Ørsted	Ørsted applies a verbal threshold. Impact or financial risks and opportunities are considered material if they are rated as 'significant' or 'crucial'. These categories correspond to the upper end of Ørsted's 1–5 scale, 4 and 5 numerical boundaries.
Maersk	Maersk applies a numerical threshold of 3 out of 5 for impact materiality. For financial materiality (risks and opportunities), the threshold is stated as lower than ERM (Enterprise Risk Management) thresholds, allowing ESG-related topics with moderate risk to be captured. No specific number is provided for financial materiality.
Puma	Puma applies a 0–15 scale and considers impacts scoring 8 or higher as material. For risks and opportunities, a separate threshold of 3 or above is applied.
Mercedes-Benz Group	Mercedes applies a qualitative threshold: issues with high severity are always material. Impacts with medium severity and high likelihood are also considered to be material. These categories are descriptive rather than numerical, the report does not provide exact values.
Carlsberg	Carlsberg does not specify thresholds applied for impact or financial materiality in its public documents.
Rockwool	Rockwool states that for impact materiality, the threshold is set at above two. Topics scoring two or less are considered to have minimal informative value. For financial materiality, the threshold is set at a score of three or above

The analysis shows a wide range of approaches to defining materiality thresholds, both in format and level of disclosure. Some entities, such as Sanofi, Puma, and Rockwool, provide clear numerical thresholds linked to their scoring models, while others rely on qualitative descriptions or omit threshold information altogether. The absence of a standard threshold-setting approach in the ESRS leaves room for interpretation, but inconsistent transparency makes it difficult to evaluate how rigorously materiality determinations are applied. As thresholds directly influence what is ultimately reported, their clarity is essential for ensuring the relevance and comparability of disclosures.

Discussion and Conclusions

This study contributes to the growing research on sustainability reporting by offering one of the first comparative assessments of how companies disclose their materiality assessment

methodologies under the ESRS framework—specifically ESRS 2 IRO-1. While prior literature has explored the conceptual development of double materiality (Baumüller & Sopp, 2021; GRI, 2022) and its theoretical significance (Black, 2008; OECD, 2015), limited empirical research has been conducted on how entities interpret and implement this requirement in practice.

By analyzing the methodologies disclosed by seven large entities across different industries, this study addresses key gaps identified in earlier research: the lack of methodological consistency (Miettinen, 2024), limited disclosure of scoring and threshold logic (Anas & Baghdad, 2024), and challenges in stakeholder integration and weighting (Dyczkowska & Szalacha, 2025). In contrast to case-specific analyses, this paper offers a cross-sectional view, enabling comparative insights into how different interpretations of ESRS guidance may influence the reliability and comparability of sustainability disclosures.

This study analyzed how seven reporting entities from different industries disclosed their methodologies for assessing double materiality, based on the requirements of ESRS 2 IRO-1. The analysis focused on the structure and clarity of disclosures related to scoring systems, use of key parameters, weighting approaches, treatment of human rights, application of likelihood, and threshold definitions.

All entities used the key parameters outlined in ESRS 1 sections 3.4 and 3.5 to assess impact and financial materiality, combining severity (based on scale, scope, and irremediability) with likelihood for potential impacts and financial risks. However, the way these parameters were applied differed significantly. Entities used varied scoring scales, applied different weightings, and in some cases, incorrectly included likelihood for actual impacts, which contradicts ESRS guidance and may lead to overestimated materiality scores. The lack of standardization in methodologies impacts the comparability and reliability of double materiality assessments. Although all entities use structured scoring systems, the inconsistencies in scale ranges, weighting, threshold definitions, and likelihood application make it difficult to benchmark or aggregate results across organizations. For example, Puma's 0–15 scale is not easily comparable with Maersk's 1–5 scale, and Mercedes' qualitative categories cannot be mapped directly to numeric systems.

Alignment with ESRS requirements was partial. While most entities demonstrated understanding of core concepts, several deviated from guidance, particularly in applying likelihood to actual impacts and in applying prioritization of severity over likelihood in topics linked to negative impacts to human rights. The findings also show that methodological transparency is inconsistent. Some entities clearly disclosed weighting, formulas and thresholds, while others provided only general descriptions or omitted critical elements that are meaningful for non-expert stakeholders. Furthermore, some entities do not clearly disclose how thresholds for materiality are determined or applied. While some, like Sanofi and Puma, set explicit numerical thresholds, others rely on quantitative thresholds or do not provide them at all. This reduces transparency and undermines confidence in the consistency of what entities choose to report. The treatment of human rights impacts was mentioned in several cases, but only a few entities reflected the ESRS requirement to prioritize severity over likelihood in a clearly defined way. These differences suggest that entities are still in the early stages of interpreting and applying the ESRS framework. The lack of methodological consistency limits the comparability of materiality assessments across companies.

This study has a few important limitations. First, only public information was used: The analysis is based on what entities chose to publish in their reports. Internal methods or decision-making processes that were not disclosed could not be considered. Second, Early stage of reporting: Since ESRS is a new standard, many entities are still developing their approaches. Disclosures may improve or change in future reports. Third, Small and selective sample: Only

entities that had relatively clear disclosures were included. The results may not represent all entities or industries. Additionally, some interpretation involved: Even though a consistent method was used, analyzing written reports always includes a degree of subjective judgment. Further research could explore how companies' methodologies evolve over time, whether disclosure practices converge across industries, and how regulatory oversight and assurance influence the implementation of ESRS-based double materiality processes.

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INADEQUATE YOUTH PREVENTION AS A RISK FOR SOCIETY AND THE POLICE

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Abstract. *The responsibilities of police officers have expanded significantly over the years. New operational challenges resulting from crises —such as the war in Ukraine, refugee movements, or the COVID-19 pandemic— have presented new challenges. Despite these new challenges, traditional responsibilities must remain a priority. Instead, continuous development and evaluation of measures and procedures are required. A lack of foresight can create risks in police operations and investigations. **Youth crime prevention** is one of these crucial aspects that law enforcement must address. Recent developments have significantly diverted attention from youth crime prevention. However, effective youth crime prevention plays a key role in long-term crime prevention. What approach does law enforcement take in handling juvenile delinquency, and what types of prevention strategies are applied? How do police officers interact with young offenders? These are essential questions that an evolving field of police science must examine.*

Keywords: *youth crime prevention, police intervention, police strategies*

Introduction

Understanding a processual society and becoming aware of its dynamics and effects are among the core competencies conveyed by Norbert Elias throughout his life. His view of sociological processes called for a deeper engagement with both the individual and society. According to Elias, individuals and society do not exist independently, but rather form a kind of interdependent community, a network of interdependencies (Elias 1977). This perspective serves as the foundation for the following critical analysis of the interactions between juvenile offenders, often labeled and personified as criminals, and the police (in particular) and juvenile court assistance. The focus lies on how these young offenders perceive institutions of state control. The central guiding questions are: What does police prevention and social work mean, and what role does police science play? What is the responsibility of the police, and how should they position themselves within the broader network of actors? Policing today faces constant change and growing challenges. Simultaneously, professionalization is advancing, and the number of related academic disciplines concerned with police work continues to rise. Police officers are now expected to develop a wide range of competencies to handle complex

incidents, requiring legal knowledge, but also empathy, sociological and pedagogical skills. Officers must function as mediators, psychologists, paramedics, and digital experts (Kühne 2021). Not only the institution of the police but also its operational environment is subject to transformation. As society accelerates, individuals must acquire more complex competencies, creating a long-term interdependence (Bidlo and Mahnken 2021). It remains questionable whether increased specialization enables officers to meet these expectations. Juvenile delinquency is both widespread and episodic (Arbeitsstelle Kinder- und Jugendkriminalitätsprävention 2015). It often begins early in life and typically ends with entry into professional adulthood. Only a minority pursue a long-term criminal path (LKA Nordrhein-Westfalen 2020; Feltes and Schilling 2015; Haus des Jugendrechts 2018; Scherr & Bauer 2024). However, society's perception is frequently shaped by sensationalist headlines such as "Youth gangs becoming increasingly brutal" (Bild.de 2019). In contrast, reality shows a different picture. For instance, an article in *Polizei Dein Partner* states: "When minors become offenders – declining case numbers stand in contrast to spectacular individual cases" (Gewerkschaft der Polizei 2021). This gap between perception and reality is often referred to as the subjective sense of security. Dark figure studies have confirmed that public perception of crime often does not match actual statistics (Ministerium des Inneren des Landes Nordrhein-Westfalen 2023). Older studies, such as the 2016 Bochum Dark Figure Study, identified various causes for this misperception. A ten-year statistical comparison (LKA Nordrhein-Westfalen 2020) shows a steady decline in registered suspects under the age of 21, from 105,915 in 2014 to 85,948 in 2021, a decrease of ~18.88%. Since 2022, however, a counteracting trend has emerged, accompanied by a significant increase. This can finally be attributed to the COVID-19 pandemic, though it does not fully explain the massive surge. Youth crime declined between 2010 and 2021 (from 68,166 in 2010 to 54,156 in 2021)¹. However, in 2022, a significant increase was recorded, mirroring the rise in the number of suspects (from 54,156 in 2021 to 75,088 in 2023). The neglect of youth prevention measures and various societal issues may have contributed to the increase. Nevertheless, statistical values are often distorted. The Police Crime Statistics (PKS), for example, only account for crimes in the bright field and for identified suspects. The dark field remains statistically elusive. This paper first examines the relevant institutional actors before exploring the collaborative concept of the Haus des Jugendrechts (House of Juvenile Justice). Subsequently, the current status and potential for process-driven improvements are discussed.

Theoretical approach

Various actors involved in the issue of youth delinquency will be examined below, with a focus on their respective roles in relation to police action. This analysis follows perspectives from police science, which is understood as an interdisciplinary discipline (Kühne, 2021). Police science can be defined as "the science of the police in its being and its obligations. It deals with the police as a function, as an institution, and with its actions" (Neidhardt, 2007). The inclusion of institutions that are also directly involved in the maintenance of internal security is essential to establish a "comprehensive, interdisciplinary, and transnational approach to analyzing internal security" (Feltes, 2007). An increasing number of institutions are involved in addressing police-related issues, which means that the establishment of internal security and crime prevention does not necessarily originate solely from the police (Feltes & Schilling, 2015). The effective prevention of juvenile delinquency must also involve

¹ The total number of all opera of crimes in NRW has risen since 2011.

the judicial system (Kutschaty & Kubink, 2011). These actors form a network of institutions in which the police continue to be regarded as the primary guarantor and facilitator of internal security. Prevention can be conceptually divided into a three-level model: primary, secondary, and tertiary prevention. While there are valid arguments for a critical review of this model (Holthausen & Hoops, 2015), it still provides a clearer understanding of the overall structure. The two primary actors examined in this study, the police and youth court assistance, are involved in both primary prevention (before a criminal act is committed) and secondary prevention (after an act has occurred, during its processing). In addition, the structures within the House of Juvenile Justice enable access to tertiary prevention (Feltes & Schilling, 2015). Youth welfare services in this context are understood as youth court assistance. Although terminology may vary, both the literature and practical application refer to youth welfare as a division of the youth department within the court system.

What is the police's objective when dealing with juvenile delinquency, and what type of prevention strategies are applied? How do police officers behave toward young offenders? These are pressing questions that an increasingly relevant field of police science must explore. A society in a constant state of progress cannot, and will not, respond to individual "failures" by treating them as isolated incidents; rather, these individuals are typically stigmatized as members of fringe groups. Those who reject or fail to internalize the dominant society's decision-making processes frequently enter into conflict with the system. In such cases, the first actor of this system is often the police, as an institution of social control. Stigmatization, as described above, is clearly reflected in the term "juvenile repeat offender" (Bliesener et al., 2010; Holthausen, 2013). As an instrument of criminal policy, the term lacks definitional and prognostic precision (Neubacher, 2010; Feltes & Schilling, 2015). Nonetheless, it has undeniably established itself in the minds of police officers (Bliesener et al., 2010), especially since the literature itself has largely ceased to use alternative terminology (Riekenbrauk, 2015). It is also increasingly evident that especially young officers exhibit strong punitiveness in their dealings with known juvenile offenders. "There is a growing tendency to solve problems quickly and decisively through repressive measures" (Feltes & Schilling, 2015). The persistent phenomenon of insubordination, though not new and still insufficiently addressed—continues to result in harsh responses toward young offenders (Behr, 2018; Bliesener et al., 2010). Such responses may directly contradict the idea of processing offenses constructively and fostering prevention. In a case from spring 2021, reported to the author by multiple colleagues, a juvenile fled from officers on a moped and was ultimately apprehended. When confronted, he allegedly told the officer that he "pays the police" and that the officer should focus on catching real criminals. The officer reportedly replied that he preferred catching "criminals like him" and would personally ensure that the youth would never obtain a driver's license. The frequency of such incidents remains unclear. The intent and objectivity of the account must also be questioned. However, the emotional manner in which the situation was recounted suggests that others present did not necessarily agree with the officer's statement. The precise context remains uncertain and unverified, highlighting its anecdotal nature. Nonetheless, the case shows parallels to issues raised by Behr regarding officers' reactions to perceived disrespect and the persistence of a "warrior mentality" in police culture. This mindset may reflect an underlying tendency toward verbally aggressive communication (Hermanutz & Weigle 2023). Officers' reactions to perceived disrespect are often personal responses to what they interpret as an attack, rooted in a misunderstanding of disrespect and violence (Bartsch & Kibbe 2023; Behr, 2018). While initial encounters between children (Petzoldt, 2017) and adolescents (Feltes & Schilling, 2015) and the police are crucial to their perception of state authority, there is often a discrepancy between theoretical understanding

and practical experience. This also affects how the police perceive and execute social education roles attributed to them (Riekenbrauk, 2015; Feltes & Schilling, 2015). Even though many officers are unaware of this responsibility, or do not see it as their own, it is demonstrably a part of everyday police work, albeit under a different label (Behr, 2018). In practice, such tasks are often grouped under the broader category of crime prevention. Police-led initiatives such as “Gelbe Karte” (Yellow Card Project) or Crash Kurs NRW are examples of primary prevention projects initiated by the police or the Ministry of the Interior of North Rhine-Westphalia (IM NRW). These projects could be described as socio-criminal policy efforts, thereby framing social work as a more prominent aspect of the police’s responsibilities. Other projects, such as KURS NRW and Kurve kriegen, align more closely with secondary prevention. There is currently no standardized research on the impact of verbal conflict situations involving police officers and young offenders (Behr, 2018). The police seem to struggle with the social transformations they face. Officers today are expected to represent a new, “ambivalent” type of police professional, far removed from the traditional types described by Behr: the warrior and the patrolman. As previously noted by the author, police officers can increasingly be seen as legally trained social workers whose roles are no longer captured by such outdated labels. They are expected to demonstrate composure, a balanced attitude, and refined skills in dealing with young offenders. While not all competencies fall neatly into this category, it represents an aspirational model of policing. In this context, insubordination would no longer be understood as a question of respect but rather as a communicative challenge in daily police operations. To conclude this section theoretically: within the North Rhine-Westphalia police force (NRW), there is currently no specific continuing education program for officers on targeted communication or engagement with young offenders. Only during their training at the University of Police and Public Administration (HSPV NRW) are such topics covered, within the submodules 1.3.1, 1.3.2, 2.1.2, and 2.2.3, dealing with crime prevention and juvenile delinquency (HSPV NRW, 2024). However, the number of hours allocated to these subjects is relatively low compared to legal content. This suggests that social competencies in dealing with youth crime are mainly acquired during field practice. Yet the acquisition and sustainability of these competencies, and the experience with preventive approaches, remain largely unexamined. From the author’s perspective, this creates a clear research mandate for police science to investigate the development of such competencies and how they manifest in daily conflict situations and police encounters (Breyman, 2006).

Youth court assistance (Jugendgerichtshilfe, JGH), also referred to as youth welfare services in criminal proceedings, is a department within municipal youth welfare offices. The two terms are largely synonymous. “The particularity of youth court assistance within the range of responsibilities of the youth welfare office lies primarily in the fact that typical service-related aspects (§ 52, paragraphs 2 and 3 of SGB VIII) are combined with other sovereign functions” (Trenczek, 2009). Accordingly, it is the legal duty of the youth welfare office, specifically of youth court assistance, to cooperate with the police as an actor of social control and to maintain direct communication. A critical discussion of the role, development, and capacity of youth welfare services in this cooperation seems unavoidable. In the Fifth Youth Report from 1980, the federal government stated that youth services were overwhelmed and inadequately prepared for their responsibilities. It was so severe that youth services were “hardly in a position to effectively solve the problems of children and adolescents who are in poor social and educational conditions”. This assessment has evolved over the decades. The expansion of youth protection, the rights of children and adolescents in criminal proceedings, and the presence of youth welfare services during legal processes are positive developments.

This is also reflected in the 14th Child and Youth Report from 2014: “Child and youth welfare services have changed significantly in their contours since German reunification and the introduction of the Child and Youth Welfare Act in 1990, and again since the turn of the millennium”. The range of services, cooperation models, and support mechanisms have improved considerably over 34 years and are now more future-oriented. In criminal proceedings, youth welfare services fulfill their legal mandate by offering support, accompanying juveniles during trials, and providing interventions under juvenile court orders. These interventions can range from anti-aggression training to social skills courses or community service placements. However, the commission responsible for the 14th report also notes that current offerings for delinquent youth, particularly those to which youth services have only limited access, must be reviewed and improved (Federal Ministry for Family Affairs, Senior Citizens, Women and Youth, 2014). This applies especially to repeat offenders and young people with a migration background. The commission therefore emphasizes the need for sufficient resources so that youth welfare services can fulfill their role. The 1980 appeal to better equip youth services with staff and funding is reiterated in the 2014 report. Although youth services have adapted to ongoing changes and have benefited from more qualified staff and increased funding, they often still lack the time, access to relevant contexts, and personnel needed to fulfill their mandate. The central dilemma of youth welfare in criminal proceedings lies in the duality of help and punishment (Lohrmann & Schaerff, 2021; Federal Ministry for Family Affairs, Senior Citizens, Women and Youth, 2014). Punishment rarely has a sustainable educational effect, even though it does not completely preclude education. Especially the overloaded juvenile justice system fails to do justice to both the pedagogical aim and the punitive expectations of society, as these are inherently incompatible (Müller & Sünker). This makes it a particular challenge for youth welfare services to create spaces where work with young offenders can take place (Schweitzer & Weber, 2022) without the pressure of state control (secondary prevention). At the same time, youth welfare (especially family support services) is expected to act preventively at an early stage (Görge et al., 2010; Holthusen & Hoops, 2015), in cooperation with other institutions and through early detection mechanisms (primary prevention). Therefore, youth welfare depends on timely reports from its partner institutions, such as case workers in youth offices and the police, to initiate appropriate measures and interventions. This requires a well-developed culture of reporting and inter-agency communication. Such cooperation between police and youth services is a core element of the House of Juvenile Justice concept. However, even here, the preventive and pedagogical objectives of youth services appear to be under considerable pressure.

The first House of Juvenile Justice (Haus des Jugendrechts) was established in Stuttgart in 1999 and is considered a pioneering model that inspired similar initiatives across Germany. In North Rhine-Westphalia (NRW), the first House of Juvenile Justice opened in Cologne in 2009. Today, NRW operates four such institutions, which are increasingly regarded as effective tools in combating crime and reducing persistent criminal careers (Haus des Jugendrechts, 2018). The collaboration between police, public prosecution, and youth court assistance allows for a more efficient and holistic approach to criminal cases, with a focused view on the juvenile offender (Haus des Jugendrechts, 2018). The underlying idea of the House of Juvenile Justice is to process cases involving repeat juvenile offenders more swiftly and with fewer bureaucratic barriers. A central objective is to achieve “the highest possible effectiveness in addressing youth delinquency through a parallel and holistic approach by the participating institutions” (Linz, 2012). Following the foundation in Stuttgart, other federal states adopted the concept. In NRW, the four currently active Houses of Juvenile Justice are

located in Cologne (2009), Paderborn (2014), Dortmund (2016), and Essen (2018), all of which handle juvenile delinquency cases. According to the original concept, officers from the criminal police, representatives of the public prosecutor's office, and youth court assistance staff work together under one roof to establish closer contact with young offenders and ensure rapid coordination on procedural matters. In addition, these institutions maintain relationships with external cooperation partners to offer support beyond the formal justice system (Haus des Jugendrechts, 2018). By networking these three key actors of the criminal justice system, a new foundation of trust is intended—particularly between youth welfare services and the police/prosecutor's office, which has historically been marked by skepticism (Feltès & Schilling, 2015). While the police focus largely on repressive measures, the role of youth welfare services is to engage in “relationship and trust-building work” (Feltès & Schilling, 2015). This can lead to conflict, especially when the relationship between young offenders and the police has already been damaged. Newer ideas—such as the concept of a virtual House of Juvenile Justice—have met with skepticism, and some critics have labeled the idea a form of “label fraud” (Lohrmann & Schaerff, 2021). However, the effectiveness of such concepts remains to be seen. The Houses of Juvenile Justice admit only so-called intensive offenders. These juveniles are discussed in so-called evaluation conferences, in which their development and potential for reintegration are assessed. Based on certain criteria (Haus des Jugendrechts, 2018), candidates are proposed for the program and assigned a dedicated caseworker. For the program to succeed, the young participants and their guardians are expected to act responsibly and cooperatively. If issues arise during case management, case conferences may be held with cooperation partners to determine specific procedural strategies, which are then communicated to the juvenile and their legal guardians. Such conferences are typically necessary when the frequency or severity of criminal acts increases. The program can end positively, negatively, or without a defined outcome. In Cologne, a distinction is made between “optional discharge” and “mandatory discharge”. In both cases, discharge is only possible with unanimous consent from all cooperating institutions. Each partner has voting rights and can delay the decision with a dissenting vote (Haus des Jugendrechts, 2018).

These concepts and their outcomes should be continuously examined and evaluated through scientific monitoring in order to improve procedures and ensure transparent measurement of success. However, such evaluations are often carried out by the ministries themselves, commissioned by them, or presented in the institutions' own reports. In the 2018 annual report of the Cologne House of Juvenile Justice, it is acknowledged that the project's success is difficult to measure statistically, as it relies largely on the recidivism rates of young offenders, an indicator that is subject to significant fluctuation. Nevertheless, it is precisely this recidivism rate that must be considered a key metric for success (Dessecker & Schäfer 2023²). Accordingly, the effectiveness of these institutions is highly dependent on the participation and cooperation of the juvenile offenders. If the support measures cannot be implemented, the system defaults to traditional repressive methods (Haus des Jugendrechts, 2018). As such, the collaboration between the involved institutions can be categorized primarily as a form of tertiary prevention, a reactive strategy adapted to reduce the future impact of offending behavior. However, alongside the positive aspects of the model, its limitations must also be acknowledged. The Houses of Juvenile Justice have been sharply criticized for their operational methods and underlying philosophy. Critics have repeatedly described them as political instruments—tools of criminal policy that focus less on the

² In the experimental group from the House of Juvenile Justice, 70% of the young people and adolescents remained without subsequent entries.

juveniles themselves and more on the broader phenomenon of crime (Riekenbrauk, 2015). They are perceived as visible responses to criminal behavior and as a reaction to growing fear of crime. In his article “Houses of Juvenile Justice – Assessment of a Cooperation Model”, Riekenbrauk, supported by further sources, argues that the concept places undue pressure on one particular actor: the youth welfare services. “The foundation of all social pedagogical work is the effort to establish trust-based cooperation with young clients. Even the mere appearance of overlapping responsibilities between youth welfare and the prosecution/police endangers the possibility of successful trust-building! There is a significant risk that general mistrust of law enforcement, formed through repeated experiences of labeling and criminalization, will extend to the youth welfare services. Moreover, the structural dominance of the police and prosecution in the ‘Houses of Juvenile Justice’ is unlikely to go unnoticed by the juveniles” (Riekenbrauk, 2015). A similar perspective is expressed by Prof. Dr. Thomas Feltes and Rüdiger Schilling in their contribution, ‘Police and Young People, More Preventive Repression?’. “In the perception of municipal decision-makers in the welfare state, social work appears to be a tool for ensuring peace and order. When the police are unsuccessful in doing so, calls arise for social workers to step in and teach young people how to integrate properly into society” (Feltes & Schilling, 2015). Thus, social work holds a crucial position in the triangular relationship between the police, the prosecution, and youth welfare services. Ideally, its task should be to support, guide, and socialize young offenders within the framework of the program, but under a pedagogical-social approach, without repressive consequences.

Youth services must carve out a space of autonomy in this structure and avoid being relegated to a secondary role in the “discourse on ‘intensive offenders’ and the ‘correct way’ to deal with them” (Riekenbrauk, 2015; Feltes & Schilling, 2015; Holthusen & Hoops, 2015). As the renowned sociologist and criminologist Franz von Liszt (1851–1919) famously stated: “Good social policy is the best criminal policy.” It therefore remains questionable whether the Houses of Juvenile Justice are truly the most effective option for dealing with or supporting juvenile offenders, especially since the selection process, which focuses solely on so-called “intensive offenders,” inherently promotes stigmatization. This risk, along with the concern that short, informal coordination between institutions could create structural imbalances, is also highlighted by Cologne-based attorney Lukas Pieplow in the 2018 annual report of the Cologne House (Haus des Jugendrechts, 2018). However, he also notes a positive development: the police officers working within the House have developed closer connections to the young people involved, along with a deeper understanding of their circumstances.

The foregoing has shown that prevention is not the sole responsibility of the police, even though the police often see themselves as the main actors, especially in contexts such as kindergartens and schools (Feltes & Schilling, 2015). At the same time, it must be acknowledged that crime prevention is essentially another term for social work in criminal policy. It is therefore undeniable that police work is partly social work. Gaining knowledge and developing a more nuanced understanding of crime, delinquency and prevention ultimately leads to the realisation that these so-called ‘soft skills’ (not to be confused with the notion of ‘soft’ officers - cf. Feltes & Schilling, 2015) are an essential part of police work and can significantly enhance its effectiveness. As previously outlined, working with juvenile delinquency should never be reduced to repression alone. Rather, it becomes clear that if young offenders are initially confronted with repressive methods, a trusting and open relationship between them and the police is unlikely to develop. This, in turn, may hinder any further preventive or educational engagement. A pedagogical and socially informed approach to interaction with young offenders is therefore critical and must not be obstructed by one-

sided enforcement. The aim of preventive policing is to preempt the need for repressive intervention. For that reason, early-stage communication and transparent clarification of behavioral boundaries play a key role (Feldes & Schilling, 2015). While the juvenile justice system includes various punitive measures, its foundation, unlike the adult justice system, should be educational in nature. Nevertheless, several of these measures have faced criticism, such as the Warnschussarrest (warning shot detention) introduced in 2013. A study conducted by the Criminological Research Institute of Lower Saxony and the University of Kassel found no clear positive effect and concluded that the measure failed to achieve any sustainable educational or pedagogical outcomes (Criminological Research Institute of Lower Saxony & University of Kassel, 2016). Interventions addressing juvenile offenders should occur promptly and are thus a regular component of routine patrol duties. The reporting culture within the police should be further strengthened, allowing early identification and documentation of problematic situations and behavioral patterns. This is the only way youth welfare services can take action proactively. Such a shift requires a broader mindset, a readiness to embrace additional responsibilities, and an ongoing commitment to professional development. It demands a reconfiguration of police practice. The question of why young people become offenders is not explored in depth here. Nevertheless, it is necessary to briefly highlight key criminological findings. These help to explain why early intervention in unstable family environments is vital to preventing future delinquent behavior. The official website of the “Crime Prevention of the Federal and State Police Authorities” includes an article that discusses experiences of violence. It concludes that children and adolescents who have themselves been victims of violence are significantly more likely to engage in violent behavior later in life (Polizeiliche Kriminalprävention der Länder und des Bundes, 2021). This has been empirically supported by numerous studies and scholarly contributions (LKA Nordrhein-Westfalen, 2020; Temple et al., 2017; Möller, 2018; Wonneberger et al., 2017; Züchner, 2018; Palit & Chhabra 2023). The established correlation between early experiences of violence and later criminality is a crucial finding. This knowledge must inform the development of targeted prevention projects (Bliesener, 2013). It also leads to a pressing call for early interventions designed to protect children and young people (Baier 2022; Petzoldt, 2017; Niehaus, 2019; Dollinger, 2014; Dölling, 2012). This results in a clearly defined mandate, directed both at youth welfare institutions and at the police, to improve communication practices and information sharing structures in order to act more effectively in the interest of prevention. A future question that may arise is whether the mental development of our children also impacts crime rates. A 2024 study by the Bertelsmann Stiftung (Steinmayr et. al. 2024) indicates that many young people feel socially or emotionally lonely. Whether these findings can serve as a basis for youth crime prevention remains unclear. However, a connection between social and emotional loneliness and the formation of youth-specific groups could be a conceivable approach.

Numerous academic contributions have examined the historical development of police activities and the increasing scope of police and criminal law interventions, such as the shift toward earlier stages of criminalization. However, the development of communicative-police interaction, particularly in the context of juvenile delinquency, has received considerably less attention, despite its equal significance. To date, there is very little empirically accessible research in this area. Nonetheless, trends in prevention and intervention can be outlined and used to make cautious projections about future developments in police practice. The JuKrim 2020 study conducted by the German Police University (Deutsche Hochschule der Polizei) offers a helpful comparative basis. The study ultimately calls for improved networking and cooperation across institutional boundaries: “If we summarize the individual statements on

potential prevention approaches, the key to promising, future-oriented prevention lies in a particularly target group-specific, early-starting, and more interconnected approach”. But what approach should be pursued in practical terms? The institutional cooperation between the police, the public prosecutor’s office, and youth court assistance, such as within the Houses of Juvenile Justice, supports a form of tertiary prevention, aimed at slowing the progression of delinquent behavior and offering juveniles an alternative path (Görge et al., 2010). In contrast, primary prevention efforts are often carried out independently by each institution. From this arises a range of potential fields of action that still require development in order to implement more effective and coordinated prevention strategies (Holthusen & Hoops, 2015). While youth welfare services sometimes face barriers to access, the police often lack the specialized personnel or sociological perspectives required for comprehensive preventive work. This observation should not be misunderstood as a severe criticism: police work is by nature bound by legal constraints and traditionally focused on repressive functions. Nevertheless, it remains part of the police’s mandate to engage with the interdependent structures of society, to adjust and train its personnel accordingly, and to continue evolving. Compared with the police typologies described by Behr, police practice is already undergoing a clear transformation. Empathy, communicative competence, and flexible operational confidence are increasingly emphasized as core competencies necessary for forward-looking, socially responsive policing (Behr, 2018).

Methodology

This paper is based on a comprehensive literature review. The methodology consists of a systematic collection, selection, and critical analysis of existing scholarly literature, empirical studies, official reports, and policy documents relevant to juvenile delinquency prevention and police action in Germany. No primary empirical data were collected. Instead, the focus lies on evaluating secondary sources to develop a nuanced understanding of the interrelations between youth crime, police engagement, and institutional cooperation—particularly in the context of preventive approaches and structural innovations such as the “Haus des Jugendrechts” (House of Juvenile Justice). The sources consulted include academic contributions from criminology, sociology, social work, and police science, with particular attention to theoretical frameworks such as Norbert Elias’ concept of interdependence. The inclusion of government reports and official statistics serves to contextualize scholarly findings within current institutional practices. Literature was selected based on thematic relevance, scientific rigor, and its contribution to understanding the practical and structural challenges in preventing youth crime. Key authors referenced include Feltes, Behr, Holthusen, Riekenbrauk, and Görge, among others. Through this qualitative approach, the paper aims to explore structural weaknesses, institutional interdependencies, and normative implications without engaging in hypothesis testing or quantitative data analysis. The methodology allows for a critical examination of policy implications and identifies gaps between theory and practice, especially regarding communication, early intervention, and the social role of the police in youth-related contexts.

Discussion

The police operate in a reciprocal relationship with society, shaped by the ongoing transformation of societal norms, values, and the individuals subject to them. As demonstrated earlier, these norms have changed significantly in recent decades. This transformation necessitated corresponding adaptations in the orientation, training, and development of police

institutions. It has become increasingly evident that prevention cannot be equated with the successful implementation of repressive measures (Unkrig & Wendelmann 2023). Especially in the field of preventive responsibilities, the police can contribute to meaningful change, but also must relinquish certain roles that do not fall within their core mandate. Intervention in socially marginalized areas and precarious family circumstances is primarily the responsibility of youth welfare services and juvenile court assistance. Family conflict management and the resolution of domestic problems lie within their jurisdiction (Wonneberger et al. 2017). However, in order to act effectively, these institutions must first be adequately informed. This necessity has also been confirmed by the JuKrim2020 research findings. Strengthening cooperation and communication between the institutions involved in addressing juvenile delinquency is essential to improve support for young offenders and enable timely intervention. In fact, successful prevention and intervention often start within the families of these individuals. Investigating these root causes and identifying structural connections remains a complex challenge for youth welfare professionals. From a critical perspective, it is therefore essential to improve the exchange of information between relevant authorities to interrupt possible cycles of neglect, lack of parental care, and unlawful violence (Landtag NRW 2019; Möller 2018). These insights should become a core element of police practice, especially police reporting culture, so that youth services can gain access to relevant cases and fulfill their role effectively. This would also help delineate the preventive responsibilities of the police more clearly. The police should primarily serve as information providers and supporters of preventive strategies, not as the central guarantor of prevention. For police science, key research questions emerge: To what extent does police behavior influence preventive strategies, particularly those in the areas of secondary and tertiary prevention? And to what degree are preventive concepts and social competencies acquired and transmitted within the police? A necessary precursor would be to define which preventive tasks fall to the police, and which to youth welfare, and to identify areas of overlap or complementarity. Only then can we determine whether meaningful competence development can be expected from either institution. The issues previously reflected upon could thereby be substantiated or refuted through empirical investigation, allowing for a clearer understanding of roles and responsibilities.

Conclusion & recommendations

From the critical approach of the present scientific work, a variety of possibilities and problems become visible to improve state action, but also to reflect on state executive action. Police work cannot be primarily limited to repressive action, but must above all also take preventive aspects into account. However, police work is not the only one affected by this. The psychological aspects of prevention work also have an impact on the other actors in the state authorities. These are also responsible "players" for successful crime prevention. Nevertheless, the police are therefore not the primary grant for preventive action. This would overload the fields of action of police activities. On the part of the police, concepts and projects that have been successfully implemented for years have been launched and cooperations have been founded. A promising and yet critical cooperation is the House of Juvenile Justice. The proximity of the cooperation partners can lead to an efficient exchange and accelerated procedures, but also carries the risk that youth welfare services will come under great pressure in the performance of their tasks and will not be able to meet the aspect of help and support in the procedure. The tertiary idea of prevention thus serves two sides of the same coin. However, the criticism of the repressive orientation must be countered by the fact that the police see

themselves more as a mediator of prevention in their legal performance of their duties and cannot be the institution for preventive intervention. This already follows from the conflict between the constitutional mandate to prosecute. In contrast, the youth welfare offices are an institution that was founded to help and implement goal-oriented support for children and young people. In the author's opinion, inadequate further training and further education in the areas of prevention work should be improved in the future. Only through a comprehensive acceptance of certain concepts and ideas can the idea of prevention also find favour with the individual employee. Although there is no empirical data on the actual teaching of these skills and thus a shortage is only predicted. However, it can be positively emphasized that both youth welfare and the police have produced a lot of improvements in preventive approaches over the past decades. However, some research has made it clear that better networking and mandatory exchange of information between different actors is needed to achieve further improvements. In the opinion of the author, the police should take on a more reporting function and involve other authorities more. This requires sufficient competence in social thinking and understanding of criminological concepts. This appears to be the essential assignment of tasks to the police in the structure, the other actors, preventive social work. It has been proven that Norbert Elia's views of social interactions can also be related to the treatment of juvenile offenders. The chains of interdependence are a natural result of a society's "action" on the individual and the "reaction" it provides. It will therefore continue to be important in the future to analyse the network of relationships and to intervene at an early stage. Research on these topics could provide further insights and conclusions. This could improve social action and make it more efficient.

More efforts to prevent social media misuse could be key. However, that is a different subject area. A study on police language culture in interactions with juvenile offenders could provide new perspectives

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POLICE RESOURCES THAT ARE NOT MEANT TO BE LETHAL: A CRITICAL VIEW OF POLICE PEPPER SPRAY

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Abstract. This study investigates pepper spray's development, use and health risks as a police tool in Germany. The starting point is the discussion about deaths after pepper spray operations and the inadequate statistical recording of injuries and fatalities caused by pepper spray by state agencies. The authors trace the historical development of police forces, from the post-war years to the introduction of CN and CS gas to the establishment of pepper spray, referring to international models such as the USA and Austria. The focus is on assessing the effectiveness and hazard potentials of pepper spray, especially regarding the distribution of aerosol particles and their health effects on directly and indirectly affected persons. The authors criticise the lack of reliable studies on the risks in closed rooms and crosswinds, and that the health risks posed by aerosol particles are underestimated. In the empirical part, experimental analyses of the particle size and distribution of two pepper sprays used in Germany are presented for the first time. The article pleads for a differentiated and scientifically sound assessment of the health hazard potential of pepper spray in police operations and calls for better data collection and further research on the effects on those affected and bystanders.

Keywords: Police Resources, Pepper Spray, Risk Management

Introduction

The topic is illustrated by four deaths after pepper spray operations by the police, which led to a minor inquiry by the parliamentary group "DIE LINKE" in 2009/2010. According to the questioners, scientists have warned of the side effects of pepper spray (BT, Drs. 17/3942). The claim that the ingredient chilli in pepper spray is harmless is complex to prove scientifically. It is clear from the Federal Government's response that it is not aware of any deaths or serious injuries that are causally related to the police use of pepper spray. In the Federal Government's response to its findings on the use of irritants by the police authorities of the federal and state governments, the number of injuries and deaths caused by the use of pepper spray is not statistically recorded separately. This leads to the conclusion that no data is available because it is not collected. The Federal Government points out that the police only use pepper spray in compliance with the principle of proportionality (BT, Drs. 17/4163). For example, a case during the G20 summit in Hamburg caused a stir when a young woman climbed onto a police clearing tank and was incapacitated by the questionable use of pepper spray, only

to be taken into custody afterwards. This statement can certainly be critically discussed.

Theoretical approach

After the Second World War, the German police were disarmed and their officers denazified. Given its abundance of power during the National Socialist era, the police in the English occupation zone were organised in a decentralised and communal manner. To this end, a regional police force (RB police) has been set up in administrative districts, and a city district police force (SK police) has been set up in cities with more than 100,000 inhabitants. However, to fulfil their police duties, the RB and SK police received only a limited number of pistols, which were not allowed to be carried by patrol officers on early duty (Kawelovski, 2025). Against the background of the weapons from the Second World War still in circulation, the police task was difficult. There was an initial need for resources to close the gap between baton and firearm. In the four occupation zones, a rough division into protective police and criminal police emerged. This subdivision was expanded in 1951 to include the riot police, whose establishment was based on an agreement between the Federal Government and the Federal States of 27 October 1950 and as a reaction to the recruitment and barracking of paramilitary police units in the Soviet occupation zone. For fear of an armed confrontation within Germany, field, street, and house fighting initially dominated the training content of the riot police. With the transfer of police sovereignty to the states, police training in legal theory began in 1953. This process was accompanied in 1968 by massive protests by the so-called extra-parliamentary opposition against adopting the Seventeenth Act Amending the Basic Law (Emergency Acts). Due to the insertion of Article 87a of the German constitution and the guaranteed support by the Bundeswehr in times of internal emergency, the riot police were successively demilitarised and primarily deployed only in football stadiums and at demonstrations (Behrendes 2003).

In the 1970s, the riot police were faced with new challenges due to the increase in large-scale events, as they no longer had the necessary skills and resources to be able to act robustly in the event of collective violence. In 1975 and 1976, the riot police and police authorities were therefore equipped with the Chemical Mace irritant sprayer (RSG 1), type Smith & Wesson, MK V, which was called a "chemical club" because of its content of 0.7 grams of CN in 73 grams of irritant liquid, its translation from English and its effect. Additional uncertainty was caused by press reports reporting on an expert opinion by Dr. Dyer, according to which the use of RSG 1 had increased the number of malignant melanomas in users (IM NRW, 1976). Nevertheless, the RSG 1 was used in the autumn of 1976 to clear the reactor construction site in Brokdorf. It was observed that demonstrators were carelessly sprayed with the irritant CN by the police, which resulted in 26 people being injured (Augstein, 1976). Six months later, the chemical weapons that had been stored in the meantime were no longer available to the police for the time being, so that in Grohnde, Lower Saxony, during the most serious riots in the Federal Republic of Germany to date, the police officers deployed could only protect themselves with their half-shell helmets, plexiglass shields and short batons (Holecek, 2017).

In the area of responsibility, new resources of deployment typical of the police were examined, which were intended to affect troublemakers as little as possible from the point of view of the rule of law and humanitarian and to protect the police officers deployed in the best possible way (Schnoor, 1981). In this context, the irritant CS was tested. Experiments in which animals were injected with CN/CS or administered in gaseous form led to the assumption that CS was less toxic than CN (Cookson & Nottingham, 1996).

Since the significance of animal experiments for humans is very controversial due to frequent methodological deficiencies and a lack of standardisation, several practical

experiments with CN and CS were carried out on test subjects at the Linnich Police College (NRW). There were no significant differences in the effect of the two substances if they were applied in small quantities in liquid form with the RSG or by burning irritant spray bodies. However, when CN/CS from water cannons were used, to which the Minister of the Interior of the Federal State of North Rhine-Westphalia, Dr. Herbert Schnoor, was also exposed, increasing concentrations on the skin led to significantly different effects. While the test subjects exposed to the CN water cannon remained capable of acting, Interior Minister Schnoor and the other test subjects exposed to the CS water cannon were almost all incapacitated. They also showed significantly stronger symptoms of nausea, which is why CS was popularly known as "vomit gas". In addition, CS led to escalating breathing difficulties, skin irritation and the development of feelings of anxiety in those affected (Lutze, 1981). Practical tests with CN and CS at the police schools in Dachau (Bavaria) and Braunschweig (Lower Saxony) confirmed the North Rhine-Westphalian results. Nevertheless, CS was introduced for the police in Bavaria in August 1981. A little later, Baden-Württemberg and other Christian Democrat-governed federal states followed. In addition to the concealed RSG 2, replaceable spray cans with one per cent CN/CS as an irritant were also procured, which could be inserted into the trigger and safety device of the existing RSG 1 (LT BW, Drs. 10/1032). North Rhine-Westphalia, on the other hand, maintained that the introduction of CS was not yet ready for a decision, as conclusive studies on the use and mode of action of CS were still lacking. In addition, it was found that CS could incriminate potential troublemakers uncontrollably and beyond what was necessary and was therefore not a typical police weapon (IM NRW 1982, p. 3). The idea for an alternative and yet typical police weapon was the American Federal Bureau of Investigation (FBI), which has been using pepper spray since 1973 (Rosenfield, 2017).

The pioneer for the introduction of pepper spray in the police forces, on the other hand, was the Austrian police, whose police officers were increasingly attacked and injured by HIV-infected and mentally disordered people with bloody syringes and knives from 1992 onwards. It was recognised that in the case of attacks with syringes or knives, the distance to potential attackers must be up to seven meters to use the desired distance means in time. The working group of the Austrian Federal Ministry of the Interior, which was entrusted with the search for suitable police resources to defend against physical attacks on security organs with blood contact (AIDS official acts), came to the conclusion based on the state of knowledge at the time that only the use of Chemical Mace MK V appears to be expedient. In this context, a project group of internal and external (scientific) experts from the police was also formed, which initially subjected CS spray and pepper spray to practical testing as a promising product. Compared to the CS spray, the pepper spray showed a higher efficacy and reliability with a lower risk of damage to health. In addition, experience from the USA showed that about 20 per cent of those affected were immune to CS, while the immunity rate for pepper spray was only two per cent. Based on the knowledge gained, pepper spray was given preference and subsequently introduced as a service weapon in Austria in 1996 (Zwanzinger, 2025).

Based on a submission by the Police Technical Institute (PTI) of the German Police University, which also incorporated the findings from the USA and Austria, the IMK recommended the introduction of pepper spray in Germany to the states and the federal government in a resolution of its 157th meeting from 10.06 to 11.06.1999. As part of the gradual introduction of RSG with pepper spray, the PTI developed a Technical Guideline (TR) in 2008, which still serves as the basis for procurement by the police today, as it describes their requirements for the design and testing of RSG with pepper spray. To keep the risk to troublemakers, police forces and bystanders as low as possible, the TR of the PTI for RSG with OC or PAVA stipulates that the active liquid must be applied with a spray jet and that the irritant

content may only be $0.3 + 0.03$ per cent by weight. Furthermore, the solvents and propellants must not be irritating, carcinogenic, toxic to fertility or mutagenic (PTI, 2008).

In a practical tactical approach, further factors must be considered to assess whether a reliable effect can occur in the sprayed persons in the form of an even justifiable exposure or whether such exposure can be avoided for uninvolved persons and users of the RSG. In this context, the first step is to assess the accuracy of the RSG. The indicator is the spray pattern diameter, which is calculated under laboratory conditions (PTI, 2008). It should be noted that the RSG has a spray jet suitable for use precisely (AGH Berlin, Drs. 17/13246). The RSG can be wind-dependent, and it rarely seems possible to safely hit and stop dynamically acting disruptors (LT RLP, Drs. 17/6054). In addition to the recommendations of the PTI, practical experience from Austria shows that a constant spray jet of more than two seconds is primarily required for a reliable effect of pepper spray (BMI Austria, 2012).

The critical question arises regarding using pepper spray in enclosed and/or crosswind-prone areas (football stadiums). Reliable studies, which are also desired by the operational police forces, are not yet available on this subject. It is undisputed that the use of pepper spray has acute effects on the eyes, skin and breathing of the people hit. However, observations that pepper spray used by the police can spread over a large area towards the end of the spraying process and in windy conditions require empirical verification. This is because acute effects and serious health consequences are also to be feared for persons indirectly affected by the use of pepper spray if they inhale the aerosol particles of a pepper spray. In the discussion on this subject, the lack of definition of a corresponding size (aerodynamic diameter) for the aerosol particles of the pepper spray is largely neglected. It is known from pharmacology that aerosol particles with an aerodynamic diameter of more than ten micrometres only reach the upper respiratory tract. Aerosol particles with a diameter of two to ten micrometres can also penetrate the bronchi, and particles with even smaller diameters can penetrate the deeper alveoli (alveoli of the lungs). In the latter case, the smallest particles enter the structural components of the lungs via the upper and lower respiratory tract, where gas exchange occurs during breathing. This increases the likelihood of a massive restriction of breathing (Huschbeck, 2019). It should be noted that despite several events that led to the introduction of pepper spray in the police some time ago, many police and politicians are subject to the erroneous belief that pepper spray alone emits a jet of liquid that only affects the persons directly hit (LT NRW, Drs. 16/13890).

Methodology

During a rethinking process in parts of the police and politics, the test laboratory of the Laus company was commissioned by the first author to test the contents of two pepper sprays used by the German police. These were the original TW 1000 Professional RSG-5, 63 ml from Carl Hoerneck, Chemische Fabrik GmbH & CO. KG and the Curd's Police RSG 2000 from IDC System AG. The aim was to analyse the aerosol particles of the pepper sprays and their distribution under experimental conditions similar to those of the PTI. For this purpose, the size of the aerosol particles was measured (μm) with a helium-neon laser and their sum distribution was calculated. The distribution (D) resulted in the parameters D10, D50 and D90, corresponding to the percentage distribution of aerosol particles (volume%). Since the original TW 1000 Professional RSG-5 is the pepper spray used by most police forces, it was exciting to the authors. For this reason, the ingredients of three pepper spray cans of this brand were examined. In addition, the aerosol particles of two pepper spray cans, each of the Curd's Police RSG 2000 and the freely available Original TW 1000 Pepper-Jet, were analysed. The aim was to investigate possible health impairments caused by pepper spray in troublemakers, emergency

services and bystanders. In particular, the analysis of the over-the-counter pepper spray was intended to clarify whether possible dangers emanate only from police spray or are generally inherent in pepper spray. For this purpose, the measuring points of the individual pepper sprays were connected and presented in the following chapter (Results) as x and y coordinates. On the horizontal x-axis, the size of the aerosol particles is plotted in micrometres (μm). The vertical y-axis, on the other hand, shows the percentage distribution of aerosol particles (%).

Results

In this chapter, the data from three measurements with the original TW 1000 Professional RSG 5 are first graphically displayed. The three measurements on the pepper spray most commonly used by the police show that a different number of sprays is possible (7-9 times). The aerosol particles have a size of 6.69 to 458.23 μm . In the D90 distribution, the aerosol particles were $\geq 320.28 \mu\text{m}$ during the first three sprays. During the further sprays, the decrease again after the fifth (1st and 2nd series of measurements) or seventh spray (3rd series of measurements). In the D90 distribution, the smallest aerosol particle size of 25.18 μm was measured in the last spray of the first series of measurements. In the D10 distribution, sizes of $\geq 97.81 \mu\text{m}$ (1st series of measurements), $82.97 \mu\text{m}$ (2nd series of measurements) and $\geq 68.94 \mu\text{m}$ (3rd series of measurements) were measured in the first sprays. The size distribution also increased with further sprays and decreased again after the fifth (1st and 2nd series of measurements) and sixth sprays (3rd series of measurements). The smallest particle size of 6.69 μm was measured in the seventh spray of the second series of measurements. The D50 distribution also represents the mean value of the distribution sums and corresponds to the results described (Figs. 1-3).

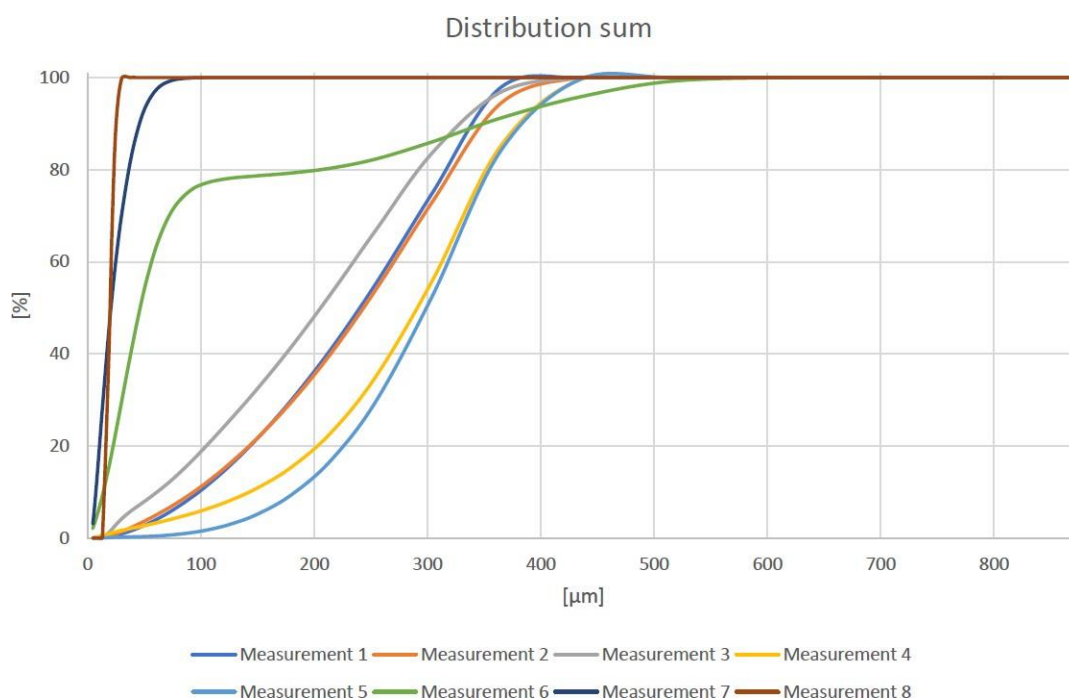


Figure 1. First series of measurements with the TW 1000 Professional RSG 5.

Source: Study initiated by the first author.

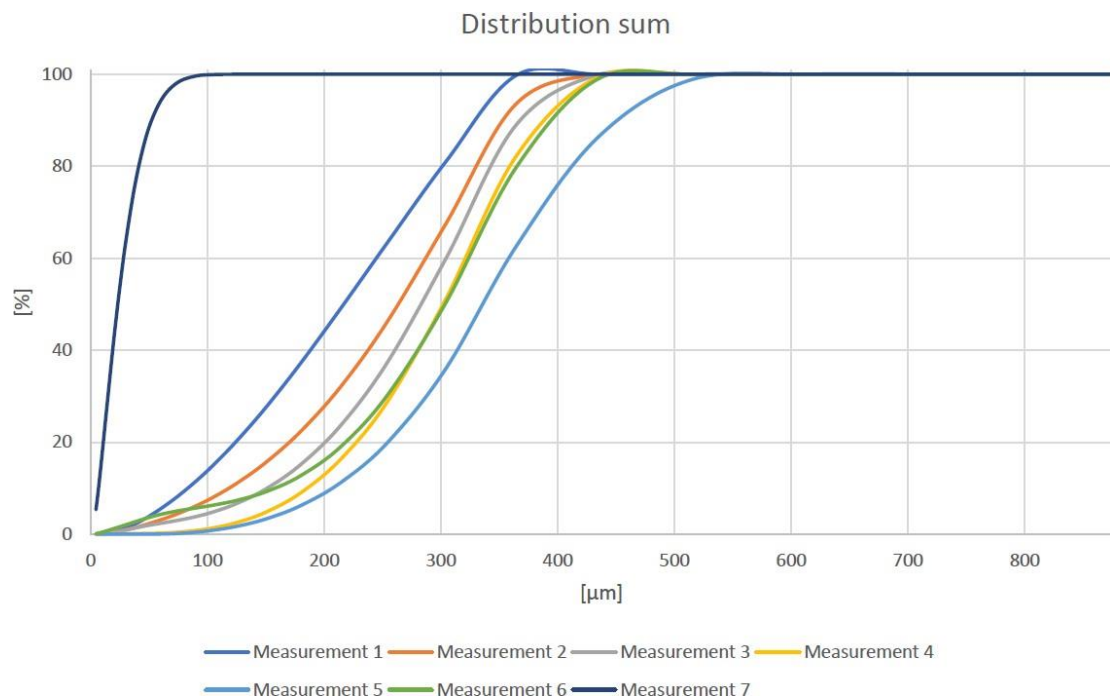


Figure 2. Second series of measurements with the TW 1000 Professional RSG 5.

Source: Study initiated by the first author.

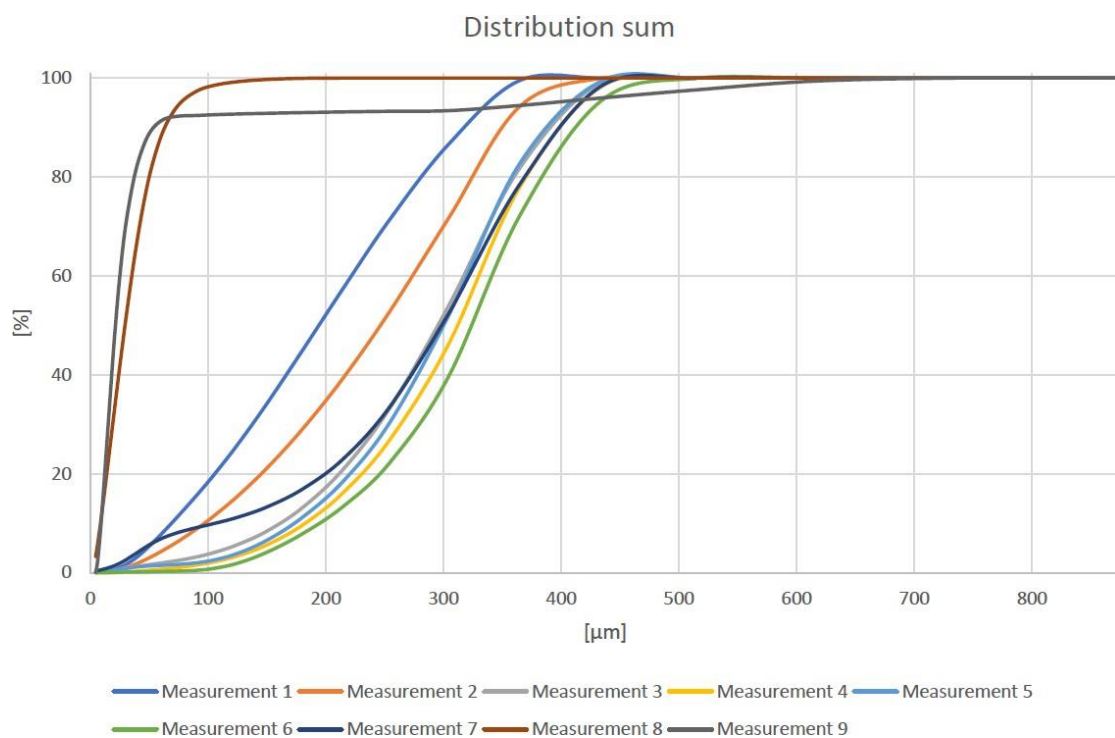


Figure 3. Third series of measurements with the TW 1000 Professional RSG 5.

Source: Study initiated by the first author.

In the next step, the data from two series of measurements are displayed with the Curd's Police Pepper Spray RSG 2000. Both measurements show that the aerosol particle sizes in the

Curd's Police RSG 2000 are between 6.78 and 782.79 μm . A distribution of D90 showed that the predominant aerosol particles (90%) of all first sprays were $\geq 285.83 \mu\text{m}$. In the further sprays, the aerosol particle size increased to the sixth (1st series of measurements) and seventh sprays (2nd series of measurements) and then decreased again. In the D90 distribution, the smallest aerosol particle size of 66.10 μm was measured in the last spray of the first series of measurements. In the D10 distribution, it was determined in the first sprays of both series of measurements that a small proportion of the aerosol particles (10%) had a closely spaced size of $\geq 80.60 \mu\text{m}$ (1st series of measurements) and $\geq 72.06 \mu\text{m}$ (2nd series of measurements). At this time, the size distribution of aerosol particles increased with further sprays. It decreased again after the fifth spray (1st series of measurements) or fourth spray (2nd series of measurements). The smallest aerosol particle size of 6.78 μm was measured in the eighth spray of the first series of measurements (Figs. 4-5).

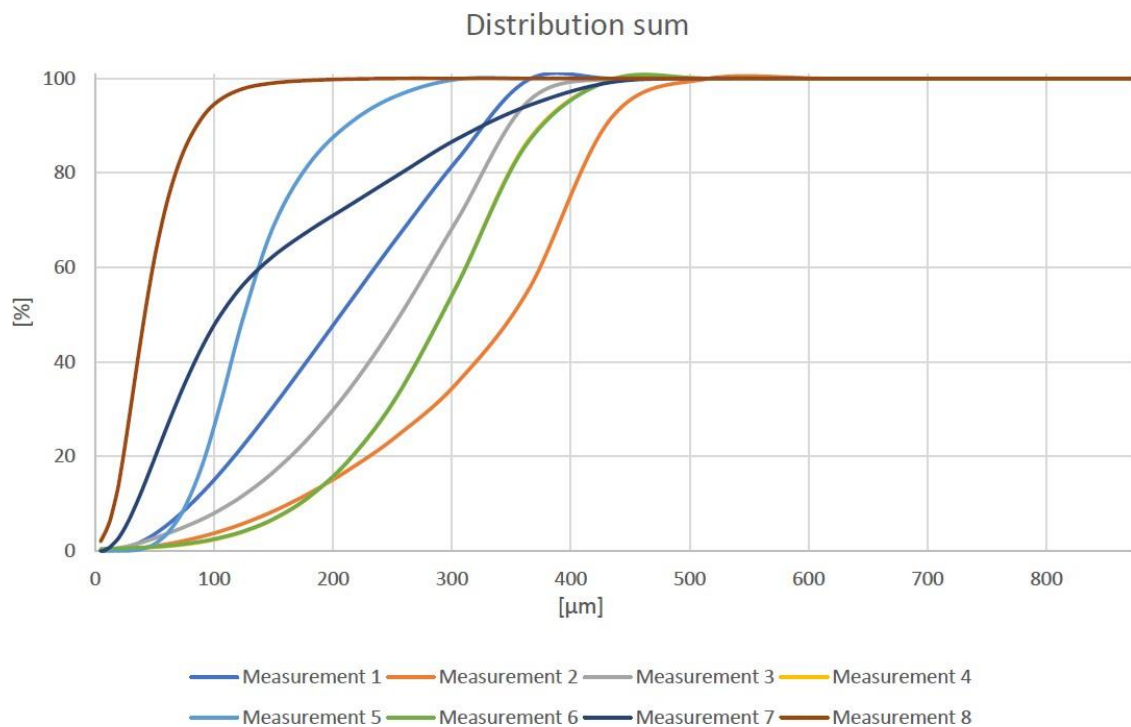


Figure 4. First series of measurements with the Curd's Police Pepper Spray.
Source: Study initiated by the first author.

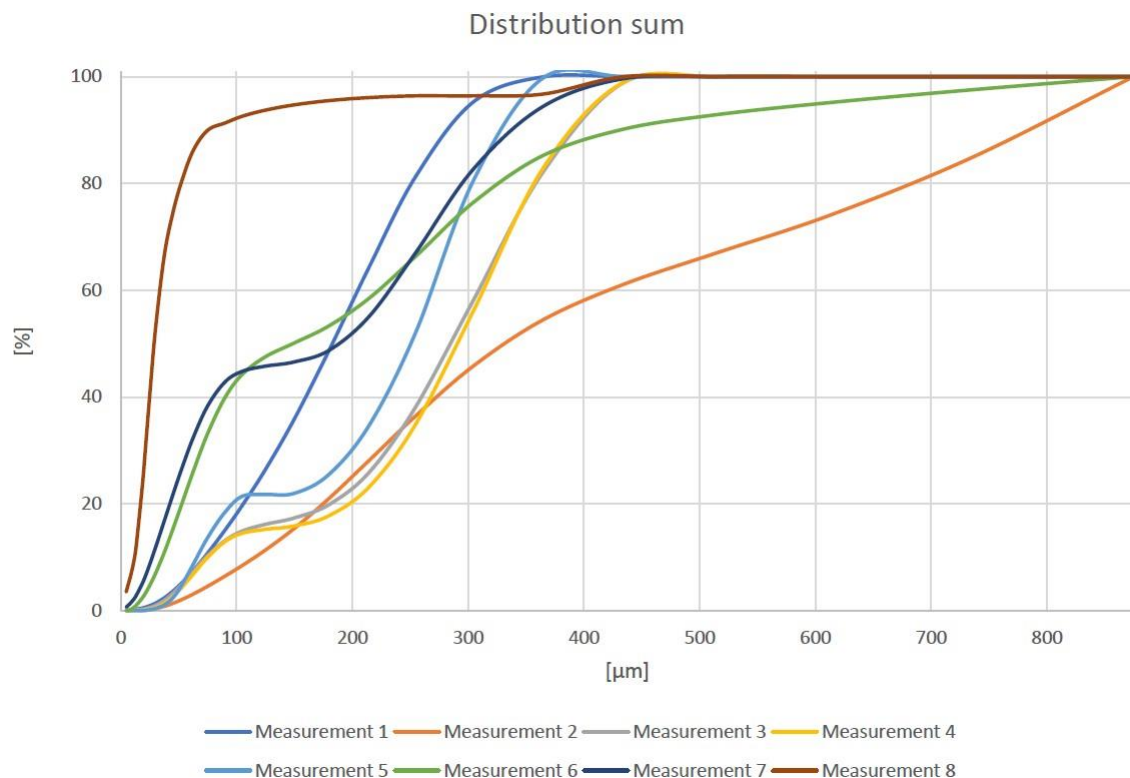


Figure 5. Second series of measurements with the Curd's Police Pepper Spray.

Source: Study initiated by the first author.

Finally, two measurements were carried out with the freely available pepper spray (Original TW 1000 Pepper-Jet), which shows that ten to eleven sprays are possible here. The aerosol particles of this over-the-counter pepper spray have a size range of 1.68 to 432.25 μm. A comparison with the pepper sprays used by the police shows almost identical results. In the distribution sums D90 and D10, comparably large aerosol particles are emitted, so it does not give the impression that the Original TW 1000 Professional RSG-5 and the Curd's Police RSG 2000 are pepper sprays specially developed for the police with higher effectiveness and lower risk potential. However, the aerosol particles of the original TW 1000 Pepper-Jet appear in the 11. Spray with a size of 1.68 μm is dramatically small. The spray tests with this pepper spray allow three conclusions. First, the aerosol particles of the very first sprays are ≥ 103.04 μm. Secondly, the aerosol particles become larger after further sprays and only smaller again after the ninth or tenth spray. Thirdly, aerosol particle sizes of ≤ 10.00 μm are emitted in the last spray bursts (Figs. 6-7).

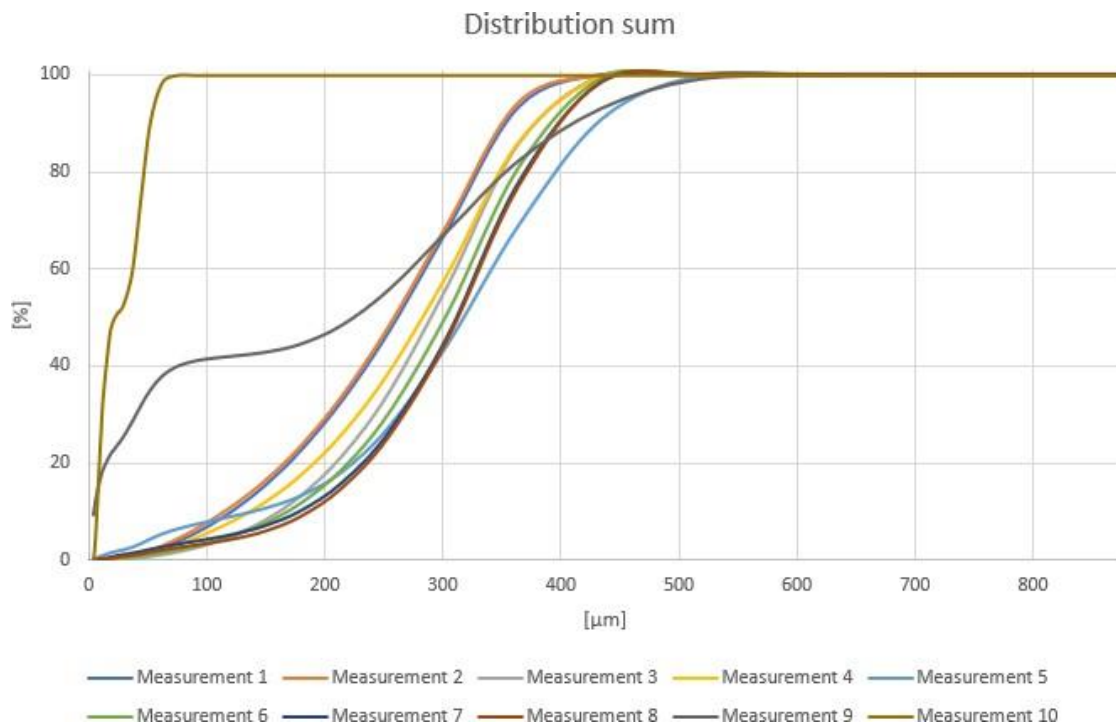


Figure 6. First series of measurements with the Original TW 1000 Pepper-Jet.
Source: Study initiated by the first author.

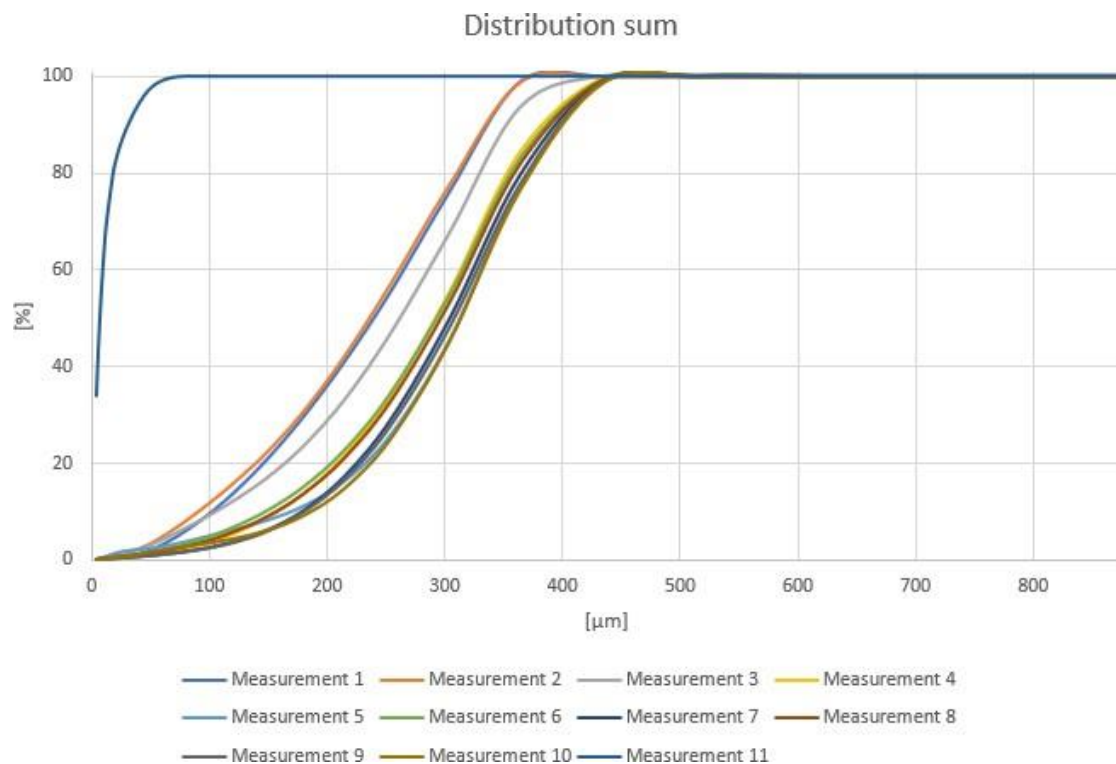


Figure 7. Second series of measurements with the Original TW 1000 Pepper-Jet.
Source: Study initiated by the first author.

The available results consistently show that when all three pepper sprays are used, the contents are atomised with the last spray, which poses a risk of deep inhalation of respiratory-irritating aerosol particles for troublemakers, emergency services and bystanders.

Police officers should not empty their pepper spray, knowing this fact, but stop spraying before the atomisation begins. The use of pepper spray can have adverse effects. The spraying of liquids by outdoor agricultural irrigation systems shows that in strong winds, an effect occurs that gives the impression that the liquid is hitting a hard surface (Fig. 8).



Figure 8. Irrigation system in agriculture.

Source: Own illustration.

It can therefore be assumed that aerosol particles from the liquid jet of a pepper spray are whirled up by the wind and distributed over a wide area. Thus, it cannot be ruled out that troublemakers, emergency services and more or less distant bystanders may also be affected by the consequences of using pepper spray.

Discussion

During the first sprays of all three pepper sprays, it was measured that a small proportion of the aerosol particles (D10) had a size of $\geq 68.94 \mu\text{m}$. In the D90 distribution, the aerosol particles were $\geq 285.83 \mu\text{m}$ in all first sprays. The size distribution increased with further sprays and decreased again towards the end of the spraying process. The smallest particle size of $1.68 \mu\text{m}$ was measured in the eleventh spray of the Original TW 1000 Pepper-Jet (2nd series of measurements). The aerosol particle sizes of all first and middle sprays are similar. Only propellant gas and residual particles are emitted in the last sprays, which leads to significant deviations from the first and middle sprays. The results coincide with the Austrian operational experience. The influence of the wind on the liquid jet and the aerosol particles it contains becomes plausible. This leads to a better understanding of the dangers of pepper spray, mainly when used in enclosed and/or crosswind-prone areas. Pepper spray in closed rooms is considered excluded for tactical reasons due to the contamination of troublemakers, emergency services and bystanders (LT RLP, Drs. 17/6054). However, the police use pepper spray in all rooms, as aerosol spread and acute danger to all those involved is excluded as long as they are outside the liquid spray jet (LT NRW, Drs. 16/13890). The latter must be critically questioned

based on the available findings, since at the end of the use of pepper spray in unfavourable wind conditions, there is a risk of deep inhalation of aerosol particles with irritation of the alveoli. To increase the risk, it must be taken into account that RSG 4 is usually used against crowds of people in football stadiums if they cause violence (LT Nds., Drs. 17/6110). Compared to the smaller RSG 3, RSG 4 can be classified as even more dangerous, as it can spray seven times the active ingredient simultaneously. This circumstance is taken into account by the fact that in the deployment orders, the deployment of the RSG 4 is made subject to the reservation of the police commander, except in self-defence situations (LT BY, Drs. 17/9585).

The initial euphoria about a practical police resource that can be used indiscriminately and without consequences has thus given way, at least in Austria, to the realisation that the use of pepper spray must be carefully weighed. The primary goal of the Austrian police is, therefore, not so much to use pepper spray in a situation-appropriate manner as to prevent its use in advance, if possible, or to prevent it as moderately as possible and to give preference to the use of physical violence (BMI Austria, 2012).

In Germany, on the other hand, reference is made to the fact that the use of pepper spray takes place on occasions in which the police would otherwise use physical force, batons or pistols, whereby the use of pepper spray reduces the risk of injury and is less harmful to health (Hamburgische Bürgerschaft, Drs. 21/8091). In its meta-study, the National Institute of Justice also focused on injuries suffered by police officers and troublemakers due to police coercion. In this regard, it was quantitatively empirically determined that pepper spray reduces the probability of injury for troublemakers by 70 per cent and increases it by 18 per cent for police officers (Alpert et al., 2011). Of note is another investigation into the use of direct coercion by the Los Angeles Police Department (LAPD). According to the study, more police officers were injured than troublemakers due to the use of pepper spray. The number and ratio of police officers injured by pepper spray and troublemakers seem to be significantly reversed compared to other means of coercion.

The brightfield figures on police officers and citizens injured by pepper spray in Germany can be found in the annual reports of the Central Information Centre for Sports Operations (ZIS) for football matches of the Bundesliga, Bundesliga 2, Bundesliga 3, DFB Cup and the associated travel routes. According to the report, in the 2023/2024 season, a total of nine state and 18 federal police officers, 40 troublemakers, 27 bystanders/injured parties and ten stewards were injured by the use of pepper spray (ZIS, 2024). In addition to a high number of injured federal police officers, a lower proportion of injured troublemakers can be attributed to the use of pepper spray by the federal police. It also seems striking that no injured bystanders/injured parties and stewards were recorded as a result of the use of pepper spray by the Federal Police. This leads to the conclusion that the Federal Police uses pepper spray less and more appropriately in problematic operational areas.

Conclusions & recommendations

This article investigates the introduction of pepper spray in the German police, which was on the one hand due to technical reasons and on the other hand, goes back to several events that were taken as an opportunity by actors from the police and politics to push ahead with the equipping of the police with pepper spray. In addition, this article sheds light on the traces of the use of pepper spray by the police. Contrary to the assumption in North Rhine-Westphalia, pepper spray spreads aerosol-like over a large area in windy conditions. This can lead to serious health consequences if the aerosol particles are inhaled. The particle size plays a decisive role in this. Therefore, the Austrian Ministry of the Interior stipulates that the particle diameter must not be smaller than two μm . There is no such regulation in Germany, although pepper spray carries various risks. In particular, a danger to bystanders in crowds cannot be ruled out. If there are vulnerable people in a crowd (e.g. pregnant women, children, asthmatics, Long Covid sufferers), the risk potential increases. The following recommendations are therefore derived from the knowledge gained:

1. Revision of the Technical Guideline for Irritants
2. Moderate use of pepper spray
3. Constant review of proportionality
4. Statistical recording of all pepper spray operations
5. Improved training and further education of police officers

Using pepper spray by the police is complex and involves opportunities and risks. In Austria, for example, one "bundled spray jet" is intended to achieve a slightly higher range. It may be less susceptible to wind but also fans out (but possibly less) and releases slightly fewer aerosols. In addition to technical investigations, careful consideration, improved regulations, and further research are required to ensure the safety of all parties involved and maintain the effectiveness of the equipment.

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DEFINITIONS AND CLASSIFICATIONS OF HYBRID THREATS IN CRIMINAL LAW

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Abstract. *Hybrid threats are various types of hostile actions that attempt to undermine the security and democratic institutions of the attacked state without using armed aggression. Hybrid threats can be responded to in various ways, but one of the key countermeasure in the legal system is criminal proceedings against the perpetrator. Court verdict for criminal offense provide the legal epilogue of the conflict and the identification of those responsible for the attacks. For such purposes it is necessary to analyse how certain types of hybrid threats could be classified in criminal law. In the paper, the author presents some enemy activities that were committed against Croatia in 1990 with an aim of secession of territory, given that similar actions were repeated in Ukraine in 2014. In the paper, the author also analyses other forms of hybrid threats besides annexation and discusses legal classifications and attempts to explore areas for further progress in international or national criminal law. The results of the analysis show that since the period of the attack on Croatia, there has been no improvement in international criminal law in terms of more detailed regulation of criminal activities of this kind.*

Keywords: *hybrid threats, criminal offense, classification, terrorism.*

Introduction

The term hybrid threats is used to describe covert types of actions that seek to undermine the security of attacked states and the fundamental values of society. Such forms of hostile action are undertaken without an armed attack in order to avoid self-defence that is permitted by international law of war (*jus ad bellum*), and at the same time they try to avoid a reaction of criminal law institutions. Hybrid attacks are attempted to be organized in such a way that they do not fall under the description of serious crimes. Responses to hybrid threats can be through various countermeasures in the field of security operations for which intelligence services, diplomatic units, economic systems and similar institutions are responsible.

One of the key forms of response to hybrid threats, as well as to other types of conflict, is through the legal system in which the responsible perpetrators should be established by a court decision as the legal epilogue of the conflict should be delivered. Such a decision also represents the basis for the historical memory of the facts. A court ruling on hybrid actions has the function of re-establishing the legal order, resolving the conflict at the legal level, determining those responsible and determining appropriate criminal penalties. If we look at conflicts in history, for those for which criminal proceedings were conducted, the facts remain clear about the responsible person or state, the type of crime and other characteristics. The court's epilogue prevents different subsequent interpretations or positions that could arise in the case of disinformation or the presentation of different versions.

The legal classifications are being discussed more intensively after taking over certain parts of Ukraine in 2014, and in this sense, it would be appropriate for the analysis to compare them with similar activities of secession that were initiated in Croatia in 1990. For some hybrid threats, politicians have stated that they fall under provisions on terrorism, violations of sovereignty and similar colloquial names, however, it is necessary to distinguish that

international or domestic criminal proceedings are conducted on the basis of a strict legal system in which criminal behaviour should be prescribed in detail before it is committed.

For this reason, an appropriate legal classification is needed to encompass the harmful characteristics of these types of attacks. If criminal acts are not prescribed in advance, this would be contrary to the principle of legality because regardless of what qualifications individual social subjects express in their assessments of certain types of events, it is important how hybrid threats are regulated in national or international criminal law. The old proverb *nullum crimen sine lege* has been used to protect citizens' rights but also as a basis for the functioning of the legal system.

As one of the important countermeasures for hybrid threats in Ukraine, the possibility of applying criminal law to perpetrators was considered (Kryvytskyi, 2024). At first, it was not clear which category of law could be applied, since there was formally no external conflict between the two states, and it was believed that priority should be given to provisions on terrorism (Vlasiuk, 2015). Some called such situation a tragedy of the legal system.

Serious hybrid actions such as those used in Ukraine in 2014 were used much earlier, namely in 1990 in Croatia, and even then certain legal problems arise in qualifying individual events of illegal annexation. For this reason, this research presents some forms of hybrid actions in Croatia and shows which classifications in criminal law were used. The results will show the state of criminal law three decades later and whether any new approaches have been developed at the international level for these types of hybrid operations.

If some criminal acts were not within the jurisdiction of the court, then a verdict cannot be passed, and some citizens may later perceive this as a failure to achieve fair justice. For example, The International Tribunal for War Crimes Committed in the Territory of the Former Yugoslavia (ICTY) have announced its verdict on Martić in the context of murders, torture, robbery, arrests, etc., but it did not have a mandate for the crime of terrorism or the crime of aggression on Croatia.

Definition of hybrid threats

In order to describe hybrid threats in criminal legislation, their clear definition is necessary. One of the problems is that under this term, in theory and practice, different interpretations and approaches are used regarding the types of events that could be included. Hybrid threats are characterized by the use of deception and concealment in various types of violent or non-violent activities that target critical infrastructure or other essential areas of societal functioning. Hybrid actions are individually adapted to the vulnerabilities of individual countries and can have a wide range of goals.

Hybrid threats include various phenomena such as assassinations, cyber attacks, disinformation, damaging communication cables, arson, explosive shipments, damaging energy systems, arming migrants, and the like. For the purposes of criminal law, it is useful to analyse the qualifications of hybrid activities in criminal law and the need to incriminate new forms of criminal offenses that could more comprehensively encompass such harmful activities in order to highlight the context of organized hostile actions. Such phenomena are significantly more serious in terms of the level of violation of rights than classical criminal offenses committed by ordinary perpetrators.

The concept of hybrid threats has become a broad concept that includes various hostile actions. The concept is composed of the word “hybrid”, which denotes something that contains mixed characteristics of various types, and the concept of “threat”, which refers to the possibility of endangering certain values or rights. The comprehensive concept of hybrid threats

was described by Mattis and Hoffman (2005), and according to their definition, hybrid threats represent simultaneous and adaptive combinations of conventional weapons, incoherent tactics, terrorism or criminal groups. According to such approaches, hybrid threats are various forms of violence, terrorism and organized crime with the aim of disrupting the order in society. Similarly, Gerasimov (2013) described covert operations based on psychological and propaganda influences, and the use of political, economic, informational, humanitarian, and other non-weaponized means, regardless of whether states are in peacetime.

After various types of hybrid attacks over the past decade, doubts have arisen about the classification in criminal law. An example of the most serious hybrid threats with an impact on territorial integrity is the takeover of parts of Ukraine in 2014. Such activities were carried out to avoid the reaction of criminal law or armed self-defence. They consisted of activities such as self-determination of ethnic minority, holding referendums or regional elections, declaring secession, spreading disinformation, involving armed “little green men” without visible signs of affiliation, taking over state institutions, and the activities of organized crime groups (*Korystin, Svyrydiuk, 2021*). In addition to such activities, numerous EU Member States were exposed to secondary hybrid threats after providing support to the Ukrainian authorities (destruction of communication links, sabotage of railway facilities, arsons, damage to military equipment, disinformation campaigns, etc.) in relation to which it was necessary to initiate criminal investigations and appropriate proceedings.

Hybrid threats are mentioned as a concept in some official documents of EU bodies, however, hybrid threats are not regulated in primary EU legislation such as treaties, judgments, declarations or resolutions. Hybrid threats are not defined in secondary legislation such as regulations, directives, decisions and similar level of legal sources. UN documents do not mention the term of hybrid threats or related concepts at all.

Comparative criminal law

According to an analysis of comparative criminal law, none of the major European countries has a separate criminal offense of hybrid threats. This shows that the incrimination of the aforementioned criminal offense is not recognized as a legal need, but rather qualifications from various other criminal offenses can be used for criminal proceedings, depending on the type of action of the perpetrator and the object attacked (terrorism, sabotage, etc.). To emphasize the harmful influence of foreign states, it would be useful to prescribe new forms of criminal offenses. Hybrid threats are a large set of various types of actions that have different objects of attack, methods of commission, and the severity of consequences, and they are not easily encompassed in a single criminal offense. A similar situation exists in some other types of crime that include various types of criminal offenses. An example is the problem of defining criminal activities such as organized crime, which can also include a large number of different types of illegal activities.

If the classification of ordinary criminal offences are applied to hybrid actions, the problem arises because ordinary criminal offences do not encompass the specific features of the planned actions of an enemy state. It would be useful to highlight the harmfulness and unacceptability of such interference in the affairs of another state by prescribing separate qualifications. An example of encompassing various types of incriminations could be a provision on a criminal organisation, which can include any criminal offence that is committed. Such an adjustment is necessary due to the emergence of new forms of conflict that were not previously used in this way.

If arsons, destruction of traffic safety devices or similar activities were viewed as ordinary criminal offences committed with the aim of property destruction, this would not reflect the specific features and the connection with the enemy state. In attempting to define a criminal offence of hybrid threats, the main difficulty is that they encompass actions of varying severity. Hybrid threats include minor acts that only affect property, as well as very serious acts that endanger lives. For this reason, it is difficult to standardize a single criminal offense, but it would be possible to structure it through several paragraphs that would include different ways of committing it or add qualified forms to various criminal offenses.

According to the state of comparative law, hybrid threats are currently more represented in the professional language of security, international relations or military strategies, but they have not yet been recognized at the level of legal sources in international or comparative criminal legislation. The concept of hybrid threats is general and undifferentiated, like the concept of organized crime, which does not represent a single criminal offense but encompasses a number of different types of criminal offenses depending on the specific case and can be defined in different ways in individual countries.

Classifications of some types of hybrid actions

Assassinations

Assassinations are forms of hybrid threats committed within the framework of planned and coordinated actions of foreign services and therefore they differ from ordinary murders in the characteristics of the perpetrators, the method of commission, the means of commission, the method of concealment, level of danger to other persons, the mass psychological effect, the motives for commission and other characteristics. Assassinations are not just ordinary murders, but a kind of theatrical criminal acts that serve to show power (Hänni, Grossmann, 2020). Assassinations are followed by other hybrid activities, such as attacks on facilities where evidence was kept, the construction of media disinformation, and the like.

During hybrid actions in Croatia, several assassinations or kidnappings of high-ranking political and military officials of the new government after 1990 were prepared or attempted. The assassination attempts were also followed by media disinformation and cover-ups from Serbian intelligence services, which makes such actions very similar to modern hybrid activities. For example, when the presidential wing of the government building was attacked in 1991 by rockets, Serbian media outlets claimed that the Croatian government had planted the explosives itself.

The assassination on Skripal in England was attempted using the rare military-grade poison Novichok. In the Litvinenko case, a very rare material called polonium was used, which doctors did not detect for three weeks in the hospital due to its specific radiation spectrum. In the Skripal 2018 poisoning case, the English prosecutor's office did not classify the event as a terrorist offense, but instead used four other classifications: conspiracy to commit murder, attempted murder of three people, use and possession of a poison, and grievous bodily harm. The terrorism qualification was not used for the 2006 murder of Litvinenko, but the investigative commission for the event used the qualification of murder (Owen, 2016). The perpetrator who attacked Chechen dissident Khangoshvili in Berlin's Kleine Tiergarten Park in 2019 was convicted in 2021 of two criminal offenses: murder and possession of an automatic firearm. The classification of the criminal offense of terrorism was also not used. In the

reasoning of the verdict, the court mentioned the commission of state terrorism, emphasizing that the crime was not committed for personal motives but for the needs of foreign services.¹

Cyberattacks, social networks and media

Cyberattacks are often cited as severe forms of hybrid threats that can cause significant property damage but can also lead to human casualties. As a result of a cyberattack carried out in 2020 on the servers of a hospital in Düsseldorf, Germany, a patient died because she could not be admitted in an emergency. Similar attacks on various other types of infrastructure can lead to multiple similar consequences. These types of attacks could meet the characteristics of a terrorist offense or other crimes in the area of causing danger to people and property. If such events were viewed only as ordinary crimes in the area of information system protection, the aspect of foreign state influence would not be sufficiently taken into account.

Cyberattacks during election campaigns were carried out with the aim of collecting and publishing documents (hack and leak). Perpetrators add incorrect documents to the original messages in order to influence the attitudes of voters. Other forms of influence through digital hybrid actions are also possible. In a report to the European Parliament regarding the 2024 Romanian presidential election, TikTok reported removing 60,000 fake profiles and around 10 million fake followers before the first round of the presidential election. The Constitutional Court annulled the presidential election and banned one politician from running in the repeat election, finding multiple irregularities and violations of electoral law that undermined the freedom and fairness of the election (*Mercescu, 2025*). The decision to annul the election was made as part of the oversight of the validity and legality of the election, based on declassified notes on information.

Attacks on communications

In a short period of time in 2024, a large number of submarine pipes and cables for communication or energy transmission were disrupted. The attacks targeted underwater routes for electricity, gas and communications, as well as connections to offshore wind farms. An example of the difficulties in qualifying such events in criminal law is the case of the explosion on the Nord Stream II offshore gas pipeline. A joint investigation team (JIT) was proposed to investigate the event between Denmark, Sweden and Germany, which in a joint letter stated that it was a criminal act of sabotage. Sweden later refused to participate due to the protection of intelligence that it would have to share with other participant states. Denmark conducted a criminal investigation and concluded that it was an intentional act of sabotage, but that there was no need to initiate criminal proceedings. This event could have been classified as terrorism because such an attack falls under the list of crimes against infrastructure that are explicitly included in that criminal offence (*Billing, Feldtmann, 2024*). After conducting an investigation, Sweden concluded that it had no jurisdiction to proceed with further criminal proceedings (the qualification of the event was not published). Germany conducted an investigation and issued an arrest warrant for the suspect, but the qualification was not publicly announced. In 2024, the German Chancellor publicly called the event a terrorist act, which would indicate a terrorist offense as a qualification in criminal law. This case shows differences in the classification of the event in terms of criminal law.

¹ KG, Urteil vom 15.12.2021 - (2)3 StE 2/20-1 (2/20), § 305.

In various European countries, perpetrators have been caught on charges of committing arson for which they received funds from foreign intelligence agencies. Some hybrid threats are aimed at disrupting the safety of railways or other types of transport, also in the interests of foreign services. In a number of European countries, cases of damage to traffic safety monitoring devices have been discovered. Such actions could be covered by the criminal offense of terrorism if the intention is to destroy infrastructure.

Hybrid threats aimed at annexation in Croatia 1990 and in Ukraine 2014

Annexation using hybrid actions

Unlike numerous forms of hybrid threats that target distant states but produce short-term harmful effects, annexation of neighbouring states territory has long-term negative effects on the security and stability. In the initial hybrid activities of the takeover of the Crimean peninsula in Ukraine in 2014 (before the open aggression), local authorities took power using the justification of the alleged protection of a self-determined Russian national minority, took over the parliament and main institutions, held a referendum and declared annexation to Russia (Petrov, 2016). After that, they took over further provinces (Donetsk and Luhansk) in a similar way. The attempt of covert takeover of Croatian territory was very similar to the case of Ukraine. The actions in Croatia during 1990 would be classified as hybrid threats according to modern nomenclatures. According to the Ukrainian point of view, classifications of terrorism could be used, but the problem arose in the different interpretation of terrorism at the national and international legal level (Vlasiuk, 2015).

The preparatory phase (before the open aggression) against Croatia began with an attempt to create a political pretext for the military action of a neighbouring country. After the democratic elections in Croatia in 1990 did not win the parties that were supported by the Serbian authorities, an extensive media campaign began, which characterized the new Croatian authorities as nationalist and extremist. With such media constructions and disinformation, discontent and feeling of vulnerability among a part of the Serbian population was incited.

Disinformation about the Nazi authorities

As part of the media attacks and disinformation campaign in Croatia in 1990, texts were published about the criminal nature of the new government. Fake news was spread about crimes allegedly committed against the Serbian population in order to cause fear and the impression of being seriously threatened. The spread of disinformation was carried out very extensively, including various categories of publications and media, up to scientific papers and professional books that wrote about imaginary atrocities and cruel acts of the new Croatian authorities (for instance, brutal attacks on Serbian children). A simple fact check made it possible to identify invented news.

For example, during the action of the Croatian police in the city of Pakrac, disinformation was spread about numerous Serbian victims, when in fact there were not a single victim at all. This was only later confirmed by the Serbian Secretariat of the Interior. As part of the disinformation in the Zadar area, physical injuries to members of the Serbian minority were staged. For the purposes of filming, the marks on the body had been made up with the help of a doctor (ladies makeup was used). Similarly, in the early stages, disinformation about the Nazi character and the need of denazification of Ukrainian authorities was spread. In Russian approach, Nazism is corresponding with liberal democracy and Western values (Tolz, 2023).

Certain activities towards the media in this segment may also fall within the jurisdiction of other regulatory bodies.

Criminal legislation contains certain acts relating to the punishability of content that incites violence, hatred and extremism, and the dissemination of false or disturbing content. Such criminal acts could be prescribed in a qualified form with a more severe punishment because they are not about ordinary perpetrators but about systematic subversion by a foreign state.

Political self-determination of ethnic minorities

Along with the spread of disinformation about the threats, activities began on self-determination and separation through new illegal representative bodies organized by local politicians. Hostile activities in Crimea in 2014 also began under the guise of self-determination of a national minority in elections. Such hybrid actions were actually an attempt to hide open aggression, present hostile actions as an internal political conflict, to provide assistance to local authorities of the so-called people's republics, and present external military intervention as humanitarian action. According to the practice of the International Court of Justice, self-determination can be implemented through democratic and public procedures only, and it can therefore be distinguished from acts of violence and terrorism. In 1992, the European Community Commission concluded that minorities in Croatia can be recognized through political participation within the internationally recognized borders of the state. The Security Council has also adopted resolutions on several occasions on that issue (*Chadwick, 2023, 50*).

In such cases, as soon as it happened to use armed violence instead of democratic procedures, such forms can be classified as criminal offenses. An Ukrainian example of a counter-response was the ban of several political parties due to their connections with Russia, using the provisions of the Law on the Prohibition of Pro-Russian Parties. The Croatian legal system also used similar form of ban when it was determined that one political party was directly participating in terrorist activities (SDS). Hybrid actions sought to show that it was an internal ethnic conflict, and that the rules of international war law should not apply (*Sayapin, Tsybulenko, 2018*). In Ukraine, during the first phases of hybrid actions before an open aggression, it was difficult to determine whether national or international law was applied, and which category of law ranging from terrorism to the law of war could be applied (*Billing, Feldtmann, 2024*).

Decisions on annexation to a neighbouring country

After the political organization into separate local communities, the next level was bringing of decisions on the secession of self-proclaimed areas from Croatia. An example is the Declaration on Autonomy 1990, which declares the takeover of certain parts of Croatian territory. A separate territorial unit of Serbian Krajina was proclaimed, in which the Secretariat of Internal Affairs and a separate Serbian militia were subsequently established. After the referendum on secession, a decision was made to join Serbia, and local politicians were asking the Serbian authorities for military assistance in order to protect them from the Croatian authorities. Such decisions were following in other villages, that is, the fake municipal assemblies decided on annexation to the Serbia. In this way, the foreign country that organized the attack takes over other state's territory without direct armed action. The Constitutional Court of Croatia has repeatedly ruled on the nullity of such decisions of unauthorised local authorities

on the secession of territory. In criminal law, this can represent various criminal offenses against the constitutional order.

The classification of the criminal offense of terrorism and armed rebellion were used. Indictments were brought against the self-proclaimed president of the Serbian province Martić (a former police officer in the Croatian police) for inciting terrorism, and much later, for war crimes by the ICTY. Similarly, after one of the rallies in Croatia, the Serbian extremist politician Šešelj was arrested and he was criminally charged with inciting religious and national hatred and calling for the violation of territorial integrity of Croatia. Serbian political parties organized gatherings of nationalist groups with the aim of spreading Serbian nationalism and inciting armed rebellion. At that time, digital technologies were not available, and they held a large number of public rallies and protests. At these, they openly threatened to call in volunteer military units from Serbia to protect the Serbian minority.

The president of neighbouring Serbia (Milošević) then publicly wrote about unjustified repressive measures by which Croatia revokes the freedom of expression of the Serbian national minority. Milošević later ended up on trial at the ICTY, and it was shown that he have concealed his hybrid activity in the supposed concern for national minorities. A very similar form of self-organization and the holding of fake elections or referendums was committed in Crimea in Ukraine in 2014, and decisions on secession were made too.

Blocking roads and railways

A group of hybrid activities in Croatia in 1990 was carried out with the aim of blocking railways, road routes and other types of traffic communications. This area of traffic communications is protected by criminal legislation primarily in the area of incriminating endangerment, and in the most serious aspects in the area of terrorism. There are no milder forms of action that would include violent disruptions of a lower intensity than terrorism. Sometimes it is difficult to prove all characteristics of terrorism, and in criminal law there could also be a new form that would include violent groups that did not cause such widespread consequences for security but have harmful effects and hostile intentions.

It is also not possible, according to the established facts, to observe such hybrid activities separately as individual occurrences of the actions of independent perpetrators, but as systematic actions of enemy units, and such actions should be prescribed as a more serious criminal offense. In areas of Croatia where Serbian terrorists tried to take power, they began road blockades called "*the log revolution*" because they placed logs across the roads. Such obstacles were manned by armed volunteer guards who occasionally robbed and searched citizens vehicles.

The mining of railway lines is specific because the use of explosive devices is a type of action that is different from other hybrid actions. In terms of the method of commission and severity, it causes significantly more serious consequences for security and should be classified as terrorism. Since October 1990, two railway lines in Croatia were mined, a few days later a third line, and six months later three more lines. At that time, numerous punishable activities were also carried out in relation to other types of transport, such as planting explosive devices, blowing up bridges, setting fires, systematic robberies at roadblocks and other violent actions.

Attacks on police stations or police officers

The most severe form of resistance to the legitimate authorities of Croatia was daily violent attacks on the police officers and other official bodies. After the declaration of secession,

Serbian terrorists began taking over government institutions, and then attacking police patrols and police stations, stealing weapons from police warehouses and organizing their own security units, the so-called *militia*. There were dozens of attacks on the Croatian police. Sometimes hundreds of armed rebels would gather and violently enter police stations, demanding the release of arrested Serbian terrorists, and threatening police officers with automatic weapons. Two police officers were wounded at a Catholic funeral, several cases of shooting from barricades were reported, and shooting at traffic police. One unusual case of confusion happened when Serbian terrorist have shoot at a police vehicle in which three Serbian police officers working for the Croatian police were at the time, and one of them died at the crime scene near Obrovac.

Several cases of throwing explosive devices at police stations, arson of police vehicles, and attacks on private homes of police officers were recorded (*Antić, 1991, 128*). Since 1991, systematic attacks on police stations have begun, the most serious of which was in Borovo Selo with 12 victims in May 1991. Weapons were stolen from police stations, as well as heavy war weapons from the World War II Memorial Centre.

Here too, the activities cannot be viewed as ordinary criminal acts of preventing officials or individual attacks, but rather as systematic hostile actions against the state. This should also be classified as terrorism or armed rebellion in terms of criminal law. If these are hostile activities related to another state, it would also be useful to highlight this aspect in a separate new qualification, because it makes a significant difference if the police officers are prevented by a group that has systematic support.

Power and water supply disruptions

Serbian rebels disrupted power supplies to neighbouring areas, damaged power lines, bridges, waterworks, and similar resources. Cutting pipelines or electrical connections is a form of action that, in criminal law, can be classified as property damage for ordinary perpetrators, but if an organized form has the aim of disrupting security, classifications from the field of terrorism would be justified. For example, the Zadar waterworks were blown up near the Maslenica Bridge in 1990, and the power lines were blown up near Josipdol in 1991. The both were classified as terrorism. These forms of action should also be viewed as part of a broader organized activity by an enemy state.

Organized Crime in Hybrid Threats

Serbian organized crime groups have also been involved in supporting armed hostile activities and should be seen in this context as part of terrorist or violent activities. Organized crime groups that have been involved in supplying weapons using smuggling routes, may also fall under the criminal offenses of preparation of terrorism or armed rebellion. In several cases, leaders of such criminal activities have been captured in Croatia. For example, the Serbian organized crime leader Arkan was arrested after entering in Croatia in December 1990 with a group of perpetrators and a large amount of military equipment. According to the information gathered, they intended to prepare an assassination on the President of Croatia. He was convicted, but managed to escape from prison in an unknown manner. Croatian police discovered a large number of smuggled military weapons in warehouses, hotels and similar facilities. Serbian radio stations advertised the distribution of weapons to Serbian population. Later it turned out that organized crime groups were establishing their own forms of governance

on the occupied area among the Serbian population, and that they occasionally committed criminal acts against the Serbian population that remained in those areas.

Attacks on citizens

During the attempt to take over parts of the Croatian territory, violent attacks on citizens were also classified as part of armed rebellion or terrorism. This group of attacks includes various types of threats to the security, life or property of citizens. In Croatia in 1990, Serbian terrorists committed numerous house invasions and robberies, assaulting and wounding citizens of Croatian nationality. They planted explosives in schools, radio stations, warehouses, churches, courthouses, monuments, post offices and similar facilities (*Antić, 1991*). According to reports from citizens, Serbian terrorists shot at citizens in catering establishments, construction workers, railway maintenance workers, priests, mentally ill citizens, funeral processions, and in one case they took football fans off a train and beat them. Various types of buildings were attacked, windows were broken, bombs were thrown at parked vehicles, family graves, restaurants, discos, flower shops, gas stations, and the like. For such actions, the classifications from the chapter on criminal offenses against life and body can be applied, but it would also be necessary to connect them with systematic hostile action, since this is a more serious act. In Croatian case law, the classification of the criminal offense of terrorism has been used in court judgments for blocking of traffic and seizing vehicles, making explosive devices, preparing a large number of explosive devices to be planted around the city, and similar violent acts.

Conclusions

The analysis show that the main problem for definition of hybrid threats within the framework of a criminal offence lies primarily in the great diversity of the methods of perpetration, the severity of the consequences and the different types of attacks. Hybrid threats differ in intensity and type depending on whether they are applied to a country that is in the immediate neighbourhood on the front line of attack, or to other distant states that play only a secondary role in the goals of the attacking state. Due to these differences, it is complex to define a single criminal offence in national or international law that would encompass all feasible forms and methods of perpetrating hybrid threats. Structurally, it would be possible to encompass most of them in a single criminal offence similar to terrorism, listing a larger number of methods of perpetration and protective objects.

However, since not all forms represent equally serious consequences, grouping them into paragraphs according to severity would be necessary. For this reason, several forms of hybrid threats should be graded depending on whether they cause human casualties, property damage, secession, extensive security breaches or other types of consequences. International law should designate such hybrid activities as new crimes in order to clearly emphasize their international unacceptability and to improve prevention. Secession actions such as those taken against Croatia in 1990 were repeated in Ukraine almost two and a half decades later. No new legal approaches had been developed in the meantime at the level of international or comparative criminal law that would adapt to such illegal forms of secession.

Hybrid threats are broad-based hostile actions that can cause various types of harmful phenomena. Hybrid activities represent the organized actions of a hostile state and should be regulated separately in order to emphasise such intentions. The function of criminal proceedings

is very important and without a final court verdict, various subsequent interpretations and disinformation about the persons or states responsible for the attacks would be possible.

The results of the analysis show that hybrid actions are currently not included in separate legal provisions on criminal offenses, nor the most serious forms of taking over territory by alleged self-determination, illegal annexation to other states, armed attacks or taking over institutions. As it currently stands, criminal offenses under national terrorism or armed insurrection legislation may apply to such cases.

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THE ROLE OF SUSTAINABLE DEVELOPMENT IN E-CONSUMERS' AWARENESS

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Abstract. *In the face of escalating global environmental challenges and evolving societal attitudes, the importance of sustainable development in e-commerce is growing [Islam et al., 2022]. The purpose of this study is to analyze the impact of e-consumers' ecological awareness on their purchasing decisions – especially regarding the delivery of products bought online – and to assess to what extent sustainable development aspects genuinely shape purchasing preferences, and to what extent they remain a declarative value. The research focuses on key areas such as the choice of eco-friendly packaging, delivery time, preferences for shipping methods, propensity for returns, and increasing interest in second-hand purchases. The study results will enable determining whether consumers genuinely modify their purchasing habits to include pro-ecological aspects, and will also help identify barriers hindering the broader implementation of sustainable development principles in e-commerce. The article thus contributes to the discussion on the future of e-commerce in the context of environmental responsibility and long-term consumer trends.*

Keywords: *e-commerce, ecological awareness, returns, sustainable development, packaging, parcel lockers*

Introduction

Sustainable development is a term widely used in literature, legal acts, and strategic documents of many entities. The most frequently cited definition of sustainable development is the one developed by the Brundtland Commission in 1987, which defines sustainable development as "...development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" [Eur-lex, 2025]. Sustainable development has become a significant element of business strategies, translating into conducting business in a way that meets the current needs of the company and its stakeholders, while simultaneously protecting the natural environment and providing resources for future generations [Purvis, Mao & Robinson, 2019]. The Corporate Social Responsibility (CSR) model plays a crucial role in this process. Thus, sustainable development and corporate social responsibility are among the key challenges for contemporary companies. By addressing these, businesses can not only achieve economic success but also contribute to building a better future.

Among other things, the growing needs related to environmental protection have become a premise for modifying the market offer of logistics service providers towards solutions that are not only economically efficient but also environmentally responsible. Understanding ecological issues and meeting the demands of a growing group of environmentally conscious consumers pose a significant challenge for businesses.

Transport accounts for the largest share of environmental pollution. According to the "European Green Deal", a revision of CO₂ emission standards for passenger cars and vans is being considered. Average CO₂ emissions from new passenger cars and vans registered in the EU will have to be 37.5% lower in 2030 compared to 2021 limits (95 g CO₂/km) [European Parliament, 2025]. For new vans, the reduction target is 31% by 2030 (compared to 147 g CO₂/km in 2021). A special incentive mechanism aims to accelerate the introduction of zero-

emission and low-emission vehicles to the market. Thus, reducing the negative impact on the environment is becoming one of the greatest challenges facing humanity.

The increase in global environmental challenges and changing social attitudes mean that sustainable development is becoming a key factor influencing business strategies, including e-commerce. The e-commerce sector, dynamically developing on a global scale, faces the challenge of reconciling the convenience of online shopping with environmental aspects. In the face of growing ecological awareness among consumers, companies are implementing various solutions aimed at minimizing negative environmental impact, including eco-friendly packaging, low-emission deliveries, and transparency regarding product origin, among others.

Despite increasingly frequent declarations from consumers about preferring sustainable solutions, the question still arises whether these genuinely translate into concrete purchasing decisions. This article will present considerations that either refute or confirm this thesis. The study is review-analytical in nature. It is based on the analysis and synthesis of available data from industry reports of selected European countries, with an emphasis on Poland, as well as scientific publications. Key consumer decision-making factors were considered, such as the choice of eco-friendly brands, preferences for eco-friendly packaging, handling returns, and the choice of delivery methods for ordered products. By analyzing available reports, including Gemius "E-commerce in Poland 2023" and "E-commerce in Poland 2024" and others, efforts were made to examine the actual impact of consumers' ecological awareness on their choices.

Ecological Awareness of E-Consumers

It is important to emphasize that ecological action is no longer just a trend but a necessity—especially in the context of the 2022 EU directive, CSRD (Corporate Sustainability Reporting Directive). This directive obliges companies to report on ESG (Environmental, Social, and Governance) performance. In the EU, the transport and storage sector accounts for a substantial share of greenhouse gas emissions, dominated by road transport at nearly 70%. E-commerce activity has a significant environmental impact, particularly in the area of last-mile delivery (door-to-door). The EU aims to reduce CO₂ emissions by 55% by 2030. It is therefore not surprising that courier companies are increasingly focusing on environmental aspects. Similar trends are observed among e-commerce customers.

According to the E-Chamber report [2024], 86% of respondents are willing to wait longer for a combined shipment of all ordered products if it is delivered in an eco-friendly manner. Additionally, 6 out of 10 respondents view returns negatively in terms of their environmental impact. Concerns also arise regarding purchases from Asian platforms - 66% of internet users perceive them as harmful to the environment. Meanwhile, 42% of consumers pay attention to whether the product is packed in an eco-friendly way, and nearly 47% are willing to pay extra for sustainable packaging. Reuse of packaging is important to 39% of respondents. These data highlight a growing awareness among customers and a willingness to embrace more sustainable solutions.

A report commissioned by the Mondi Group [2025] shows that sustainability significantly influences packaging preferences and online shopping behavior across Europe. Among 6,000 consumers surveyed, eco-consciousness plays a vital role - particularly in Scandinavian countries, where consumers are most engaged in choosing sustainable options (Table 1). All countries in the study reported an increase in interest in eco-friendly packaging compared to the previous year.

Table 1. Comparison of Trends in Selected European Countries (2024 vs. 2023)

Source: [Mondi, 2025]

Country	Preference for eco-friendly packaging (2024)	Change from 2023
Germany	82%	+6 p.p.
France	78%	+4 p.p.
Poland	73%	+5 p.p.
Sweden	85%	+7 p.p.
Czechia	76%	+5 p.p.

Furthermore, research conducted by AMS SmartOOH [2024] indicates that as many as 86% of Poles expect companies to engage in pro-ecological activities. Moreover, consumers are also willing to pay more for products from brands that operate responsibly. These declarations provide important information for companies that sustainable development has a clear impact on brand value, enhancing its market position. According to Gemius reports, in 2023 [2023], 68% of Polish consumers declared paying attention to ecological aspects of online shopping, while in 2024, this number increased to 73%. A similar trend is observed in Europe - in Germany, 82% of consumers prefer ecological packaging, and in Sweden, 85%, but promotions and price still have a decisive impact on purchases.

One of the key trends is the shift towards more ecological delivery methods. In 2024, according to Gemius research, 81% of Polish consumers choose Paczkomat's as a pick-up method, which minimizes the carbon footprint of transport [Majchrzak-Lepczyk, 2023]. There is a clear increase in the popularity of parcel lockers for both deliveries and returns. InPost has become a leader among courier companies, and more and more companies are using eco-friendly packaging, which responds to growing consumer expectations (Table 2).

Table 2. Summary regarding ecological online shopping preferences in Poland

Source: [Gemius, 2023; Gemius, 2024]

Category	2023	2024
Preferred delivery method	Paczkomat (78%)	Paczkomat (81%) (+3 p.p.)
Most frequently chosen courier	DPD (35%), InPost (33%)	InPost (45%) – new leader
Returns – preferred method	Return by courier (40%), parcel lockers (30%)	Parcel lockers (36%) (+6 p.p.)
Eco-friendly packaging	55% of companies declare its use	61% of companies declare its use (+6 p.p.)

Category	2023	2024
Impact of ecology on delivery choice	68% of consumers pay attention to ecological options	73% of consumers pay attention to ecological options (+5 p.p.)

Eco-friendly packaging is one of the main tools companies use to reduce environmental impact. In 2024, 61% of companies declared its use. Product returns, on the other hand, regardless of the chosen method, always generate an additional carbon footprint associated with transport and the consumption of packaging materials [Barman, 2025]. Although Gemius reports [2023, 2024] do not analyze in detail the impact of ecological awareness on return decisions, actions related to consumers' growing interest in more sustainable return options (e.g., shipment consolidation, returns to pick-up points instead of by courier) are observed. It can therefore be assumed that consumers, especially those with high ecological awareness, may be willing to make certain compromises in convenience if it helps reduce the negative environmental impact. Although a significant group of consumers declares a willingness to use returnable packaging, their actual use may be significantly lower.

Research conducted by Gemius [2024] shows that the most important issue related to ecological delivery methods and the possibility of returning goods is the use of ecological packaging (indicated by 2/3 of respondents), followed by the possibility of using reusable packaging (Chart 1). Carbon footprint issues and transport by electric vehicles are perceived by respondents as less important.

Interest in used products as an alternative to buying new products is growing among consumers. 61% of consumers in Poland make second-hand purchases, with the most popular categories being clothing (79%) and books and films (71%) [Gemius, 2024]. What should be clearly emphasized is the fact that for the first time, the category of second-hand online purchases (re-commerce) appeared in the Gemius report. This confirms the upward trend in used product purchases. The latest Gemius report [2024] shows that as many as 50% of second-hand product buyers describe their financial situation as "good" which is a very important piece of information. Buying used products is no longer frowned upon. Customers appreciate quality, as a product that will last for years can be bought at a good price.

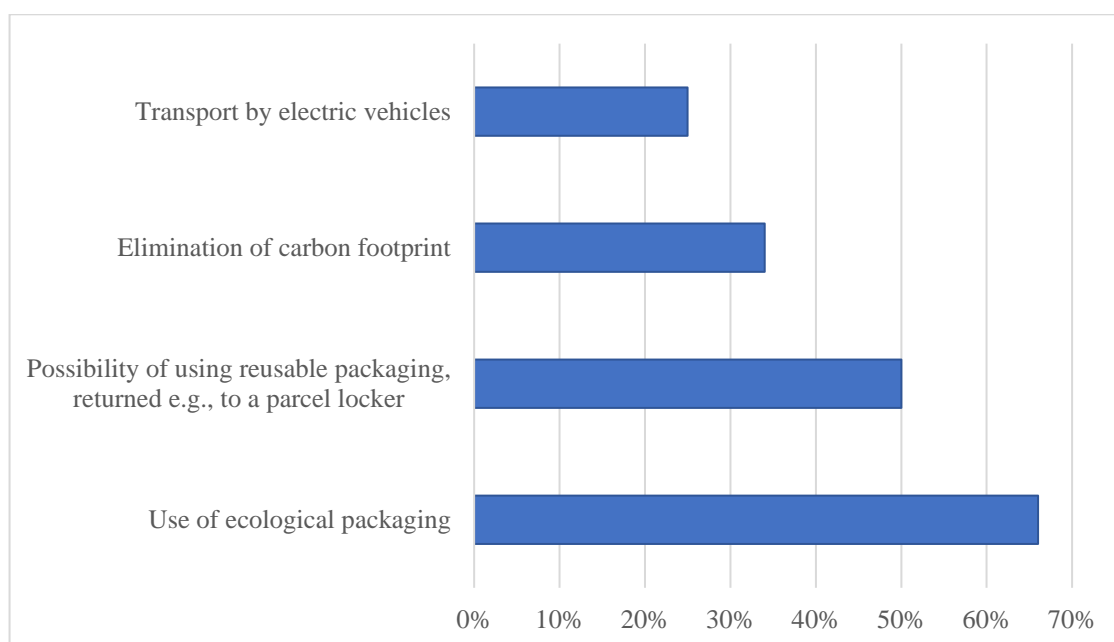


Chart 1. Most important areas related to ecological delivery/return method¹

Source: [Gemius, 2024]

However, the most important area is the growing awareness of climate change and the negative impact of mass-produced products. This shows a growing interest in purchasing used products, indicating increased ecological awareness among consumers [Yao, 2024]. Companies are adapting to these trends by offering more ecological delivery options and recycled products.

E-commerce Company Strategies for Sustainable Development

E-commerce companies are increasingly investing in green logistics, implementing low-emission deliveries, promoting order pick-up at points, and optimizing courier routes using artificial intelligence. Simultaneously, the importance of ecological packaging is growing – businesses are using recycled materials, reducing plastic, and encouraging customers to reuse packaging. Transparency also plays a significant role, as companies provide detailed information on product origin and ecological certificates, and some implement blockchain technology to track the supply chain [Karakas, Acar & Kucukaltan, 2021; Aslam, Lai, Al Hanbali & Khan, 2025].

Platforms enabling the sale and exchange of used products are becoming increasingly popular, aligning with the circular economy model. Research conducted by Mediapanel [2025] shows that in Poland, Vinted recorded the longest participant engagement time in the first quarter of 2025, which may confirm a growing interest in re-commerce purchases. From its inception, Vinted has positioned itself as a platform supporting sustainable consumption and circularity in fashion. The company successfully leverages consumers' growing interest in a responsible approach to shopping by creating an intuitive, mobile interface and efficient search algorithms. The entire sales and purchase process has been maximally simplified. The implementation of technological innovations, such as smart warehouses or tools for measuring carbon footprint, allows companies to more effectively achieve sustainable development goals.

¹ Basis for percentage calculation: persons who rated the importance of the impact of the delivery and return method on the environment as 4 or 5 (important or very important) (N=493).

Thus, e-commerce companies are increasingly adapting their operational processes to the growing ecological expectations of consumers.

Unfortunately, consumers, despite their declared concern for the environment, often make purchasing decisions based on price [Štofejová et al., 2023]. European ProCarton research indicates that 64% of consumers choose environmentally friendly products only when their price is equal to conventional alternatives [Chimczak-Bratkowski, 2025]. Innovations in sustainable packaging should therefore go hand in hand with cost optimization. In response to this problem, companies are implementing loyalty programs where consumers can get discounts for choosing environmentally friendly products. Additionally, the importance of education is growing – businesses publish ESG reports to promote conscious shopping.

An ideal example is InPost, as one of the leaders in e-commerce logistics in Europe [Majchrzak-Lepczyk, 2024]. The innovative solutions implemented by the company aim to reduce CO₂ emissions and increase delivery efficiency. The company focuses on automating logistics processes, minimizing environmental impact, and promoting ecological consumer choices. The company has developed a decarbonization strategy, consistent with the goals of the Paris Agreement, aiming to achieve net-zero emissions by 2040 [Inpost, 2025]. As part of this strategy, the company:

- Monitors and reduces greenhouse gas emissions in three scopes: direct operational emissions, energy-related emissions, and emissions across the entire value chain.
- Implements electric delivery vehicles, which reduce the carbon footprint of transport.
- Optimizes logistics processes to reduce the number of trips and increase delivery efficiency.

One of InPost's key solutions are Paczkomat's, which significantly reduce CO₂ emissions compared to traditional courier deliveries. This allows consumers to pick up parcels at a convenient time, reducing the number of failed delivery attempts and additional trips. Parcel lockers consume less energy than traditional distribution centers, which aligns with the strategy of reducing energy consumption. Currently, the company has 25,000 Paczkomat's located in Poland, as well as 1,300 electric vehicles. The company continues to invest in further developing the Paczkomat's network to increase their accessibility and reduce delivery-related emissions. As part of this strategy, the company:

- Publishes reports on CO₂ emissions and progress in achieving climate goals.
- Collaborates with business partners to promote ecological solutions throughout the supply chain.
- Introduces technological innovations that support sustainable development, e.g., intelligent logistics management systems.

InPost consistently implements innovative solutions that contribute to the sustainable development of e-commerce. Through its decarbonization strategy, Paczkoamt's, eco-returns (sent without the need to print labels), and transparent ESG reporting, the company not only minimizes its environmental impact but also educates consumers and business partners on ecological choices. Other examples of innovative solutions include the use of tools to calculate the carbon footprint of purchases, which help consumers understand their environmental impact.

Despite the growing importance of social responsibility, both among consumers and companies, the "Responsible E-commerce 2024" report [Izba Gospodarki Elektronicznej, 2024] indicates challenges facing the e-commerce industry. Trust, cybersecurity [Guzenk, 2024], and willingness to invest in an ecological future are key areas influencing further market development. The results cited indicate that consumers' ecological awareness is growing, but their purchasing decisions are often dependent on convenience and price. Companies are

implementing sustainable development strategies, but their full implementation requires further education and changes in consumer habits. The future is shaped by the continued need to promote ecological products and solutions and to implement technologies enabling more sustainable e-commerce.

Consumer Behavior and Sustainable Practices in E-commerce

Growing ecological awareness among consumers is increasingly visible, yet studies reveal a significant discrepancy between declared attitudes and actual purchasing choices. Consumers often express a willingness to purchase environmentally friendly products, but in practice, their decisions are strongly determined by convenience, price, and habits [Oláh et al., 2023]. This discrepancy poses a key challenge for sustainable e-commerce, requiring an analysis of barriers and motivators influencing consumer behavior.

Therefore, the following challenge areas should be identified:

- Economic costs - ecological products are perceived as more expensive. Although some offer long-term savings, the higher initial cost is a barrier, especially for households with limited budgets [Štofejová et al., 2023; Chimczak-Bratkowski, 2025].
- Lack of convenience - choosing sustainable products often involves greater effort and less availability. Consumers may encounter difficulties finding ecological alternatives in local stores or online.
- Skepticism and lack of trust - consumers may be skeptical of companies' ecological claims, fearing greenwashing [Feghali, Najem & Metcalfe, 2025; Mazur i Wierzbicka, 2022]. Lack of transparency in supply chains and difficulty in verifying the authenticity of ecological certificates can undermine consumer trust.
- Power of habits and social norms - entrenched consumer habits and social norms promoting consumption hinder the change towards more sustainable behaviors. Consumers often choose products that are popular and widely socially accepted, even if they are not ecological [Linder, Giusti, Samuelsson & Barthel, 2022].
- Lack of information and education - many consumers lack sufficient knowledge about the environmental impact of their purchasing decisions. The absence of clear and easily accessible information on the ecological aspects of products makes it difficult to make informed choices.

Thus, in view of the above barriers, motivators for changing non-ecological behaviors among customers should be sought. Among them, the following can be indicated:

- Increased ecological awareness - growing awareness of the impact of consumption on the natural environment can prompt consumers to seek more sustainable options. Educational and social campaigns play a key role here in raising awareness and motivation.
- Personal values - consumers who identify with ecological values are more likely to choose products, services, and solutions consistent with their beliefs. Companies can build customer loyalty by communicating values and engaging in environmental protection activities.
- Social influence - consumers are susceptible to their social environment, as knowing that their friends, family, or other groups are engaged in sustainable practices makes them more likely to imitate their behavior.
- Innovation and availability of sustainable products - technological development and innovations in ecological products and services increase their availability and

attractiveness to consumers. Companies that offer innovative and competitively priced sustainable alternatives have a better chance of attracting customers.

- Policy and regulations - government regulations, such as eco-taxes, bans on harmful substances, or packaging standards, can effectively promote sustainable consumption.

Undoubtedly, modern technologies play a very important role in transforming e-commerce towards sustainable development. Artificial intelligence (AI) and blockchain technology offer innovative solutions that not only improve operational efficiency but also increase transparency, build consumer trust, and support ecological practices [Hina, Islam & Dhir, 2024].

In conclusion, the gap between declared values and actual consumer behavior remains a significant challenge for the development of sustainable e-commerce. Habitual purchasing patterns, social norms favoring consumption, and a lack of transparent information about the environmental impact of products can limit the effectiveness of pro-ecological actions. Understanding these barriers – both psychological and structural – is a necessary condition for implementing effective strategies to change consumer attitudes. At the same time, the growing potential of innovative technologies, such as artificial intelligence (AI) and blockchain, offers new possibilities for building more transparent and efficient online sales systems. AI can support personalization and consumer education, predict purchasing preferences, and promote products consistent with the idea of sustainable development. Blockchain, in turn, increases the transparency of supply chains, authenticates manufacturers' declarations, and strengthens consumer trust by allowing traceability of product origin and environmental impact. Integrating these technologies with educational activities and designing the consumer experience in an ecological spirit can significantly contribute to reducing the distance between awareness and action. As a result, it is precisely the combination of consumer insights with appropriately implemented technological solutions that can form the foundation for a more sustainable and responsible e-commerce in the future.

Conclusions

Consumer ecological awareness in e-commerce is growing, but its influence on actual purchasing decisions remains limited. There is a gap between declarations and actions – consumers increasingly emphasize the importance of ecology, but when choosing products, they are guided by other criteria, often price, convenience, and availability. E-commerce companies, aware of the growing interest in sustainable development, are implementing strategies aimed at reducing CO₂ emissions, limiting waste, and improving operational transparency. InPost, as an example of an innovative approach in Poland and beyond, is developing its Paczkomat's network, investing in low-emission logistics, and implementing solutions supporting ESG reporting.

On an international scale, the role of technologies such as artificial intelligence and blockchain is also growing, as they allow for supply chain optimization, increased transparency of ecological certificates, and consumer education. These technologies also help overcome barriers related to costs, convenience, or skepticism towards company declarations. Purchasing behaviors are changing dynamically, and a key trend is the growing popularity of second-hand purchases, which indicates increasing acceptance of more sustainable consumer practices. At the same time, the importance of returns is growing, which can negatively impact the environment if appropriate mechanisms to limit them are not implemented.

Sustainable development in e-commerce is becoming one of the most important challenges and simultaneously opportunities for contemporary businesses and consumers. E-commerce companies, in response to these challenges, should implement a range of strategies supporting sustainable development, invest in green logistics, ecological packaging, supply chain transparency, and loyalty programs promoting pro-ecological choices. Consumer education, through ESG reports and information campaigns, plays a huge role. The future of sustainable e-commerce depends both on the further development of innovative solutions and on changes in consumer attitudes. Education, transparency, and business cooperation are essential for ecology to become a real selection criterion, not just a declaration. Only by combining efforts on all these levels will it be possible to build an e-commerce market that is not only modern but also socially and environmentally responsible.

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THE IMPACT OF TATTOOS AS BODY MODIFICATIONS ON PUBLIC PERCEPTION OF THE POLICE: AN EYE-TRACKING STUDY

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Abstract. This study investigates the impact of tattoos on police officers' perception by the general public. In recent years, body modifications, particularly tattoos, have gained increasing social acceptance, while hiring policies in the public sector, especially within law enforcement, remain inconsistent regarding the hiring of tattooed applicants. The investigation aimed to analyse the effects of tattoos on public trust in and the perception of the police. To capture the perception, both eye-tracking data and behavioral data were collected. The eye-tracking analysis revealed that tattoos attracted significantly more visual attention than other elements of police equipment, such as the emblem or firearm. Furthermore, behavioral data showed a correlation between the fixation duration on tattoos and the participants' attitudes towards the police: individuals with a negative attitude towards the police fixated on the tattoos significantly longer. The sample consisted of 114 participants, aged 18 to 46 years. Approximately 37% of the participants were tattooed themselves. In addition to eye-tracking data, the study also examined the participants' attitudes toward the police, as well as their personal experiences with police encounters. The results suggest that tattoos on police officers do not have a significant influence on public perception, but they interact with the observer's attitude towards the police. These findings could further stimulate the discussion on introducing uniform agency standards for hiring tattooed candidates within law enforcement.

Keywords: *body modifications, social acceptance, public perception, eye-tracking analysis, employment policies*

Introduction

‘Tattoos are no longer a sign of belonging to a motorbike gang or an indication of having served a prison sentence, but for many people today they are part of their individual personality development,’ explains Patrick Seegers, state chairman of the German Police Union (DPolG) in Lower Saxony (DPolG, 2022, n.p.). This statement reflects the trend in the general population. According to a study conducted by the market and opinion research institute YouGov in 2021 (n.p.), 26% of 25 to 34-year-olds have one or more tattoos. Furthermore, 53% of respondents stated that they find tattoos beautiful.

Nevertheless, official standards regarding the recruitment of applicants with tattoos are still not uniformly standardised. Lars Michaelis, Professor of European and Civil Service Law, explains that uniformed civil servants are subject to stricter standards, as they are primarily seen as representatives of the state and less as individual personalities (dbb beamtenbund und tarifunion, 2023, n.p.). Only unconstitutional, weapon-like or extremist tattoos would constitute hard exclusion criteria for applicants. The hurdles for applicants with tattoos in the civil service therefore appear to be low. At present, there is no data on the proportion of tattooed police officers within the individual authorities in Germany.

However, it is not yet clear how and under what conditions the various tattoos of police officers affect the general population. German police officers are also coming under increasing pressure from the public. According to the European Commission's standard barometer, 77% of the German population as a whole trusted the police in 2021, while 21% expressed no trust. In the summer of 2020, trust in the German police was still at its highest level to date at 84% (European Commission, 2020). Current research on the perception and impact of tattooed police officers on the general public in the context of previous experiences and general attitudes towards the police appears to be limited and is addressed by this survey.

Theoretical approach

Body modifications such as piercings and tattoos are common in the modern Western world. This survey focuses on the effects of tattoos, as these are the most widespread body modifications (Atkinson, 2003).

Historically, tattoos were initially only seen on prisoners, soldiers & sailors (DeMello & Rubin, 2000). In the late 1980s, however, a general trend towards tattoos and piercings developed (Siebers, 2000).

According to Thielgen and Schade (2023), non-verbal communication includes features such as facial expressions or body movements and outward appearance. Tattoos can therefore be categorised as external appearance and thus as non-verbal communication. A study by Degelman and Price (2002) shows that tattoos can influence people's perceptions. High school and university students evaluated a woman who was presented in a photo with or without a visible tattoo on her upper arm with regard to various characteristics such as fashion consciousness or intelligence. Regardless of whether the participants were tattooed themselves, the tattooed woman scored significantly lower in nine out of 13 characteristics.

Applied to the context of this study, the question arises as to whether police officers with tattoos are also rated more negatively in terms of their personality or character in the field. Non-

verbal communication is a key predictor of operational success, as it significantly influences first impressions in the field (Thielgen & Schade, 2023).

While some studies show clear effects of tattoos on perception, others paint a more differentiated picture depending on context and population. Based on their survey, Hauke-Forman, Methner and Bruckmüller (2021) came to the conclusion that police officers with piercings and tattoos are perceived as less competent and less trustworthy. In addition, officers with body modifications were perceived to be more threatening than those without modifications. In contrast, an experimental survey with imprisoned offenders (approx. 70% male) did not show the so-called tattoo effect in any way. This states that the presence of tattoos on uniformed police officers has a detrimental effect on their perception (Thielgen, Schade & Rohr, 2020). In the aforementioned study, significant evidence was found for the profession effect. This implies that police officers in uniform are generally rated more positively by the test subjects than police officers in plain clothes.

According to Schöne (2022), migration policy, the steady rise in drug use and increasing (right-wing) crime are contributing to the fact that the police are increasingly no longer perceived as friends and helpers, but are often criticised.

The public image of the police can be analysed on the basis of affective and cognitive components. Affective components include emotional and spontaneous judgements, such as those caused by headlines with little information. In contrast, cognitive components refer to rational judgements that are strongly influenced by personal experiences with the police, among other things. As a rule, both components work together and have a significant influence on the perception of the police.

The external appearance is also part of the image of the police and has a significant influence on perception. The uniform in particular plays a decisive role: it serves as a means of recognising professional group affiliation and as a non-verbal means of communication (Hermanutz & Weigle, 2017). However, uniforms, handcuffs, batons and weapons can also create a sense of distance that can be perceived negatively (Schädle-Deininger, 2005). In a study by Rylan (2017), police officers in uniform were nevertheless perceived more positively than those in plain clothes. A study by Rosenbaum, Schuck, Costello, Hawkins and Ring (2005) shows that attitudes towards the police are not formed by direct encounters alone. Indirect experiences and existing preconceptions play a central role. Ethnic minorities in particular perceive the police more critically due to frequently negative experiences and social contexts. Changes in attitudes are difficult to achieve due to stable stereotypes and bias.

Stereotypes often contribute to prejudices that can have a negative impact. Amongst other things, police officers are often ascribed abuse of power and a consuming view of authority. In the past, police officers have shown disrespectful behaviour towards foreign citizens in particular (Goff, Jackson, Di Leone, Culotta & DiTomasso, 2014). Common stereotypes also include characteristics such as a willingness to use violence or unfriendliness, which can have a negative impact on the public image of the police and lead to negative attitudes towards police officers. In a study by Schweer, Strasser and Zdun (2008), the perception of the police by ethnic minorities was analysed, with a particular focus on everyday conflicts. It was found that ethnic minorities often perceive the police as marginalising or discriminatory, particularly due to cultural differences and social disadvantage. The study emphasises that stereotypes and police subcultures significantly influence the behaviour of officers and the perception of ethnic groups. These dynamics can increase the potential for conflict in everyday police work. In addition, the public image of the police is further characterised by social events and media coverage. Headlines such as right-wing extremist WhatsApp chats in police groups or the murder of George Floyd, which point to structural problems, encourage greater public criticism of the

police. Such events often lead to the formation of collective movements against police violence (Schöne, 2022). In summary, although there are cases of discriminatory or stereotypical behaviour within the police, these should not be generalised to the entire institution (Schweer et al., 2008). Various factors influence how the police are perceived. These include appearance, e.g. in the form of body modifications (Thielgen & Schade, 2023). Personal experiences with the police, stories from third parties, headlines and the general image also play a decisive role.

It can be assumed that, according to the principle of salience, tattoos on police officers attract more attention than police officers' equipment. Based on the reviewed literature and empirical findings, the following hypotheses were developed to examine visual attention and attitudes toward tattooed police officers. The following hypothesis is derived from this:

H1: Tattoos are generally fixated significantly longer than neutral AOI.

Furthermore, it can be deduced from the literature that tattooed persons are generally evaluated more negatively, regardless of whether the observing persons are tattooed themselves (Degelman & Price, 2002). Police officers with piercings and tattoos are perceived as less competent, less trustworthy and more threatening (Hauke-Forman, Methner & Bruckmüller, 2021). Previous experiences also influence the perception of the police (Rosenbaum et al., 2015). It can be assumed that people who already have a negative attitude towards the police are more likely to fixate on points that confirm this negative attitude. Based on this consideration, the following hypotheses can be derived:

H2: People who have a bad attitude towards the police fixate the tattoos significantly longer than people who have a good attitude towards the police.

H3: People who have had negative experiences with the police fixate the tattoos significantly longer than people who have had no negative experiences with the police.

H4: There are significant differences in attitudes towards the police and in the evaluation of past experiences with the police between the groups presented with the stimuli.

In addition, it should be ascertained whether the interviewees are tattooed themselves. The literature shows that it makes no difference in the evaluation of strangers whether the people being observed are tattooed themselves or not (Degelman & Price, 2002). Furthermore, unknown stimuli attract more attention than familiar stimuli according to the principle of salience and habituation. For this reason, the researchers assume that personal tattoos have no influence on how long the tattoos are fixed.

H5: People with tattoos do not differ significantly in the fixation duration of tattoos compared to those without tattoos.

It also emerges that attitudes towards the police depend on the one hand on indirect experiences, i.e. knowledge of other people's experiences, and on the other hand on previous attitudes and encounters with the police (Rosenbaum, et al., 2015). It is therefore assumed that previous negative experiences with the police influence current attitudes towards them.

At the same time, it is assumed that people who work for the police themselves or have close relatives/acquaintances in this professional field may have had more positive experiences with the police, which in turn could improve their attitude towards this professional group. Hypotheses six and seven are derived from this:

H6: People who have had negative experiences with the police themselves have a worse attitude towards the police than people who have not had negative experiences with the police.

H7: People who work for the police themselves (or their relatives/acquaintances) have a better attitude towards the police than people who have no private contact with the police.

Furthermore, marginalised groups in particular, such as people with a migration background, describe negative experiences in contact with the police (Schwer, Strasser & Zdun,

2008). Within this study, the researchers focussed on one of these marginalised groups, from which the final hypothesis can be derived:

H8: People with a migration background or those whose parents are immigrants have a worse attitude towards the police than people who do not have a migration background.

Methodology

The present study follows a cross-sectional design (Schmidt-Atzert & Amelang, 2012). The subjects were presented with the variables of the eye tracking survey and the items of the questionnaire only once. An individual eye movement pattern to the presented stimulus was recorded for each person, followed by the response behaviour in the presented questionnaire.

A German version of the Perception of Police Scale (POPS) was used to record the perception of police officers (Nadal & Davidoff, 2015). The following control variables were also collected: Acquaintances, family or friends in the police force, experiences with the police, relation to tattoos, age, gender, level of education, migration background, place of residence and faith or religion. The questionnaire was created with the help of SoSciSurvey and the test subjects completed it after the eye tracking survey.

Four different images of police officers with and without different tattoo variations were used to carry out the eye tracking. The original image was provided by the supervising lecturer and the image was processed using the Adobe Firefly programme.

The images were entered into the Tobii Pro eye tracking programme and the areas of interest (AOI), the tattoos, the police emblem and the weapons were defined. After a pre-test, recruitment began. Recruitment took place both on site at the Fresenius University of Applied Sciences in Cologne, where the eye tracking laboratory is also located, and via WhatsApp groups. The only inclusion criterion was that the pupil movement of the subjects could be recorded by the eye tracking tool. The students received subject hours for their participation. The theoretical constructs were recorded using a questionnaire and an eye tracking tool.

The *Perception of Police Scale* (POPS) is used to measure attitudes towards the police (Nadal & Davidoff, 2015). The questionnaire comprises twelve statements that were answered by the respondent on a five-point Likert scale from 'strongly disagree' to 'strongly agree'. Nadal and Davidoff (2015) measured very good internal consistency ($\alpha = .92$) for the scale. The subjects' experiences with the police were recorded using the police-related questions section of the questionnaire from Oberwittler, Schwarzenbach & Gerstner's (2011) school survey on life situations and risks of young people. The items from the police-related questions section used in the present study record whether the test subjects have had contact with the police in the last twelve months and the reason for this contact. In addition, the behaviour of the police officers in the respective situation was recorded and whether the study participants felt that they had been treated with respect. The entire questionnaire was '(...) tested in various pretests for comprehensibility, usability and statistical properties' (Oberwittler, Köllisch & Naplava, 2001, p. 23).

The Tobii Pro eye tracking tool was used for the part of the study in which an image was presented for ten seconds and the eye movements and fixations of the test subjects were recorded. The AOIs recorded included the tattoos, the police emblem, the belt and the weapon. The test subjects were shown only one of the following four images at random.



Figure 1. Images of the test subjects.

The data set of the eye tracking study comprises $N = 114$ participants aged between 18 and 46 years. On average, the participants were $M = 21.63$ years old ($SD = 3.75$) and of the 114 participants, 94 people stated that they felt they belonged to the female gender (82%). In addition, 17 men (15%) took part, one person chose the gender diverse (1%) and two participants did not specify a gender. The sample is divided into 42 people (37%) with tattoos and 71 people (62%) without tattoos. The three most frequently cited reasons for having tattoos were: To remember a special event (26 responses), I just like the way it looks (23 responses) and To express myself (13 responses). Of the 114 respondents, 92 people (81%) stated that they knew someone who worked for the police, 14 participants (12%) had family members in the police force and 73 (64%) had contact with the police through friends.

The study was analysed using the free programming language R (R Core Team, 2021) and the software RStudio as a development environment and graphical user interface (RStudio Team, 2020). In the first step, the two data sets collected were summarised. This was followed by a descriptive analysis of the combined data set and a review of the reliability of the scales collected. The hypotheses were then analysed using inferential statistics. This was done using t-tests for independent samples for $H1$, $H5$, $H7$ and $H8$, as well as Pearson correlations and regression analyses to examine hypotheses $H2$, $H3$ and $H6$. In addition, a MANOVA was calculated to test $H4$.

Results

Descriptive analysis. Table 1 shows the univariate statistics and reliabilities of the POPS scale and the scale for evaluating experiences with the police. Cronbach's alpha for the scale on attitudes towards the police is $\alpha = 0.88$ and for experiences $\alpha = 0.99$.

Table 1. Univariate descriptive statistics and Cronbach's alpha for the POPS (attitude towards the police) and experiences with the police.

Konstrukt	<i>M</i>	<i>SD</i>	<i>Md</i>	<i>Q25</i>	<i>Q75</i>	<i>Min</i>	<i>Max</i>	<i>n</i>	<i>n_miss</i>	α
Attitude towards police	3.46	0.50	3.5	3.08	3.75	2.00	4.75	113	1	0.88
Experience with police	1.60	3.50	2.67	2.67	2.83	0.00	3.00	113	1	0.99

Note. Q25: 25 % quantile, Q75: 75 % quantile.

The average observation periods and other descriptive key figures for the various AOIs can be found in Table 2.

Table 2. Univariate descriptive statistics for the observation period of the different AOIs.

AOI	<i>M</i>	<i>SD</i>	<i>Md</i>	<i>Min</i>	<i>Max</i>	<i>n</i>
Belt	667.	762.	497	0.00	3692	113
Pistol	754.	651.	583	0.00	2850	113
Police- emblem	1195.	1355.	850	0.00	9334	113
Tattoo	1538.	1183.	1300	0.00	5842	101

Note: AOI: Area of Interest.

Table 3 shows the bivariate correlations between the constructs surveyed. Here, a significant correlation was only found between the attitude towards the police and the duration of fixation of the tattoos with $r(113) = -.21, p < 0.05$.

Table 3. Bivariate product-moment correlations for attitudes towards the police, experiences with the police and the duration of fixation on tattoos.

	Attitude towards police	Experience with police
Experience with police	-.10	
Tattoo fixation time	-.21*	-.01

*Note: n = 113, * $p < .05$*

Statistical evaluation of the hypotheses. In the first hypothesis, it is assumed that tattoos attract the attention of the test subjects and therefore the average viewing time of the tattoo AOI is longer than that of the other AOIs. The descriptive data shows a mean viewing time of the tattoo AOI of $M = 1538.31$ ms and a mean viewing time of the neutral AOI of $M = 792.08$ ms. In addition, the t-test for independent samples shows a significant difference between the viewing duration of the AOI, $t(157.83) = 5.609, p < 0.001$.

A linear regression model is set up to test the second hypothesis that people with a poorer attitude towards the police fixate the tattoos for longer. This model shows a variance explanation of $R^2 = .04$ for the criterion of attitude towards the police and this variance explanation is significant with $F(1, 99) = 4.371, p < 0.05$.

Hypothesis three assumes longer observation periods for people with negative experiences with the police. The established linear regression model shows a variance explanation of $R^2 < .01$ for the criterion of experience with the police. The variance explanation with $F(1, 99) = 0.0038, p = 0.9511$ is not significant.

The multi-factorial analysis of variance to test the fourth hypothesis, which assumes differences in attitudes towards the police and the evaluation of past experiences with the police between the groups of the presented stimuli, shows a significant result with $Wilks = 0.935$,

$F(6,870) = 4.991, p < 0.001$. The univariate ANOVA tests show no significant result for the attitude towards the police with $F(3, 436) = 1.688, p = 0.169, \eta^2 = 0.011$ and a significant result for the evaluation of past experiences with the police with: $F(3, 436) = 7.694, p < 0.001, \eta^2 = 0.053$.

To calculate the fifth hypothesis, people with tattoos fixate tattoos for longer, another t-test for independent samples is carried out. This shows no significant difference between the two groups with $t(70.44) = 0.965, p = 0.338$ with an average viewing time of $M = 1689.32$ ms for people with tattoos and $M = 1447.22$ ms without.

The correlation between attitude towards the police and experience with the police to test the fifth hypothesis is not significant at $r(114) = -.10, p = 0.275$.

Hypothesis seven assumes that people with a connection to the police have a better attitude towards the police. The mean value of the POPS is $M = 3.47$ in the group of people with a connection to the police and $M = 3.43$ in people without a connection to the police. Furthermore, the t-test for independent samples shows no significant difference between the attitudes towards the police, $t(27.01) = 0.341, p = 0.274$. To calculate the eighth hypothesis, people with a migration background have a worse attitude towards the police, another t-test for independent samples is carried out. This shows no significant difference between the two groups with $t(33.54) = -0.191, p = 0.8496$ with an average POPS scale value of $M = 3.44$ for people with a migration background and $M = 3.47$ without.

Discussions

In the following section, the results are summarised and interpreted on the basis of the theoretical background. Hypothesis one assumes that people generally look longer at the tattoos than at the neutral AOI. With a mean difference of around $d = 746$ milliseconds between the tattoo AOI and the average viewing time of the neutral AOI (weapon, emblem, belt), there was a significant difference in the t-test ($p < .001$). Hypothesis 1 can therefore be accepted for the time being.

However, it must be clarified how meaningful this difference actually is. Out of a total of 10 seconds in which the image was viewed, test subjects looked at the tattoos for less than one second longer on average than at the neutral AOI. It can be assumed that this is solely due to the salience of the stimulus of a tattoo in the way people process images. According to Sanocki and Sulman (2011), colour disharmony or colour salience of individual stimuli attracts human attention. The colour contrast of the tattoo will therefore naturally attract more attention than police clothing. This can also be proven by the average viewing time of the police emblem ($M = 1195$ ms), which presumably also attracted more attention than, for example, the belt ($M = 667$ ms) due to the colour contrast. In addition, police officers in North Rhine-Westphalia have only been allowed to wear open tattoos since 2018 (Reuter, 2020), which makes an open tattoo as an AOI an unclear attraction. Therefore, it is probably more crucial to look at the fixation time of tattoos in relation to attitudes towards the police, which was done in hypothesis two.

In the linear regression model, the attitude towards the police was able to explain 4% of the variance in the duration of tattoo fixation ($p < .05$). People who had a more negative attitude towards the police therefore fixed the tattoos for longer. Hypothesis two is therefore significant and can be accepted for the time being. The longer fixation time could be due to the principle of selective perception. People who already have a more negative attitude towards the police could therefore be more likely to fixate points that confirm this negative attitude.

Hypothesis three 'People who have had negative experiences with the police fixate the tattoos significantly longer than people who have had no negative experiences with the police'

must be rejected for the time being with a variance explanation of less than one per cent for the criterion of experiences with the police and a significance above the level of 5% ($p = 0.9511$). With a mean value of $M = 1.6$ on a scale from one 'not true at all' to four 'true exactly', on which the behaviour of police officers was to be rated, e.g. 'The police officers treated me/us fairly and with respect', the general experience with police officers is rather negative. It was previously assumed that negative experiences could lead to tattoos being more likely to be fixed, as people with tattoos also tended to be rated negatively in the study and people who think negatively of a group of people would accordingly also fixate negatively connoted attributes. Based on the results, it can be assumed that either the sample was not suitable for determining significant effects or that the negative experience with police officers is possibly not related to tattoos.

The majority of respondents who had tattoos themselves gave the following reasons for getting tattoos: To remind me of a special event (26 mentions), I just like the way it looks (23 mentions) and To express myself (13 mentions). Here, tattoos tended to be experienced as something positively connoted, which raises the assumption that a negative attitude towards the police is not strengthened or weakened by tattoos.

A MANOVA was calculated to test hypothesis four, i.e. whether the different stimuli contributed to people showing different response behaviour in the Attitude towards the police and Experience with the police scales. This showed that the four groups differed significantly in the two-factor model. Looking at the scales individually, only significant differences were found for the Experiences with the police scale. These results are the opposite of those from hypotheses two and three, in which only those people who had seen a police officer with a tattoo were included in the calculation.

For hypothesis five 'People who have tattoos do not differ significantly in the fixation time of tattoos from those without tattoos', a t-test was calculated which showed no significant differences between the groups. The fifth hypothesis can therefore be accepted. When calculating hypothesis six 'People who have had negative experiences with the police themselves have a worse attitude towards the police than people who have not had negative experiences with the police', a slight correlation was found ($r = -.10$), but this was not significant. Furthermore, this is a negative correlation, which would mean the following: the better the attitude towards the police, the worse the experience. This would contradict the previous study situation, which is why it can be assumed that this result came about by chance. For hypothesis seven 'People who work for the police themselves (or their relatives/acquaintances) have a better attitude towards the police than people who have no private points of contact with the police', there was a mean value difference of $d = .04$ and no significant difference between people who have contact with the police and those who do not. However, here too the sample is rather unbalanced. Around 80% know people from their family or circle of friends and acquaintances who work for the police. It is therefore doubtful how meaningful this group comparison is.

Hypothesis eight 'People with a migration background or whose parents are immigrants have a worse attitude towards the police than people who do not have a migration background' is not significant with a mean difference of $d = .03$ and a significance level of $p = .85$ in the t-test and must therefore be rejected. However, previous studies have shown that marginalised groups often have poorer experiences with the police and therefore have a poorer attitude towards them (Schweer et al., 2008). In order to be able to provide an explanation for this result, it is important to emphasise the composition of the sample. Around 80% of the sample in this study had no migration background, 15% of the people had parents with a migration background and 4% stated that they themselves had immigrated. A comparison between people

with and without a migration background, in which only four per cent are actually affected by this themselves, does not appear to make much sense. The present study has some strengths in its methodology, but also various limitations in the significance of its results.

Firstly, it is a strength that both the POPS scale and the Ska-la Experience with the Police scale have good to excellent (Cohen, 1988) internal consistencies (POPS: $\alpha = .88$; Experience with the Police: $\alpha = .99$). However, it can be questioned to what extent an internal consistency of .99 is meaningful, as an internal consistency of 1 would mean that the items measure exactly the same thing. In future surveys, attention should be paid to how experiences with the police can be better operationalised.

How accurately eye tracking is measured depends on the software used, which was of high quality in this study (Digitec, n.d.). It should also be emphasised that the test supervisors all attended the same workshop to familiarise themselves with the eye tracking tool and made a point of presenting the same information about the test to all test subjects. Almost all tests were carried out by two of the researchers, which meant that test leader effects could only arise to a limited extent. In addition, all respondents received the same instructions within the online questionnaire, which contributes to the objectivity of the survey.

The replicable methodology would make it possible to replicate the study and thus establish intersubjectivity, or to diversify and enlarge the sample, which has limitations in this survey. The theoretical background shows that past negative experiences with the police in particular have an influence on attitudes towards them and that people belonging to minorities in particular have had more such experiences (Schweer et al., 2008). However, the sample consists mainly of people who were recruited at the Fresenius University of Applied Sciences. They are therefore predominantly very privileged individuals. Only 95% stated that they had a general higher education entrance qualification or a higher educational qualification, which indicates an educated sample that does not represent the average of society (Statistisches Bundesamt [Federal Statistical Office] degelma, 2022). In addition, only 2% of respondents stated that they had had contact with the police because they were suspected of a criminal offence. Nevertheless, the experience with the police was below average, which could have to do with the negative media presence in recent years. In future studies, greater attention should be paid to marginalised groups, as the current literature shows that these groups in particular have had negative experiences with the police (Schweer et al., 2008). Within this survey, only the migration background was surveyed, which was less than 20%. It would make sense, for example, to also record sexuality and ethnicity or to choose an additional qualitative format.

When interpreting the recording of gaze fixations, it is also important to bear in mind that all data only relates to a white, slim, male person, as the participants only saw pictures of this person. This means that even though police officers are repeatedly mentioned, the conclusions can strictly speaking only be drawn for male police officers.

Furthermore, over 80% of the sample was female, which makes it difficult to transfer the findings to the general population. In general, it can be said that the only hypotheses that were actually significant (hypotheses one and two) did not show any really large effects. This raises the question of whether tattoos have an actual influence on the perception of police officers or whether other attributes are more likely to be decisive. However, this must be verified in further studies.

Conclusions & recommendations

For future research, variables such as the heterogeneity of the sample, the recording of more relevant control variables such as sexuality, ethnicity or attitudes towards tattoos and the revision of the instruments used, especially the scale on experiences with the police, would be useful starting points. It would also be advisable to include further attributes in the image presentation. People of different genders, different skin colours or different physiques could be presented randomly. As there was also no difference in the duration of observation between the various tattoo modifications, it would be sufficient to use only one tattoo.

For work in the police service, this survey shows that tattoos do not appear to play a significant role in the perception of the police.

At the beginning of this study, tattoos were considered as a means of personality development and their effect on police officers was scrutinised in relation to the general population. Connections were found between the duration of viewing such tattoos and attitudes towards the police. Experiences in dealing with the police also show a connection to the viewing of such body modifications by uniformed police officers. In a separate analysis of attitudes towards the police, neither the influence of a migration background nor the influence of acquaintances in the police force on attitudes towards the police could ultimately be confirmed. As this result does not correspond to the current state of research, it would be interesting for future research to investigate these hypotheses with the help of a representative sample. The confirmed correlations emphasise the relevance of an intensive examination of the influence of body modifications in police officers on their everyday work situation. The findings may contribute to ongoing discussions about how visible body modifications in police officers are perceived – and whether existing recruitment standards should be re-evaluated in light of empirical evidence.

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THE SOCIOCULTURAL AND POLITICAL CHALLENGES IN THE BUILDING OF EUROPEAN SECURITY RESILIENCE

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Abstract. For 80 years, the United States of America dominated the world in terms of leadership in creating a global security system and overseeing its functioning. After World War II, two opposing political regime systems emerged – liberal democracies and communist dictatorships. Their competition during the Cold War had to find political and economic ways to avoid total war in Europe.

The further development of security resilience in the European countries differed significantly. With the help of the United States, the countries of Western Europe rebuilt their economies and established NATO, a common security resilience organization. This ensured their ability to create liberal democracies and market economies. However, gradually the development of their security resilience became dependent on the political and military power of the United States. The societies of the Central and Eastern European countries occupied by the Soviet Union resisted communist regimes: at first militarily and later intellectually, in an effort to preserve their cultural identity. Therefore, these countries focused not on developing security resilience, but on fighting for their cultural independence.

The fall of the Berlin Wall and the dissolution of the Soviet Union enabled the countries of Central and Eastern Europe to restore their sovereignty and independence through democratic elections, to free themselves from Communist regimes and to create liberal democracies. The established US monopoly in the world guaranteed peace in Europe and solutions to the challenges of developing a market economy dominated the political agenda of the European Union. With the disappearance of the threat of communism, the growing economic power of the EU was perceived as a guarantor of European security. But this period of peace ended in 2008, when, in the context of the global and US financial crisis, the Russian Federation began a new period of escalation of military power in Europe. It now seeks to destroy the sovereignty of Ukraine and occupy it.

Military and humanitarian assistance from the US and European countries has helped Ukraine not to lose the war so far. But at the beginning of 2025, the new US administration radically changed its geopolitical orientation and assistance to Ukraine, which has caused great concern among European countries about their security resilience, since neither individual nor joint military power may be sufficient to resist the Russian Federation's further escalation of the war in Europe. The question of the attitude of the societies of the European Union countries towards the future of security also arose: do they understand the need to actively engage in the creation of security in Europe? There are no research-based answers to this question yet. More research is urgently needed on the socio-cultural and political challenges associated with building security resilience in European countries.

The aim of the study is to reveal the challenges inherent in reflecting on the political and social reality of the European Union countries in creating a joint security and defense framework in the context of the escalation of Russian's war on Ukraine. The current study presents its conclusions.

Keywords: World War II, Cold War, security resilience, European security dependence on US, new US geopolitical orientation.

Introduction

The development of Europe in the past was very changeable - short periods of peace were replaced by long-term wars between its countries. An analysis of periods of peace reveals that the longest periods of peace in Europe were established only by those treaties the preparation and implementation of which involved strong countries that respected state sovereignty and created resilient security. The Peace of Westphalia is the first example of a long-term peace: the peace treaties signed by European countries on May 15 and October 24, 1648, established

a new order in Europe, based on respect for the concept of state sovereignty and valid until 1806. (Westphalia, Britannica).

In the 20th century, two world wars took place in Europe, causing very large and long-term damage. World War II, which was based on the antagonism of political ideologies, was especially cruel and caused the death of millions of people. The anti-Hitler coalition (the Allied powers) defeated the aggressors - the Axis powers in this war - and established a lasting peace, the meaning of which in terms of justice was fundamentally different in the countries of Western Europe and Central and Eastern Europe (World War II, Britannica).

Peace in Europe in the second half of the 20th century was controversial. Its nature was determined by the countries that won the Second World War: namely, Great Britain, the United States of America and the USSR. These countries agreed at the Yalta Conference, February 4–11, 1945 and the Potsdam Conference, August 2, 1945 to divide the European continent into two spheres of influence. The Soviet Union was given the opportunity to restore and expand the sphere of influence previously held by the Russian Empire. This determined the long-term dependence of European countries on the military power of the United States and the Soviet Union. However, these dependencies were fundamentally different: the experience of democracy and liberal economics spread from the United States, and the totalitarian communist regime of military occupation and planned economy from the Soviet Union. Thus, the postwar peace conditioned a radically different development of the security of European countries in the 20th century: the countries of Western Europe were augmenting the quality of life of their societies, while the countries of Central and Eastern Europe were suffering under occupation and fighting for political and cultural independence.

The fall of the Berlin Wall, a symbol of the division of the world into East and West (1989) and the disintegration of the Soviet Union (1991) marked the beginning of the establishment of a just peace throughout Europe. This period of just peace in Europe was interrupted in 2008, when the global hegemony of the United States ended with its financial crisis, and in this context, the Russian Federation began a new period of escalation of military power: a military conflict occurred between Georgia and Russia and the unrecognized republics of Abkhazia and South Ossetia; in 2014, Russia began its war on Ukraine and since 2022 it has aimed to destroy the Ukrainian state. Military and humanitarian assistance from the United States and European countries has helped Ukraine not to lose the war so far.

Neither in 2008, nor in 2014 did the United States or the European Union recognize the emerging threats posed by the Russian Federation's long-term escalation of the war in Europe. For over nine years, a brutal war has been going on in Eastern Europe, and it could spread throughout Europe if the Russian Federation wins the war in Ukraine. European countries are significantly lagging behind in developing their military industry, joint actions and measures designed to deter Russia from continuing the war in Ukraine and further escalating it in Europe. This is possible only by taking comprehensive and systematic actions to prevent the escalation of the war: 1) restoring and developing the military and defense industry of the European Union countries, 2) increasing military and humanitarian assistance to Ukraine, and 3) creating joint military forces of the EU countries and consolidating them with the Ukrainian army. But these actions and measures may not be enough if they do not include the support of the societies of the European Union countries. The European Union countries have so far devoted too little effort to creating an integrated EU society.

Given the current unilateral policy of the United States and the lack of political and defense unity of the EU countries, the leaders of the largest European countries have a new leadership responsibility: to urgently assemble their volunteer military forces, which, at the request of the Ukrainian authorities, must be deployed on its territory and ensure a just peace

for it. This way the political leaders of European countries could demonstrate for the first time since World War II an independent military will to defend the whole of Europe. The mobilization of and reliance on such volunteer military forces - a "security society" - would revive the hope of creating a strong European Union. The "security society" could become the basis for the integration of the EU countries.

The object of the current study is the policy of European countries in creating a common security and defense framework and mobilizing complex assistance to Ukraine. **The aim of the study** is to reveal the challenges inherent in reflecting on the political and social reality of the European Union countries in creating a common security and defense potential in the context of the escalation of Russian's war on Ukraine. **Research methods:** the study is based on document analysis and historical comparative methods.

The Creation of a Global Security System after World War II

This year marks 80 years since the end of World War II. During this period, an institutional system of global security, which operates on the basis of international law, was created at the initiative of the United States. The basis of this global security system consists of 1) the shared institutions of the world's states - the United Nations, the World Bank, the International Monetary Fund, the World Trade Organization, the World Health Organization, the International Criminal Court and other international security institutions; and 2) international legal norms regulating international and interstate relations and the protection of human rights. It is necessary to emphasize that for 80 years the most important hopes for global security were associated with the democratic leadership of the United States in creating and managing the global security system. Now, in 2025, the US is abandoning its leadership in building global security and is changing its geopolitical orientation. This abandonment poses existential challenges for European countries, whose security ostensibly derived from the military and NATO defensive power of the United States. Given these circumstances, we will briefly review the essential features of US leadership in the processes of building global security and preventing the threat of war.

The United States of America is the initiator and leader of the creation of a global security system

After World War II, the United States of America was the largest economy in the world and accounted for about half of its economy (Nye, Jr., 2025). Therefore, only the United States was able to take the initiative to create global security institutions, define their operational functions and regulations, legal norms of interstate and international relations, human rights, and institutions for their protection. The United States successfully implemented this complex leadership role: through its efforts in complex and multifaceted processes, the US formed an international legal order, the observance of which could guarantee global peace. It should be noted that the processes of creating global security institutions required a lot of political, diplomatic, and economic efforts to unite countries promoting different ideologies and encourage them to cooperate in order to prevent the threat of a new war whether economic, political, or conventional.

In the initial stage of the creation of world security institutions, the United States of America actively cooperated with Great Britain and the Soviet Union. The former "League of Nations" was unable to prevent the Second World War and the international crimes committed during it; therefore, the need arose to establish a new international organization that would

effectively ensure world peace and security. The origin of such an organization goes back to the Atlantic Charter signed by the US President F. D. Roosevelt and the UK Prime Minister W. L. S. Churchill on 14 August 1941. It declared that in the case of the United States of America and Great Britain: (1) neither nation sought any aggrandizement; (2) desired no territorial changes without the free assent of the peoples concerned; (3) respected every people's right to choose its own form of government and wanted sovereign rights and self-government restored to those forcibly deprived of them; (4) would try to promote equal access for all states to trade and to raw materials; (5) hoped to promote worldwide collaboration so as to improve labor standards, economic progress, and social security; (6) after the destruction of "Nazi tyranny," they would look for a peace under which all nations could live safely within their boundaries, without fear or want; (7) under such a peace the seas should be free; and (8) pending a general security through renunciation of force, potential aggressors must be disarmed. The Atlantic Charter was adopted by 26 Allied countries at the Washington Conference on 1 January 1942 and later by another 21 countries. They formed the nucleus of the United Nations. In 1945, the Atlantic Charter was included in the Declaration of Fundamental Principles of the United Nations (Atlantic Charter | History & Definition | Britannica).

The name United Nations was first officially used by President F. D. Roosevelt on 1 January 1942, when the Allies of World War II fighting against the Axis states signed the United Nations Declaration. The 26 signatories pledged to form a coalition and cooperate in the fight against the Axis states. Subsequently, at the Moscow Conference, which took place from 19 October to 1 November 1943, the Foreign Ministers of Great Britain, the United States, and the Soviet Union as well as the Chinese Ambassador to the Soviet Union adopted the Four States Declaration on Universal Security. It recognized the need to establish as soon as possible an international organization based on the principle of the sovereign equality of all peaceful states, open to all such states and dedicated to the maintenance of international peace and security. This international organization was established at the end of World War II, when 50 nations signed the United Nations Charter at the San Francisco Conference on June 25, 1945. However, the founding date of the United Nations is October 24, 1945, when the Charter was ratified by the signatory nations. The United Nations began its activities in London on January 10, 1946, when the organization's members met for their first session (United Nations, Britannica).

The analysis of the development of European countries in the 20th century reveals that the expectations of cooperation between the USA and the Soviet Union regarding the development of the postwar world were not fulfilled. The resolutions of the Yalta and Potsdam conferences determined the postwar division of European countries into spheres of influence of liberal democracy and communist ideology. A large part of the countries of Central and Eastern Europe fell into the sphere of influence of the communist ideology of the Soviet Union, including the Baltic countries occupied in June 1940. In the second half of the 1940s, free elections were not allowed in the Central and Eastern European countries occupied by the Soviet troops, and the power of communist parties was established.

The USA hoped that the extension or termination of the assistance they provided was a measure that could force the Soviet Union to implement the resolutions of the Yalta Conference on the democratization of the countries of Central and Eastern Europe. The Soviet Union thought that by withholding economic aid, it would push the United States into an inevitable crisis of overproduction and collapse of its industry and the entire capitalist world. Both countries believed that postwar conditions were more favorable to them and pursued policies that were unacceptable to the other.

The leadership of the United States during the Cold War

The US attitude towards the USSR fundamentally changed when the US ambassador to Moscow, G. F. Kennan, presented an assessment of the strategic goals of the USSR and its policies in February 1946. G. F. Kennan stated that the USSR government did not believe in long-term peaceful coexistence with the capitalist world and would be guided by the logic of force. Therefore, in 1946 US President H. S. Truman refused promises to transfer the reparations paid by Germany to the USSR and began a policy of containing the development of communist ideology, called the Truman Doctrine (Cold-War, Britannica).

The Cold War (1946–91) emerged as a political, economic, propagandist, and partly military struggle between the United States of America and the USSR (with their allies) for world domination. This term was first used publicly in 1947 by Bernard Baruch, the US representative to the UN Atomic Energy Commission (UNAEC). He used this term to describe the conflicts between the United States and the Soviet Union in the 20th century. It was at the beginning of the Cold War that the issue of nuclear security arose, as the United States dropped atomic bombs on two Japanese cities, Hiroshima and Nagasaki, on August 6 and 9, 1945. On June 14, 1946, before a UNAEC session, Baruch presented a proposal for the creation of an international Atomic Development Authority. The presentation of the Baruch Plan marked the culmination of an effort to establish international oversight of the use of atomic energy in hopes of avoiding unchecked proliferation of nuclear power in the post-World War II period (Milestones in the History of U.S. Foreign Relations - Office of the Historian).

Under the Baruch Plan the Atomic Development Authority would oversee the development and use of atomic energy, manage any nuclear installation with the ability to produce nuclear weapons, and inspect any nuclear facility conducting research for peaceful purposes. The plan also prohibited the illegal possession of an atomic bomb, the seizure of facilities administered by the Atomic Development Authority, and punished violators who interfered with inspections. The Atomic Development Authority would answer only to the Security Council, which was charged with the power to punish by imposing sanctions on the nations that violated the terms of the plan. Most importantly, the Baruch Plan would have stripped all members of the United Nations Security Council of their veto power concerning the issue of United Nations sanctions against nations that engaged in prohibited activities. Once the plan had been fully implemented, the United States was to begin the process of destroying its nuclear arsenal.

The Soviets strongly opposed any plan that allowed the United States to retain its nuclear monopoly, not to mention international inspections of Soviet domestic nuclear facilities. The Soviets also rejected the idea of surrendering their Security Council veto over any issue as they argued that the Council was already stacked in favor the United States. The vote was held on 1946 December 30, with 10 of the UNAEC's 12 members voting in favor, while the other two members (the Soviet Union and Poland) abstained. The vote required unanimity to pass, so the Polish and Soviet abstentions thwarted the adoption of the Baruch Plan and accelerated a global nuclear arms race (Milestones in the History of U.S. Foreign Relations - Office of the Historian).

During the Cold War, distrust prevailed in international world relations, which was especially conditioned by the development of nuclear weapons and the creation of military blocs. The greatest contradictions arose in the period of 1948-1962. At the beginning of this period, the Soviet Union's opposing of the unification of the western part of Germany and closing of Berlin's land and water routes to the West gave rise to the Berlin Blockade (1948-1949) on 24 June 1948. On 28 June 1948, the USA and Great Britain began to supply the city

with essential products, equipment, and fuel by airlift. By 27 September 1949, 275,000 flights had been made, transporting about 2.5 million tons of cargo for 224 million US dollars. In response to this assistance, the Soviet Union increased its occupying forces in East Germany to 40 divisions. The Western Allies had only 8 divisions, so the US sent three groups of bombers to Great Britain. The Allies applied countermeasures: the roads to East Germany were closed, an embargo was imposed on Eastern Bloc goods. Under pressure from the countermeasures, the Soviet Union lifted the blockade on 12 May 1949 (Berlin blockade, Britannica).

Resistance to the Berlin Blockade brought together the countries of North America and Western Europe. On 4 April 1948, they signed the North Atlantic Treaty in Washington, thus establishing NATO (the North Atlantic Treaty Organization). NATO's primary purpose was to defend itself against the Soviet Union and to discipline Germany. As a result, in 1955, the Federal Republic of Germany was admitted to NATO. As a counterweight to the North Atlantic Alliance, the Soviet Union and its satellites, the pro-Soviet bloc states of Central and Eastern Europe, signed a military and political cooperation agreement (the Warsaw Pact) on 14 May 1955. As a result, the North Atlantic Treaty countries expanded NATO's defensive purpose to counter potential threats from the Warsaw Pact members. During the Korean War of 1950–1953, NATO strengthened its military forces. In 1962, NATO helped the United States resolve the Cuban Missile Crisis, which was caused by the Soviet Union secretly placing nuclear-tipped missiles in Cuba.

The threat of nuclear war that prevailed between the military blocs led to the spread of the international peace movement. Since 1950 its activities have been coordinated by the World Peace Council, established at the initiative of the Soviet Union and financed by it for 90 percent of the costs (World Peace Council - Universal Lithuanian Encyclopedia). It is therefore no coincidence that the view that the aggressive behavior of capitalist countries, rather than the Soviet Union, poses a greater threat to peace has taken root in the pacifist movement. Countries not belonging to hostile blocs were united by the Non-Aligned Movement, which sought only to solve important international issues through cooperation (Non-Aligned Movement).

Tensions between the military blocs needed to be controlled due to the threatening prospect of a “nuclear winter”. Therefore, the United States proposed a return to arms control policy. Bilateral arms control was carried out by the United States and the Soviet Union (later the Russian Federation). They signed the Strategic Armaments Limitation Treaties (SALT I, 1972; SALT II, 1979) and the Strategic Armaments Reduction Treaties (START I, 1991; START II, 1996). In 1991, a multilateral arms control regime was agreed upon – NATO and the Warsaw Pact countries signed the Treaty on Conventional Forces in Europe (CFE). This treaty provided for the limitation of five main types of conventional weapons (tanks, armored vehicles, warships, artillery and missiles) and established procedures for monitoring compliance with the treaty (arms-control, Britannica).

The Treaty on Conventional Arms in Europe was revised in 1999, as international security conditions changed. In the mid-1980s, the Soviet Union had to admit that it was economically unable to withstand the new round of the arms race initiated by the United States in the context of the costs of the ongoing war in Afghanistan. As a result, the Soviet leadership softened the ideological dimension of its policy and eventually stopped supporting the communist worldview. This process led to the collapse of the Warsaw Pact bloc and to the end of the Cold War. The victors of World War II - Great Britain, the United States, France and the Soviet Union - signed the Moscow Treaty in 1990, which allowed for the reunification of Germany and the end of the Cold War (Cold War, Britannica).

The ideological conflict between the two blocs throughout the Cold War did not stop the colonized and occupied countries of the world from seeking independence. The struggles for

independence often escalated into internecine wars, and the countries that regained their independence were forced to either join the bloc or define their “non-alignment.” Nevertheless, the number of states in the world increased from 50 (in 1945) to more than 150 by the end of the Cold War (Leonard, 2023, Project- syndicate).

Differences in the sociocultural and political experience of security in European countries

The victorious powers of World War II agreed at the Yalta and Potsdam conferences to divide Europe into two spheres of influence, the development of which was controlled by the United States and the Soviet Union, respectively. The European division was oriented along the historical boundaries of the Russian Empire, which the Soviet Union sought to “restore”. The United States supported the development of liberal democracy and market economies in Western Europe. The Soviet Union, in turn, occupied the countries of Central and Eastern Europe and imposed communist ideology and a planned economy on them. In both cases, this ideological division determined the long-term dependence of the further development of European countries on the military power of the United States and the Soviet Union.

The Baltic States’ Military and Peaceful Resistance to the Occupation of the Soviet Union

The Baltic States – Estonia, Latvia, and Lithuania – were the first Eastern European states to be occupied and annexed by the Soviet Union at the beginning of World War II. In June 1940, these states were attacked by the Soviet Union, which “based” its actions on the Molotov-Ribbentrop Pact (24 August 1939), signed by Nazi Germany and the Soviet Union. In August 1940, the Soviet Union annexed Estonia, Latvia, and Lithuania and forcibly incorporated them into the Soviet Union. In June 1941, the Soviet Union carried out the first deportations of the Baltic populations to special detention camps in Siberia and Central Asia (“GULAG” camps). As the societies of the Baltic States sought to free themselves from the new occupation by the Soviet Union, an organized partisan resistance movement arose. The Soviet government consolidated the occupation through military control, repression, and deportation. However, resistance movements of varying intensity and nature continued until the restoration of statehood in the Baltic States in 1991.

Estonian military resistance emerged when the Red Army approached Estonia during the war between Nazi Germany and the Soviet Union. The declared general mobilization enabled the creation of Estonian units (about 40,000 people), which prevented the Soviet troops from crossing the Narva River from February to June 1944. When all of Estonia was again occupied by the Soviet Union, about 70,000 Estonians fled to the West, mainly to Sweden and Germany. In the period of 1939–1945, due to deportations, hostilities, mobilization, and emigration, the population of Estonia decreased from 1,136 million to 854,000. About 5 percent of the territory of Estonia was transferred to the Russian Soviet Federative Socialist Republic. Further repressions and deportations of Estonian society gave rise to a partisan resistance movement, in which about 15,000 people died. After its suppression, forced collectivization of peasant farms was carried out in Estonia in the late 1940s and early 1950s. It was accompanied by mass deportations: for example, more than 20,700 Estonians were deported on 25–26 March 1949. More than 200,000 foreigners, mostly Russians, moved to Estonia. If in 1940 Estonians made up 90 percent of their country’s population, then in 1990 they made up only 60 percent. Resistance to the Soviet occupation regime acquired an intellectual character - a struggle for their native language, culture, and faith. Despite the repressions, Estonians managed to resist russification and preserve their national identity (Estijos istorija, VLE).

The Latvian military resistance began at the beginning of the war between Nazi Germany and the Soviet Union. On June 28, 1941, a Latvian uprising against the Soviet occupiers broke out in Riga. Nazi Germany quickly occupied the entire territory of Latvia and did not seek to restore its independence. On the contrary, the "Ost" plan developed by Nazi Germany provided for the Germanization of the Baltics and other conquered countries. To fight on the Eastern Front in 1943, Nazi Germany formed the Latvian Legion. From July 1944 on, hostilities continued to take place on the territory of Latvia; in October 1944, the Red Army occupied Riga, but fighting in Courland continued until the capitulation of Nazi Germany. Fleeing from the Soviet occupation, about 160,000 Latvians escaped to the West. The Latvian partisan resistance lasted until the beginning of 1950. During the mass deportations of the Latvian population in the late 1940s and early 1950s, about 180,000 people were deported. Due to the migration of Russians and Russian-speaking people to Latvia, as encouraged by Moscow, in 1989 Latvians made up only 52 percent of Latvia's population. Although Latvia was one of the most economically developed republics of the Soviet Union, this did not stop its intellectual resistance to the Soviet occupation (Latvijos istorija, VLE).

Lithuanian military resistance arose at the beginning of the war between Nazi Germany and the Soviet Union: on 22–27 June 1941, the "June Uprising" took place and the Lithuanian Provisional Government was formed. It operated in Kaunas from 23 June 1941 to 5 August 1941, until it was dissolved by the Nazi authorities. Until the end of July 1941, Lithuania was ruled by the German military administration, after which civilian occupation rule was introduced. Lithuania became part of Ostland. In the summer of 1944–early 1945, the German occupation of Lithuania was replaced by the second occupation of the Soviet Union: a totalitarian Soviet regime prevailed again, based on the powers of the Communist Party, state security institutions, the army, Soviet officials, the prosecutor's office, courts, and military tribunals. Against this regime, an organized armed resistance movement arose in 1944, which lasted until 1953. In order to quickly break the anti-Soviet armed and other forms of resistance in Lithuania, the Soviet leadership resorted to mass imprisonment and deportations of the Lithuanian population. In the periods of 1944–1947 and 1950–1953, more than 1,100 political prisoners were killed in Lithuania. In 1944–1952, more than 142,500 prisoners were deported from Lithuania to the Soviet Union's "GULAG" camps. In 1944–53, 1,651 representatives of the scientific and creative intelligentsia were arrested: most of them were exiled or imprisoned, some were killed. In 1946–47, most Catholic bishops were repressed. In 1944–1953, more than 5% of the population was exiled from Lithuania. In 1948–1951, forced collectivization took place. The Communist Party of the Soviet Union sought to further suppress the national, civic, and religious consciousness of the Lithuanian people; 42 Catholic churches were closed down between 1953 and 1985. But all the repressive measures did not stop the intellectual resistance of the Lithuanian Catholic Church and other social groups to the Soviet occupation (Lietuvos istorija, VLE).

Central European countries' military resistance to the Soviet Union and communist regimes

Hungary was the first Central European country to experience military coercion by the Soviet Union after World War II. The first postwar parliamentary elections in Hungary in November 1945 were won by the Independent Smallholders' Party with a large majority (57% of the vote), and on February 1, 1946, Hungary was proclaimed a republic. But the Hungarian communists did not accept the democratic defeat and began a fierce campaign to discredit their political opponents. The Left Bloc, formed by the Communists, Social Democrats, and the

Peasants' National Party, won the August 1947 parliamentary elections. The communist-dominated government in 1947–1948 nationalized the banks and industrial enterprises and began the collectivization of agriculture. The 1949 constitution was drawn up on the model of the Soviet Union and a communist political regime was introduced.

Only in 1956 did Hungarian society regain the hope of changing the country's political and economic order, when the Soviet Union replaced the Stalinist-style leader of the Hungarian Workers' Party. The workers' uprising in Poznan (Poland) on 23 October 1956 prompted Hungarians to express solidarity: a rally was held at the monument to J. Bem in Budapest; in the evening, the monument to Stalin was toppled; after short battles, the radio station was occupied. About 300,000 people gathered outside the parliament and demanded freedom of the press, freedom of speech, free elections, greater independence from the Soviet Union, and the appointment of the reformer Imre Nagy as the head of the country's government. During the days of 23 and 24 October, the uprising spread to other Hungarian cities. This frightened the Soviet leadership: on 25 October, it appointed Janos Kádár as the new party leader and ordered Hungarian security forces to shoot at people gathered outside the parliament. About 100 people were killed.

Imre Nagy, the appointed Prime Minister of Hungary, sought to control the situation: on 27 October he formed a new government and dissolved the security institutions; the next day he asked the Soviet Union to return its troops to their bases; on 30 of October he included representatives of the Independent Smallholders' Party and the National Peasants' Party in the government; the day after he announced Hungary's withdrawal from the Warsaw Pact; and on 01 November he asked the United Nations to guarantee Hungary's neutrality. But the puppet government led by Janos Kádár, formed on 03 of November, "asked" the Soviet leadership to suppress what it called a counter-revolutionary rebellion. On the night of 03–04 November, Soviet troops attacked Budapest and by 10 November the Hungarian revolution had been suppressed. About 2,700 rebels died during the revolution; after the uprising was suppressed, about 350 people were sentenced to death, about 30,000 were imprisoned. By the end of 1956, about 200,000 people had fled to the West (Hungarian-Revolution, Britannica).

Czechoslovakia did not escape the military coercion of the Soviet Union either. The new Czechoslovak government formed in early April 1968 took real steps to create a more democratic socialism, introducing freedom of speech, assembly, and movement, strictly controlling the activities of security institutions, liberalizing prices, and allowing private business to operate. This caused resistance from the Soviet Union, which demanded that the reforms be stopped and threatened military intervention. On the night of 20–21 August 1968, the Warsaw Pact troops (about 300,000 people and 7,000 tanks) entered Czechoslovakia. The pretext for the invasion was an appeal to Moscow for help by Czechoslovak Communist Party figures published in the Soviet press. The Czechoslovak government urged the population not to resist, but about 80 people died during the first weeks of the military intervention. The leaders of Czechoslovakia, who were taken to Moscow after negotiations with the Soviet leadership on 23–27 August, were forced to sign the so-called Moscow Protocols, which allowed the deployment of Soviet troops in Czechoslovakia. The reforms that had been initiated were interrupted and reversed. Public protests against the suppression of the Prague Spring lasted until mid-1969; they were brutally suppressed by security forces (Prague-Spring, Britannica).

Polish society closely followed the military actions of the Soviet Union in suppressing resistance to communist rule in Central and Eastern Europe. On 28 June 1956, workers in Poznan began a general strike and mass demonstration, which spontaneously turned into armed action. Chanting economic and political slogans (bread and freedom), the workers occupied the prosecutor's office, the court, and other government institutions, freed 257 people from prison,

and attacked the building of the Voivodeship Security Committee. Both sides used firearms in the attack, as the workers armed themselves by occupying militia posts and commissariats, disarming the militia and internal security forces. On 30 June 1956, the uprising was suppressed by military forces. But it had an impact on the further liberalization of the Soviet regime in Poland (Poznan-Riots, Britannica).

The historical experience of the occupation by the Russian Empire oriented Polish society towards peaceful forms of resistance to the communist regime. Peaceful resistance was promoted by the Polish Catholic Church. In August-September 1980, workers at the Gdansk shipyard founded an independent trade union "Solidarity", consisting of strike committees. Very soon, "Solidarity" became a social movement and covered the whole of Poland. Due to the efforts of the communist authorities to limit the activities of "Solidarity", it became radical. In December 1981, martial law was introduced in Poland, Solidarity leaders were arrested, and strikes were suppressed by military force. Underground "Solidarity" organizations operated under conditions of repression: self-government expanded, alternative social institutions were created, demonstrations and strikes resumed. Public support for the activities of "Solidarity" forced the communist Polish government to undertake reforms of the political system. After two months of negotiations, representatives of the government and "Solidarity" adopted the Round Table Agreement on 17 April 1989 to legalize "Solidarity". In 1989, "Solidarity" won the first democratic elections since World War II and formed the first non-communist majority government (Solidarity, Britannica).

The formation of Western European countries' security dependence on US power

After World War II, many Western European countries did not have the funds needed to rebuild their devastated economies and buy new equipment and materials. It was beneficial for the United States to rebuild the economies of those countries: rich European countries could become a good market for US products; without US support, the ideas of communism could have become popular in Western Europe; the influence of the Soviet Union could have expanded. Therefore, US Secretary of State G. C. Marshall announced on June 5, 1947, that if Europe created a long-term reconstruction program, the United States would finance it. The Marshall Plan was also offered to Eastern European countries and the Soviet Union, if the latter agreed to have the United States control the implementation of the plan. The Soviet Union refused and began to develop its own plan to integrate the Central and Eastern European countries which had fallen under its influence.

The US Congress allocated \$13 billion to support the Marshall Plan. 70 percent of this amount was allocated to the purchase of US goods. The largest share of funds went to Great Britain, France, Italy and West Germany. From 1949, as the Cold War intensified, an increasing share of funds was allocated not to economic reconstruction, but to military spending. The Marshall Plan was implemented successfully: when the support ended in 1952, Western European industrial production exceeded the pre-war level by 35 percent. Only West Germany did not reach this level. The Marshall Plan was also one of the first factors in European integration, because during its implementation, trade customs barriers were eliminated, and supranational institutions were created to coordinate the economy (Marshall-Plan, Britannica).

After World War II, as international tensions rose again, Jean Monnet and his team began to develop the concept of a European Community. On 9 May 1950, on behalf of the French government, he drafted and published the so-called Schuman Declaration. This declaration proposed that all German and French coal and steel production be placed under the control of a single High Authority. The declaration was based on the idea that sharing the production of

these resources between the two most powerful countries on the continent would help to avoid future wars. The governments of Germany, Italy, the Netherlands, Belgium, and Luxembourg supported the declaration, and this document became the basis for the European Coal and Steel Community – the predecessor of the European Economic Community and the subsequent European Union. In 1954, when the creation of a European Defense Community failed, Monnet established the United States of Europe Action Committee. This committee was established to revive the spirit of European integration and became one of the main driving forces behind many of the changes in the process of European integration.

At the time of NATO's founding, US military support was seen as a bridge to European independence. This assumption was not entirely justified, as evidenced by the complaint of US President Dwight D. Eisenhower ten years later. In 1951 November 24 in his diary, he wrote that without some kind of “European unification” that led to a unity of economic power and a European military, much of the spending by the United States “will simply be a waste...” (Waging Peace: Eisenhower and the North Atlantic Treaty Organization).

Every U.S. president since then has reiterated this complaint. But behind Washington's repeated call for Europe to “do more” usually came a second one: “Not like that.” The worst-kept secret of the trans-Atlantic security policy is that from the dawn of the Cold War, the United States sought not only to bind Europe into a common defense framework against the Soviet Union but also to keep it in a state of tutelage. That meant strangling all attempts to build independent European defense structures or strategies (Lucas, 2025, Foreign policy).

Thus, it can be said that at the beginning of the Cold War, a trend towards the economic unification of Western European countries emerged. But it did not include defense unification, as this was hindered by the contradictory behavior of the United States. The European community grew and expanded as a voluntary union of countries for economically and politically beneficial joint activities. Therefore, it is no coincidence that the strength of the European Union is still defined not by military power, but by the “democratic community” that was formed over the past fifty years. Its development model particularly emphasizes the role of human rights protection and legal regulation. Indeed, the security needs of the “democratic community” are satisfied through the protection of human rights. This is illustrated by the “quiet revolution” that took place in the Western world in the second half of the 20th century (Inglehart, 2016), in the process of which the concept of the quality of life was linked to the pacifist cultivation of peace, which turned into an important part of the social lifestyle in the West. In this context, the pacifist political thinking of the “democratic community” developed, which gradually limited the significance of military means in ensuring the national security and defense of European societies.

The pacifist mindset of Western European societies is a strong socio-cultural factor that can significantly limit the political decisions of EU countries: 1) to quickly develop the potential of the military industry and joint EU military forces; 2) to involve society in building security resilience; 3) to deploy parts of its military forces in Ukraine to ensure its military resilience.

Changes in the world order - a complex challenge to the creation of European security

The year 2025 is a sign of the disarray caused by the end of the old-world order. The old-world order does not match the challenges of climate change management and the global market economy, in the context of which the new world order is spontaneously taking shape. The political scientist Joseph S. Nye, Jr. is absolutely right when he states, that “world order is a matter of degree: it varies over time, depending on technological, political, social, and ideological factors that can affect the global distribution of power and influence norms. It can

be radically altered both by broader historical trends and by a single major power's blunders" (Nye, Jr., 2025, Project-syndicate).

Over the past 80 years, the world order has been at a turning point several times: in 1945, 1990, and 2008. Under the influence of the United States, the world order was created in 1945 and developed until the end of the bipolar world in 1991. Reflecting on the end of the Cold War, Michael Mastanduno predicted three realistic models for the further development of the international order: 1) the growth of economic competition between the major industrial power countries; 2) a return to the traditional multipolar balance of the system of power; 3) a unipolar international system in which the United States continues to play a dominant role (Mastanduno, 1999, p. 19). Until 2008, it seemed that the third model of international order could reign indefinitely, upholding a unipolar world controlled by US political, economic and military power. After 2008, however, a model for a new world order began to emerge, one which would be based on the creation of a multipolar balance of the system of power among the world's strongest countries.

Changes in world order after 2008

This year marks another turning point in the world order. As Nye observes, "With the Soviet Union's collapse in 1991, the US enjoyed a brief "unipolar moment," only to overextend itself in the Middle East, while permitting the financial mismanagement that culminated in the 2008 financial crisis. Believing the US was in decline, Russia and China changed their own policies. Putin ordered an invasion of neighboring Georgia, and China replaced Deng Xiaoping's cautious foreign policy with a more assertive approach. Meanwhile, China's robust economic growth allowed it to close the power gap with America" (Nye, Jr., 2025, Project-syndicate).

At the beginning of this period, the Russian Federation finally formulated its revanchist ideology and, by attacking Georgia, tested its power and the international, especially European, reaction to its military aggression. Neither the USA nor the EU countries recognized the very dangerous further development of Russian revanchism. On the contrary, the USA and the EU countries sought to develop business relations with Russia. They were convinced that the development of economic relations was the best means of preventing Russia's revanchist moods and imperialist ambitions. Therefore, they did not adequately respond to the 2008 speech of Russian President V. Putin in Bucharest, in which he warned the West that if Ukraine joined NATO, it risked losing Crimea and Eastern Ukraine.

After Ukrainian President V. Yanukovych refused to sign the Association Agreement with the EU and later fled Kiev, Russia carried out a pre-planned occupation of Crimea on the night of 27 February 2014. Russia's hostile actions were condemned by NATO and the G7 countries. On 27 March, the United Nations General Assembly adopted resolution 68/262, which declared the Crimean referendum illegitimate and the peninsula's annexation to the Russian Federation illegal. On 15 April, the Ukrainian parliament adopted a resolution declaring Crimea a territory temporarily occupied by Russia. During the annexation of Crimea, about 10,000 Crimean residents became refugees (Krymo aneksija, VLE).

In 2014, the US and EU countries again failed to see the possibility of Russia further escalating the war in Ukraine. By contrast, the Russian government took the appeasement policy of the US and EU leadership as a political and military weakness that does not help Ukraine create the necessary military and security resilience. World security institutions and existing international law did not prevent further escalation of the war either. Therefore, in the period of 2014-2021, Russia prepared for war and on 24 February 2022 invaded Ukraine. It

hoped to win the war quickly, but the heroic resistance of the Ukrainians curbed this ambition, and a brutal war is still ongoing in Ukraine. The military and humanitarian assistance provided by the US and EU countries is helping Ukraine fight against the aggressor.

Changes in the world order in 2025

Earlier this year, the United States abandoned its historical position as the world's leading security provider. The new US administration has formulated an ideology of economic revanchism, as its economic power in the world economy has shrunk to 25 percent. (Nye, Jr., 2025). The US administration believes that with the help of high tariffs it will be able to revive its large-scale industries and successfully expand its economic power. The provision of any past and new aid to foreign countries is now defined as a business that should provide significant benefits to America itself. Geopolitical relations are interpreted as business transactions.

The radical changes in the geopolitical leadership of the US have caused confusion among its long-time allies. From the current point of view, the US sees the European Union as its second largest economic competitor, after China. Therefore, it constantly threatens NATO countries to reduce military assistance to them and even encroaches on their territorial sovereignty. In turn, EU countries are asking whether it is still possible to trust US military support for Ukraine and the presence of parts of its army in Europe.

Current US political and military assistance to Ukraine is focused on two fronts: 1) obtaining long-term economic benefits from Ukraine and 2) restoring business relations with the Russian Federation. In this respect, today's US geopolitics is more in line with Russian interests than with Ukrainian and European interests. But in the context of the war in Ukraine, the leaders of major European countries do not feel ready to prevent the escalation of the Russian war in Europe without US military assistance. The solution to this dilemma requires great political determination to quickly create an EU volunteer army and the courage to deploy it in Ukraine, even in the absence of assured US support. Provided EU leaders do not lack political determination and courage, this would open up new opportunities for creating a European Union state that could be a strong leader in the security of the future multipolar world. This could also encourage the US and the EU to build a relation of equal partnership. If the US were to maintain strong alliances with Japan and Europe in the future, they would represent more than half of the world economy, compared to only 20 percent in the case of China and Russia (Nye, Jr., 2025). Therefore, the creation and deployment of a European volunteer army in Ukraine provides a great opportunity to prevent a Russian war in Europe and to engage in a new process of creating a global security system.

Conclusions

After the end of World War II, the United States of America alone had the political, economic, and military power to take the lead in creating a global security system. Its efforts created an institutional system of global security, which consisted of: 1) common institutions of the world's states - the United Nations (UN), the World Bank, the International Monetary Fund (IMF), the World Trade Organization (WTO), the World Health Organization (WHO), the International Criminal Court, and other international security institutions; and 2) international legal norms, regulating international and interstate relations and the protection of human rights.

The resolutions of the Yalta and Potsdam (1945) conferences determined the postwar division of European countries into the spheres of influence of liberal democracy and

communist ideology. A large number of Central and Eastern European countries, including the Baltic states occupied in June 1940, fell into the sphere of influence of the Soviet Union's communist ideology.

The expectations of cooperation between the United States and the Soviet Union after World War II were not fulfilled. The Cold War raged between them, which, due to the parity of military power, did not escalate into a conventional war. But the escalation of the Cold War undermined the economic power of the Soviet Union and led to its collapse.

During the Cold War, different sociocultural and political models of building security in European countries were formed. The societies of Central and Eastern European countries resisted the occupation of the Soviet Union and communist regimes by military and other means. They preserved their cultural identity, but did not have the opportunity to create their own security resilience. Western European countries created a market economy and liberal democracy, but their military defense became dependent on the military power of the United States. These countries emphasize economic power, equating it with security resilience and reinforcing a pacifist attitude towards peace. This attitude may limit the creation of armed resilience in European security in the future.

A retrospective analysis of the Russian Federation's revanchist breakthroughs revealed that changes in the world order began in 2008. Believing the US was in decline, Russia and China changed their own policies. Putin ordered an invasion of neighboring Georgia, and China replaced Deng Xiaoping's cautious foreign policy with a more assertive approach. Meanwhile, China's robust economic growth allowed it to close the power gap with America.

In 2025, changes in world order finally became apparent. Earlier this year, the United States abandoned its historical position as the world's leading security provider. The new US administration has formulated an ideology of economic revanchism as a basis for geopolitical relations, including the role of the US as a mediator in achieving a ceasefire and peace in Russia's war in Ukraine. Such a role for the US does not guarantee peace in Europe. To that end, the leaders of the largest European countries must show political determination and courage by quickly creating a joint European volunteer army and deploying it in Ukraine. In turn, such political determination and courage can become a basis for building a strong EU state and European security resilience.

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THREATS TO THE PERSONAL RIGHT TO PRIVACY CAUSED BY THE USE OF ARTIFICIAL INTELLIGENCE

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Abstract. This scientific article analyzes how the application of artificial intelligence (AI) technologies affects the protection of the right to privacy in modern society. Given that the capabilities of AI systems are rapidly expanding and becoming increasingly integrated into everyday life, the risks to personal data security and privacy violations are also growing. This scientific article aims to analyze the threats posed by artificial intelligence technologies in practice to the persons's right to privacy and to evaluate the legal regulation of these threats based on the analyzed cases.

The theoretical part of the article examines the concept, development, classification, and key characteristics of artificial intelligence, as well as the evolution of the right to privacy - from its philosophical origins to its current legal regulation. In the empirical part, a case study method was applied, analyzing the examples of the companies Clearview AI and Cambridge Analytica. The investigation of these cases highlighted the threats posed by AI to the right to privacy in practice and allowed for the evaluation of the violations committed and the responses of regulatory institutions.

The conducted research confirms that the threat to privacy protection arises not from the AI technology itself but from the way it is applied. It was found that the new Artificial Intelligence Act of the European Union is a significant step in ensuring the protection of personal data. Furthermore, the GDPR also strengthens the right to privacy. However, to achieve effective protection, it is essential to enhance both consumer awareness and the accountability of technology developers.

Keywords: artificial intelligence (AI); GDPR; the right to privacy; legal regulation.

Introduction

The main changes in the information technology era, in the context of artificial intelligence, began to take shape and unfold around 2010-2012. One of the most prominent examples of this is „AlexNet“, a deep learning model. In the 2012 annual „ImageNet“ competition, „AlexNet“ showed incredible image recognition results (Pinecone, 2024), improving its error rate from around 26% to 15.3%. Although this breakthrough in artificial intelligence opened up new possibilities for applying deep learning in various fields, at that time artificial intelligence was not yet widely available for everyday use by every modern person.

However, over the last ten years, with the rapid development of information and artificial intelligence technologies, models such as *GPT-3*, *BERT*, *Transformer* have been created, which gave new momentum to artificial intelligence. In recent years, artificial intelligence has begun to have a strong impact on the everyday life of today's society. Today it is used in a wide variety of areas, such as mobile phones with voice-controlled assistants, facial recognition functions, smart home devices, city monitoring systems, healthcare systems, social networks, or finance.

It is often not considered that every day we encounter artificial intelligence solutions that can affect our privacy, which shows the **relevance** of this topic. The **novelty** of the topic can be justified by the previously mentioned facts that artificial intelligence technology has only begun to develop rapidly in recent years, and the possibilities for its use are constantly expanding. Such rapid expansion also creates new threats to a personal right to privacy that previous generations have not yet encountered.

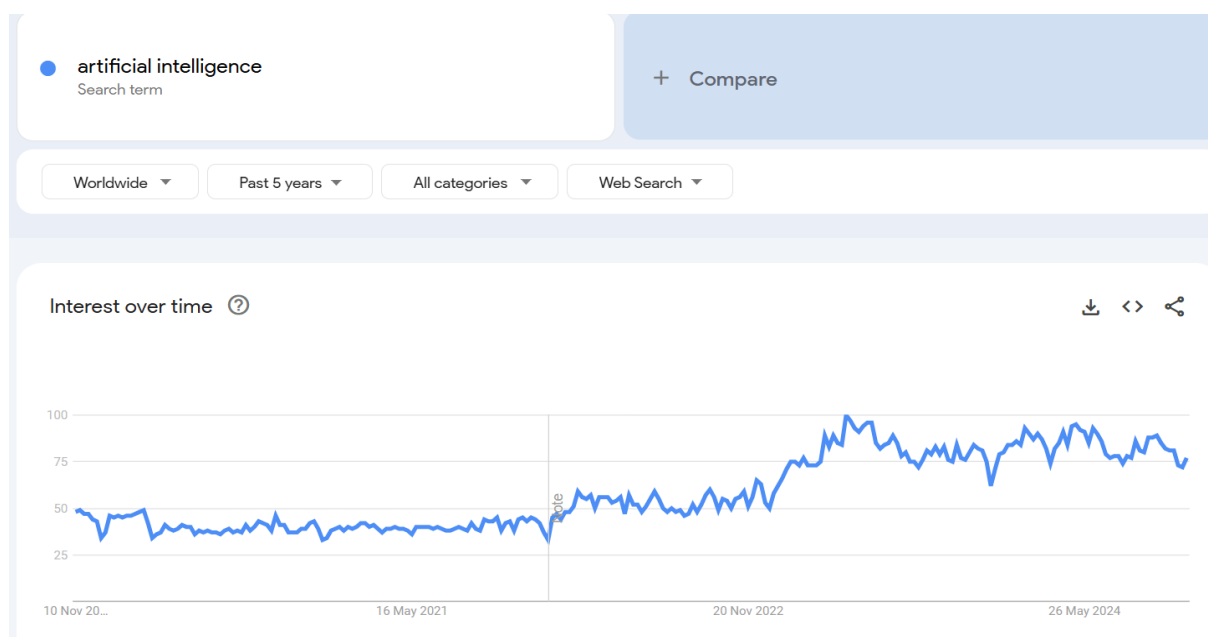
The **issue** of this scientific article is related to the rapidly developing technologies of artificial intelligence, where more and more cases are emerging where these systems violate a person's right to privacy. Despite the growing public and legislative attention to artificial intelligence technology, the question arises - is the existing legal regulation sufficient to protect a person's right to privacy when artificial intelligence technologies are used?

The **aim** of the scientific article is to analyze the threats posed by artificial intelligence technologies in practice to the persons's right to privacy and to evaluate the legal regulation of these threats based on the analyzed cases.

The scientific article uses **theoretical research methods** - comparative, which compares the existing legal regulation with the new EU Artificial Intelligence Act. Historical, in order to reveal the course of development of artificial intelligence technologies, to understand how historical developments have affected today's privacy protection issues. The study also used a **qualitative research method** - a case study, based on a study of two specific cases of „Clearview AI“ and „Cambridge Analytica“, in order to understand how the application of artificial intelligence can affect a person's right to privacy, as well as how threats to a person's right to privacy manifest themselves in practice, and in what ways law enforcement entities respond to this.

Development and main features of artificial intelligence

The fact that the phenomenon of artificial intelligence is inseparable from society today can be substantiated by data from the „Google Trends“ platform. This „Google“ platform allows you to analyze the trends of searches people perform on the „Google“ search engine over a certain period of time. Analyzing the data for the last 5 years, starting in 2019, it can be seen that interest, globally, in searching for information by entering the phrase „artificial intelligence“ into the „Google“ search engine has not been below an index of 25. And since 2022, there has been a strong rise, and since then the index has not fallen below 50, and in recent years it has been between 75 and 100 (*Google trends, 2024*).



Picture 1. Statistics for search „artificial intelligence“.

Source: "Google trends" data, 2024.

Such data show that interest in artificial intelligence in today's society is particularly high, and at the same time emphasizes the relevance of this topic and the need to research it and pay attention to public education.

The first steps towards the practical development of artificial intelligence began in the middle of the 20th century. In 1950, Alan Turing published his famous article „Computing Machinery and Intelligence“. This article became a cornerstone, marking the beginning of the science of artificial intelligence. It proposed the famous Turing test as a way to determine whether a machine can be considered intelligent. This test is conducted with the participation of two people and a computer. The principle of the test is based on a game - one person communicates with both another person and a computer via text messages, and the test is passed if the person does not distinguish who they are communicating with at the time, whether another person or a computer (Turing, 2024). Alan Turing believed that in 50 years, a computer would be able to play such a game so well that it would achieve a 70 percent winning rate. Today, 74 years later, it can be said that A. Turing was right.

The even more rapid practical development of the science of artificial intelligence gained momentum a few years after his work - with the historic Dartmouth Conference in 1956, which became the first systematic attempt in the scientific world to officially define and establish the science of artificial intelligence as an independent field of research. During the conference, a definition was proposed: Artificial intelligence is the science and engineering of creating intelligent machines (McCarthy, 2007). This definition reveals two main directions in the field of AI. The scientific side is research and the development of theories about how machines could imitate intelligence, and the engineering side is the practical creation of systems with intelligence. Although the definition seems quite simple, it has become the basis for many subsequent definitions. The beginnings of computer science and the rapidly growing interest in intelligent machines influenced the conditions for this conference to take place. One of the goals of the conference was to conduct research on artificial intelligence and explore the possibilities of creating systems that could simulate human intelligence using mathematical, logical and engineering methodologies (McCarthy, 2007). The aim was also to establish AI science as a

separate discipline, separating it from other scientific fields, and to explore how machines could learn, improve, and solve various problems in a logical manner.

The 1950s–1970s are often referred to as an era of optimism, marked by important AI achievements, such as the creation of „LISP“ in 1958, the first programming language specifically designed for AI, and „ELIZA“ in 1966, the first conversational program capable of simulating human communication. This era of artificial intelligence was characterized by a very strong belief in a breakthrough, but due to high expectations, a decrease in funding, and the failure to implement overly ambitious goals, progress stalled and from 1970 to 1980 there was a so-called „winter“ period in the context of artificial intelligence.

However, with the development of expert systems in the 1980s, artificial intelligence research has gained new momentum. This recovery, combined with technological advances and increasing computer power, opened the door to new concepts that reached their first breakthrough in the 1990s – the beginnings of machine learning (*Tableau, 2025*). After the success of machine learning in the 1990s, artificial intelligence research intensified over time, including in the field of deep learning. Deep learning, using artificial neural networks, has become a key tool for solving complex problems such as speech recognition, image analysis, and text generation. It is a machine learning method that allows computers to learn from large data sets automatically, without direct human intervention. This method uses multi-layer neural networks that analyze data step by step, starting with simpler features such as lines and colors and moving on to more complex structures such as dog shapes or recognizable features (*Lecun, Bengio, Hinton*). Deep learning algorithms, applied to various complex tasks, are creating ever newer and stronger opportunities to use AI in areas such as medical diagnostics, transportation, education, and to facilitate countless other daily human activities in various fields. However, it should be noted that the current rapid development of AI also poses new challenges, ranging from ethical dilemmas to threats to personal privacy.

In his book „The Quest for Artificial Intelligence a history of ideas and achievements“, Nils John Nilsson provided a definition – artificial intelligence is the activity aimed at creating machines that would be intelligent. And intelligence is the quality that allows a subject to act appropriately and anticipate future events in their environment (*Nilsson, 2022*). Simply put, this scientist's definition means the creation of systems that could replace humans in tasks that typically require human intelligence.

Stuart Russell and Peter Norvig emphasize that the essence of AI is the ability to interact with the environment and make decisions focused on achieving specific goals. According to these authors, AI systems should not only learn or imitate human intelligence, but also effectively adapt to changing circumstances (*Russel, Norvig, 2022.*) Such a definition is important in several respects. This definition primarily focuses on the practical aspects of AI applications, that is, decision-making and goal achievement. This definition also emphasizes the system's ability to function effectively on its own in various situations. Definition by S. Russell and P. Norvig remains relevant for modern AI applications. In areas such as autonomous vehicle systems, predictive models, or virtual assistants like „Alexa“ and „Siri“.

In addition to the academic perspective, artificial intelligence is also being intensively studied by technology developers and implementers. The technological approach reveals how AI is perceived in practice - both in the development and implementation of solutions in various fields. This approach allows us to look at AI as a tool that not only solves complex problems, but also transforms everyday life, business, and industry. From the point of view of technology developers and industry representatives, artificial intelligence is an essential tool that allows you to automate processes, increase efficiency, and create innovative solutions in various fields. For example, „Google“ uses AI to improve its search algorithms to provide more accurate and

relevant results to users (*Google AI principles*). „Amazon“ uses AI to generate personalized product recommendations by analyzing consumer behavior and purchase history (*Levine, 2024*). Meanwhile, „Tesla“ is implementing AI technologies for autonomous vehicle control, aiming to create fully autonomous cars. AI is being integrated into various industries such as manufacturing, logistics, finance, and medicine. For example, in medicine, AI is used to analyze diagnostic images, helping to detect signs of disease and suggest appropriate treatments (*Mims, 2024*). Such applications not only increase the efficiency of processes, but also reduce the likelihood of errors, thereby improving the quality and reliability of services.

Classification of artificial intelligence and its threats to the person's right to privacy

The classification of artificial intelligence allows not only to distinguish its different properties and operating principles, but also to better understand the limits and possibilities of its application. The main classification directions of artificial intelligence can be divided into three types. By level of intelligence, by principle of operation and by scope of application.

According to the level of intelligence, the following types are distinguished:

1. Narrow AI – this type of artificial intelligence is used to perform one specific task. Narrow AI does not have the ability to think; such a machine performs predetermined functions. This is how various phone apps, recognition tools, spam filters, etc. work. For example, „Siri“ or „Google Translate“.

2. General AI – also called general artificial intelligence, today remains only a theoretical concept. General AI should be able to perform any task that a human can perform, using its intelligence, creative thinking, social understanding, and ability to learn and adapt to unseen situations without prior programming (*Joshi, 2002*).

According to the principle of operation (*Santos, Radanliev, 2024*):

1. Reactive machines – such machines operate only based on the data available. They don't have the ability to remember their past events when making new decisions. One of the most famous examples of such a machine is the chess computer IBM Deep Blue“, which defeated Garry Kasparov in 1990 (*IBM*).

2. Limited memory – this type is able to perform complex classification tasks, recall data, and make predictions. Self-driving cars operate on this principle, but when faced with an unusual task, the machine will not cope, for example, when it sees a new road sign that is not in memory. This is the current state of artificial intelligence.

3. Theories of mind and self-concept – the current goal is to create systems that can understand the thoughts, emotions, and intentions of other people or objects. When such technology is in operation, it would be able to make decisions based on a person's beliefs and emotions. Self-concept theory is a theoretical type of AI, the highest level of development, where a machine could recognize itself and analyze its own actions.

By application area (*The Applications of AI, 2023*):

1. Natural Language Processing (NLP) – is able to understand, analyze, and generate natural human language, such as the ChatGPT language model.

2. Computer vision – performs image analysis and recognition, such as facial recognition systems.

3. Expert systems – programs solve specific problems using a base of rules and existing knowledge, for example, medical diagnostic systems.

4. Robotics is the use of artificial intelligence to control and automate mechanical systems, such as industrial robots and autonomous drones.

The concept of AI, its development, and classifications reveal the complex and ambiguous nature of this technology. Its origins date back to mythological stories and philosophical reflections, and over the decades this technology has become the most relevant field of science and technology. In the context of historical development, from A. Turing to the Dartmouth Conference, AI has emerged as a breakthrough innovation that has a profound impact on various areas of life. Analyzing different definitions reveals the dynamism of the perception of artificial intelligence and its dependence on the perspective - academic, technological, or practical. Scientists such as John McCarthy, Nils John Nilsson, along with Stuart Russell and Peter Norvig, have emphasized the importance of both intelligent imitation and decision-making, and technology developers and industry representatives see artificial intelligence as a tool that is becoming inherent for achieving efficiency and innovative achievements.

The AI classification further expands this concept, revealing levels of intelligence, operating principles, and areas of application. The differences between narrow and general AI help us understand what goals modern AI is capable of achieving today and what tasks can be overcome in the near future. Application areas show how AI is becoming established in everyday activities. A comprehensive explanation of the concept of AI is one of the essential steps in understanding the impact this phenomenon has on modern society. It should be noted that the areas of AI application are important in the context of threats to privacy, therefore the aim is to further reveal the real threats to privacy that may be caused by areas such as facial recognition systems, speech models, or other areas that pose risks. However, before that, it is important to understand the concept of a person's right to privacy.

The right to privacy has traditionally been understood as an individual's right to inviolable personal space, autonomy, and protection from external interference. This principle has evolved from the preservation of physical space to the right to control information about oneself. Modern society, constantly influenced by technological progress, has expanded the understanding of this right, especially in the context of the digital space. AI fundamentally changes the perception of privacy because it is able to collect, analyze, and systematize enormous amounts of data. Digital assistants, bio-metric data recognition systems, and behavioral prediction algorithms are transforming privacy from protecting physical space to ensuring digital autonomy. This requires new legal, ethical and technological measures that can protect the individual in this dynamic technological age. Person's right to privacy today includes not only protection from physical intrusion, but also the ability to control how their data is used in the digital space. The influence of artificial intelligence in this context is particularly important, as this technology can not only automate processes, but also discern patterns of behavior of individuals, predict their actions, or even make decisions based on the collected data.

All of this raises questions about the transparency of data collection and use and the human right to control information. Given these challenges, it is important to understand how the right to privacy is adapting in the era of artificial intelligence, with particular attention to how digital privacy is changing traditional understandings. It is worth noting that when delving deeper into the concept of the right to privacy in the context of AI, a very important "keyword" is discovered - data. In the context of artificial intelligence, personal data is an essential part of the technology's functioning - without it, AI would not be able to learn, analyze, or make decisions. The importance of data in the modern world is undoubtedly one of the fundamental reasons why the right to privacy has transformed and expanded. Digital technologies have enabled a huge flow of data, which includes not only basic information, but also detailed personal profiles, behavioral patterns, bio-metric indicators, geolocation data and much more.

Today, data become an integral part of the right to privacy, as its collection, storage and use are directly related to a person's autonomy and their ability to control information about themselves. Personal data protection expands the concept of the right to privacy, because today ensuring personal privacy includes not only the inviolability of physical space, but also digital data. This raises important questions not only about the right to privacy, but also about how this data is protected from misuse.

A person's right to privacy is a human right with deep roots in a historical and philosophical context, which changes in response to the development of society and technology. From the inviolability of private physical space to digital data management, the concept of privacy has expanded and become comprehensive in the modern world. Artificial intelligence's ability to collect and analyze personal data poses new challenges, so today, digital human privacy is becoming no less important than physical privacy.

Legal regulation of the right to privacy in the context of artificial intelligence

The European Union Artificial Intelligence Act (hereinafter referred to as the AIA) officially entered into force on 1 August 2025. Originally proposed by the European Commission in April 2021 and formally adopted by the European Parliament and the Council in December 2023, the AIA represents the world's first comprehensive legislative framework aimed at regulating artificial intelligence technologies. The AIA addresses the potential risks AI systems pose to health, safety, and fundamental rights. It is designed to ensure the safe deployment of AI technologies while safeguarding core European values such as human dignity, privacy, and non-discrimination. The regulation establishes a risk-based approach, where obligations are proportionate to the level of risk that different AI systems may present. (European Commission, 2024; TeisėPro, 2024).

From February 2, 2025, marks an important milestone in the regulation of artificial intelligence in the European Union – the first provisions of the Artificial Intelligence Act have come into force. This means that from this day, certain artificial intelligence systems are completely prohibited, and new obligations arise for developers, providers, and users of AI tools (TeisėPro, 2025).

The Artificial Intelligence Act marks one of the first not only theoretical, but also practical attempts to regulate artificial intelligence, outlining clear rules and creating a precedent that may influence other states considering their own AI regulation. The AIA will be fully applicable from August 2, 2026, and with exceptions for certain rules until August 2, 2027. Thus, the article continues by examining the specific threats to the user's privacy rights when using artificial intelligence. The AIA analysis allows us to understand which areas of privacy are protected in the context of AI and where risks arise.

The main goal of the Artificial Intelligence Act is to create a legal framework that would ensure the development of AI technologies that would not violate fundamental human rights and serve the welfare of society. This act not only obliges developers and users of AI systems to comply with certain norms, but also sets clear boundaries in which cases they cannot be crossed. To make those boundaries clear, the AI system is grouped into different levels of risk in the act.

The most stringently assessed systems, the use of which is prohibited, are assigned to the unacceptable risk group. Such systems pose a threat to human rights, freedoms and democratic processes. The AI Act prohibits eight types of practices:

1) harmful artificial intelligence-based manipulation and deception. A real example is „Deepfake“ technology. „Deepfake“ is a combination of the terms „deep learning“ and „fake“.

Deepfake is extremely realistic videos that are digitally manipulated to make the individuals in them appear to be saying or doing things that never happened in reality. The basis of this technology is the use of artificial neural networks, analyzing large data sets, to learn to imitate a person's facial expressions, mannerisms, voice, and intonations. The process involves feeding videos of two people to a deep learning algorithm, which learns to replace one person's face with another (*Westerlund, 2019*). Videos created using this technology can often be seen on various social networks, where speeches by various politicians and public figures are faked.

2) malicious artificial intelligence-based vulnerability exploitation. Such practices can be used by criminals who, perhaps without sufficient literacy, use language models, such as „CHAT GPT“, to create convincing, professional letters, impersonating employees of a bank or other institution and trying to extort certain data or money from a person.

3) social scoring. A real-world example is China's social ranking system, in which citizens are actually divided into "good" and "bad" (*Hou, Fu, 2022*) and gain or lose points depending on their behavior. Higher scores provide opportunities, such as the ability to obtain loans or expedited visas, while lower scores may limit your ability to travel or receive government services.

4) risk assessment or prediction of individual criminal acts. In the United States, the COMPAS - Correctional offender management profiling for alternative sanctions system was used, which assesses the likelihood of prisoners to re-offend. Practice has shown that this system was biased against African Americans, as they were more often seen as posing a higher risk of crime compared to whites (*Strikaitė-Latušinskaja, 2022*).

5) non-targeted collection of internet or security video surveillance material for the purpose of creating or expanding facial recognition databases. We already have real examples in history where such systems were used. Clearview AI collected large amounts of facial photos from various social networks and websites, creating the world's largest facial recognition database, but even before the Artificial Intelligence Act existed, the creation of such a system already violated certain laws, such as the norms set by the GDPR. The main reason for this was that most people were unaware that their faces were being pulled into the system (*European Data Protection Board, 2022*).

6) emotion recognition in workplaces and educational institutions. Thanks to technology and artificial intelligence, devices exist that, for example, measure a student's brain activity and emotional state during lessons, but this raises concerns about personal privacy and psychological stress, so including such systems in the list of prohibited practices seems reasonable and necessary.

7) bio-metric categorization to identify certain protected characteristics. Such systems are designed to group people according to their biological or physical characteristics, in order to determine certain characteristics, race, gender, age, and health status.

8) real-time remote bio-metric identification for law enforcement purposes in public spaces. Such systems can recognize a person in real time by scanning their face, which can help detect wanted individuals, but at the same time, individuals are massively monitored and their identities are determined, even though they are not involved in criminal acts, which violates their privacy.

In addition to unacceptable risk systems, a list of high-risk systems is also distinguished, which will not be banned, but will be strictly regulated. Such systems are related to health, safety, and fundamental human rights. High-risk use cases include:

1) AI security systems responsible for critical infrastructure facilities. For example, the use of AI systems in transport safety systems, the failure of which would be dangerous to human health or life.

2) AI systems in education, for example, an automatic exam grading system, such a system can affect a person's future career and their planned future.

3) AI in medicine, the use of such systems certainly poses a high risk, as their inaccuracy, for example in surgery, can have serious consequences.

4) AI recruitment and job performance systems. One example is the „HireVue“ system, which helps employers save time and analyzes candidates seeking employment based on their facial expressions, speech patterns, and voice, thus filtering out suitable and unsuitable employees for the employer (*Harwell, 2019*).

5) Use of AI in everyday services, for example, AI can biasedly assess a person's creditworthiness, which may determine whether they will be granted a housing loan, the solution of such a system can have a significant impact on a person's life.

6) Use of AI for remote human recognition, identity verification, bio-metric classification, and emotion recognition.

7) Use of systems in law enforcement, for example to analyze evidence in courts.

8) Use in the areas of migration and border control, such as automated systems that analyze migrant data and visa applications.

9) AI solutions in court proceedings, systems that assist judges in drafting decisions, are also considered high-risk systems.

When analyzing these two risk groups, it is clear that unacceptable AI systems are prohibited because they pose a direct threat to human rights, democracy, and public safety. However, high-risk systems are permitted to be used with strict controls. This difference shows that the European Union's AI Act not only aims to prevent threatening systems, but also seeks to create clear regulation that would also allow for innovation while protecting human rights. In addition to these two strongly controlled types of risk, transparent risk systems are also distinguished, such as chat-bots. The main requirement for such systems is to notify the user that they are communicating and interacting with a machine, an artificial intelligence system. The Artificial Intelligence Act does not set any rules for minimal risk systems, such as spam filters and video games.

Currently, the legal system of the Republic of Lithuania does not have a special legal act that would directly regulate the protection of threats to personal privacy rights posed by artificial intelligence. Nevertheless, it is worth noting that state institutions are actively seeking to implement the provisions of the European Artificial Intelligence Act. Therefore, the initiatives and actions of Lithuanian institutions aimed at preparing and implementing the AI Act in the Republic of Lithuania will be further analyzed.

The sources of the Ministry of Economy and Innovation of the Republic of Lithuania provide the following main obligations of the Republic of Lithuania - to publish a list of institutions protecting human rights, to develop rules on permits for the use of a real-time remote bio-metric identification system for law enforcement purposes, to designate national competent authorities, to develop rules on the application of sanctions, to create AI regulatory sandboxes and develop guidelines for their participants, to implement the right to file a complaint with the market surveillance authority, and to develop rules according to which it is possible to access the documents that the AI system supplier must keep, even if it ceases its activities. These key commitments are planned to be implemented by 02-08-2027. While the Republic of Lithuania is fulfilling its obligations, AI system suppliers will also have to fulfill their obligations in parallel (*Ministry of the Economy and Innovation of the Republic of Lithuania, 2025*).

The Republic of Lithuania has already fulfilled certain obligations, for example, a list of institutions protecting human rights has been published. The following institutions are key in protecting human rights in Lithuania when using high-risk AI systems:

1) The Office of the Equal Opportunities Ombudsman – the institution's primary goal is to ensure that private and public persons do not violate the principle of equality of persons and comply with the prohibition of discrimination.

2) Seimas Ombudsman's Office – this institution monitors human rights in Lithuania, also initiates investigations into fundamental human rights problems, and carries out dissemination and public education on human rights issues.

3) The Office of the Ombudsman for the Protection of Children's Rights – the purpose of this office is to improve the legal protection of children, protect the rights of the child and their legitimate interests.

4) The Office of the Inspector of Journalistic Ethics – investigates human rights violations in the media.

These institutions, based on Article 77 of the AI Act, have the right to request access to and receive all documents stored under the AI Act related to the use of high-risk AI systems, and to submit requests to the market surveillance authority to organize a test of the high-risk AI system if the documents received are not sufficient to ensure that the EU legislation on the protection of human rights has not been violated. The institutions on this list also have an obligation to inform the market surveillance authority of any request submitted for access to stored documents, to cooperate with the market surveillance authority and to comply with the confidentiality requirements set out in Article 78 of the AI Act (*Ministry of the Economy and Innovation of the Republic of Lithuania, 2025*).

A common list of national measures was also analyzed; these measures will help the state implement the established requirements, which all member states must implement. The list contains a total of sixteen measures, three of which, considered the most significant, are highlighted below (*Ministry of the Economy and Innovation of the Republic of Lithuania, 2025*):

1) Draft Law on amendments to Articles 1, 2, 11, 13, 14, 17, 21 of the Law of the Republic of Lithuania on Technologies and Innovations No. XIII-1414 and supplementing the law with an annex. The aim of the project is to designate the public institution Innovation Agency as the national competent authority – notifying authority, and to establish that the public institution Innovation Agency would be responsible for the creation of a limited pilot regulatory environment for artificial intelligence and the supervision of the operation of this environment. This measure is highlighted as important because institutional coordination is essential to ensure smooth cooperation between Member States and between national and the EU institutions.

2) Draft Law on amendments to Articles 1, 2, 23 and the Annex to the Law No. X-614 of the Republic of Lithuania on Information Society Services. The aim of the project is to designate the Communications Regulatory Authority of the Republic of Lithuania as the national competent authority – market surveillance authority, and also to entrust it with the functions of a single contact point. As a result of the implementation of this project, the Communications Regulatory Authority of the Republic of Lithuania has become the key entity responsible for technology oversight, transparency, and compliance.

3) Draft Law on the Application and Supervision of Artificial Intelligence. The objectives of the project are to lay down rules on sanctions and other enforcement measures, which may also include warnings and non-pecuniary measures, to be applied for infringements of this regulation by operators, and to take all necessary measures to ensure that they are properly and

effectively implemented. Determine the distribution of functions between institutions performing supervision of AI systems market (national competent authorities and other supervisory authorities). The implementation of this project will ensure sanctions and enforcement mechanisms and a clear division of functions between the institutions performing supervision.

In the context of today, the adoption of the AI Act is of great importance. In particular, the European Union is becoming a leading jurisdiction that has set standards for AI ethics and security that other countries may adopt in the long term. This act also protects citizens' rights in the context of artificial intelligence by establishing clear guidelines for its development and use. Another important aspect is the creation of legal clarity for legal entities, which will help companies develop AI technologies while knowing clear boundaries. In addition, given the rapid development of technologies and changing operating principles, after the entry into force of the AIA, although the act regulates high-risk AI systems in detail, constant monitoring and real-time updates in the event of changes are important in order to avoid the use of legal loopholes. Practical implementation is also an important aspect, a major challenge awaits the European Union countries, which will have to ensure that the AI Act is effectively applied and not circumvented.

For this reason, the pursuit of implementing the European Union Artificial Intelligence Act becomes particularly important, and the implementation of the initiatives and requirements of Lithuanian state institutions in this context becomes a particularly positive indicator. The formation of national legal instruments and institutional structures is an important step in preparing Lithuania for effective regulation of artificial intelligence.

The impact of the application of artificial intelligence technologies on the protection of the person's right to privacy: analysis of practical cases

In order to comprehensively and thoroughly reveal the impact of artificial intelligence on a person's right to privacy, this paper conducts a qualitative study using the case study method. This method was chosen because quantitative methods, such as surveys or statistical analysis, are not appropriate in the context of this work, as the phenomenon being analyzed is primarily very new and related to complex legal, ethical, and technological areas.

Case study provides an opportunity to thoroughly analyze and describe a single event or fact in a real context and to describe (explain) the phenomenon under study, especially when the boundaries between the phenomenon and its context are not clear. This is a qualitative research strategy that involves a detailed, in-depth examination of one or more specific cases that illustrate the problem under study. Here, the main focus is on a specific case, which is attempted to be described and explained in as much detail as possible, and to answer the research questions.

The specific cases chosen – „Clearview AI“ and „Cambridge Analytica“ – are not accidental. They are both directly and widely known to the public and are associated to significant violations of the right to privacy committed using artificial intelligence technologies. The analysis of these two cases allows not only to reveal specific threats to privacy protection arising from the application of artificial intelligence, but also to formulate recommendations and insights that may be useful in developing and improving legal regulation in this area. The selected cases also perfectly illustrate the importance and relevance of the legal and technological aspects analyzed in the theoretical sections in the practical space, therefore, the case analysis in this work will be useful in achieving comprehensive and practically based conclusions.

The Clearview AI case was chosen because the company used facial recognition technology based on artificial intelligence to illegally collect the bio-metric data of millions of people from public internet sources, social networks, and other platforms. This case reveals the specific risks posed by automated, mass collection and processing of bio-metric data using artificial intelligence.

The Cambridge Analytica case is important because it reveals how artificial intelligence-based profiling and data analysis systems can be used not only for commercial but also for political purposes, manipulating individuals and their privacy. This case also allows us to take a deeper look at the issues of psychological profiling and manipulation of personal data.

„Clearview AI“ case assessment under the European Union AI Act

After analyzing the factual circumstances of this case, violations of the right to privacy, and the actions of the institutions of the European Union member states against the „Clearview AI“ company, it is worth noting that, first of all, this case forms a unified position of personal data protection authorities, which indicates that even if a company carries out its technology activities outside the European Union, it must comply with the common European Union legislation, such as the GDPR, if it processes the data of the EU citizens. This case also highlighted other important aspects in the context of the right to privacy, for example, that the protection of bio-metric data and the protection of personal images are distinguished as particularly sensitive areas, therefore, in the event of threats to this data, institutions immediately take action and impose particularly strict sanctions for identified violations, and such threats are not ignored in the European Union.

On January 18, 2020, The New York Times published an article titled „The secretive company that might end privacy as we know it“ that publicly revealed the activities of „Clearview AI“ for the first time. Until then, the company had operated quietly and was reported to have used its services by more than 600 law enforcement agencies, as well as several private companies. The question has been raised whether activities of „Clearview“ violate legal regulation by using facial recognition technology.

On June 10, 2020, the European Data Protection Board (EDPB) issued a preliminary assessment expressing serious doubts about the legality of such a service in the context of the EU law. *"In its response to MEPs on the „Clearview AI“ tool, the EDPB also shared its concerns about certain developments in facial recognition technology." The EDPB recalls that, under the Law Enforcement Directive (EU) 2016/680, law enforcement authorities may process bio-metric data for the purpose of uniquely identifying a natural person only in accordance with the strict conditions of Articles 8 and 10 of the Directive. The EDPB has doubts as to whether any Union or Member State law provides a legal basis for using a service such as the one offered by „Clearview AI“. Therefore, as it stands and without prejudice to any future or pending investigation, the lawfulness of such use by the EU law enforcement authorities cannot be ascertained. Without prejudice to further analysis on the basis of additional elements provided, the EDPB is therefore of the opinion that the use of a service such as „Clearview AI“ by law enforcement authorities in the European Union would, as it stands, likely not to be consistent with the EU data protection regime.*

It should be noted that this case was assessed by the institutions based on the GDPR norms, since at the time the European Union Artificial Intelligence Act had not yet entered into force, therefore this study also aimed to assess how the activities of the „ClearView AI“ company in this case would be assessed based on the provisions of the newly entered European

Union Artificial Intelligence Act, how the activities of this company would be assessed, and what the differences would be when applying the AI Act compared to the GDPR.

Under the Artificial Intelligence Act, „Clearview AI“ is believed to have violated at least one clearly stated prohibition. Certain AI systems are prohibited altogether if they pose unacceptable risks. For example, Article 5(e) of the EU AI Act, “making available on the market, putting into service for this specific purpose or using AI systems that create or extend facial recognition databases by non-targetedly collecting facial images from the internet or from security video surveillance systems (CCTV) footage”

„Clearview AI“ automatically collected facial images for its system from publicly available online sources, including social networks, news portals, and public videos. In this way, these images were used to create a bio-metric database, which was later offered commercially to law enforcement agencies. It is believed that such practices directly correspond to prohibited activities under the cited Article 5 of the AI Act, since the data was collected inappropriately, without consent, from the public internet space. Given the scope of the regulation set out in Article 1 of the Artificial Intelligence Act, it is clear that the activities of „Clearview AI“ would have fallen within the scope of the Regulation. According to Article 1(a), (c) of the AI Act, the AI Act applies to both suppliers and installers, regardless of whether they are established in the European Union or in a third country, if their AI systems are used in the Union or have an impact on the Union residents. Although Clearview AI is based in the United States, the company collected and processed bio-metric data and facial images of citizens of the European Union countries and offered its technology for use by law enforcement authorities in several EU member states, including Sweden, Italy, France, and Austria. Such actions clearly comply with the provisions of the AI Act.

Given that in practice the authorities have applied the strictest penalties based on the provisions of the GDPR, and that the AI Act would include this company's technology in the scope of prohibited systems, it is reasonable to assume that in such a situation the AI Act would also impose severe penalties as provided for in Article 99 of the Act - „Non-compliance with the prohibitions on AI-related practices referred to in Article 5 shall be subject to administrative fines of up to EUR 35,000,000 or, in the case of an undertaking, up to 7% of its global annual turnover in the preceding financial year, whichever is higher.“

The „Clearview AI“ case has exposed the threats that artificial intelligence-based bio-metric systems can pose to a person's right to privacy. The company's illegal practice of collecting facial images, ignoring the rights of data subjects, and transferring data to third countries without safeguards and contracts - all of this has shown how modern technologies can be used to violate human rights principles. The European Union member states, through their data protection authorities, reacted unanimously, imposing large financial sanctions and adopting decisions on data removal and cessation of activities. Analyzing this case under the European Union Artificial Intelligence Act, it is clear that such a system falls into the category of prohibited AI systems, therefore the sanctions could be even stricter than under the GDPR.

This case becomes significant not only in legal practice, but also in creating clearer standards for regulating artificial intelligence, in order to prevent the misuse of personal data in the future. The work continues with another famous case analysis, „Cambridge Analytica“, which, although based on different technology, also involves the use of data without explicit consent and reveals a different way of using artificial intelligence tools - to manipulate the obtained personal data in order to influence their political choices.

Assessment of the „Cambridge Analytica“ case under the European Union AI Act.

„Cambridge Analytica“, a company founded in the United Kingdom, has presented itself as an advanced data analytics company that helps reach specific groups of individuals based on their behavior, opinions, and habits. They said they use a lot of information about people's ages, interests, political views, and even psychological traits to create highly targeted marketing messages. The company also used sophisticated data analysis and prediction techniques to identify groups of people who behave similarly and deliver tailored content to them. This information was collected from different sources, sometimes even without people's consent, and decisions were made on its basis in political campaigns and advertising. In simple terms, this system worked like this: if a person liked certain posts on social media, watched a specific type of video, browsed certain pages, or shared certain content, all of this activity was analyzed to create a psychological portrait of the person. Based on this portrait, political messages or advertising were applied to the person while they were browsing the internet, which was intended to influence their opinions or behavior.

In summary, the most important features of this company's activities can be distinguished: it was a private data analysis company, it helped political parties and businesses reach target groups of people, data was collected from various public and not always transparent sources, people were assessed, their personality, values, and behavior were analyzed, and the created content was adapted to specific groups and shown to them through various digital and social channels.

When assessing the activities of CA in accordance with the provisions of the AI Act, there is no doubt whether the data analysis system they used, based on profiling and automated decision-making, did not violate the restrictions or prohibitions set out in the AI Act. For example, Article 5(a) of the AI Act prohibits – „using an AI system that uses methods that affect the subconscious mind of a person, of which the person is unaware, or that purposefully uses methods of manipulation or deception, with the aim of substantially changing the behavior of a person or group of persons, or by substantially changing that behavior, significantly weakening their ability to make a reasoned decision, thereby forcing them to make a decision that they would not have made otherwise...“. Considering that CA used advertisements that were purposefully shown to specific people, based on their psychological profile, it can be argued that this could be seen as an attempt to exploit a person's psychological vulnerability.

Viewed through the prism of Article 5(c) of the European Union Artificial Intelligence Act, it can be argued that activities of „Cambridge Analytica“ theoretically met certain characteristics of prohibited practices. Article 5(c) of the EU AI Act – „making available on the market, putting into service or using AI systems to assess or classify natural persons or groups of persons for a given period of time on the basis of their social behavior or known, inferred or foreseeable personal or personality traits, where the social ranking results in one or both of the following: i) harmful or unfavorable treatment of certain natural persons or groups of persons in social contexts that are not related to the contexts in which the data were originally generated or collected; ii) harmful or unfavorable treatment of certain natural persons or groups of persons that is unjustified or disproportionate to their social behavior or its dangerousness.“ In simple terms, it can be assumed that the essence of this prohibition is to protect people from being unfairly assessed on the basis of their behavior, especially when that behavior has nothing to do with the situation in which it is subsequently used. For example, if a person on „Facebook“ „likes“ patriotic posts or articles about security, it doesn't mean they need to be shown political ads from one party or biased information about immigration. Or if a person is interested in health and alternative medicine online, they should not automatically be classified as those who

distrust science and be constantly exposed to misinformation. This protects people from getting the wrong impression based solely on their clicks or browsing habits. „Cambridge Analytica“ collected and analyzed data provided by users on social networks, created psychological profiles, and used them for political purposes - aiming to influence people's opinions and behavior in elections.

Taking into account these provisions, it can be assumed that if the activities of the CA were assessed under the new AI Act, there would be reasonable grounds to apply the prohibitions specified in Article 5. This would mean the possibility of imposing correspondingly severe fines, as provided for in Article 99 of the AI Act - up to 35 million euros or 7% of global annual turnover, and the company's systems would be considered in the group of prohibited practices.

Conclusions

After analyzing the concept, development, and main characteristics of artificial intelligence, it can be stated that it is a rapidly developing and multi-layered technology, the definition of which depends on the approach - scientific, practical, or technological. Although there is no single definition, most sources agree that AI is the ability to automate tasks that require human intelligence. Its classification by operating principle, level of intelligence, and scope of application helps to better understand which technologies are considered AI and in what areas they are used. Historical development shows how AI has moved from ideas to practical application, and today's possibilities also raise new questions about its impact on humans and their rights.

Modern society and the development of AI technologies have led to the fact that the concept of privacy is no longer understood only as the inviolability of the body or home - today it is increasingly associated with the right to control information about oneself in the digital space. AI's ability to automatically collect, analyze, and predict based on personal data poses serious threats to informational autonomy. Therefore, protection against unauthorized use of data becomes an essential part of privacy. This transformation of the law shows that in the era of AI, privacy must be understood as the right to control data, not just as the inviolability of physical space.

The current legal regulation of the person's right to privacy in the Republic of Lithuania in the context of artificial intelligence is primarily based on the General Data Protection Regulation applied by the European Union, which ensures the basic principles of data protection and is directly applicable in the Member States. The latest and most significant step in this area is the adoption of the Artificial Intelligence Act, which becomes the world's first legal act that systematically regulates the use of AI and seeks to ensure human rights, including the right to privacy, against the backdrop of technological development. There are currently no national legal acts directly regulating the interaction of AI and privacy in Lithuania. However, both Lithuania and all the EU Member States are actively preparing for the full implementation of the Artificial Intelligence Act, developing national measures and forming a network of responsible institutions, aiming to ensure the practical application of this legal act.

The practical impact of the application of artificial intelligence technologies on the protection of a person's right to privacy, as analyzed in the cases of „Clearview AI“ and „Cambridge Analytica“, reveals that the main threats arise not from the technology itself, but from how and for what purposes it is used. Both cases examined demonstrated systematic privacy violations – from the illegal collection of bio-metric data without consent to the creation and manipulation of a person's psychological profile for political purposes. The European

Union's Artificial Intelligence Act would theoretically have allowed such practices to be designated as prohibited – both due to the inappropriate collection of bio-metric data and profiling methods. This shows that the new regulation has great potential to more effectively protect the person's right to privacy in the context of AI by clearly identifying risky or illegal systems. At the same time, the study revealed an important insight: technical progress alone is not enough; strengthening transparency, information, and personal control over data is necessary.

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THE LAW ENFORCEMENT OFFICER'S TOOLKIT: OPTIMAL MEASURES OF DIRECT COERCION AND THE COMPETENCIES TO BE DEVELOPED THROUGH TRAINING

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Abstract: *This article explores the optimal set of direct coercive measures required by competent law enforcement agencies in Estonia and identifies the core competencies necessary for their lawful and effective application. The research is motivated by the evolving security landscape and the increasing need for non-police agencies to exercise direct coercion during crises. Employing document analysis of police security tactics reports (2012–2022), the study investigates which coercive measures are used most frequently, in what combinations, and under which circumstances. The findings reveal a shift from a linear to a situational model of coercion, where electroshock weapons are increasingly favoured due to their efficiency and lower risk of harm. The study highlights inconsistencies in the legal regulation of coercive measures across different agencies and calls for a more coherent and inclusive legal framework. A set of specific competencies – spanning physical force, special equipment, firearms, and de-escalation techniques – is proposed for integration into law enforcement training curricula.*

Keywords: *competent law enforcement agency, toolkit of direct coercive measures, competencies in the use of force.*

Introduction

In the context of the changed security environment and various crises, it is increasingly important that law enforcement agencies beyond the police are granted broader powers to apply direct coercion. To determine what constitutes an optimal toolkit of direct coercive measures for a competent law enforcement agency, and what competencies are required for their use, document analysis was conducted. Analysed were the summaries of the Police and Border Guard Board's use of direct coercion between 2012 and 2022. The results show that the police apply direct coercion in a wide range of situations – for example, to execute a law enforcement order (precept by LEA Section 28) save the life of a suicidal individual or neutralise an attack on an officer. This indicates that other law enforcement agencies should also be legally empowered to use a diverse array of direct coercive measures. To prevent the misuse of direct coercion, attention must be focused on training, as competencies in the use of direct coercion inform the design of training curricula.

Section 6(1) of the Law Enforcement Act (LEA) defines a **competent law enforcement agency** as an authority, body or person authorised by law or regulation to perform the function of state supervision.¹ These agencies may be authorised to apply **state supervision measures** specific to their field, and, where necessary, enforce them through **direct coercion**. For example, a competent law enforcement officer has the right to use physical force and handcuffs on an intoxicated individual who is endangering others in order to ensure their transport to a

¹ Only the police have the competence to intervene additionally as a law enforcement agency with general or urgent competence, under Section 6(2) and (3) of the LEA. For a more detailed explanation of the definition of law enforcement competence, see Roosve 2025, commentary on Section 6 of the LEA, pp. 53–63.

sobering-up facility (LEA, Sections 42(1) and 79(1) points (1) and (3)). Under current legislation, the Estonian legislature designates the police as the principal user of direct coercion. Other special law enforcement agencies either lack such powers entirely (e.g. the Data Protection Inspectorate), or their internal regulations are inconsistent (see below for examples from the sector).

In light of the deteriorated international security environment (the Estonian Parliament 2023, pp. 4, 9, 13) and other potential crises, it is essential to review and revise the provisions governing the use of direct coercion by law enforcement agencies. In the event of unexpected or unfamiliar incidents, the police may have insufficient time or capacity to respond to ordinary threats (Jäätma 2020, p. 78). Recent crises in Estonia that have demanded extensive police involvement and resources include the April 2007 riots, the COVID-19 pandemic in 2020 and mass migration triggered by the war in Ukraine in 2022. Thus, the **relevance** of the current study is closely tied to the present security situation and Estonia's ability to manage crises. The Police and Border Guard Board needs other law enforcement agencies² to serve as capable, independent partners with their own **powers to apply direct coercion** (the Estonian Parliament 2021, p. 29). There may be circumstances in which the police, due to capacity constraints, are unable to provide support to other agencies, even though Section 6(6) of the LEA establishes an obligation for the police to assist with the use of direct coercion (Roosve 2025, pp. 53–63).

The **novelty** of this study lies in its methodology: by analysing ten years of police practice in the use of direct coercion, it identifies the optimal range of direct coercive measures for competent law enforcement agencies. Since the legal basis and practical skills for using direct coercive measures must be taught and practised, the study also defines a set of competencies that can inform training programme design.

The central **research problem** is as follows: What measures of direct coercion are needed by competent law enforcement agencies in the performance of state supervision, and what competencies must officers possess in order to use such measures? The **aim of the study** is thus to identify the necessary and appropriate direct coercive measures for competent law enforcement agencies, and to define the corresponding competencies, so that these can be systematically incorporated into training programmes on the use of direct coercion.

To achieve the aim and address the problem, the following **research questions** are posed:

1. Which measures of direct coercion are used to enforce various state supervision measures?
2. Which measures of direct coercion are used most frequently, and in what combinations?
3. What recommendations can be drawn from security tactics analyses to inform training and the definition of competencies in the use of direct coercion?

To answer these questions, the following **research tasks** (RT) are set:

1. Compile an overview of the state supervision measures set out in the LEA that allow for the use of direct coercion (RT1); Analyse the Police and Border Guard Board's security tactics manuals and prepare a summary showing:
 - a) which direct coercive measures are used to enforce which supervision measures (RT2);
 - b) which direct coercive measures are most commonly used and whether they are used individually or in combination (RT2);

²Under each of Estonia's eleven ministries, at least two law enforcement agencies operate with state supervision competence; these are agencies or inspectorates such as the Rescue Board and the Police and Border Guard Board under the Ministry of the Interior.

- c) what recommendations emerge for defining competencies in the use of direct coercion (RT3);
2. Formulate a set of competencies for the use of direct coercive measures (RT3).

The current state of the field of law enforcement

It is encouraging that, in recent years, various laws in the field of law enforcement – including those related to the use of direct coercion – have been modernised in Estonia. As a result, volunteers are increasingly able to contribute to maintaining public order. In addition to the roles of assistant police officer, assistant rescuer and Defence League member, the legal basis for involving assistant bomb disposal specialists and crisis-role bomb disposal assistants has now been established. **This includes their right to apply state supervision measures and to use direct coercion** (see Rescue Act, Sections 32¹, 38¹, 38², 42¹ and 42²). A draft law currently pending before the Government of the Republic proposes granting additional supervisory tasks and the right to use direct coercion to municipal law enforcement officers (Ministry of the Interior, 2023). The need for this is clear (see survey results on municipal law enforcement officers at the Tallinn Municipal Police Department, Vanaisak 2021, pp. 258–266). Amendments to the Security Activities Act, which came into force in 2024, clarify the rights of security guards to **use force, weapons and special equipment**, and **outline training requirements**, and should serve as a model for future legislation. These changes help to strengthen internal security and enhance public safety (The Estonian Parliament, SE 629, p. 63). Further revision of the Security Activities Act remains relevant, particularly to clarify the role of security staff in protecting public order more broadly – for example, whether and under what conditions they may provide services at public gatherings and admitted to apply direct coercive measures.

Several authors have examined the legal and practical issues associated with the use of direct coercion, including Silva Kirsimägi, Hannes Haav (in collaboration with Jaak Kiviste and Oliver Purik), and the author of the present article. Kirsimägi (2023) notes that **current law lacks clear and consistent regulation regarding the use of force** in situations where the Defence Forces or Defence League are involved in maintaining public order. Haav et al., (2023) analyse three years of police practice in the use of **electroshock weapons** and argue that **the conditions for their use should be aligned with those for pepper spray and telescopic batons**. Vanaisak (2019) highlights **inconsistencies** in the lists of permissible direct coercive measures governing the Environmental Board. These lists do not reflect practical needs or align with the Environmental Supervision Act, and the Environmental Board requires authority to use a broader range of special measures and direct coercive measures (Vanaisak 2019, see also Table 1). Leaders of bomb disposal operations have stressed that, in performing tasks involving the identification or neutralisation of a serious threat, they should be authorised to use more direct coercive measures than just physical force and firearms. The current restriction on the use of firearms in cases of self-defence should be extended to include law enforcement tasks (Vanaisak 2020, pp. 50, 55, 59; see also Rescue Act Section 26¹(1–2) and Explanatory Memorandum to Draft Act SE 128 UA, p. 9).

Table 1. Inconsistencies in the list of direct coercive measures permitted for the Environmental Board under the Environmental Supervision Act, Hunting Act, Fisheries Market Organisation Act, Fishing Act, General Part of the Environmental Code Act, Forest Act, Water Act and Animal Protection Act
(based on Vanaisak 2019, pp. 203–205).

LEGAL ACT	MEASURES OF DIRECT COERCION			
	PHYSICAL FORCE	HANDCUFFS	SERVICE ANIMAL (DOG)	SERVICE WEAPON
Environmental Supervision Act	?	*	*	*
Hunting Act	*	*	?	*
Fisheries Market Organisation Act				
Fishing Act	*	*		*
General Part of the Environmental Code Act	*			
Forest Act	*	*	?	*
Water Act	*			
Nature Conservation Act	*		?	

The study presented in this article focuses on different aspects of the use of direct coercion: which measures should be used to enforce which measures; whether any hierarchy or pattern exists in the selection of measures; what an appropriate toolkit of direct coercive measures should include for each competent law enforcement agency; what problems arise in practice; what recommendations exist for prevention; and where the focus of training in the use of force should lie.

Methodology

This study uses a combined research methodology. The **analysis of documents** reflecting the practical application of direct coercion includes police security tactics incidents from 2014–2022, police security tactics recommendations from 2013–2022 and police firearm use analyses from 2012–2013. These materials are treated as secondary data (Give, 2008, p. 803), allowing for the reuse and processing of data collected by another researcher for a different purpose.

As law must adapt to societal change, one of the legal scholar's responsibilities is to interpret developments in legal practice, identify points of friction, and devise general, comprehensible guidelines or principles to resolve a range of individual cases (Soo & Pormeister 2021, pp. 11, 19–20, 51). The study is not limited to doctrinal analysis; it also examines and analyses specific cases that may serve as the basis for developing broader legal-theoretical frameworks.

On 12 July 2023, the author submitted a request³ to the Police and Border Guard Board to analyse police firearm use, police security tactics recommendations and police security tactics incidents from 2012–2022. The Police and Border Guard Board granted permission to use the security tactics materials on 14 September 2023. The data are used in aggregate, without reference to personal information, and in compliance with the Public Information Act, which prohibits disclosure of information that could hinder the detection of offences or facilitate their commission (Public Information Act, Section 35(1)(5¹)).

³The application was submitted in accordance with the requirements for conducting research on the police organisation and for the provision, use and storage of information necessary for such research.

1. Overview of regulations on the use of direct coercion and areas for development

This chapter provides a brief overview of the legal framework governing direct coercion, highlighting both legal and practical issues. It addresses the need for listing direct coercive measures available to competent law enforcement agencies in special laws, relevant case law from the Chancellor of Justice and the courts, and a model along with the required competencies for the use of direct coercion. The chapter also examines the need to amend current legislation and offers a limited international comparison, particularly with legislation from the Federal Republic of Germany.

The list of direct coercive measures available to competent law enforcement agencies (other than the police) must be included in special laws

Direct coercion refers to influence exerted on a person, animal or object using physical force, special equipment or a weapon. If it is not possible to enforce compliance through substitutional performance or a fine, direct coercion may be used. This is always an administrative act exercised under discretionary powers (LEA, Section 74; Explanatory Memorandum to Draft Act 49 SE, p. 105; Supreme Court judgment 1-17-1219/39, para. 16). The LEA is a general law that lays down the overarching rules for all law enforcement agencies, including types of direct coercion (**physical force, special equipment, weapons and ammunition**) and the conditions for their use (Draft Act 49 SE, p. 101; see LEA, Chapter 5). In addition to the **police**, the right to use direct coercion is granted to **other law enforcement agencies**. The explanatory memorandum to the draft act mentions the Tax and Customs Board and the Environmental Inspectorate (now the Environmental Board). The legislature has deemed it necessary to expand the list of such authorities: if a law enforcement agency has the power to apply a measure that may warrant direct coercive enforcement, it must also be empowered to use direct coercion (Draft Act 424 SE, p. 25; Draft Act 49 SE, pp. 103, 105).

Where a **special law enforcement agency** is granted the right to use direct coercion, **the relevant special law must specify which types of direct coercive measures it is authorised to use** (Draft Act 424 SE, pp. 20, 25; Draft Act 49 SE, p. 105). To prevent the abuse of less-lethal weapons – which may cause serious injury or death – their use must also be strictly regulated by law (United Nations 2020, para. 1.1). The introduction of this article referred to inconsistencies in the regulation of direct coercion by the Environmental Board and the Rescue Board's bomb disposal units, but there are other examples. The Tax and Customs Board is authorised to use a range of direct coercive measures under Sections 67–68 of the Customs Act. These include handcuffs, service dogs, rubber and telescopic batons, gas weapons and firearms.⁴ However, equivalent lists should be included in all special laws granting the Tax and Customs Board supervisory powers (see inconsistencies in Table 2). For example, Section 33(4) of the Tobacco Act authorises the Tax and Customs Board to use direct coercion but does not specify the permitted measures, despite this having been deemed necessary during the drafting stage (see Draft Act SE 753: “The proposal was submitted by the Tax and Customs Board to enable its officers to use physical force, special equipment or weapons when apprehending illegal tobacco handlers and their goods, or in response to assaults during such operations.”) The Alcohol Act, meanwhile, does not grant the Tax and Customs Board powers of direct coercion, although such authority could be necessary when dealing with prohibited

⁴In the author's view, the list of direct coercive measures available to the Tax and Customs Board should also include physical force, without which the use of certain other measures is not possible.

alcohol handlers (see Alcohol Act, Section 7(1)(1–7) and Section 4(1)(1), which defines prohibited alcohol handling).

Table 2. Inconsistencies in the list of direct coercive measures in the special laws governing the Tax and Customs Board
(compiled by the author)

LEGAL ACT	Inconsistencies	MEASURES OF DIRECT COERCION						
		Physical force	Hand-cuffs	Baton	Service dog	Gas weapon	Fire-arm	Other special
Alcohol Act		-	-	-	-	-	-	-
Road Transport Act	Direct coercion allowed for examination of movables, but no measures listed in the special act	?	?	?	?	?	?	?
Customs Act		?	*	*	*	*	*	*
Tobacco Act	Use of direct coercion allowed, but measures not listed in the special act	?	?	?	?	?	?	?
Fiscal Marking of Liquid Fuel Act		-	-	-	-	-	-	-
Liquid Fuel Act	Direct coercion allowed for all supervisory measures, but no coercive measures listed in the special act	?	?	?	?	?	?	?

As of 7 February 2025, local government law enforcement officers do not have the legal authority to use direct coercion. The legislature intends to amend this in relation to the transport of intoxicated persons to sobering-up facilities and supervision under the Public Transport Act (Ministry of the Interior 2023, pp. 9 ff). In addition to granting the right to apply specific special measures, the proposed legislation would authorise local government law enforcement officers to use direct coercive measures such as physical force, handcuffs, gas weapons and telescopic batons. Based on the findings of Haav et al., (2023, p. 81), the list of direct coercive measures proposed in the draft legislation could also include the use of electroshock weapons. Compared to gas weapons or telescopic batons, electroshock weapons are associated with less pain and a lower risk of injury. Local government law enforcement officers should also be granted the right to use direct coercion under other legislation (e.g. the Tobacco Act; see also results from the MUPO survey in Vanaisak 2021, pp. 258–266).

Linear and situational models for the use of direct coercion

Research on the use of direct coercion generally focuses on a binary choice: whether to use it or not (Paoline & Terrill 2011, p. 160). In Estonian academic literature, the escalation of direct coercive measures is described in terms of increasing intensity, based on the principle of proportionality (Draft Act 49 SE, p. 102). In 2017, Kiviste developed a matrix for the use of direct coercive measures. In this model – a **linear model** of use of force – the choice of measure is guided by proportionality: the least intrusive measure is selected first, and more intense means are employed only if necessary to achieve the goal. This stepwise approach is used by 80% of police officers (Terrill & Paoline 2012, p. 38). According to the matrix, the least invasive intervention is the mere presence and visibility of the officer, while the most extreme is causing death. Between these extremes lie actions such as communication, movement restriction, deprivation of liberty, infliction of pain, bodily harm and life-threatening injury. Physical force, handcuffs and service dogs are used to restrict movement (low intensity); gas, bladed and electroshock weapons cause pain (moderate intensity); and firearms can result in injury, life-threatening harm or death (high intensity). However, strong use of physical force or bladed weapons may also cause death, and serious harm may result from dog bites or, in rare cases, gas or electroshock weapons (Laaring et al., 2017, p. 284; see also McEwen 1997, p. 49, and Adams & Jennison 2007, p. 450).

In studying the practice of direct coercion, it is emphasised that force should always be guided by proportionality: the most effective means of achieving the objective should be chosen, with the least possible harm to the subject and the officer. This is known as the **situational model of direct coercion** (Terrill & Paoline 2012, p. 40). Haav et al., (2023, p. 81; see also Bulman, 2011, pp. 6–7) found that the use of electroshock weapons is safer than telescopic batons, as it does not cause long-lasting pain or injury. An analysis of four years of Estonian police security tactics materials showed that among moderate-intensity equipment, pepper spray and telescopic batons cause the most injuries and prolonged pain. Compared to electroshock weapons, the injury rate is 33% versus 9%. Notably, pepper spray alone is effective in only 23% of cases and is usually followed by the use of other coercive measures. These findings align with results from other countries (Haav et al., 2023, p. 81; see also Ministry of Justice 2024, LEA draft, Annexes 1 and 2). It is well established that the longer a conflict persists, the more likely it is that force will be applied repeatedly or that equipment will be changed; this in turn increases the risk of injury to both the subject and the officer (Mesloh, Henych & Wolf, 2008, p. 67; Mesloh, Heych & Wolf, 2009, p. 3; Alpert et al., 2011). The force used by police officers must be objectively reasonable and take all circumstances of the specific incident into account. There is growing support for situational models in which the choice of coercive measure is based on the subject's level of resistance (Terrill & Paoline 2012, p. 41).

Several authors also highlight the need to enhance training, particularly by focusing more on the use of non-linear force models, where measures are selected based on the situation (Staller & Zaiser 2015; see also Roberts 2012). Naturally, the range of measures entrusted to law enforcement officers must enable such an approach.

Estonian case law shows that when assessing the legality of coercion, attention is paid to **whether the choice and intensity of the coercive tool are linked to the officer's knowledge and training** (Supreme Court judgment of 1 July 2021, No 1-18-10214, para. 34; see also Soo & Sootak 2023, pp. 760–761).

It is often assumed that increasing the duration of training ensures the lawful and effective use of force (Staller & Zaiser 2015). Current academic literature recommends placing greater emphasis not only on tactical repetition of standard scenarios but also on understanding the

consequences of excessive force. Training methods should encourage learners to analyse the impact of disproportionate force and to propose alternative responses based on their own insights (Staller & Zaiser 2015; see also Atherley & Hickman 2014; Smith & Holmes 2014).

The use of direct coercive measures in the context of state supervision

The author attempted to derive the potential applicability of direct coercive measures from the threat criteria outlined for each state supervision measure (see LEA, Sections 26, 28 and 30–53, which set out the grounds for the application of general and special state supervision measures). Although more intense coercive measures, such as firearms or electroshock weapons, may only be used in response to an imminent, serious threat,⁵ this comparison yielded little substantive result. For example, the requirement of a serious threat also appears in the definition of a movement restriction order under LEA, Section 44(1)(3), but applying this measure does not necessarily require the use of an electroshock weapon or firearm.⁶ In practice, however, situations can escalate rapidly, and the use of firearms may become necessary and justified even in enforcing a standard enforcement order (or “precept” under LEA, Section 28) where this was not initially anticipated⁷ (see e.g. Tallinn Circuit Court judgment 3-18-1515/29).

The application of direct coercion in case law and in the practice of the Chancellor of Justice

Law enforcement officers are routinely faced with situations in which they must quickly and lawfully decide whether and how to use direct coercion. According to case law and the Chancellor of Justice, three interlinked elements are key when assessing the use of force: **the context of the situation, the appropriateness of the method and respect for human dignity**. The European Court of Human Rights (ECtHR) has repeatedly emphasised that physical force may only be used when absolutely necessary and never excessively (ECtHR, 21 December 2015, *Sakir Kazmac v. Turkey*, No 8077/08; ECtHR, 15 July 2022, *Kursish and others v. Russia*, No 62003/08). If the use of force is not objectively necessary, it undermines a person’s dignity and constitutes a violation of Article 3 of the European Convention on Human Rights (ECtHR judgement of 28 September 2015, *Bouyid v. Belgium*, No 23380/09). Physical force includes a range of actions, from restraining a person to more severe measures such as hand-to-hand combat (Draft Act 49 SE, p. 103). The intensity of force is classified as light, moderate or severe (Supreme Court Criminal Chamber, 8 June 2016, 3-1-1-55-16, paras 11.3, 11.3.1). **Light** physical force covers passive or guiding contact, such as standing in the person’s path or holding their shoulder. **Moderate** physical force involves specific techniques for apprehending an individual, where physical contact must be perceptible to ensure that the law enforcement officer maintains control of the situation. **Severe** physical force, including punches, kicks and chokeholds, is only justified in life-threatening situations (Vanaisak 2025, p. 388). The ECtHR has underlined that striking a person who is already under full control is deeply degrading and incompatible with the duties of an officer. Blows to the face are especially serious, as the face is a key feature of personal identity and communication, and striking it humiliates the person even in the absence of witnesses. However, the use of **deceptive strikes** may be permitted in certain circumstances (ECtHR judgment of 28 September 2015, *Bouyid v. Belgium*,

⁵ See Roosse 2025, pp. 44–55.

⁶ The requirement of a serious threat is also included in LEA Sections 46–51.

⁷ See LEA Section 28: a precondition for imposing an enforcement order (or “precept”) is the existence of an ordinary threat or disturbance of public order.

No 23380/09). Handcuffing is also considered a form of physical coercion and forms an integral part of the process (Chancellor of Justice 2014, para. 29).

LEA Sections 79–81 establish detailed requirements for the use of handcuffs and other restraints, ammunition, water cannon, electroshock weapons and firearms. The legislature notes that the need to specify the use of other measures – such as service animals, vehicle-stopping devices, and bladed or gas weapons – should be derived from law enforcement practice (Draft Act 49 SE, p. 109). So far, no such need has been identified. Rather, it is emphasised that the use of any means of direct coercion should be guided by the general requirement of proportionality, and that specifying exceptions in legal provisions is necessary only in the case of firearms and munitions.

Special means are intended primarily to enhance and direct the effect of physical force (Draft Act 49 SE, p. 103). Case law and opinions from the Chancellor of Justice emphasise that the use of force must comply with the principles of proportionality, necessity and appropriateness (Administrative Procedure Act, Section 3(2)). The use of **handcuffs** is governed by LEA Section 79, which sets out specific grounds for their use, including preventing escape and self-harm (Draft Act 49 SE, pp. 109–110). The Supreme Court has held that handcuffing without a legal basis always violates human dignity and may entitle the individual to compensation for non-material harm (Supreme Court Criminal Chamber judgment of 9 June 2023, No 1-22-5272, para. 44). The court has also previously deemed a 15-year-old prison escape attempt as a valid escape risk, even when the person was handcuffed (Supreme Court, 3-3-1-56-15, para. 9). The Chancellor of Justice has clarified that in addition to handcuffs, alternative and more restrictive restraints such as shackles, restraint jackets or restraint chairs may also be used (see also LEA, Section 78¹(2–5)). These measures are intended to secure a dangerous person in a fixed body position and restrict their movement to prevent escape or attack (Chancellor of Justice opinion No 7-4/140766/1404170, para. 40). Such restraints must be applied without causing unnecessary pain or degrading the individual’s dignity (Supreme Court, 1-17-1219, para. 14).

The use of **service animals** is regulated through internal guidelines, such as the Police and Border Guard Board’s service dog deployment procedure (Police and Border Guard Board 2020). Although legislation does not explicitly limit the contexts in which service dogs may be used, their deployment must still comply with the principles governing the use of force (Draft Act 49 SE, p. 104). The LEA expressly permits the use of service animals for security checks and searches of movable property (Sections 47(2) and 49(1)), but this does not exclude their use in enforcing other measures, provided that a legal basis for direct coercion exists. The choice of direct coercive measures rests with the law enforcement officer and must be guided by purposefulness and proportionality. Whether a dog is more effective in neutralising a threat than physical force, gas, an electroshock device, a firearm or a bladed weapon depends on the situation and the measures available to the officer at the time. Based on the study, the use of police dogs is an effective deterrent and a quick conflict resolution option, as their presence increases the likelihood of ending confrontations (Mesloh et al., 2008, p. 91). In practice, the use of dogs is categorised into three levels based on impact and proportionality: **visual presence, targeted apprehension and free attack** (Kiviste 2025, commentary to LEA, Section 78¹(2)).

Case law reflects a range of vehicle-stopping measures, including the use of tyre spike strips, physical barriers and emergency vehicles (Tallinn Circuit Court, 3-18-154/18, paras 9–11). In all such cases, the requirement of proportionality must be met: the danger posed by the stop itself must not exceed the threat it is intended to prevent (Laaring et al., 2017, p. 236).

Ministry of Justice analysis and legislative amendments regarding the permissibility of direct coercion

The Ministry of Justice has conducted an analysis of the Law Enforcement Act and drawn up proposals for amendments. Regarding the use of direct coercion, the proposal suggests **removing separate references** to the right to use direct coercion under individual measures, as Section 76 of the LEA already establishes general grounds for the use of direct coercion, applicable to all measures (Ministry of Justice 2023, analysis of the LEA, pp. 11–12). the analysis also highlights the need to relax the rules **governing the use of electroshock weapons, less-lethal ammunition** (Ministry of Justice 2023, analysis of the LEA, pp. 17–18; LEA draft 8-3/5025-1, pp. 37–40, 43–44) and water cannon, in order to ensure their effective and proportionate use in law enforcement (draft LEA, p. 41). Since 2014, the use of electroshock weapons has been equated with that of firearms, significantly limiting their deployment – even in situations where officers are under attack (LEA, Section 80). The aim of easing this regulation is to reduce escalation and the risk of injury, by lowering the classification of electroshock weapons within the hierarchy of coercion measures. In Europe, their impact is considered comparable to pepper spray and lower than that of cold weapons, such as telescopic batons (Petersen, Koper, Taylor, Liu & Sheridan-Johnson, 2024, pp. 389). The use of less-lethal ammunition, such as rubber bullets, is also proposed for regulation, as current law does not differentiate it from standard lethal ammunition (LEA, Sections 79–81). The change would allow rubber bullets to be used where proportionate, helping to prevent more serious injury. The use of water cannon is currently restricted to situations involving a serious threat (LEA, Section 79¹). Relaxing this regulation would enable their deployment earlier in an incident, avoiding escalation to the point where firearms are required (Ministry of Justice 2023, analysis of the LEA).

The analysis further suggests keeping the **list of special equipment** under the Law Enforcement Act **open-ended**: “It is not reasonable for a law enforcement agency to be barred from using effective yet less harmful special equipment simply because the legislature has not yet included it in the statutory list” (Ministry of Justice 2023, analysis of the LEA, p. 19).

List of enforcement officers authorised to use direct coercion under German law

The development of Estonian law enforcement legislation has been influenced by the German concept of threat prevention law (Laaring 2015, p. 13). In Germany, authorisation to use direct coercion is generally provided under federal administrative law and police law, notably the Administrative Procedures Act (Verwaltungsverfahrensgesetz, VwVfG), the Administrative Enforcement Act (Verwaltungsvollstreckungsgesetz, VwVG) and the Police Act (Polizeigesetz). Each of Germany’s 16 federal states has its own legislation, such as the Bavarian Administrative Enforcement Act (Bayerisches Verwaltungszwangsgesetz) or the Administrative Enforcement Act of North Rhine-Westphalia (Verwaltungsvollstreckungsgesetz für das Land Nordrhein-Westfalen), which define the legal grounds for intervention in more detail. The provisions on direct coercion in these state-level regulations are broadly similar to those found in Chapter 5 of the Estonian Law Enforcement Act. For example, under **the Administrative Enforcement Act of North Rhine-Westphalia**, direct coercion may be used only if other enforcement measures are unsuitable or ineffective (Sections 58(3) and 62(1)). Enforcement officers may exercise coercive powers when performing public duties, to the extent permitted by law (Section 67(1)). The measures available for influencing people and objects include physical force and measures that enhance its effect, such as restraints, service

dogs, patrol vehicles, irritants. The weapons used a batons, a pistol, and a revolver (Section 67(2–4)). However, Estonia differs significantly in that, in addition to the police, there are approximately 40 competent law enforcement bodies that follow the general rules on direct coercion laid out in the LEA. Under LEA, Section 75(1–2), the police hold general competence to use direct coercion, while other law enforcement agencies may only do so if explicitly authorised in their sector-specific laws. In Germany, it is more common for **general laws** to include a broad list of enforcement officers permitted to use direct coercion. These may include fisheries and hunting inspectors, forest protection officers (Section 68(1) points 13–15), food safety inspectors (Section 68(1) point 6), and individuals involved in disaster response, explosions or similar emergencies (Section 68(1) point 8).

As Estonian law enforcement legislation has moved towards strengthening the powers of special law enforcement agencies, directly replicating elements of the German legal model is no longer appropriate. The author therefore agrees with Luts-Sootak's (2023, pp. 441–442) view that mixing two different legal systems does not necessarily produce the desired results; instead, Estonia should adopt solutions tailored to its own needs. And these needs should emerge as a result of research focused on the study of practice.

Competencies in the use of direct coercion

The term *competency* refers to a skill applied in a specific life or work situation, while competence denotes the knowledge, skills, experience and attitudes required for successful professional activity (Raun et al., 2023, p. 3). The description of core skills necessary for a task forms the basis for defining the objectives and learning outcomes of curriculum modules. A professional standard is a document approved by a professional council which outlines professional activities, competence requirements and assessment criteria (Professions Act 2018, Sections 5(1–2) and 15(1)). In Estonia, the occupational qualifications process is coordinated by the Estonian Qualifications Authority (see www.kutsekoda.ee). In the author's view, holding a professional qualification should be mandatory for all law enforcement officers who use direct coercion in their duties. This position is supported by the Ministry of the Interior, which plans to amend the Local Government Organisation Act to require that municipal law enforcement officers hold a relevant qualification (Ministry of the Interior 2023, Section 3, p. 1). To prevent the abuse of direct coercive powers, the draft legislation introduces mandatory requirements for officers, including prohibitions on appointing certain individuals, health examination obligations, administrative supervision of law enforcement bodies and officers, and requirements for degree-level education and in-service training (Ministry of the Interior 2023, pp. 17, 21, 35). Researchers have also stressed the need for impartial and objective oversight mechanisms. The objectivity and transparency of investigations into excessive force complaints are significantly enhanced when complaints are assessed not only by police management but also by an external civilian oversight body (Terrill & Ingram 2016, pp. 173–174).

Defining competencies in the use of direct coercion is essential to ensure that law enforcement officers act professionally, proportionately and purposefully in situations that require physical force or other direct coercive measures. These competencies identify the knowledge, skills and attitudes needed for the lawful use of direct coercion and enable officers to respond quickly and appropriately in volatile and high-pressure scenarios.

At the **Estonian Academy of Security Sciences**, future police officers acquire core skills in the use of direct coercion and security tactics under national curricula for either Vocational Police Officer Training or Higher Education in Police Service. These courses include 234 academic hours of instruction (Academy Council Decision No 1.1-5/107 of 3 May 2024;

Rector's Decision No 6.1-5/505 of 4 September 2024). The curricula define the expected learning outcome regarding the use of force as follows: upon completion, the learner will be able to **handle police service weapons and special equipment lawfully, safely and effectively, apply self-defence and restraint techniques, and administer emergency first aid.**

Ideally, all law enforcement officers authorised to use direct coercion should undergo similar training. The Ministry of the Interior intends to establish concrete requirements for degree-level and in-service training, as well as health standards for officers (Ministry of the Interior 2023, pp. 2–4). High-quality training and clear admission and health requirements support the recruitment of competent officers. Citizens tend to file more complaints against inadequately trained officers with limited experience, particularly for impolite behaviour and excessive use of force⁸ (Terrill & Ingram 2016, p. 171).

2. Study

Overview of the study methodology

The study uses **document analysis** and **focus group interviews** as research methods.

Document analysis is based on the Police and Border Guard Board's security tactics summaries from 2012–2022. Data analysis is conducted through coding and categorisation. In the coding process, significant passages, sentences and keywords are identified and assigned a label or code (Ezzy, 2002, pp. 84–94). These codes are then grouped into categories based on similarity. To gain an initial overview, a combination of **inductive and deductive coding** was used: the full set of analysis documents was reviewed, and preliminary codes were developed (Kalmus et al., 2015). These results were then refined using **directed coding**, adjusting the codes in accordance with the study's themes and research questions (Kalmus et al., 2015). Although theoretical saturation (Laherand 2008, p. 288) was partially already achieved during the review of 2014 and 2015 documents, the entire dataset was analysed in depth to ensure a comprehensive picture. For example, the use of physical force is addressed both in the analysis for the second half of 2015 and in the 2020 security tactics recommendations. Across these analyses, the main methods of applying physical force and the related best practices are reiterated and reinforced (see Police Security Tactics Incidents 2015 H2, p. 39; Police Security Tactics Recommendations 2020, pp. 39–42). Reviewing the full sample revealed long-term trends in the use of direct coercion and highlighted recurring recommendations, such as repeated calls for the introduction of electroshock weapons starting with the 2017 analyses, although a patrol officer did not use one for the first time until 11 September 2018.

Results and discussion of the document analysis

This subsection summarises the research findings from which the necessary and optimal list of direct coercive measures can be derived for each competent law enforcement agency. Given the article's length constraints, the findings are presented briefly and concisely, with most examples and recommendations compiled into summary tables.

⁸ The same has been observed in the case of officers with a military background who have been hired into the service (Terrill & Ingram 2016, p. 171).

Results of the Police and Border Guard Board security tactics summary analysis

The document analysis revealed three⁹ categories related to the use of direct coercion: **the use of various direct coercive measures, incidents involving firearms and assaults on officers carrying out their duties**. Each category included four to eight separate codes (see Tables 3–11).

Table 3. Categories and codes of direct coercion use based on ten years of Police and Border Guard Board security tactics summaries
(compiled by the author).

Category 1: Codes for direct coercive measure use	Category 2: Firearm use codes
Physical force	Warning shot
Handcuffs	Signal shot
Service animal (dog)	Forced stopping of a vehicle
Vehicle stopping device	Repelling or neutralising an animal
Cold weapon (telescopic baton)	Countering an attack
Gas weapon	During an escape attempt
Electroshock weapon	Attempt to seize a firearm
Category 3: Codes for assaults against officers performing duties	
Assailant unrelated to the incident	
Procedural actions in a police vehicle or facility	
Eliminating a public order disturbance	
Apprehending a person	
How?	

Physical force

The primary codes under the category “Use of various direct coercive measures” were based on the most frequently used measures mentioned in the Police and Border Guard Board’s security tactics summaries.¹⁰

The analysis showed that “physical force” and “use of handcuffs” were the two most frequently occurring codes, with **52** and **70** instances respectively (see Tables 4 and 5). Physical force was used on its own in only two cases, and analysts suggested it could have been avoided in both (PolTR 2012, pp. 48, 98, 101). In most instances, physical force was used in combination with handcuffs (31 cases), typically to enforce a precept, repel an attack or detain a person, but also in situations where handcuffs or a charged Taser were not available. In 15 cases, force was applied in the combination FORCE–GAS–BATON–CUFFS. In one case, physical force followed the firing of rubber bullets, in the sequence BATON–GAS–FORCE–FIREARM. Examples and recommendations concerning the use of physical force are summarised in Table 4.

⁹ Although a total of twelve categories were identified, only three are discussed in the article.

¹⁰ Coercive measures that are used infrequently – such as water cannons, special-purpose light and sound devices – as well as ammunition added to the list of direct coercive measures in 2023, have been excluded.

Table 4. Use of physical force
(compiled by the author)

Category 1: Use of direct coercive measures	
Code: Physical force	Frequency: 52, used individually on two occasions
Examples and recommendations: <i>Opening doors, forcibly taking a blood sample, applying an arm lock to restrain a detainee, pushing away a non-compliant person (disobeying an order), escorting a person to sobering-up.</i>	
<i>Avoid physical contact – better to push the person away with force (PolSTI 2020, p. 36); instead of physical force, use a cold weapon (PolSTI 2014, H1, p. 40); if physical contact is unavoidable, the offender must be quickly brought under control (PolSTI 2014, H1, p. 24); pre-emptive strikes are permitted (PolSTI 2018 H1, p. 12; PTTI 2019, pp. 82–83, 108; PolFA 2020, p. 41); choosing the right intensity level (mild, moderate, severe) and duration of force application is critical (PolFA 2020, p. 40).</i>	

Handcuffs

The code “handcuffs” appeared in **70** instances. Handcuffs were used for detaining individuals, conducting security checks and searches, escorting persons to sobering facilities, and restraining aggressive detainees. They were used against individuals attacking or threatening others, or resisting or threatening to resist police officers. Often, handcuffs were used together with physical force (31 cases). For example, wrestling holds and arm locks were used to subdue a dangerous individual on the ground, followed by handcuffing (PolSTI 2016 H1, p. 22). Handcuffs were frequently used in combinations such as FORCE–TASER–CUFFS (14 cases), with warnings about firearms or Taser use proving effective in six cases before handcuffing. The analysis also revealed unjustified use of handcuffs, in violation of LEA Section 79(1) points 1–3 – for example, using direct coercion during breath testing procedures, where the law does not allow it. Transporting an individual to a breathalyser test using direct coercion (including handcuffs) is unlawful.¹¹ The use of handcuffs is permitted only under specific conditions defined by law and must not be applied as a “precaution” without proper legal grounds.

Table 5. Use of handcuffs
(compiled by the author)

Category 1: Use of direct coercive measures	
Code: Handcuffs	Frequency: 70, used individually on two occasions
Examples and recommendations:	
<i>Aggressive person; suicidal individual; violent person in a holding cell; subject resisting arrest; aggressive and dangerous violent offender (intimate partner violence, IPV); apprehending a suspect.</i>	
<i>Do not cuff the offender to the officer's arm (PolSTI 2020, p. 35); to prevent escape or attack, place the cuffs behind the back with palms facing outward (PolSTI 2019, p. 10); in watercraft, ensure that a cuffed person wears a life vest that will position them safely if they fall overboard.</i>	

Gas weapon

The code “gas” appeared in **28** instances. Gas weapons are intended for stopping immediate assaults (PolSTI 2017, H1, p. 36). They may be used until the objective is achieved – for example, the crowd disperses or the aggressor ceases resistance. The harm caused by gas may be less than the consequences of physical force (PolSTI 2021, p. 125). The purpose of gas is to temporarily disable an offender’s ability to resist; typically, the person is then handcuffed. After the gas takes effect, the individual should be brought to fresh air and restrained (PolSTI

¹¹ Under LEA Section 40(2), the use of direct coercion in the context of determining alcohol intoxication is only permitted to ensure that a blood sample can be taken from a person who is legally required to provide one.

2015, H1, pp. 33–34). It was emphasised that if the person is already under control, warning them about gas use is inappropriate, as no legal basis for its use exists (PolSTI 2018 H1, p. 5).

Table 6. Use of gas weapons
(compiled by the author)

Category 1: Use of direct coercive measures	
Code: Gas weapon	Frequency: 28
Examples and recommendations:	
<i>Apprehending a suicidal person in a flat; removing an intoxicated person from a vehicle; against an aggressive person in outdoor conditions; detaining a mentally ill person; repelling a knife attack by a seven-year-old child.</i>	
<i>Gas has little or no effect on intoxicated individuals or animals; attention must be paid to the officer's own safety and provision of first aid (PolSTI 2016, p. 23; PolSTI 2014, H1, p. 17; PolSTI 2017, H1, p. 47); slower effect on people wearing glasses; effective at approx. 1–4 m range; outdoors, use downwind (PolSTI 2015, H1, p. 31).</i>	

Cold weapon

The code “baton” appeared in **17** instances. As a **cold weapon**, a baton is designed to cause harm to a target through the application of physical force in direct contact. Police officers primarily use telescopic or rubber batons for self-defence and to repel assaults, but also to enhance the effectiveness of physical force during detentions. For example, a baton can help retrieve arms fixed under the body or assist in applying arm locks (Weapons Act, Sections 11 and 15; PolSTI 2020, p. 23; PolSTI 2021, p. 69). A telescopic baton can also be used to force open doors or break windows (PolSTI 2014, H1, p. 9).

Table 7. Use of cold weapons
(compiled by the author).

Category 1: Use of direct coercive measures	
Code: Telescopic baton	Frequency: 17
Examples and recommendations:	
<i>Breaking house or vehicle windows, forcing doors open; countering a knife attack; repelling a dog attack; countering an attack on an officer; enhancing the effect of physical force.</i>	
<i>Effective strikes are impossible in confined spaces. When breaking glass, strike the lower edge or corner with the handle end using a strong and decisive blow. Wear protective goggles, gloves and long-sleeved outerwear (PolSTI 2016, H1, p. 9; PolSTI 2021, p. 97). If someone is behind the glass, they should be warned if possible and advised to cover their eyes and face or turn away (PolSTI 2021, p. 97).</i>	

Service animal

The code “service dog” appeared in **13** instances. Service dogs are used when a detainee refuses to comply with orders and cannot be apprehended using other means such as physical force or special equipment (PolSTI 2014, H1, p. 24). Even the presence of the dog and a warning about its use can have a deterrent effect. Service dog deployment is categorised by intensity and proportionality. Starting with the least severe, the forms of use are as follows: demonstration of readiness to attack (the dog is directed towards the offender); directed use (the dog is directed at a visible subject under coercion, bites a reachable part of the body and releases on the handler’s command); free use (the dog is sent to search for a hidden or concealed person, bites a reachable part of the body upon finding them, and releases the bite upon the handler’s arrival and command) (PolSTI 2014, H1, pp. 30–31). Tactics vary between crowd control and routine situations. When dealing with individuals, barking is typically avoided (Radala, email 2024).

Table 8. Use of service animals
(compiled by the author)

Category 1: Use of direct coercive measures	
Code: Service dog	Frequency: 13
Examples and recommendations:	
<i>Apprehending a fugitive by a special unit; detaining an individual attacking an officer; apprehending an offender who has fled into a forested area.</i>	
<i>When service dogs are present during duty, handlers/owners should restrain them, remove them or secure the room (PolSTI 2014, H1, p. 32); barking dogs are only displayed by police during crowd control (Radala 2024).</i>	

Taser

The code “Taser” appeared in **24** instances. The effects of a Taser are generally less severe than those of a firearm. Although painful, the electroshock does not pose a significant threat to life or health and becomes dangerous only under particularly unfortunate circumstances (PolSTR 2020, p. 77). To protect the person’s health and comply with the prohibition of torture, it is prohibited to use more than three discharges or apply the device for longer than five seconds at a time (PolSTI 2021, pp. 56, 83). The purposes of Taser use include neutralising an individual’s capacity to attack, resist or flee.

Table 9. Use of electroshock weapons
(compiled by the author)

Category 1: Use of direct coercive measures	
Code: Electric shock weapon	Frequency: 24 (approx. 10 incidents per year since 2018)
Examples and recommendations:	
<i>Attacking dog; rescuing victims in intimate partner violence (IPV) incidents; preventing suicides; assaults against officers.</i>	
Fire and explosion hazard; firing distance 2–4.5 m ; aim at the abdomen and legs, preferably shoot from behind. <i>Avoid targeting the face and genitals (PolSTI 2020, pp. 26–27); in the case of ineffective or missed shots, be ready to use other weapons.</i>	

Forced vehicle stop

The code “forced vehicle stop” appeared in **47** instances. In two cases, a police emergency vehicle, roadblock or spike strip was used; in seven cases, ramming was applied. In 2019, physical force was used exceptionally to stop an ATV. Firearms were used to stop vehicles in 33 instances, including 10 warning shots. Although firearms may be lawfully used to stop a vehicle under certain conditions, the associated risk is high, as accurately hitting a fast-moving and erratically driving vehicle is difficult and may endanger bystanders (PolTR 2012, H2, p. 33; PolSTR 2020, p. 49). Firearms are increasingly used with greater caution, and in 2022 were not used at all for this purpose (PolSTI 2022, p. 119).

Table 10. Forced vehicle stops
(compiled by the author)

Category 1: Use of direct coercive measures	
Code: Forced stopping of a vehicle	Frequency: 47
Examples and recommendations:	
<i>The driver fled by accelerating, endangering themselves, passengers, and other road users through dangerous manoeuvres, such as driving on the wrong side or in the middle of the road at high speed.</i>	

Ensure that stop signals were **understandable and visible**, and repeat them; remain calm and resort to forced stopping only when absolutely necessary – avoid pursuit instincts; avoid risky manoeuvres (PolFA 2013 (Dec), p. 23); the firearm is used not by the emergency driver but by the front-seat **passenger**; the police vehicle should align with the rear tyre of the target vehicle; the police driver should keep the vehicle as stable as possible alongside the pursued car, prepared to accelerate, decelerate and maintain a safe side distance (2–3 m); the shot must be aimed so as not to cause **further danger** (ricochet, stray bullet); it is advisable to aim from the side at the lower part of the tyre (PolFA 2013 (Dec), p. 25).

Firearm-related incidents

The category “firearm-related incidents” included seven codes: warning and signal shots, forced stopping of a vehicle, deterring or neutralising an animal, stopping an attack, detaining a fleeing individual, and stopping attempted seizure of a service weapon (see Table 11). Additional codes under this category, such as “accidental discharge”, “service weapon malfunction during discharge” and “suicide”, are not addressed separately in this article.

Firearms are used to forcibly stop vehicles, to repel attacking animals or against individuals.

Before using any form of direct coercion, including a firearm, the subject must be warned – verbally, with a gesture or by firing a warning shot. Pointing a weapon or aiming it (e.g. using a laser sight) can also serve as a perceived warning (PolSTI 2020, p. 39). The officer must ensure the person understands they have been warned about the use of coercion; if this is unclear, the requirement is not met (PolSTI 2020, p. 39). A warning shot is only permitted when the legal basis for using the firearm is present. It must not be used to warn a person against whom firearm use is not lawful, as this would constitute an unlawful threat of force. Violations most commonly occur when attempting to stop a fleeing suspect – when there is no immediate serious threat to life or physical inviolability, or when the offence is not a first-degree violent crime or one punishable by life imprisonment (LEA, Section 81) – or after a vehicle stop, when firearm use is permitted against the vehicle but not its occupants (PolSTI 2020, p. 14).

Table 11. Incidents involving firearms
(compiled by the author)

Category 2: Incidents involving firearms	
Codes, frequency	Examples
Warning shot (57):	<i>Detaining a dangerous person; forced stopping of a vehicle; knife-wielding attacker; attempts to seize a firearm when the officer is surrounded by an aggressive group; an aggressive individual attacking officers.</i>
Signal shot (1)	
Forced stopping of a vehicle (23)	
Repelling or neutralising an animal (6)	
Countering an attack (9)	
During an escape attempt (2)	
Attempt to seize firearm (3)	
Recommendations: <i>A warning shot is permitted only if there is a legal basis to use a firearm (PolSTI 2020, p. 15); ensure the warning was perceived as such by the individual (PolSTI 2015, H1, p. 42); instead of multiple warning shots, aim directly at the person if necessary; for forced stops, use loudspeaker warnings (PolSTI 2015, H1, p. 8); prefer using stopping tools (e.g. spike strips or roadblocks) over firearms (PolFA 2020, p. 45); avoid developing tunnel vision (PolSTI 2015, H1, p. 20). Avoid using warning shots indoors or near the state border.</i>	

Assaults against officers performing duties

The category “assaults against officers performing duties” included six codes: attacks by unrelated individuals, incidents during procedural acts in a police vehicle or facility, during public order enforcement (i.e. eliminating a disturbance), during arrests, and during off-duty police interventions. For the methods used, see Table 12.

Police officers are assaulted on average **48** times per year. According to the document analysis, officers were attacked 62 times in 2014, 61 in 2015, 53 in 2016, 49 in 2017, 37 in 2018, 44 in 2019 and 38 in 2020. Analysts believe official statistics capture only about 25% of such incidents. About 80% of assailants are intoxicated adult males, although women and minors are also represented, and a notable share of attacks are committed by individuals with mental disorders. Officers are shoved, punched, kicked, headbutted, strangled, spat on, bitten and scratched. Weapons used include screwdrivers, knives, axes and gas weapons. Some assailants set dogs on officers. Perpetrators vary and include intoxicated drivers, individuals accompanied by dogs while lying or loitering in public spaces, minors, persons causing noise disturbances, participants in domestic disputes, and patrons of bars or nightclubs. In some cases, bystanders intervene, such as attempting to protect a female detainee, mistakenly believing police were the aggressors (PolSTI 2014–2020).

Table 12. Assaults against officers performing duties
(compiled by the author)

Category 3: Assaults against officers performing duties	
Codes/frequency: (37)	Examples
1. <i>Assailant unrelated to the incident (3):</i>	<i>Intoxicated neighbour attacked officers with a knife; a bystander in a group fight; partner of a drunk driver.</i>
2. <i>During procedural acts in a police vehicle or facility (12):</i>	<i>Person in the back seat punched the officer in the neck and attempted to strangle them; interviewee threatened to harm with a pen; person taken for sobering attempted to escape from the vehicle.</i>
3. <i>While resolving public order disturbances (16):</i>	<i>Escorting someone to sobering-up; IPV offender.</i>
4. <i>During arrest (6):</i>	<i>Suspects, persons being forcibly brought in.</i>
5. <i>How?</i>	<i>Kick to the groin (3), spitting in the face (2), punch to the face (4), headbutt, blow to the chest (4), punch to the eye, pepper spray to the face (3), stabbed with a syringe, scuffle, kick to the knee (3), kick to the buttocks, pushed and fell, slap to the face (3), strike to the neck, dog attack incited (2), headbutt to lower lip, bite to hand or hip (5), strangled from behind, knife strike to neck in a dark apartment (1), attacked with a broken glass bottle (1), sprayed with pepper spray; dog attacked or was incited to attack the officer (6); assistant police officer blocked keyhole with hand to prevent gas cloud spread and was stabbed; detention centre staff attacked (2); handcuffed offender jerked violently and injured officer's wrist.</i>
Recommendations: <i>When placing individuals in a police vehicle, follow security tactics to prevent attacks (PolSTI 2015, H1, p. 33); intoxicated persons may behave unpredictably (PolSTI 2015, H1, pp. 33, 35); when dealing with intoxicated groups, be prepared for serious threats (PolSTI 2015, H1, p. 32).</i>	

Discussions

Although the incidents requiring intervention may appear similar, each is unique, which is why different direct coercive measures are used to enforce the same special measures. For example, in order to enforce a precept (LEA, Section 28), impose a prohibition on presence (LEA, Section 44) or escort a person for sobering up (LEA, Section 42), a verbal order or the use of physical force alone may suffice. However, there are cases where a sequence of measures – including handcuffs, a service dog, pepper spray, an electroshock weapon or even a firearm – may be justified. The security tactics reports indicate that incidents initially appearing peaceful often require the use of increasingly intense means. This makes it impossible to specify which direct coercive measure is suitable for enforcing a particular supervisory measure, since the decision depends entirely on the **specific nature** and **dynamics of the situation**. This underlines the need for a diverse toolkit of direct coercive measures for law enforcement

officers. Without such a range, some incidents may go unresolved, potentially fostering a sense of impunity in the offender.

Among coercive measures, **handcuffs** were the most frequently used, with **70 instances**, followed by **physical force (52)**, **forced vehicle stoppage (47)**, **gas (28)**, **electroshock weapons (24)**, permitted since 2018), **telescopic batons (17)** and **service dogs (13)**. Firearms were used in **23** instances to stop vehicles, in **9** instances to counter an attack, and in **6** instances to deter or neutralise an animal. Coercive measures are **rarely used in isolation; rather, they are applied in combination**. Thus, it is not sufficient for a competent law enforcement agency to be authorised to use only physical force as a direct coercive measure; this limitation is highlighted by research (see Environmental Board, p. 4, Table 1). Physical force alone may provoke or escalate aggression. In such cases, officers must have the option to counter such aggression with other special equipment or weapons. Physical force is most often used in combination with other direct coercive measures, particularly handcuffs. The most common combination is physical force with handcuffs. Increasingly, measures are used in graded intensity sequences such as **FORCE–GAS–BATON–FIREARM–CUFFS**. Analysis of security tactics shows that in more recent practice, combinations such as **FORCE–TASER–CUFFS** or **TASER–CUFFS** are becoming more common. This indicates a shift away from previously established principles, with officers increasingly applying the most effective tool immediately, based on the intensity of the assault and the aggressor's level of aggression. The sequential use of lighter measures may cause greater pain and injury – both to the officer and to the person responsible for the public order offence. As a result, the traditional **linear model** of police use of force has been receding since the introduction of the electroshock weapon in 2018, with a trend towards a **situational use-of-force model**. It is also noted that officers are using telescopic batons less frequently, citing limited space and the risks these weapons pose in dynamic situations. Batons are primarily used to target pressure points, inducing pain to enhance the effectiveness of physical force. This supports the view that electroshock weapons are more humane than gas or cold weapons and should be available to every officer authorised to use direct coercion.

The analysis of security tactics indicate that regulating direct coercive measures at varying levels of detail is not justified. For example, while the use of handcuffs and electroshock weapons is strictly regulated, the use of more dangerous measures, such as gas and cold weapons, is inadequately addressed. The author concurs that changing this would enhance legal clarity. This position is also supported by Kool in the Ministry of Justice's analysis of the Law Enforcement Act (Ministry of Justice 2023, pp. 11–12), which proposes removing references to the right to use direct coercion from the provisions on specific measures.

The right to use direct coercion should be enshrined in the LEA for all law enforcement agencies, as is the case for the police. If an agency has the right to apply measures that presuppose direct coercion, it should also have the right to use suitable measures from a comprehensive range. A definitive solution is difficult to specify, however, since the LEA is a general act that requires the coercive powers of a special law enforcement agency to be further regulated in a special act (LEA, Section 75(1)), where the agency's supervisory competence is also established. As the legislation applicable to special law enforcement agencies contains significant inconsistencies (Tables 1–2), these should be resolved under the current legal framework by ensuring that the list of coercive measures is consistent and, as noted earlier, sufficiently diverse. By comparison, in Germany, the general legislation of the Länder regulating the use of direct coercion includes a list of enforcement officers, such as those responsible for forestry, fishing or hunting supervision. Similar provisions could be included in the Estonian Law Enforcement Act. The author proposes that the LEA include a list of Estonia's

main agencies authorised to use direct coercion, such as the Rescue Board, the Tax and Customs Board, the Environmental Board, and municipal or city law enforcement units.

In general, there is broad agreement that the toolkit of direct coercive measures available to a law enforcement agency must be diverse: it is not enough to rely on one or two measures, such as physical force and a firearm. The selection should include electroshock weapons, which are considered more humane than pepper spray or batons.

Training considerations

The findings confirm that police officers frequently face assaults in the course of their duties, which emphasises the need for effective self-defence skills and **the proficient use of direct coercive measures**.¹² The risks of improper or excessive use of direct coercion can be mitigated through both theoretical and practical training, along with officer selection criteria and oversight mechanisms established by law (Ministry of Justice, 2024). The volume and duration of both degree-level and in-service training must be regulated by law.

Based on police security tactical case reports regarding the use of direct coercion, the **competencies** for applying direct coercive measures can and should be **formulated in detail**. Separate descriptions should be provided for the use of **physical force, handcuffs, gas weapons, cold weapons, service dogs, electroshock weapons, firearms and vehicle stopping tools**. The analysis highlights the need for training in **communication psychology**: police officers must be able to prevent escalation and understand de-escalation techniques. More attention should also be given to the **safe handling of firearms**, especially in light of the number of accidental discharges and suicides. Where injuries occur as a result of direct coercive measures, officers are obliged to call for assistance and provide first aid; accordingly, the relevant **first aid** competencies must also be defined.

The **competencies** required for officers authorised to use direct coercion are **summarised** by type of coercive measure in **Table 13**.

Table 13. Competency descriptions for the use of direct coercive measures
(compiled by the author)

PHYSICAL FORCE	HANDCUFFS	TELESCOPIC BATON
Develops communication skills and prevents escalation.	Understands the (additional) legal bases for the use of handcuffs and masters various application techniques.	When using the baton on a person, masters various self-defence, repelling and restraint techniques, and applies the baton effectively according to the situation.
Knows the effects of using physical force at different levels and applies it with the appropriate intensity and duration.	Uses handcuffs lawfully, effectively and safely in different situations.	Masters techniques for using the baton to effectively manipulate objects.
Applies a model of physical force suitable to the situation, thereby avoiding excessive pain and injury (or death) to either party.		

¹² Statistics indicate that police officers are attacked an average of 48 times per year (see Table 12), including during the resolution of public order disturbances (16) and during procedural acts (12). Notably, some attackers have been persons unrelated to the incident, such as bystanders or neighbours. Approximately 80% of attackers were intoxicated, and attacks by individuals with mental disorders have increased significantly.

GAS	SERVICE DOG	ELECTROSHOCK WEAPON
Uses a gas weapon and considers its potential effects in indoor and outdoor conditions, as well as its impact on the aggressor and the officer.	Knows the categories for using service dogs and selects an effective and safe method to resolve the incident.	<p>Uses the electroshock weapon with intent and control.</p> <p>Understands the effects and associated risks of the electroshock weapon and takes them into account when using it.</p> <p>Assesses the person's physical condition after using the electroshock weapon, checks skin and injuries, monitors heart and respiratory condition, and calls an ambulance if necessary.</p>
FIREARM	VEHICLE FORCED STOPPING DEVICE	FIRST AID AFTER DIRECT COERCION
<p>Knows the legal bases for using firearms to stop vehicles, deter attacking animals and respond to threats posed by individuals.</p> <p>Can assess and apply firearm warnings, ensuring they are appropriate, visible and understandable.</p> <p>Can use a firearm safely and responsibly.</p>	<p>Knows the legal bases for the forced stopping of a vehicle.</p> <p>Knows the tools and tactics for the forced stopping of vehicles and understands their suitability in different situations and for different vehicle types.</p> <p>Can select a safe, suitable location and effective method for stopping a vehicle, considering the situation and associated risks.</p>	<p>Reports the nature and extent of injuries accurately to the emergency centre.</p> <p>Masters resuscitation techniques, including knowledge of specific considerations for children, adults, pregnant individuals and those affected by electric trauma.</p> <p>Provides first aid for wounds, bleeding, fractures and concussions.</p> <p>Alleviates the effects of chemical irritants on eyes, skin and respiratory tract.</p>

Conclusions

Under the Estonian Law Enforcement Act, the police have general authority to use direct coercion. The legislature has also authorised approximately 40 special law enforcement agencies to carry out supervisory functions within their respective areas of responsibility under around 170 special laws. To fulfil their tasks, these bodies are permitted to apply both general and special measures of state supervision, the enforcement of which may include the use of direct coercion as a last resort. However, the regulations governing direct coercion by these special law enforcement agencies contain deficiencies and inconsistencies. The research underlying this article **aims to determine which direct coercive measures are necessary and appropriate for competent law enforcement agencies and to develop related competencies that could be integrated into training curricula on the use of direct coercion. Free research questions** were formulated for this article.

To answer these questions, legal literature was reviewed, ten years' worth of police security tactical summaries 2012–2022) were analysed (**document analysis**).

The first research question – Which direct coercive measures are used to enforce various measures of state supervision? – cannot be answered in a single, definitive manner. The description of special measures in the Law Enforcement Act does not allow for a direct link

between each measure and a specific direct coercive measure. Nor does the practice-based analysis yield one clear answer: the choice of coercive measure depends on the nature of the case and the dynamics of the situation. This underscores the need for law enforcement officers to have access to a diverse range of direct coercive measures. It is not reasonable to assume that an officer can rely solely on physical force as the only available measure of direct coercion.

The answer to the **second research question** – Which direct coercive measures are most frequently used and in what combinations? – was derived from the document analysis. The most commonly used measures were: handcuffs (70 cases), physical force (52), vehicle stopping measures (47), gas weapons (28), electroshock weapons (24, available since 2018), telescopic batons (17) and service dogs (13). Firearms were used in 23 instances to stop vehicles, in 9 instances to counter attacks, and in 6 instances to deter or neutralise animals. Direct coercive measures are rarely used in isolation but rather in combination. Since the introduction of the electroshock weapon in 2018, there has been a shift away from a linear model of direct coercion (sequential use of multiple measures, e.g. physical force, cold weapon, gas weapon, firearm, handcuffs) towards a situational model in which the most effective measure – such as an electroshock weapon – is deployed immediately, followed by handcuffs.

The third research question – What are the recommendations from security tactical analyses for training and the formulation of competencies in the use of direct coercion? – produced the following responses: degree-level and in-service training must be regulated by law. The results highlight the need for competencies to be described in detail, as this is the only way they can be meaningfully integrated into curricula. Specific competencies were defined for the use of physical force, handcuffs, service dogs, vehicle stopping measures, cold weapons, gas weapons, electroshock weapons and firearms, as well as for first aid and communication psychology (see Table 13).

The results of studies – a **document analysis** – are significant and contribute to existing knowledge. Since current legislation does not clearly stipulate which coercive measures should or may be used in specific situations, the findings highlight the need for competent agencies to have a diverse and context-appropriate toolkit of coercive measures.

The document analysis confirmed that direct coercive measures are rarely used individually, but rather in combination, and that the situational model – whereby the intensity of direct coercion is adapted to the severity of the situation – is becoming increasingly dominant. The study also identified the need to clarify how the general principle of proportionality should be applied in practice (except in the case of firearms), which would enable agencies to use less harmful alternatives, such as electroshock weapons.

These results make a valuable contribution to existing knowledge by offering data-driven insight into current practices and gaps in the use of direct coercion. Based on the findings, concrete competencies have been developed that can be used in the design of training programmes (see Table 13).

The author **proposes** adopting the general principle of proportionality as the basis for using direct coercive measures, eliminating the specific requirements for handcuff use, easing the conditions for deploying electroshock weapons and water cannons, and regulating the use of rubber bullets.

In all cases, the toolkit of direct coercive measures should be as diverse as possible (not limited to physical force) and include less harmful alternatives such as electroshock weapons.

This study opens up new avenues for further exploration. For example, Section 6(6) of the LEA stipulates that the police must provide assistance to other agencies in which the use of direct coercion is involved. Although Pilving (2015) and Roosve (2022) have examined the issue of inter-agency assistance, legal uncertainty persists regarding the scope of police

obligations: specifically, whether police assistance must be provided solely to agencies that lack powers of direct coercion or also to those with limited powers, such as the Health Board, which is authorised to use only physical force.

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