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REPUTATION AND STATUS IN DENMARK'S STRATEGIC CULTURE

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The primary objective of the article is to evaluate the significance of status and allied reputation within Denmark's strategic culture. Amongst Danish international relations scholars, there is a well-established notion that one of the key motivations for the use of military force in Danish foreign policy was the aspiration to cultivate special relations with the United States and achieve the status of a privileged ally. This status would confirm guarantees for Denmark's national security, provide the country with an opportunity for distinctive influence in decision-making and agenda-setting in NATO, the EU, and transatlantic cooperation. A qualitative content analysis of the 2017–2018, 2019–2020 and 2022 Danish foreign policy strategies was carried out to determine the effect of such expert perceptions on the texts of the guiding foreign policy documents. The analysis highlighted and confirmed the 'super Atlanticism' tendencies in Denmark's contemporary strategic culture, revealing its close ties with the Danish perception of the US as the safeguard for the liberal world order and associated multilateral institutions. Denmark's value-driven militarised foreign political activism in the post-Cold War era is thus not only pragmatic but also ideological as it seeks to promote liberal values, democracy and human rights under American leadership. The article concludes that factoring in status and reputation in strategic culture studies may complement the explanations of security community formation, alliance strategies and the dynamics behind relations within different types of alliances.

Keywords:

Denmark, strategic culture, USA, NATO, EU, reputation, special relations, alliance, Northern Europe, Arctic

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Introduction. Expert discussion on status and reputation in Denmark's strategic culture

As a small power incapable of ensuring national security unaided, Denmark has historically been preoccupied with relations with key allies and the country's reputation amongst them. In this respect, Denmark seems to prove the thesis about the deep concern of small states over the issues of status sovereignty, and formal and informal equality with other participants in international relations, chiefly larger and influential countries [1]. A vivid illustration of Nordic Europe's close attention to status and place in the international hierarchy is the criticism of the G20 member list, which does not include any of the Nordic countries, from Norway's former Minister of Foreign Affairs Jonas Gahr Støre.¹ Previous research has linked such criticism to the Nordic states' attempts to gain membership in the forum and thus expand their influence in world politics. The same motivation for raising the status and building a reputation of a reliable and never-failing ally was spelt out in 2014, when Sweden stated its commitment to a 'feminist' foreign policy, and in 2003, when Denmark took part in the invasion of Iraq [2]. It has been mentioned in the literature that the modest position of the Nordic states in the international hierarchy prompts them to compete for a status that can be described as 'good power'. Improving a country's status within this paradigm requires adopting a value-driven approach and creating an image of a dependable partner in relations with leading powers or in the framework of multilateral diplomacy and international organisations [3].

When considering some general issues of small states' security, Nikolai Kaveshnikov writes in a similar vein that the position of these countries has historically been governed by 'the impossibility to ensure their security' due to the scarcity of resources. Therefore, they face the choice between three principal behaviour strategies: 1) finding equilibrium amongst powers; 2) seeking security guarantees, defence mechanisms or protectorate status from a great power; 3) increasing the cost of gaining and retaining control of their territories [4]. Nordic Europe's sensitivity to matters of status leads one to suppose that Denmark would opt for the second strategy in its dealings with NATO, the EU and the US. The Danish case is a good candidate for investigation as no other Nordic country seems to be such a staunch advocate of using military force and participating in international military operations as a tool to build up a reputation and raise visibility in the eye of the US. This is evidenced by Danish casualties in Afghanistan reaching 44 (37 service people died in action; 7 of diseases and in accidents),² which is more than in all the other operations and missions where the country

¹ Ertel, M. 2010, Norway Takes Aim at G-20 "One of the Greatest Setbacks Since World War II", Spiegel, URL: <https://www.spiegel.de/international/europe/norway-takes-aim-at-g-20-one-of-the-greatest-setbacks-since-world-war-ii-a-702104.html> (accessed 26.03.2023).

² Jensen, L. B. 2021, Efter 20 år i Afghanistan: Det har krigen kostet i liv, kræfter og kroner, *Altinget*, URL: <https://www.alinget.dk/udvikling/artikel/efter-20-aars-krig-i-afghanistan-det-har-den-kostet-i-liv-kraefter-og-kroner> (accessed 10.03.2023).

took part after WWII. Overall, 53 members of the Danish armed forces died in international operations between 2002 and 2018,¹ whilst Norway lost only 10 service people during its years in Afghanistan.² Major General Gunner Arpe Nielsen, the Chief of the Royal Danish Army, stressed when discussing Denmark's military involvement in the Global Coalition To Defeat ISIS:³ 'We have a group of employees who have undertaken an extraordinary effort. We engaged in Iraq in October 2014 and have flown more than 4,000 hours, more than 410 missions, and have dropped more than 350 bombs. We cannot continue to do this.⁴ This leads one to conclude that Denmark endeavoured to make a contribution that would make it stand out amongst the US-led allies, no matter how much these efforts exhausted the country's defence capabilities.

A study of Denmark's track record fits the context of growing research interest in investigating the strategic culture of medium-sized and small states striving to fill a distinctive unique niche in the international system [5]. Another area of interest is the militarisation of the country's foreign policy after the end of the Cold War. This line of policy replaced commitment to UN peacekeeping, mediation and promotion of international law. In our analysis of Denmark's strategic culture, we build on the findings of the third-generation researchers of the phenomenon as the country's use of military force is closely linked to its vision of world order, democratic values and its role in the Euro-Atlantic community, these three elements comprising 'national optics' [6].

The thesis about the allies attaching great significance to status and reputation when it comes to restating and reinforcing security guarantees has been proven conclusively by Danish IR scholars. For example, Kristian Søby Kristensen, head of the Centre for Military Studies at the University of Copenhagen since 2022, describes Denmark as an 'entrepreneurial ally' seeking to increase its relevance in the eyes of the key ally, the US. He identifies three factors behind this. The first factor is the strategic considerations: close ties with the US translate for Denmark into influence, a privileged position among other allies and firmer security guarantees. The second factor is moral concerns: Denmark has historically felt indebted to the US for its contribution to the victory over Germany in World War II and the Nordic country's security during the Cold War despite Denmark's problem behaviour in NATO, particularly during the *fodnotepolitik* [footnote policy]

¹ Karkov, R. 2023, Tre blev dræbt af vådeskud, ti omkom i ulykker, de fleste døde i kamp — ny kortlægning af udsendte soldaters død, *Berlingske*, URL: <https://www.berlingske.dk/samfund/tre-blev-draebt-af-vaadeskud-ti-omkom-i-ulykker-de-fleste-doede-i-kamp-ny> (accessed 10.03.2023).

² Veum, E. 2021, Døde de forgiveves?, *NRK*, URL: https://www.nrk.no/urix/dode-de-norske-soldatene-i-afghanistan-forgiveves_-1.15591861 (accessed 11.03.2023).

³ ISIS has been designated as a terrorist group and banned in Russia.

⁴ Schaub, G. Jr. 2015, Denmark: Defence Woes In the Little U. S. Ally That Could, *War On The Rocks*, URL: <https://warontherocks.com/2015/08/denmark-defense-woes-in-the-little-u-s-ally-that-could/> (accessed 08.03.2023).

period of 1982–1988 [7]. The third factor is cosmopolitanism, i.e., the idea that the US and its European allies use military force as a tool to promote the values of liberal world order and human rights and to achieve universal welfare for all [8].

During the Cold War, Denmark's behaviour within the alliance rendered it a difficult ally. Although this prevented forging special relations with the US, Washington did not attempt at 'punishing' the unreliable ally. Remarkably, towards the end of the Cold War, Denmark had acquired the nickname *Prügelknabe* [whipping boy] within the alliance. This sobriquet was given to Denmark due to its low military expenditure throughout the Cold War from 1949 to 1989: it was well below the alliance average, fluctuating between 2 and 3% of the country's GDP to exceed 3% briefly in the 1950s and peak in 1955 at 3.5%. To compare, the NATO average was continually above 3% and even 4% until the early 1970, reaching the maximum of 6% in 1953. Denmark's military expenditure was much more modest than that of countries of similar economic capacity, such as Belgium, the Netherlands and Norway. This line of behaviour, however, was a product of steps that did not fit within the framework of alliance or bloc solidarity, such as support for the USSR's proposal to convene the Conference on Security and Cooperation in Europe or the criticism of the NATO Double-Track Decision [9]. Low defence expenditure, a refusal to host American military bases and nuclear weapons (with the exception of Greenland, the location of an airbase and Thule Site J, the latter remaining a crucial element of the US missile early warning system, and the Project Iceworm, which was terminated in the late 1960s), an attempted ban on the entry of American ships carrying nuclear weapons into Danish ports and discussions about non-nuclear zones in Northern Europe collectively created a conflicting and unfavourable image of Denmark within NATO and in the eyes of the US. However, in reality, they had little to no adverse effect on the practical activities of the alliance [10]. Researchers from the Danish Institute for International Studies reached similar conclusions in their comprehensive four-volume report on Denmark's foreign policy during the Cold War (1945–1991), which appeared in February 2005.¹ The report concluded that, during the Cold War, Denmark, labelled as an 'ally with reservations' both in formal terms and in the perception of Washington, was nevertheless becoming increasingly integrated into NATO's political and military structures. Denmark's allies also viewed the country as a loyal member of the alliance.

Later, the Danish government's ambition to improve this adverse image led to what is known as Denmark's 'super-Atlanticism', which entailed a 'militarised' foreign policy, steadfast support for American ideology and overseas initiatives and notably close relations with the US. As a 'super-Atlanticist,' Denmark wholeheartedly supported the US invasion of Iraq in 2003, joining the Coalition of the Willing, whilst other smaller NATO members, such as Belgium, Norway, and Greece, voiced criticism of the operation [11]. In this respect, Hans Mouritzen notes that, despite competition between Copenhagen and Stockholm for informal

¹ Danmark under den kolde krig — den sikkerhedspolitiske situation 1945–1991, 2005, *DIIS*, URL: <https://www.diis.dk/publikationer/danmark-kolde-krig> (accessed 05.03.2023).

leadership in the Baltic region, as well as for the status of the principal advocate of the Baltic States' Euro-Atlantic integration to the US in the 1990s, Sweden's and Norway's commitment to peacekeeping and UN institutions proved more persistent than that of Denmark [12].

Denmark leaned towards a strategy of aligning itself with the US. It consistently reduced defence spending, supported the transformation of NATO's functions and objectives, facilitated the Baltic States' accession to NATO and joined major ad hoc coalitions created by the US and its European allies in 1990–1991 during the Gulf War, in October 2001 during the operation in Afghanistan and in March 2003 during the intervention in Iraq [13].

After the Cold War, Denmark went beyond the minimum NATO membership requirements, striving to forge unique ties with the US, which could once meet the American-British benchmark. This partly accounts for the country's disproportionately high troop numbers, operational spending and casualties per capita in US-led and NATO operations. An acknowledgment of Denmark's successes was the appointment of the former Prime Minister of the country, Anders Fogh Rasmussen, as NATO Secretary-General (2009–2014) and the Danish Chief of Defence, Knud Bartels, as the Chairman of the NATO Military Committee (2012–2015). In early 2013, during a visit to Washington, a British delegation was even privately advised to emulate the Danish model [14].

Denmark's participation in US and NATO interventions in the Balkans, Iraq, Afghanistan, Libya, and Syria was driven not so much by objective national security interests as by the desire to enhance its visibility and prestige as seen by its American ally. Even the format of Denmark's involvement in these operations was subservient to this goal, along with the choice of regions for deploying Danish contingents, the composition of the units, financial and material expenditures, and many other aspects. The conditions for Danish participation in operations are deliberately designed so that the country stands out in the eyes of its allies. It is not that the Danish military considerably influences the course of combat operations: Danish policymakers are well aware that the military contingents and resources they provide are too insignificant for this purpose. However, the Danish do not impose any additional restrictions and reservations, participating in combat in particularly hazardous areas and executing high-risk operational tasks.

In practice, this manifested itself in Denmark providing fighter aircraft and special forces for the Afghanistan operation even before an official request from the US. Furthermore, the country was:

- one of the five US allies in the coalition involved in the initial phase of the invasion of Iraq in 2003;
- one of the six NATO members that provided military contingents for deployment in Southern Afghanistan in 2006;
- one of the eight NATO members involved in the bombing of Libya in 2011;
- the only country except France to have supported the US threat of airstrikes in Syria in 2013;
- one of the six NATO members to have participated in airstrikes against ISIS in Iraq in 2014–2015 and in Iraq and Syria in 2016;

— one of the few participants in the ground operation in Syria in 2017 that provided special forces units.

Moreover, as it was revealed by Edward Snowden in 2013, Danish intelligence agencies assisted the US in spying on European politicians, prompting the NSA to involve Danish military intelligence, *Forsvarets etterretningstjeneste* (FE), in the activities of the Five Eyes.¹

The aspiration to have Danish activities recognized and appreciated by key allies was evidenced in the fact that Danish F-16s deployed 11 % (821) of all the bombs used by NATO members in the Unified Protector operation. In the initial period of Operation Odyssey Dawn, Denmark was second only to the US in the number of bombs released (102). During the Libyan operation, Denmark, one of the first countries to deploy ground contingents, struck 17 % of the air targets.² In 2014—2015, Denmark deployed more bombs (503) in the course of the coalition operation against ISIS in Iraq than the aircraft from the United Kingdom and France [15].

Military spending, which was systematically reduced throughout the 2000s and 2010s (until the 2018—2023 defence agreement), extensive expenses related to participation in international operations, a shortage of experienced technical and military personnel, and NATO and the US returning to the priority of containing Russia and strengthening the defence capabilities of European countries at the NATO summits in Wales and Warsaw in 2014 and 2016, significantly complicated Denmark's task of maintaining its reputation as a reliable and dependable ally. In March 2022, persistent difficulties in equipping the Danish armed forces led the country to adopt a plan to reach the NATO target of defence expenditures at 2 % of GDP by 2033. In December 2022, the new Danish government shifted the deadline to 2030.³ This is still a long-term timeframe and Danish military analysts are concerned that the country may face criticism from NATO for increasing its defense expenditures too slowly, especially considering that almost ten years have passed since the NATO summit in Wales in 2014, where the target was approved, and given that combat operations are ongoing in Ukraine.⁴ Earlier,

¹ Antonov, M. 2021, V tsentre shpionskoy pautiny: Daniya podslushivala soyuznikov dlya SshA [At the heart of a spying network: Denmark intercepted allies' conversations for the US]. *Vesti.ru*, 31 May 2021, URL: <https://www.vesti.ru/article/2569154> (accessed 05.03.2023).

² Malmvig, H. 2019, Through Thick and Thin: Will Danish Military Engagements with the U. S. Endure in the Middle East?, *Foreign Policy Research Institute*, URL: <https://www.fpri.org/article/2019/08/through-thick-and-thin-will-danish-military-engagements-with-the-u-s-endure-in-the-middle-east/> (accessed 09.03.2023).

³ Krog, A. 2022, Ny regering: Forsvarsbudget skal udgøre to procent af BNP i 2030, *Altinget*, URL: <https://www.altinget.dk/artikel/ny-regering-forsvarsbudget-skal-udgore-to-procent-af-bnp-i-2030> (accessed 08.03.2023).

⁴ Lomholt, A. 2023, Danmark skal investere milliarder i Forsvaret — men snart kan regningen blive endnu større. *TV2*, URL: <https://nyheder.tv2.dk/samfund/2023-01-31-danmark-skal-investere-milliarder-i-forsvaret-men-snart-kan-regningen-blive-endnu> (accessed 08.03.2023).

in October 2022, Denmark was reprimanded in a NATO report for multiple failings in the preparation of an armoured brigade, radio intelligence and means of anti-submarine warfare.¹

Danish experts on national foreign policy and strategic culture, while arriving at a consensus that the country has started to employ armed forces more extensively, gaining greater legitimacy and effectiveness in the eyes of the political elite, differ in their views regarding the reasons and outcomes of this transformation in foreign policy. There is also some uncertainty about the balance between Atlanticism and Europeanism in Denmark's alliance relations. The table below provides an overview of the findings of leading Danish experts on the transformation of foreign policy and strategic culture in the country.

**Denmark's foreign policy and strategic culture after the end of the Cold War,
as seen by Danish international relations scholars**

Aspect of analysis	Hans Mouritzen [16]	Mikkel Vedby Rasmussen [17]	Peter Viggo Jakobsen [18]
Causes and factors of transformation	The state's contemporary geopolitical situation and historical geopolitical experience — the disappearance of the Soviet threat, the need for US involvement in European security, the prevention of the dominance of the Franco-German dyad, and the loss of influence due to the expansion of the EU and NATO — have led Denmark to embrace the historical lesson of the duty to 'fight for freedom and peace' instead of letting others do it for them	Denmark's strategic culture is defined by the alternating division and consensus in Denmark's domestic politics between proponents of 'cosmopolitanism', who believe in Scandinavian uniqueness, moralism, and non-military foreign policy tools, considering military force as useless, on the one hand, and advocates of 'defencism', who hold that even small countries have to develop military forces alongside other European states. In the early 1990s, these factions united under the banner of 'activism', replacing Denmark's Cold War-era concept of 'containment' and incorporating the use of armed force into the cosmopolitan discourse	Military activism in Denmark has been influenced by three key factors: the state of the international environment (including the nature of threats, opportunities for cooperation, and the international demand for the use of military force), political will (domestic political consensus), and the capabilities of the Danish armed forces. Central to Danish 'activism' is that it promotes the country's interests and values only in situations where national security and survival are not at risk

¹ Belukhin, N. E. 2022, Kopengagen peresmatrivaet priorityty natsionalnoy bezopasnosti [Copenhagen reviews national security priorities], *Russian International Affairs Council* 28 March 2022, URL: <https://russiancouncil.ru/analytics-and-comments/columns/europeanpolicy/kopengagen-peresmatrivaet-priorityty-natsionalnoy-bezopasnosti/> (accessed 09.03.2023).

The continuation of the Table

Aspect of analysis	Hans Mouritzen [16]	Mikkel Vedby Rasmussen [17]	Peter Viggo Jakobsen [18]
Atlanticism/ Europeanism ratio	After the Cold War, Denmark shifted from a restrained form of Atlanticism to its standard version, and, from 2001 onwards, it embraced 'super-Atlanticism'. This entailed close cooperation with the US and a strong commitment to American foreign policy ideology. The national defence policy exhibited limited Europeanisation due to the opt-outs from the EU's CFSP/CSDP	A member of both the EU and NATO, Denmark was more receptive to changes in the international order than other Northern European countries in the 1990s. This prompted the country to see military force as an extension of European unity and integration, the latter being a peace project. Danish Euroskepticism may have further contributed to the militarisation of the country's foreign policy. Initially linked to the pursuit of special relations with the US, 'activism' could potentially spill over into other contexts	An instrument of Danish foreign policy since 1920, ¹ the country's 'activism' is not directly associated with its NATO membership or the position of the US as a global leader. The end of the Cold War gave an additional impetus to these long-standing traditions. Yet Denmark's involvement in Afghanistan and Iraq aimed to enhance its reputation in the eyes of the US and attempt to build special relations with it [19]
Benefits acquired, evaluation of transformation success	Exchange of confidential information, a higher status in the eyes of Washington compared to other European countries, and privileged relations with the US ensure Denmark's greater influence on NATO reforms and the transformation of transatlantic relations	Transformation and modernisation of the Danish armed forces, their evolution from a means of national defence into a tool for power projection; military force is now seen as a legitimate and effective instrument for responding to global threats	Washington now sees Denmark as a country of greater influence and prestige than before. Yet the US perception of the country depends on Denmark's continuous ability to provide effective contingents for long-term participation in international operations

¹ The Danish had to become part of the League of Nation's contingent supervising the 1920 Vilnius referendum. This mission, however, was abandoned. Peter Viggo Jakobsen links the beginning of 'activism' to Danish participation in a unit of the Non-Intervention Committee stationed at the French-Spanish border in 1937–1939.

The end of Table

Aspect of analysis	Hans Mouritzen [16]	Mikkel Vedby Rasmussen [17]	Peter Viggo Jakobsen [18]
Negative consequences of the transformation	Mounting contradictions in domestic politics, clashes with the common identity of Northern European countries (the Norden space), competition with other EU members (primarily the Netherlands and Poland) for Washington's favour, and the risk of Denmark being perceived as a satellite and proxy of the US within the EU	Internal political debates and contradictions regarding 'true' and 'false' activism are intensifying, and the use of military force is no longer linked to the European peace project and European integration; all this could lead to new divisions	Depletion of Denmark's armed forces, the need for their fundamental modernisation and renewal, especially in the context of NATO's return to a policy of containment and confrontation with Russia. The desire to continue the 'activist' course is at odds with the actual capabilities of the country's armed forces

Commenting on Denmark's unique position within the EU, Lyudmila Babykina writes that the abolished defence opt-outs have negatively affected not only Denmark's political status but also its defence and affiliated industries. She notes that the country could still participate in essential areas of cooperation not directly related to the EU's CSDP, such as military mobility or combating cybercrime and hybrid threats, thus creating 'grey zones' in the application of the opt-outs. Danish international relations scholar Ole Wæver believes that Denmark should place greater reliance on Europeanism in its foreign policy to ensure better alignment with its national interests.

Danish researchers, for example, have pointed out that the conditions of Denmark's EU membership rendered its foreign policy increasingly inconsistent. For example, the abolished defence opt-out (Danish: *forsvarsforbehold*) hindered the pursuit of a value-based foreign policy (Danish: *værdibaseret udenrigspolitik linje*). Tirne Flokhardt from the Danish Institute for International Studies maintains that Denmark has historically displayed a cautious attitude towards militaristic measures and anything resembling of 'great power' responses, favouring peaceful conflict resolution, bridge-building, assistance to development as a security tool, and initiatives for closer dialogue, democratisation and human rights promotion. In her view, the 'defence opt out' led to unforeseen consequences,

causing Denmark to deviate from its traditional foreign policy track. In addition, having embraced the concept of ‘activist’ foreign policy (Danish: *aktivistisk udenrigspolitik*), the country became a leading participant in international military operations, which would have previously been viewed as a militaristic gamble. Thus, the defence opt-out and activism in foreign policy, according to one group of Danish researchers (Flokhart, Nissen, Staur, Mouritzen, Olesen and others), created a rift between Denmark’s strategic culture and its actions on the international stage, especially evident amidst the expanding cooperation between the EU and the UN.

However, Martin Marcussen, Anders Wivel, Lee Miles and other researchers argue that the significance of Denmark’s opt-outs had diminished significantly after the early 1990s, and their preservation or abolition could not have a profound effect on the foreign policy of such a small country in the 2000s.

Their central argument is that, as globalisation progressed, Denmark had more important platforms for implementing its foreign policy than those provided by the EU, especially due to the country’s special relations with the US. Along this line of thought, European necessity is seen as having transformed into a global opportunity, and Danish foreign policy has shifted from an adaptation policy to active internationalism [22]. This perspective appears to reflect the state of affairs observed from 2000 to 2015. However, with the election of Donald Trump as President of the United States in 2016, the US adopted a strategic shift towards containing China. Furthermore, the abolition of the Danish defence opt-outs in June 2022, followed by Denmark’s participation in EU military operations and missions and defence cooperation within PESCO, led the country to pay significantly more attention to the European dimension of its foreign policy. This shift is evident in Denmark’s 2022 Foreign and Security Policy Strategy, where three sections dealing with national priorities within international organisations are dedicated to the EU. It emphasises that Denmark must be at the heart of the EU and should strive for a stronger EU on the global stage — a union that can lead the way in the international fight for values.¹ Yet, this new focus and Denmark’s ‘return’ to Europe can be seen as a mere attempt to meet US expectations for a more independent and stronger EU, especially in matters of defence.

The main differences in expert assessments of Denmark’s foreign policy transformation concern the specific benefits the country gained through its special relationship with the US. Another point of divergence is the external structural and internal factors behind modern Danish activism. For instance, Jacobsen and Wivel [23] see it as a historically rooted method of Danish for-

¹ Udenrigs- og sikkerhedspolitik strategisk strategi. 2022. Udenrigsministeriet, 2022. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitik-strategi-2022> (accessed 09.03.2023).

eign policy that merely assumes various forms depending on the interplay of the three factors featured in the table. Danish activism as a distinctly modern phenomenon, attributable to factors like the end of the Soviet threat, the acceleration of globalization, the emergence of new challenges, and the adoption of humanitarian interventions. Furthermore, some analyses underscore the significance of Minister of Foreign Affairs Uffe Ellemann-Jensen, who played a key role in the decision to deploy HDMS Olfert Fischer to the Persian Gulf for its involvement in enforcing UN sanctions against Iraq [24], along with Prime Minister Rasmussen. There are three key perspectives on the correlation between transformation and continuity within Denmark's decision to join operations in Afghanistan and Iraq, i.e., whether such decisions can be considered a departure from the ideals of peaceful northern internationalism towards more aggressive diplomacy and interventionist practices. Firstly, contemporary Danish activism is seen as a continuation of the policy of adapting to the conduct of great powers and superpowers, pursued by Denmark during the Cold War. Secondly, it is viewed as a foreign policy transformation consisting of a departure from the national traditions of internationalism, with the country metamorphosing into a strategic player and an active participant in armed conflicts. The difference is stressed between activism and the adaptation policy pursued during the Cold War and the 1990s. Thirdly, Danish activism is considered both a radical deviation from the adaptation policy of the Cold War period and a continuation of traditional Danish and Scandinavian internationalism [25].

When examining the specific advantages Denmark gained from its activism in its relations with the United States, Danish experts tend to concur that these benefits could have been much more substantial if Danish diplomats had made systematic and strategic use of these new opportunities. In practice, they often operated on an ad hoc basis. US support for the candidacy of Rasmussen as NATO Secretary-General can be attributed not so much to the desire to reward the Danish ally for its willingness to participate in operations in Iraq and Afghanistan but to the Americans' perception of Rasmussen as an advocate of Washington's vision for NATO reforms and strategic development. Generally aligned with the American worldview, he was willing to make unpopular and challenging decisions when necessary. Interestingly, it was the Obama administration, not the Bush administration, that endorsed his candidacy during the crucial stages of negotiations within NATO, despite Rasmussen's close personal contacts with the latter [19].

One way or another, the research consensus regarding Denmark's strategic culture after the end of the Cold War is that the country has departed from primarily humanitarian diplomacy, mechanisms of official development assistance, reliance on international law, peacekeeping, and multilateral cooperation within the framework of the UN. Moreover, during the bipolar confrontation, Denmark

strived to head assistance to the global South, allowing itself to criticise US interventions in Vietnam and the Third World. It has transitioned to a more militarised foreign policy, with the country participating in all major US operations in the former Yugoslavia, Afghanistan, North Africa, and the Middle East. In all these cases, Denmark's primary motivation was to please the United States and build special relations with Washington.¹ However, the official Danish rhetoric and the national media portrayed these actions in an idealistic light — as measures to prevent atrocities, human rights violations, and the promotion of democracy, freedom, and the rule of law. This viewpoint was effectively conveyed by Prime Minister Rasmussen in his speech on 29 August 2003 to mark the 60th anniversary of the end of the occupation administration: 'The lesson from 29 August 1943, is that if you genuinely stand for our core values like freedom, democracy, and human rights, you must be willing to actively contribute to their defence, even when it means making unpopular and risky decisions'.² Whilst likening Denmark's cooperation with the Germans during the occupation and the opt-out policy of the 1980s to national and moral betrayal, Rasmussen compared Denmark's participation in the invasion of Iraq to the courageous actions of Danish resistance fighters, who proved Denmark's unwavering support for the Allies in World War II [26].

The question remains unanswered — whether Denmark can still be considered a 'super-Atlanticist' or it is gradually moving towards moderate Atlanticism. Wivel, for example, believes that the continuation of 'super-Atlanticism' in Denmark's foreign policy is linked to significant challenges and uncertainties, because the US steadily encourages its allies to increase military spending for enhanced security in Europe. This especially applies to the Baltic Sea region, which is geographically close to Denmark. The country, however, continues to benefit from its special relationship with the US and its privileged access to American officials, which provides Denmark with a clearer picture of the US position on issues of national interest [12]. At the same time, Sweden and Finland are pursuing NATO membership and, like Denmark, are striving for a special status in relations with the US, having obtained security guarantees from it. Against this backdrop, maintaining the 'super-Atlanticist' status will call for tools and steps compared to what was required earlier. It will also demand significantly greater efforts to avoid being overshadowed by Poland, Sweden, Finland and the Baltic States.

¹ Malmvig, H. 2019, Through Thick and Thin: Will Danish Military Engagements with the U. S. Endure in the Middle East?, *Foreign Policy Research Institute*, URL: <https://www.fpri.org/article/2019/08/through-thick-and-thin-will-danish-military-engagements-with-the-u-s-endure-in-the-middle-east/> (accessed 09.03.2023).

² Læresætningen fra 29. August 1943 er, at hvis man mener noget alvorligt med vores værdier, med frihed, demokrati og menneskerettigheder, så må vi også selv yde et aktivt bidrag til at forsvare dem... Selv når der træffes upopulære og farlige beslutninger.

Much will depend on Denmark's belief that the United States is an effective guarantor of a liberal international order and the political landscape in the Danish parliament. There are growing trends in favour of stronger European defence cooperation and closer ties with France and Germany. Whilst Denmark still maintains a presence in the Middle East, its primary focus has now shifted to the military and political developments in the Baltic region and Eastern Europe. Additionally, the willingness of Denmark's political and economic elite to endorse a policy of containment towards China, or at the very least, reduce and limit engagements with the country, will play a crucial role.

An important question is whether the views and theses put forward by Danish political scientists are reflected in the country's foreign policy strategic documents and what place the concept of status occupies in its strategic culture. In this article, we endeavour to answer this research question by scrutinising Denmark's conceptual foreign policy documents to look at how attention to status and reputation defines its strategic culture.

Reputation and status in Denmark's foreign policy and security strategies

Studying strategic culture, foreign and defence policy, and national security issues through content analysis of conceptual documents, official speeches, media articles, and parliamentary debates is a time-tested and widely practised academic approach. Qualitative methods of content analysis are still prevalent, with earlier less popular quantitative tools gaining wider currency. For example, despite the earlier tendency for researchers to rely on qualitative methods, a recent work employs quantitative content analysis to understand similarities and differences between the defence policies of EU member states published from 1994 to 2018 [27], as qualitative analysis is not well-suited for extensive comparative studies involving a larger number of countries and long-time spans. Another study uses quantitative content analysis to analyse German socio-political discussions in the media regarding international operations and Bundeswehr missions. The authors note that, while remaining an unconventional and novel practice, utilizing such a method in investigating strategic cultures can complement the literature in the area [28]. As the conceptual documents suggest, the more common qualitative content analysis of strategic documents and official statements underpinned the identification of Russia's functional priority in foreign policy [29]. It was also used to assess the level of commonality in European foreign policy amidst recent international crises [30].

This article will use more traditional and common content analysis to examine Denmark's four foreign policy and security strategies covering the periods of

2017–2018,¹ 2019–2020,² 2022³ and 2023.⁴ The rationale for this choice lies in the relatively limited volume of the texts under consideration and the study's focus on a single facet of strategic culture, rather than pursuing a comparative research approach.

Denmark's first comprehensive foreign and security policy strategy was introduced in 2017, serving as a blueprint for the country's 'activist' foreign policy, the path followed for over 20 years after the end of the Cold War. Before 2017, direction was provided by regional and thematic strategies, as well as ad hoc discussions in *Folketing* committees [31]. Although these strategies, designed for short-term purposes, are a relatively recent and irregular practice, they merit scholarly attention as they represent the initial endeavours to organise Denmark's foreign policy priorities in the face of escalating global uncertainty and codify them into a unified conceptual document. Notably, 'super-Atlanticism' is a purely analytical concept and never appears in official government rhetoric [12]. This circumstance suggests that, when conducting content analysis, authors concentrate on the hidden, implied meanings of the strategies' provisions, effectively engaging in 'latent analysis' [32].

Danish academic literature frequently employs the notion of 'compartmentalisation' (Danish: *kompartmentalisering*) when examining the nation's foreign policy. This concept links the pursuit of core national interests (economic, security, ideological and value-based) to four main international institutions: the EU, NATO, the UN, and Nordic cooperation [33]. However, given that the concept of 'super-Atlanticism' was explored in the preceding section, and considering the effect special relations between the US and specific European nations have on foreign policy priorities, it seems appropriate to shift our attention towards the aspects of status and reputation in these relations [34]. What attaches additional importance to a detailed analysis of these facets is that security concerns, the emphasis on status and reputation, and the nature of Denmark's strategic culture comprise an integrated model of the country's militarised activism. The US is the main guarantor of Denmark's security, which leads the latter country to seek and maintain the status of a privileged, reliable and responsible ally. This, in turn, further binds the two states through common

¹ Udenrigs- og sikkerhedspolitisk strategi. 2017–2018. Udenrigsministeriet, 2017. URL: <https://udenrigspolitik.dk/wp-content/uploads/2017/08/Udenrigspolitisk-og-sikkerhedspolitisk-strategi-2017-2018-final-2.pdf> (accessed 09.03.2023).

² Udenrigs- og sikkerhedspolitisk strategi. 2019–2020. Udenrigsministeriet, 2018. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitisk-strategi-2019-2020> (accessed 09.03.2023).

³ Udenrigs- og sikkerhedspolitisk strategi. 2022. Udenrigsministeriet, 2022. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitisk-strategi-2022> (accessed 09.03.2023).

⁴ Udenrigs- og sikkerhedspolitisk strategi. 2023. Udenrigsministeriet, 2023. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitisk-strategi-2023> (accessed 09.03.2023).

practices in military-political decision-making and planning, Danish procurement of American weaponry and the defence of shared values. The aspiration towards the status of a privileged ally is reinforced by Denmark's activist and pragmatic strategic culture, which sees its goal in promoting traditional Northern European values of democracy and human rights, whilst taking into account the current needs of national security and the balance of power in international relations. This is particularly relevant in light of the US being the leader of the transatlantic community [35].

Strategy 2022 stands out for the attention paid to status and reputation in relations with the US and the measures to secure them. It also articulates Danish claim to a special role in the transformation of the EU and NATO: '[w]e will be at the centre of an EU that delivers results for its citizens'; '[w]e will maintain Denmark at the core of NATO and strengthen the transatlantic bond'.¹ Probably, this ambition is linked to a change of administration in the White House and Denmark's desire to make up for the opportunities lost during Donald Trump's presidency. For example, Strategy 2017–2018 briefly mentions the US' intention to withdraw from the Paris Agreement, describing it as highly regrettable.² Similar concerns were voiced in Strategy 2019–2020, which reads: '[t]he United States of America (US) is putting "America First", raising doubts about its global leadership and its willingness to defend the world order that it was instrumental in building'.³ Many specific measures to maintain the special status of Danish-American relations seek to persuade the US to revert to the support of the international institution of the liberal world order.

Discussing defence cooperation, the 2022 strategy states that the UK remains Denmark's close partner, identifying active post-Brexit security cooperation between the UK and the EU as a major priority. The strategy also points out defence cooperation with France, which was formalised in a memorandum of understanding in June 2014. The memorandum particularised Franco-Danish cooperation in countering piracy, joint actions of Danish and French armed forces in Kosovo and Mali, emphasising the importance of sharing experiences by the Danish and French navies. During the signing of the memorandum, Defence

¹ Udenrigs- og sikkerhedspolitisk strategi. 2022. Udenrigsministeriet, 2022. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitisk-strategi-2022> (accessed 09.03.2023).

² Udenrigs- og sikkerhedspolitisk strategi. 2017–2018. Udenrigsministeriet, 2017. URL: <https://udenrigspolitik.dk/wp-content/uploads/2017/08/Udenrigspolitik-og-sikkerhedspolitisk-strategi-2017-2018-final-2.pdf> (accessed 09.03.2023).

³ Udenrigs- og sikkerhedspolitisk strategi. 2019–2020. Udenrigsministeriet, 2018. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitisk-strategi-2019-2020> (accessed 09.03.2023).

Minister Nicolai Wammen described Denmark as a ‘country with limited resources pursuing an active foreign policy’¹ striving to contribute to operations led by larger allies.²

When elaborating on the role of the US in global climate policy, Denmark’s strategy for 2022 mentions cooperation with several American states on eco-friendly water supply technologies and agriculture, stressing collaborations with northeastern states in the field of wind energy. The strategy underscores Denmark’s extensive export opportunities in the US market and the need to take an active part in the green transition in the US, which is depicted as a ‘goldmine’ for Danish companies. Interestingly, expert and research articles typically focus on the political advantages of Denmark’s special relationship with the US, tending to overlook the associated economic benefits. Strategies 2017–2018 and 2019–2020 also commonly disregard this aspect of Danish-American relations.

Denmark’s strategy 2022 creates a paradoxical impression that the country tries to double-hat as a super-Atlanticist and a super-Europeanist, with this impression reinforced by the hasty decision of the Social Democratic government to hold a referendum on abolishing Denmark’s defence opt-outs shortly after the start of the special military operation. The strategy refers to the EU as the ‘most important foreign policy platform’, whilst describing close relations with the US as decisive for advancing Danish interests and values. The importance of interaction with the US is emphasised in the context of multilateral institutions and collaborations with ‘other partners’: ‘[i]t is together with the USA, the EU, and our other partners that we must handle the pressure on the strong international institutions and the challenges that come from, among other things, China’s more self-assertive behaviour and Russia’s hybrid warfare and military escalation in our neighbouring area’.³ Denmark’s support for American leadership is thus closely linked to wider of multilateral cooperation ‘where common rules, democracy, and human rights are respected’. Moreover, strategies 2017–2018, 2019–2020 and 2022 stressed the centrality of the EU to Denmark’s foreign policy: ‘[f]or Denmark, EU membership is our best opportunity to influence the

¹ ‘Som et land med begrænsede resurser og en aktiv udenrigspolitik’.

² Frankrig og Danmark underskriver forsvarsaftale, *Forsvarsministeriet*, 2014. URL: <https://www.fmn.dk/da/nyheder/2014/2014/frankrig-og-danmark-underskriver-forsvarsaftale/> (accessed 16.03.2023).

³ Udenrigs- og sikkerhedspolitik strategisk strategi. 2022. Udenrigsministeriet, 2022. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitik-strategi-2022> (accessed 09.03.2023).

world around us’;¹ ‘[t]he EU is the essential platform for the promotion of Danish interests in Europe and globally’;² ‘American and EU value-based leadership are crucial — and they must have our support’.³

The ‘need for American leadership’ clearly articulated in strategy 2022, leads one to agree with the expert opinion that the primary goal of the document is to reiterate commitment to close relations with the US and loyalty to NATO.⁴ The 2022 text is more of a political manifesto than a strategy proper, apparently targeted at the domestic audience: it repeatedly mentions duty, responsibility and the aspiration to act on behalf of the whole world at the UN Security Council, whilst failing to set problems and propose solutions. The same pattern can be seen in the account of transformations in Danish foreign policy amidst global change given by the Danish Diplomat Kristian Jensen on 1 May 2016.⁵ The most detailed sections of the strategy are dedicated to economic diplomacy, particularly increasing Danish exports to the US and the EU. This might be considered as evidence of the strategy’s orientation towards a domestic audience, especially Danish business circles.

Strategy 2023, which was published in May 2023, declared ‘pragmatic idealism’ the guiding principle of Danish foreign policy. It was prepared by the new Social Democratic government, i.e., the liberal party Venstre and the centrist Moderates,⁶ who sought to depart from the ‘value-based idealism’ of the previous government and take into account the recent radical changes in European securi-

¹ [For Danmark er EU-medlemskabet vores bedste mulighed for at påvirke verden omkring os]. Udenrigs- og sikkerhedspolitisk strategi. 2017—2018. Udenrigsministeriet, 2017. URL: <https://udenrigspolitik.dk/wp-content/uploads/2017/08/Udenrigspolitisk-og-sikkerhedspolitisk-strategi-2017-2018-final-2.pdf> (accessed 09.03.2023).

² [EU er den afgørende platform for dansk interessevaretagelse i Europa og globalt]. Udenrigs- og sikkerhedspolitisk strategi. 2019—2020. Udenrigsministeriet, 2018. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitisk-strategi-2019-2020> (accessed 09.03.2023).

³ Udenrigs- og sikkerhedspolitisk strategi. 2022. Udenrigsministeriet, 2022. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitisk-strategi-2022> (accessed 09.03.2023).

⁴ Stockmarr, L. 2023, Leila Stockmarr (EL): Regeringens udenrigspolitiske strategi fremstår i høj grad blot som en brandingøvelse og en genbekræftelse af Danmarks tætte relation til USA og NATO, *Ræson*, URL: <https://www.raeson.dk/2022/leila-stockmarr-el-regeringens-udenrigspolitiske-strategi-fremstaar-i-hoej-grad-blot-som-en-brandingoevelse-og-en-genbekraeftelse-af-danmarks-taette-relation-til-usa-og-nato/> (accessed 13.03.2023).

⁵ Barnekow, C. 2022, Der gik ikke en måned, før den udenrigs- og sikkerhedspolitiske strategi blev overhalet af virkeligheden, *Altinget*, URL: <https://www.alinget.dk/for-svar/artikel/der-gik-ikke-en-maaned-foer-den-udenrigs-og-sikkerhedspolitiske-strategi-blev-overhalet-af-virkeligheden> (accessed 13.03.2023).

⁶ This government was the first after 1978 to include the leading parties of the opposing ‘blue’ and ‘red’ political groups. C.: Hansen, M.V. 2022, Danmark har fået en ny regering, *Danmarks Radio*, URL: <https://www.dr.dk/ligetil/danmark-har-faaet-en-ny-regering> (accessed 01.05.2023).

ty. Remarkably, when presenting the text of the strategy, new Minister of Foreign Affairs Lars Rasmussen made a special mention of African countries, stressing that '[t]wo-thirds of the world's population live in countries that either remain neutral or directly support Russia's actions in Ukraine'. He emphasised that Denmark could no longer be as particular about its partners as it had been before.¹ Probably, he hinted at the intention to win greater support for the Euroatlantic position within the UN from the Global South. Amongst the first manifestation of the new Danish government's 'pragmatic idealism' one might mention the lifting of the arms embargo on Saudi Arabia and the UAE in March 2023, as well as Prime Minister Mette Frederiksen's visits to Croatia, Albania and Egypt in March 2023. During these visits, discussions revolved around undocumented immigration and potential Danish assistance in Egypt's green economic transition. Frederiksen emphasised the need to 'reach out, seek common solutions, and strengthen partnerships, especially with the Global South'.² At the same time, strategy 2023 is a continuation and expansion of strategy 2022's European allegiance, which was strongly reinforced after 24 February 2022, reflecting the country's ambition to exploit the 'super-Europeanism' niche amidst the European security crisis. Denmark's earlier scepticism about the EU enlargement was replaced in strategy 2023 by the statement of the need to prepare new members to accession: '[t]he prospect is an EU with well over 30 member states'.³ Rasmussen assistance to Ukraine, Moldova and Georgia in taking the 'European path' as the central foreign policy goal of the current generation (which calls to mind Denmark's support for the Baltic States during their integration into the EU and NATO in the late 1990s—late 2000s. He also welcomed Germany's proposal to establish an informal club of nations advocating the idea of broader use of majority voting in the context of the EU's CFSP/CSDP and especially associated restrictions.⁴ The first meeting of the group, which Denmark and Sweden joined as observers and Finland as a full member, took place in Brussels on 22 May 2023. However, the Danish government and parliament remain split over this issue. When commenting on the group, Rasmussen tends to resort to diplomatic phrasing, such as

¹ Eller, E. 2023, Danmark skifter kurs: Mindre høj hest — mere pragmatisme, *Danmarks Radio*, URL: <https://www.dr.dk/nyheder/politik/danmark-skifter-kurs-mindre-hoej-hest-mere-pragmatisme> (accessed 01.05.2023).

² Migration er på dagsordenen når Mette F. rejser til Egypten, 2023, *Nordjyske*, URL: <https://nordjyske.dk/nyheder/politik/migration-er-paa-dagsordenen-naar-mette-f-rejser-til-egypten/4160693> (accessed 01.05.2023).

³ Udenrigs- og sikkerhedspolitik strategisk strategi. 2023. Udenrigsministeriet, 2023. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitik-strategi-2023> (accessed 09.03.2023).

⁴ Kongstad, J. 2023, Putins invasionskrig fremtvinger et sprængfarligt dansk opgør med tabuer i europapolitikken, *Jyllands-Posten*, URL: <https://jyllands-posten.dk/international/ECE15818848/putins-invasionskrig-fremtvinger-et-spraengfarligt-dansk-opgoer-med-tabuer-i-europapolitikken/> (accessed 01.05.2023).

‘slightly more effective foreign policy’.¹ This question will probably become a subject of serious discussions regarding a new inter-party agreement to present Denmark’s endorsed positions on various aspects of European integration. This agreement is expected to replace that from 2008 and is scheduled for discussion in the autumn of 2023 when *Folketing* reconvenes after the summer break.

Our analysis shows that Danish ‘super-Atlanticism’ is closely linked to the perception of the US as a guarantor of the liberal world order, which should also reinforce the EU’s role in global governance and world politics. Denmark’s stance on the strategic autonomy of the Union remains ambivalent, with the first direct mention of the concept appearing in Strategy 2023, which emphasises the need to enhance European resilience in the face of crises by building an open strategic autonomy.² Strategy 2022 merely mentioned Denmark’s support for the development of ‘a European strategic compass’ and the emergence of a more independent EU capable of assuming greater responsibility for security and stability in neighbouring regions. The strategy placed emphasis on the regulatory and normative power of the EU, its influence on global trade and climate policy and the need to ensure the resilience of supply chains. The question of enhancing the EU defence capability is discussed mainly in the context of the interests of Danish companies. The text of the strategy reads: ‘Denmark must also take part in building up the European defence industry and in strengthening the engagement of our companies with regard to international collaboration for the benefit of our security, prosperity, and welfare’.³

Conclusion. The categories of reputation, significance and status in strategic culture studies

The analysis of Denmark’s foreign policy strategies highlights its ambition to be more than an ordinary member of NATO, to be part of the ‘privileged circle’ of US allies with a ‘special voice’ in making and promoting decisions within the alliance. This is in effect the case despite Denmark’s limited defence and economic capability. As for the long-term prospects and compatibility of the ‘super-Atlanticism’ and ‘super-Europeanism/ultra-Europeanism’ trends, it should be noted that Denmark does not view them as mutually exclusive. For example, Strategy 2022 has 150 mentions of the EU, although the US remains Denmark’s

¹ [lidt mere effektiv udenrigspolitik]. Albrechtsen, R., Lauritzen, T. 2023, Løkke vil drøfte EU-veto, men de fleste partier tøver: «Det korte svar er nej». *Altinget*, URL: <https://www.altinget.dk/artikel/loekke-vil-droefte-dansk-holdning-til-eu-veto-men-de-fleste-partier-toever-det-korte-svar-er-nej> (accessed 01.05.2023).

² Udenrigs- og sikkerhedspolitisk strategi. 2023. Udenrigsministeriet, 2023. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitisk-strategi-2023> (accessed 09.03.2023).

³ Udenrigs- og sikkerhedspolitisk strategi. 2023. Udenrigsministeriet, 2023. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitisk-strategi-2023> (accessed 09.03.2023).

most important ally.¹ This may be due to the perception of the EU as a broader platform for advancing Danish interests in areas such as migration regulation, climate norms, human rights, democracy, trade policy and others, whilst special alliance relations with the US are mostly mentioned in a military-political context. Strategy 2023, for instance, reiterates the thesis about the exceptional military-political role of American power: ‘The USA will continue to be Denmark’s most important security policy ally, and we must continue to strengthen the transatlantic bond. Together with the USA and our other partners, Denmark must stand by the fundamental principles of a rules-based international order’.² Nevertheless, Denmark’s ambition to secure a special role in relations with both the US and the EU testifies to the country’s willingness to make an exceptional contribution to a reform of transatlantic relations that would not affect American involvement in European security. Denmark seems to attach considerable significance to the risks associated with American isolationism and the US potentially deprioritising the European dimension. Statements about the special responsibility for security in the Baltic region and the EU’s expanding role in defence policy do not dispel these concerns. Recent events also demonstrate a continuity in Denmark’s approach, reminiscent of the strategies pursued by the country in the 1990s and early 2000s. For instance, it voiced moderate criticism of the US withdrawal from Afghanistan in August 2021. Furthermore, Prime Minister Frederiksen expressed her bewilderment at France casting aspersion on Australia over the cancellation of the submarine order, which followed the establishment of AUKUS. She warned against turning ‘concrete challenges, which will always exist between allies, into something they should not be’, commenting on France’s overly emotional response.³

Examining prestige, reputation, significance, friendship, influence and other related phenomena within strategic culture, collectively categorised as ‘status’, could add to our understanding of ‘special relationships’, security communities, strategic partnerships and alliance strategies. This is especially true since, for example, the emergence of security communities must be underpinned by shared values and a sense of mutual involvement. Even within formalised alliances, the communication dynamics and the distribution of responsibilities amongst allies have a crucial role after the formal agreements take effect [37]. Denmark, for instance, aimed to use unconditional and unrestricted participation in US- and

¹ Albrechtsen, R. 2022, Ny dansk udenrigsstrategi nævner EU over 150 gange, men USA er stadig regeringens vigtigste allierede, *Altinget*, URL: <https://www.altinget.dk/forsvar/artikel/ny-dansk-udenrigsstrategi-naevner-eu-over-150-gange-men-usa-er-stadig-regeringens-vigtigste-allierede> (accessed 01.05.2023).

² Udenrigs- og sikkerhedspolitik strategisk strategi. 2023. Udenrigsministeriet, 2023. URL: <https://um.dk/udenrigspolitik/aktuelle-emner/udenrigs-og-sikkerhedspolitik-strategi-2023> (accessed 09.03.2023).

³ Denmark Sides With U. S. Against French Criticism of Defense Deal, *PBS*, 2021. URL: <https://www.pbs.org/newshour/world/denmark-sides-with-u-s-against-french-criticism-of-defense-deal> (accessed 16.03.2023).

NATO-led coalition operations as an ‘excuse’ for not increasing defence spending. The country considers its contribution to operations advancing US interests, including military personnel losses, as more substantial input than complying with the requirement of defence spending at 2 % of GDP.¹ However, this also raises the question of the extent to which the significance of status depends on the structural characteristics of the alliance, particularly the number of participants and the distribution of capabilities. For example, Denmark, as a junior partner within NATO, is gradually adapting to the new rules of the game, realising that an essential characteristic of being a ‘good, exemplary ally’ includes meeting the required level of defence spending. Furthermore, US expectations from its allies and, consequently, their reputation are directly linked to their military capabilities. This underscores the importance of studying the connection between status and structural factors within a given alliance.

Nevertheless, Copenhagen continues to seek new ways to pander to Washington, including by taking measures to improve domain awareness systems in the Danish Arctic and Atlantic territories in the vicinity of Greenland and the Faroe Islands. This is evidenced by Denmark’s adoption in February 2021 of a special Arctic defence agreement totalling 1.5 billion Danish Kroner (220 million dollars), which includes the construction of radar installations in the Faroe Islands and the purchase of drones for Greenland. This move was a response to US concerns that, due to insufficient monitoring, Russian submarines and aircraft could operate unnoticed in the airspace and waters of these autonomous territories.² In June 2022, the US Embassy in Denmark announced that, along with the modernisation of the Thule base, the American, Danish and Greenland parties discussed the installation of new radars on Greenland’s coast pursuant to the declaration of intent regarding investment in Greenland’s defence system made by the US Department of Defence in September 2018.³ Probably, the Arctic.

The Arctic region is increasingly becoming a space where Denmark can enhance its status within NATO and in its relations with the US. However, this will require greater financial and material investment compared to Danish participation in operations in Kosovo, Iraq, Afghanistan, Libya and Syria. As NATO members declare the need to deter Russia in the Baltic region, Denmark’s defence investment in the Arctic and, consequently, its reputation as an ‘exemplary ally’ will be costly both in a literal and political sense. Therefore, the role of the

¹ Schaub, G. Jr., Jakobson, A. K. 2018, Denmark In NATO: Paying For Protection, Bleeding For Prestige, *War On The Rocks*, URL: <https://warontherocks.com/2018/07/denmark-in-nato-paying-for-protection-bleeding-for-prestige/> (accessed 07.03.2023).

² Nielsen, A. B., 2023, Det grønlandske trumfkort, *DIIS*, URL: <https://www.diis.dk/node/24842> (accessed 07.03.2023).

³ Sørensen, H. N., 2023, Danmark og USA: Flere amerikanske radarer kan være på vej i Grønland, *KNR*, URL: <https://knr.gl/da/nyheder/danmark-og-usa-flere-amerikanske-radarer-kan-v%C3%A6re-p%C3%A5-vej-i-gr%C3%B8nland> (accessed 07.03.2023).

Greenland factor in Danish reputation may increase, in terms of the Arctic's value to Washington and the autonomous Greenlandic government's desire to have its own diplomatic voice to negotiate independently with the US, a goal it has consistently pursued in recent decades. Currently, Greenland is preparing to publish its own foreign policy strategy, and until its adoption, Kingdom of Denmark's Arctic strategy will not be further developed. In May 2022, Greenland obtained written assurances from the Danish government that Greenlandic interests would be taken into account in the development of a new defence agreement for Denmark, which is planned to be presented in the summer of 2023.

In conclusion, based on the Danish experience, the research approach outlined in this study can be expanded and continued with a comparative analysis of how other small countries — EU and NATO members, as well as non-Western countries — understand and perceive the categories of status and reputation, strategic culture and alliance strategies. This can lead to achieving a higher level of generalisation regarding considerations of status, prestige and reputation in strategic culture and a broader understanding of the concept of 'special relations' beyond the American-British model [38]. Another promising topic for the study could involve comparing the category of status and the ways in which countries in different positions within the international system — great powers, middle powers, regional powers, rising powers, and small states — seek to elevate or maintain their status.

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INFORMATION AND PROPAGANDA STRATEGIES IN GERMAN NON-STATE MEDIA DISCOURSE DURING THE COVID-19 PANDEMIC

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This study aims to analyse the strategies supporting the German Government's biopolitical health and life protection practices and how they were promoted in the discourse of non-state media outlets during the COVID-19 pandemic. It is assumed that non-state media used various pandemic communication strategies to achieve common biopolitical goals, striking a balance between propaganda and outreach. A comparative analysis was conducted of German publications that focused on the pandemic and appeared during the four waves (January 2020 – March 2022). A total of 54,515 texts from the German media (Süddeutsche Zeitung, Die Zeit, Die Tageszeitung) were examined. Methodologically, the study draws on the Herman-Chomsky propaganda model and Jacques Ellul's concept. The results show that non-state media employ different communication strategies in line with the filters of the Herman-Chomsky model. All the media outlets maintained a balance between propaganda and public outreach, supporting the Government's biopolitical programme whilst prioritising their own interests. It can be concluded that the strategies chosen by the non-state media outlets instilled a sense of confidence, prompting the public to comply with the restrictions and measures consistent with the biopolitical agenda of the state.

Keywords:

Germany, media, pandemic, propaganda, biopolitics

In recent years, particularly since the onset of COVID-19, the principles of crisis communication have gained heightened importance. Government communication with the public through diverse channels has become vital for promptly disseminating essential information about public health measures and fostering public cooperation in the fight against COVID-19 [1]. The way communication channels present events and cause-and-effect relations has a direct impact on public consciousness [2; 3].

Research data demonstrates a deep politicization of the pandemic discourse, revealing the decisive role of politicians in shaping the agenda of traditional media [4; 6]. It can be assumed that media outlets, by broadcasting the authorities'

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point of view, play a significant role in influencing and managing the public's response during emergencies [7]. Thus, certain attitudes broadcast through the media encourage society to follow the line chosen by authorities [8]. In this regard, a question arises as to whether all media adhere to the official political agenda or act in their own interests.

It is interesting to note that during the COVID-19 pandemic in Germany, society seemed to have controversial attitudes to imposed restrictions, which led to a wave of protests resulting in the formation of a permanent protest movement against the restrictive measures proposed by the authorities. However, research results show that, despite all contradictions, the authorities managed to build public loyalty [9; 10]. This achievement required complex efforts, which involved various channels of communication, including non-state media.

The relevance of the study is therefore justified by the following provisions:

- the need to solve biopolitical problems during the crisis by building public loyalty to unpopular measures and maintaining a sufficient level of trust in the government to make society comply with the imposed restrictions;
- the established dependency between the search for information about COVID-19 in the media and the perception of the virus as a threat to health [11].

The aim of this research is to analyze the strategies that support the biopolitical practices of the German government to preserve the health and life of the population, and the techniques implemented in the discourse of non-state media in Germany during the COVID-19 pandemic.

The main hypothesis is that non-state media, by introducing certain speech clichés into the discourse, used various strategies to achieve common biopolitical goals in accordance with the filters of the Herman-Chomsky model.

Information and propaganda strategies in media discourse

Despite extensive research on propaganda over the past century, the topic remains highly relevant. Researchers continue to develop new definitions that align with the evolving reality and explore the novel tools employed by propagandists.

This study examines propaganda as a persuasive technology in the media, adopting Ellul's perspective [12], where it is viewed as a certain type of message used to spread or introduce a certain culture, philosophy, point of view, or even a certain slogan. Regarding propaganda strategies employed during the pandemic, this study underscores the importance of the emotional component, encompassing intimidation, along with the recurrent utilization of specific speech clichés, in shaping the resulting impact. The intimidation strategy is considered one of the leading techniques of propaganda [13; 14]. The publication of intensive care statistics and the number of deaths from the coronavirus was aimed at instilling fear of the disease. This fear played a role in motivating people to adhere to the

imposed restrictions and seek vaccination [15]. At the same time, propaganda corresponds to a sequence of well-planned messages spread over a long period of time [16], with repetition as the most effective technique [14].

Public opinion often holds a negative perception of propaganda, viewing it as a set of techniques designed to mislead people. However, it is worth noting that in certain situations, propaganda can be employed for the public's benefit, as evidenced by some studies (e.g., [17]). This brings propaganda closer to another form of persuasive communication — education. Therefore, it becomes essential to differentiate between these two types of persuasive communication.

In fact, the definition of education formulated by Poluikova is very close to the definition of propaganda presented above: the main goal of education is “to influence the addressee in order to form relevant knowledge and adequate behaviour... by persuasion through ratiocination of this or that idea”, as well as relying on “emotional and evaluative means of influence” [18, p. 63].

Both propaganda and education play a crucial role in disseminating new and useful information to help individuals adapt to unfamiliar or challenging circumstances. However, knowledge disseminated through education is independent of one's interests. Education does not force opinions and does not control the implementation of imposed attitudes; it provides a choice and may even retreat if the ideas and attitudes being broadcast are not accepted. Within the framework of education, various forms of communication are available, including interactive methods like discussions and debates. The key element in education is the recipient of information, the one who is being educated.

On the other hand, propaganda is based on the assumption that the propagandist is, *de facto*, better informed and holds the authority to determine what changes should be introduced. Propaganda shapes certain behavioural patterns and attitudes, with the propagandist taking on a central role. Unlike education, propaganda is a one-way communication [12], not involving interaction. In addition, the most important point is, perhaps, that propaganda always serves someone's interests. This is not mere information dissemination; rather, it is a one-sided and assertive broadcasting of a particular standpoint.

During the COVID-19 pandemic, the adoption of diverse persuasive technologies became imperative to protect and save lives. The media and various sources played a crucial role in disseminating pertinent information to address biopolitical challenges. As a result, the goals and objectives of both propaganda and education converged during this period. The educational efforts of the media and propaganda had a significant impact on the target audience, leading to the acceptance of broadcasted opinions and specific behavioural patterns. Consequently, educational and propaganda discourses in the media were strategically directed towards influencing people's behaviour, including compliance with lockdown measures, social distancing, wearing masks, and opting for vaccination.

The context of any pandemic is marked by stress, panic and uncertainty. The results of a significant number of studies show that people's awareness of risks is the main predictor for the implementation of the recommended behaviour aimed at protecting health [11; 19; 20]. However, awareness of risks when there are no clear action algorithms aimed at minimizing them gives rise to a feeling of fear that leads to panic, while timely and reliable information about risks is aimed at streamlining fears [21].

Therefore, as an additional hypothesis for the research, it was assumed that there should have been a certain equilibrium in the media discourse between propaganda (encouraging the adoption of specific behavioural patterns through intimidation) and education (presenting objective data).

Methodology

The study is methodologically based on the propaganda model proposed by Herman and Chomsky [22]. Throughout the pandemic, every media outlet shaped its own rendition of 'reality,' sieving out information that contradicted their editorial stance or the preferences of their proprietors. Meanwhile, facets of the pandemic that coincided with the objectives of the editorial office and catered to the needs of publishers, owners, and other stakeholders received the most comprehensive coverage. During times of crisis, non-state media could align with the state's biopolitical objectives, overtly endorsing vaccination and adherence to restrictions. Alternatively, they might assume a more impartial position, taking into account the interests of publishers and proprietors. From a linguistic point of view, we follow [16], where propaganda is seen as a sequence of well-planned messages distributed by propagandists.

To test the assumption about working 'filters', three non-state media representing business and civil society were selected for the study. *Die Tageszeitung* is an employee-run cooperative that describes itself as an independent media outlet and has New Leftist views. *Die Zeit* is a liberal newspaper, part of the major publishing house Zeit-Verlag Gerd Bucerius GmbH & Co. KG (owned by the Holzbrink family) with branches in the USA and Great Britain. *Süddeutsche Zeitung* is part of Southwest German Media Holding GmbH; its goal is to inform and freely form the opinions of individuals, as well as to promote liberal and tolerant attitudes, centrism, and social liberalism.

Texts were selected using two keywords 'COVID-19' and 'Pandemie'. The data collected represented four coronavirus waves (January 2020 — March 2022). The total volume collected — 23.3 million words (*Süddeutsche Zeitung*: 38,887 texts, 14.5 million words, four waves; *Die Zeit*: 10,078 texts, 7.40 million words, three waves; *Die Tageszeitung*: 5550 texts, 1.48 million words, two waves).

After the lemmatization and removal of stop words in the texts, the most frequent phrases consisting of two lexemes (bigrams) were identified, which were then analyzed using the methods of qualitative content analysis and discourse analysis.

Bigrams were selected based on the frequency of occurrence (minimum threshold — 300 occurrences for *Süddeutsche Zeitung* and *Die Zeit* and 100 occurrences for *Die Tageszeitung*) and further sorted by the PMI coefficient (pointwise mutual information — coefficient of point mutual information) [23]. The higher the coefficient, the more often these words occur together in the corpus of texts, compared with the frequency of each word observed separately. The combination of these two indicators allows us to define a bigram as a stable speech cliché for this corpus of texts.

The assumption was made that a collection of repetitive speech clichés (bigrams) could enable the identification of strategies that uphold the German government's biopolitical practices for safeguarding the health and lives of the population. This, in turn, allows for drawing conclusions regarding the primary editorial policies in alignment with the Herman-Chomsky model.

Analysis

Süddeutsche Zeitung

The non-state publisher *Süddeutsche Zeitung*, which represents the national business, was actively involved in educational activities during all four waves of the pandemic (Table 1).

Table 1

Education and Propaganda in the *Süddeutsche Zeitung* Media Discourse

Technology	Strategy	1 st wave	2 nd wave	3 rd wave	4 th wave
Propaganda	Intimidation	—	—	—	'Todesfall Zusammenhang' (PMI 9.10), 'Mensch sterben' (PMI 5.93)
	Official sources of information / politicization	'Angela Merkel' (PMI 11.29), 'Markus Söder' (PMI 10.48)	'Angela Merkel' (PMI 11.38), 'Biontech Pfizer' (PMI 10.85), 'Markus Söder' (PMI 10.34), 'Robert RKI' (PMI 9.32)	'Robert RKI' (PMI 8.98)	—

The end of Table 2

Technology	Strategy	1 st wave	2 nd wave	3 rd wave	4 th wave
Education	Statistics	‘Milliarde Euro’ (PMI 8.15), ‘Million Euro’ (PMI 7.54), ‘wegen Coronapandemie’ (PMI 6.58), ‘wegen Coronakrise’ (PMI 5.47)	‘Milliarde Euro’ (PMI 8.11), ‘Million Euro’ (PMI 7.53), ‘impfen lassen’ (PMI 6.85), ‘Zahl Neuinfektion’ (PMI 6.66), ‘wegen Coronapandemie’ (PMI 6.36)	‘Schülerin Schüler’ (PMI 10.31), ‘Geimpfte Genesene’ (PMI 9.77), ‘Neuinfektion pro’ (PMI 8.3), ‘Kind Jugendlicher’ (PMI 8.14), ‘Milliarde Euro’ (PMI 8.07), ‘vollständig impfen’ (PMI 7.77), ‘Million Euro’ (PMI 7.56), ‘impfen lassen’ (PMI 6.96), ‘Zahl Neuinfektion’ (PMI 6.81), ‘wegen Coronapandemie’ (PMI 6.31)	‘Schülerin Schüler’ (PMI 10.63), ‘Geimpfte Genesene’ (PMI 10.22), ‘Milliarde Euro’ (PMI 8.16), ‘Million Euro’ (PMI 7.6), ‘impfen lassen’ (PMI 6.96)
	Pluralism of opinions	‘Deutscher Presseagentur’ (PMI 9.36)	‘Deutscher Presseagentur’ (PMI 9.49)	‘Deutscher Presseagentur’ (PMI 9.44)	‘Vereinigung Notfallmedizin’ (PMI 12.03), ‘Deutscher Presseagentur’ (PMI 9.34)

Generally, the periodical publishes statistical data about all spheres of public life. For example, the economic consequences of the pandemic are described in detail (“*Million Euro*”, “*Milliarde Euro*” — *millions of euros, billions of euros*) emphasizing the damage caused (“*wegen Coronapandemie*” — *due to the coronavirus pandemic*, “*wegen Coronakrise*” — *because of the coronavirus crisis*). In addition, the data on the number of the vaccinated (“*vollständig impfen*” — *to fully vaccinate*, “*Geimpfte Genesene*” — *vaccinated recovered*, “*Schülerin Schüler*” — *student schoolgirls*) are provided. Furthermore, the publisher supports the government’s vaccination campaign by providing statistics on the number of cases, the publication of statistics from intensive care units and the number

of deaths (“Zahl Neuinfektion” — number of new infections, new cases per...), as well as the readiness of the population to be vaccinated. For example, in *Süddeutsche Zeitung*, 12/10/2020: “Stand Anfang November geben immerhin 55 Prozent der Befragten an, dass sie sich im kommenden Jahr “sehr wahrscheinlich” oder “wahrscheinlich” gegen das neue Coronavirus impfen lassen wollen” — At the beginning of November, 55 per cent of respondents said they were “very likely” or “probably” to get vaccinated against the new coronavirus next year).

However, the published statistics during the fourth wave can be regarded as a strategy of intimidation: “Todesfall Zusammenhang” — death associated with, “Mensch sterben” — man to die.

The publisher cites the viewpoints of prominent politicians like Angela Merkel and Markus Söder. This tendency can be attributed to the radical changes in public life, which have been tightly regulated by the state. As a result, the media extensively cover every decision made by the authorities. For example: *Süddeutsche Zeitung*, 02/01/2021: *Bundeskanzlerin Angela Merkel (CDU) hat das Versprechen erneuert, dass jeder impfwillige Bürger bis zum Ende des Sommers ein Impfangebot erhalten kann. Das Impfen sei jetzt Chefsache, so Söder. (Chancellor Angela Merkel (CDU) reaffirmed the promise that every citizen who wants to be vaccinated can receive a vaccination offer before the end of summer. Vaccination is now a top priority, says Söder).*

In the second wave, BioNTech Pfizer appears among the frequently cited sources, which marks the official strategy concerning the need for vaccination in the media discourse, along with Robert Koch Institute, a nationwide health-monitoring agency of the German Federal government, which formulates recommendations, assesses the situation, and broadcasts the state biopolitical agenda.

On the other hand, throughout the period, Deutsche Presse Agentur (dpa), a German news agency that broadcasts the opinions of politicians, experts and representatives of civil society, is frequently used as a source of information. During the fourth wave the opinion of the professional community, the German Interdisciplinary Association for Intensive Care and Emergency Medicine (‘Vereinigung Notfallmedizin’) is also found in media discourse. By including these sources, the publisher realizes the principle of pluralism of the opinions presented. However, the inclusion of the Association’s data can also be seen as an intimidation strategy and promotion of vaccination during the fourth wave. For example: in *Süddeutsche Zeitung*, 03/24/2022: “Auf den Intensivstationen saarländischer Krankenhäuser lagen 56 erwachsene Patienten mit COVID-19, wie aus Daten der Deutschen Interdisziplinären Vereinigung für Intensiv- und Notfallmedizin (Divi) vom Donnerstag hervorgeht (St and 7.06 Uhr). Neun dieser Patienten mussten beatmet werden” — According to the German Interdisciplinary Association for Intensive Care and Emergency Medicine (Divi), on Thursday (as of 7:06 a.m.), there were 56 adult patients with COVID-19 in the intensive care units of Saarland hospitals. Nine of these patients required ventilation.

Thus, the pool of the sources cited suggests support for the government's bi-political programme along with a strategy of intimidation (albeit mostly in an implicit form). Nevertheless, it cannot be unequivocally stated that the propaganda strategy prevails in the discourse of this publisher.

Die Zeit

The strategies employed by *Die Zeit* are similar to those of *Süddeutsche Zeitung*, as the publisher seems to avoid explicit propaganda through intimidation. There are also obvious differences in the sources cited (both state and independent). The list of strategies is presented in Table 2.

Table 2

Education and Propaganda in *Die Zeit* Media Discourse

Technology	Strategy	2 nd wave	3 rd wave	4 th wave
Propaganda	Intimidation	—	—	—
	Official sources of information/politicization	'Markus Söder' (PMI 11.38), 'BioNTech Pfizer' (PMI 10.84), 'Angela Merkel' (PMI 10.32), 'Robert RKI' (PMI 8.36)	'Angela Merkel' (PMI 10.37), 'Robert RKI' (PMI 8.29)	'Olaf Scholz' (PMI 10.26), 'RKI melden' (PMI 6.79)
Education	Statistics	'Neuinfektion pro' (PMI 7.60), 'aktuell Zahl' (PMI 6.26), 'vergangen Woche' (PMI 6.19)	'Milliarde Euro' (PMI 8.4), 'binnen Tag' (PMI 7.35), 'meist Neuinfektion' (PMI 7.06), 'Million Euro' (PMI 6.85), 'aktuell Zahl' (PMI 6.46), 'impfen lassen' (PMI 6.45), 'neu Fall' (PMI 5.07)	'Milliarde Euro' (PMI 8.82), 'impfen lassen' (PMI 6.75), 'aktuell Zahl' (PMI 6.25), 'neu Fall' (PMI 5.34)
	Pluralism of opinions	'Zeit online' (PMI 9.4)	'Armin Laschet' (PMI 10.77), 'Zeit online' (PMI 9.23)	'Zeit online' (PMI 9.3)
Other	—	'Bürgerin Bürger' (PMI 10.80)	'jung Mensch' (PMI 5.13), 'Million Mensch' (PMI 5.06)	'allgemein Impfpflicht' (PMI 8.77), 'Million Mensch' (PMI 5.22)

In general, the tone of the discourse can be defined as quite positive (as there is no strategy of intimidation). The publisher, rather, tends to present pallid statistics on the number of infections (*“Neuinfektion pro”* — *new cases on*, *“vergangen Woche”* — *last week*, *“binnen Tag”* — *per day*, *“meist Neuinfektion”* — *most new cases*, *“neu Fall”* — *new case*), and economic consequences (*“Million Euro”*, *“Milliarde Euro”* — *millions of euros, billions of euros*).

It is also interesting to note the heightened interest in the discussion of social problems related directly to the virus as well as to the quarantine, lockdown, and vaccinations (*“Million Mensch”* — *“millions of people”*, *“Bürgerin Bürger”* — *citizens*). In addition, a group of children and adolescents (*“Jung Mensch”*) is distinguished in the third wave and is discussed not only in terms of morbidity and the vaccination campaign (although this topic prevails), but also with respect to social problems. For example: in *Die Zeit*, 06/02/2021: *“Junge Menschen haben ein anderes Zeitgefühl. Ihnen fehlt die Erfahrung, dass Krisen wieder vorbeigehen. Ihr Leben ist hier, in der Pandemie, ein Danach gibt es nicht.” Das sagt die Psychiaterin Carola Bindt, die die Kinder- und Jugendpsychiatrie am UKE leitet. (Young people have a different sense of time. They lack the experience that crises end. Your life here in a pandemic, there is no after. So says psychiatrist Carola Bindt, the head of child and adolescent psychiatry at the UKE).*

The publisher includes official sources of information (Robert Koch Institut, Markus Söder, Angela Merkel, Olaf Scholz) in the discourse and broadcasts the state biopolitical programme. At the same time, it positions itself as the source of the most up-to-date and reliable information on the incidence of COVID-19 in Germany (*“Zeit online”*, *“aktuell Zahl”* — *actual figures*), implementing a strategy of education and pluralism of opinions, and thus it seems to distance itself from pro-government data sources. For example: in *Die Zeit*, 05/01/2022: *“ZEIT ONLINE besucht daher täglich diese Seiten und sammelt so selbst die Daten. Dies ist aktueller, allerdings können sich so die Zahlen von RKI und ZEIT ONLINE unterscheiden. Die aktuellste Zahl der bestätigten Infizierten allein ergibt zudem noch kein umfassendes Bild über das Infektionsgeschehen. Gezeigt werden immer nur Fälle, die auch getestet wurden”* — *ZEIT ONLINE visits these sites daily and thus, collects data on its own. This data is more current, but RKI and ZEIT figures online may differ. In addition, the actual number of confirmed cases does not yet give a complete picture of the ongoing infection, only those cases that have also been tested are shown).*

In addition, during the third wave, Armin Laschet, the chairman of the Christian Democratic Union Party, appears among the most frequent sources. He acts as a representative of civil society.

Despite the presence of official sources of information, there is no evidence that the publisher takes an active pro-government stance. COVID-19 is not depicted explicitly as a threat that brings death, and rather, the plurality of different opinions indicates a neutral stance aimed at informing the population about the risks and ways of protection (vaccination) in a timely manner.

Die Tageszeitung

Unlike the two media scrutinized above, Die Tageszeitung represents civil society as a subject of biopolitics. This status affects the strategies used by the publisher (Table 3).

Table 3

Education and Propaganda in Die Tageszeitung Media Discourse

Technology	Strategy	3 rd wave	4 th wave
Propaganda	Intimidation	‘Coronavirus anstecken’ (PMI 8.82), ‘Zusammenhang Virus’ (PMI 8.32)	‘gemeldet Todesfall’ (PMI 10.37), ‘Mensch sterben’ (PMI 5.87)
	Official sources of information / politicization	‘Ständige Impfkommision’ (PMI 11.72), ‘Jens Spahn’ (PMI 10.27), ‘Biontech Pfizer’ (PMI 9.71)	‘Jens Spahn’ (PMI 11.83), ‘Olaf Scholz’ (PMI 10.8), ‘Karl Lauterbach’ (PMI 10.21), ‘Robert RKI’ (PMI 8.89)
Education	Statistics	‘Nachricht Coronakrise’ (PMI 10.09), ‘Geimpfte Genesene’ (PMI 9.46), ‘Milliarde Euro’ (PMI 8.64), ‘Kind Jugendliche’ (PMI 7.77), ‘Million Dose’ (PMI 7.3), ‘vollständig impfen’ (PMI 6.92), ‘impfen lassen’ (PMI 6.53)	‘Nachricht Coronakrise’ (PMI 10.33), ‘Geimpfte Genesene’ (PMI 9.92), ‘Milliarde Euro’ (PMI 8.7), ‘Million Euro’ (PMI 6.93), ‘impfen lassen’ (PMI 6.82)
	Pluralism of opinions	—	‘Deutscher Presseagentur’ (PMI 10.14)
Other	—	—	‘allgemein Impfpflicht’ (PMI 8.15)

Of the three media analyzed, Die Tageszeitung uses the intimidation strategy most intensively, publishing statistical data, where the emphasis is laid not only on the number of infections (“*Coronavirus anstecken*” — *get infected with the coronavirus*) but also on the number of deaths from the coronavirus, (“*Zusammenhang virus*” — *associated with the virus*, “*Mensch sterben*” — *a person to die*). For example: in Die Tageszeitung, 02/07/2022: “*196 weitere Menschen starben im Zusammenhang mit dem Virus*” — *Another 196 people died due to the virus*.

In addition, similar to the publications of Süddeutsche Zeitung and Die Zeit, the discourse is focused on statistics that describe the progress of the vaccination campaign (“*Geimpfte Genesene*” — *vaccinated recovered*, “*Kind Jugendli-*

che” — adolescent children, “Million Dose” — millions of doses, “vollständig impfen” — to fully vaccinate, “impfen lassen” — to vaccinate), as well as the economic consequences of the pandemic (“Milliarde Euro”, “Million Euro” — billions of euros, millions of euros).

The main sources of information broadcast to the audience are official ones: Health Ministers Jens Spahn and Karl Lauterbach, as well as Chancellor Olaf Scholz (during the fourth wave). The ‘security professionals’ who support the state biopolitical agenda also appear in press: the Permanent Commission for the Vaccination of the Population (*Ständige Impfkommission*) and the Robert Koch Institute, while an alternative opinion is presented sporadically (*Deutsche Presseagentur* — the fourth wave).

In addition, the discussion on the general duty to vaccinate (“*allgemein Impfpflicht*”) is in the spotlight.

For example: in *Die Tageszeitung*, 02/06/2022: “*Die Frage, ob man eine allgemeine Impfpflicht braucht oder ob nicht die Impfpflicht ab einem gewissen Alter ausreicht, um die Überlastung des Gesundheitssystems zu vermeiden, mag die Politik unter Heranziehung epidemi ologischen Sachverständes klug beantworten*” — *Politicians can wisely answer the question of whether universal vaccination is necessary, or whether compulsory vaccination from a certain age is enough not to overwhelm the health care system, with the help of epidemiological expertise.*

In general, compared to other media, one can note the largest number of clichés representing the biopolitical programme of the government (vaccination) both in the propaganda and the education strategies.

Results

Table 4 summarizes the results of the propaganda and education strategies used by non-state German media to achieve biopolitical goals.

Table 4

Education and propaganda in the media discourse of non-state media

Technology	Strategy	Süddeutsche Zeitung	Die Zeit	Die Tageszeitung
Propaganda	Intimidation	Partly	No	Yes
	Official sources of information / politicization	Partly	Yes	Yes
Education	Statistics	Yes	Yes	Yes
	Pluralism of opinions	Yes	Yes	Partly

Research results reveal that the COVID-19 pandemic was used by the government as an opportunity for the dissemination of political propaganda via the media [24; 25]. On the one hand, the strategy of intimidation of the population was intensively used. For example, risk frames (transmission of the virus) created by the media encouraged people to comply with restrictive measures [26], and

the key topic of discussion was “the risk of infection” [8]. However, in our study, intimidation as one of propaganda tools was not dominant for non-state German media and was used only in the discourse of one publisher — Die Tageszeitung (Table 4).

Evidence also suggests that politicians were quoted more frequently in the media than academics and other public health experts [4; 5; 24], and, as a result, politics prevailed over science in the news [27]. The results of our study also confirm this fact. The most quoted personalities in the non-state German media were the country’s officials: Angela Merkel, Markus Söder, Jens Spahn and Olaf Scholz, as well as other professional communities broadcasting the biopolitical agenda. The representation of the official view in publications exceeds the scope of the alternative opinion.

Beyond intimidation and reliance on official information sources, propaganda strategies can encompass directing attention towards specific actions that can be interpreted as a call to action. Interestingly, no indications for the mandatory wearing of masks, observance of the lockdown, restriction of contacts, etc. were found among the most frequent phrases, while references to vaccination were identified in all three media, which could probably mean the employment of some ‘selective’ propaganda, consistent with the tasks of the editorial board.

On the other hand, the strategy of public education was also actively implemented in the discourse of the three publishers. The media tried to eliminate ambiguity in order to form a certain attitude (see, for example, [28—30]). The results of our study show that the non-state German media preferred to make judgments based on objective data throughout the waves of the pandemic. The leitmotifs of the discourse were the consequences of the pandemic for all spheres of life (economy, social sphere, etc.), as well as statistics on morbidity and mortality. Both leitmotifs are designed to convey the complexity (although, in most cases, non-catastrophic) of the current situation. It is worth pointing out that whether statistics should be regarded as an education strategy is a debatable issue, since the continuous publication of statistics on the number of infected, those in intensive care, the number of deaths, as well as economic losses, can be perceived as a propaganda strategy through intimidation. Regular broadcasting of quantitative data on losses can be regarded as encouraging citizens to comply with restrictive measures (especially at the first stage of a pandemic in a situation of uncertainty). Later, the use of statistics can be assessed as balanced, since along with negative trends, ‘positive’ statistical data were published on the number of recovered, uninfected, etc.

Despite the prevalence of official sources of information, the study’s findings reveal a pluralism of opinions presented. Given the prevalence of official sources of information, mass media serve as intermediaries, disseminating ‘ready-made’ information without explicitly expressing their own position, thus maintaining a sense of neutrality.

In general, it can be noted that the topics included in the agenda of the non-state media in Germany under scrutiny are identical. When new information is obtained or the need to carry out certain activities appears, clichés are introduced into the discourse, for example, the ones related to vaccination. However, despite the similar pool of topics, the applied strategies differ, which confirms the Herman-Chomsky filter hypothesis. The *Die Zeit* and *Süddeutsche Zeitung* represent the interests of business that is the subject of biopolitics. At the same time, *Die Tageszeitung* can be seen as representing civil society, which is also a subject of biopolitics. The results of the study show similar strategies to support the government's biopolitical agenda for business and civil society — education and propaganda. However, business seemed to act for the benefit of society, solving biopolitical problems mainly without active propaganda of pro-government ideas, while civil society behaved a little more aggressively, propagating the state biopolitical programme through instilling fear. It can be concluded that all non-state media resorted to both strategies, maintaining a certain balance between propaganda and education.

A limitation of the study is that it only analyzed publications from the third and fourth waves in *Die Tageszeitung*. The results, which demonstrate the publisher's propensity to promote the state biopolitical agenda through propaganda, cannot be extrapolated to the first two waves of the pandemic.

Conclusion

1. The non-state media scrutinized in the study used various strategies to achieve common biopolitical goals by introducing certain clichés into the discourse (see the data provided in Table 4). *Die Tageszeitung* was the only publisher that explicitly resorted to the strategy of intimidation along with the most intensive presentation of pro-government opinions. *Die Zeit*, on the other hand, abandoned the strategy of intimidation, focusing on the presentation of up-to-date statistics, as well as pluralism of opinions (both official and alternative). *Süddeutsche Zeitung* appears to distance itself from the government's point of view by limiting the number of official opinions it publishes. However, it also resorted to the strategy of intimidation. In the discourse of all the studied media, a certain balance between propaganda and education was observed.

2. By choosing propaganda (*Die Tageszeitung*) or education (*Die Zeit* and *Süddeutsche Zeitung*) as the prevailing strategies, the media support the government's biopolitical programme aimed at preserving the life and health of the population, since in the context of the pandemic, both strategies are aimed at achieving the common goal. However, the support of the official strategy realized by the media is expressed explicitly in the form of propaganda or more restrained (implicitly) through education, depending on the tasks and interests of the subjects of biopolitics (business and civil society), which use media as tools for influence.

3. The identified propaganda clichés were based on repetition and partly on intimidation (due to the inclusion of an emotional component or objective data). The repeatability criterion was fully implemented, while the emotional component (intimidation) was not an integral part of the propaganda. In general, in the discourse of the German media, the impact is realized specifically through the publication of statistical data, which leads to an increase in the level of trust in society.

4. The proposed approach, based on the analysis of clichés to identify propaganda guidelines and intentions of patrons, proves to be effective. The application of the Herman-Chomsky model led to the conclusion that the sources of funding filter has the greatest impact on the degree of adherence of the media to one of the strategies: education or propaganda. In the case of the German non-state media, business does not explicitly show involvement in biopolitical propaganda, in contrast to civil society.

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ARTIFICIAL INTELLIGENCE: A CATALYST FOR ENTREPRENEURSHIP EDUCATION IN THE BALTICS

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The article explores the growing role of artificial intelligence (AI) in entrepreneurship education within universities. This exploration is set against the backdrop of the rapid and widespread integration of AI technologies across economic and other domains of life. The authors aim to define the concept of ‘entrepreneurial potential’ and elucidate the contribution of AI in augmenting the entrepreneurial potential among university students in the Baltic States. To achieve this goal, the authors employ a range of methods, including comparative analysis, analogy, generalization, classification, and structural-functional analysis, among others. These methodologies are integrated within an interdisciplinary framework, enabling a comprehensive investigation of the subject matter. The comparative analysis of university entrepreneurship education in the Baltic States demonstrates the strengths and weaknesses inherent in the notion of entrepreneurial potential. This study also considers the impact of academic mobility in the modern world, characterized by rapid and dynamic shifts in technology, markets, and business models. The study concludes that proficiency in working with AI-powered equipment and algorithms is of paramount importance in amplifying the entrepreneurial potential of students in Latvia, Lithuania, and Estonia. This aspect is increasingly gaining attention from universities, which collaborate closely with the business sector, governmental bodies, and regional agencies to provide diverse forms of support to aspiring business students. The final part of the article addresses issues that require more active and innovative participation of academia in activities enhancing the role of student youth in the economic development of their countries and regions.

Keywords:

artificial intelligence, entrepreneurial potential, students, mobility, Baltic countries

Introduction

The aim of this article is to elucidate the significance of entrepreneurial potential within Baltic universities, utilizing a specific example, and to delineate the impact of artificial intelligence and its technologies on students’ attitudes towards

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entrepreneurship in these regions. This objective entails addressing the following tasks: evaluating the advantages of the entrepreneurial potential concept in studying student entrepreneurship; analyzing international experiences in assessing students' entrepreneurial potential, particularly in light of the growing influence of artificial intelligence in various economic and societal domains; examining instances of employing artificial intelligence as a pivotal element in enhancing the entrepreneurial potential of students within the Baltic countries; and outlining future directions for investigating the entrepreneurial potential of students.

These tasks are preceded by several remarks regarding the conceptual foundations and analysis of the idea of student entrepreneurship, which express a certain interdependence between a human and a machine/algorithm as a sociocultural, socio-economic aspect of human interaction with the outside world [1, p. 6; 2]. In this regard, entrepreneurial potential, entrepreneurial talent, entrepreneurial efficiency, entrepreneurial university, and entrepreneurial thinking can be considered as different concepts for studying student entrepreneurship. Each of these concepts relates to various aspects of entrepreneurial activity and can be explored in terms of different theories and models of entrepreneurship, as well as for the analysis of data and interpretation of findings. For example, entrepreneurial talent (creative and entrepreneurial abilities) can be studied within the framework of the theory of "innovative entrepreneurship", which focuses on the role of innovation in successful entrepreneurial activity. Entrepreneurial potential is considered using the model of the theory of planned behaviour that focuses on the planning and decision-making by the entrepreneur. Entrepreneurial efficiency is perceived through the theory of self-efficacy, which refers to how a person evaluates his/her own abilities and competencies in achieving goals.

Entrepreneurial thinking can be studied within the design thinking model, which refers to the ability to think creatively and innovatively. The concept of "entrepreneurial intentions" is related to the more general theory of entrepreneurship, which explores the process of creating and developing new enterprises. It includes aspects such as the search for opportunities, risk assessment, financial planning, resource management, etc. The 'entrepreneurial university' model focuses on student entrepreneurship but also covers such aspects as entrepreneurial education, support and financing of students' entrepreneurial projects. The development of entrepreneurial thinking and behaviour can have a long-term positive effect on the future careers and life paths of student youth.

The general basis of the concepts described is made by the "theory of planned behaviour". Its authors are Richard S. Steiner and Andrew Barto [3]. The theory of planned behaviour is also known as reinforcement learning theory [4–7]. The main aspects (elements) of the theory of planned behaviour include *agent* (any form of artificial or natural intelligence), *environment* (the environment the agent interacts with, receiving rewards (reinforcements) or punishments, depending on one's actions), *environment model* (agent's internal perception of the state of the environment in response to one's actions), *reinforcement* (the quantitative assess-

ment that the agent receives from the environment in response to one's actions), *strategy* (the actions of the agent in each state of the environment to achieve maximum reinforcement).

The connection between the theory of planned behaviour and the concept of entrepreneurial potential lies in the fact that both approaches are relevant to decision-making in an uncertain environment. In the context of the theory of planned behaviour and reinforcement learning, diagnosing (examination) is an important aspect, since the subject of the action must find a balance between learning new strategies and experimenting with unfamiliar actions, as well as using already familiar actions that can lead to more reinforcement.

Entrepreneurship today relies heavily on the support of cutting-edge information technologies to discover fresh ideas, innovations, and market opportunities for the development and promotion of novel products and services. Technical tools infused with elements of artificial intelligence (AI) play a pivotal role in this process. One such tool is an AI-powered chatbot known as Chat Generative Pre-Trained Transformer, or ChatGPT. These tools introduce diverse dimensions to the connection between the Theory of Planned Behavior and the concept of entrepreneurial potential.

ChatGPT, for instance, can be a valuable resource for entrepreneurs by assisting them with tasks such as generating business ideas, conducting market research, building predictive models, and identifying emerging trends. Such capabilities empower entrepreneurs to make well-informed decisions. ChatGPT and similar technical tools with AI components serve as vital support systems for young, active entrepreneurs in Latvia, Lithuania, and Estonia, furnishing them with essential information, guidance, and aid in business planning, strategizing, and decision-making rooted in the principles of the theory of planned behaviour.

However, while these contemporary tools provide invaluable support for student entrepreneurship, it is imperative to weigh the strengths and weaknesses of the entrepreneurial potential concept in light of the pervasive influence of global mobility in the modern world.

Literature review. To shift the economy from a liberal to a socially-oriented model and strive for maximum employment, both the EU countries and Russia require a strong foundation of entrepreneurial activity, particularly among the youth. Science, along with the societal demand for its accomplishments and findings, plays a vital role in facilitating this transformation. Consequently, we will analyze how the issue of utilizing AI for enhancing entrepreneurial potential is reflected in the databases of Scopus and Web of Science. In the period 2019–2023, the number of publications related to the issues of entrepreneurial potential of students using AI amounted to 25 articles published in scientific journals indexed in the Scopus scientometric database, and 62 articles — in Web of Science. According to data from the Scopus database, scholars from China exhibited the

highest level of activity in research related to this topic, with 25 publications. Following closely behind were researchers from the USA, with 15 publications, and Russia, with 7 publications.

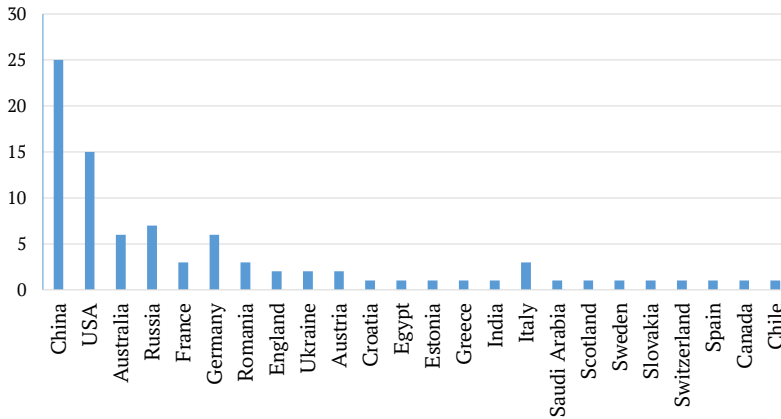


Fig. 1. Number of publications in different countries containing the phrase “Entrepreneurial potential of students using artificial intelligence” in the title, abstract or keywords in the Scopus, Web of Science databases from 2019 to 2023

Source: elaborated by the authors based on the data of Scopus and Web of Science databases.

Within the Baltic region, Estonia was the sole representative in this distribution of scientific activity pertaining to students’ entrepreneurial potential, achieving a result of “1”.

The results shown in Figure 2 confirm the interest of scientists from various fields of science in the topic of “entrepreneurial potential of students using artificial intelligence”. The majority of the publications are related to business, management, accounting, and computer science. However, 10% of the total number of publications come from the field of social sciences.

The analysis of publications related to the issues of student entrepreneurial potential using AI revealed the fact that most often researchers cite the work by Obschonka and Audretsch “Artificial Intelligence and Big Data in Entrepreneurship: a New Era Has Begun”, published in the scientific journal *Small Business Economics* in 2020 [8]. The main goal of the special issue of this journal titled “Rethinking the Entrepreneurial (Research) Process: Opportunities and Challenges of Big Data and AI for Entrepreneurship Research” was to provide a multidisciplinary platform for conceptual and empirical studies dedicated to the opportunities and challenges of AI in the field of entrepreneurship research. Seven papers showing examples of case studies in this area were presented. The papers illustrate the usefulness of innovative thinking and methods, as well as the existing challenges and open questions that entrepreneurship researchers face when applying AI/Big Data to their field.

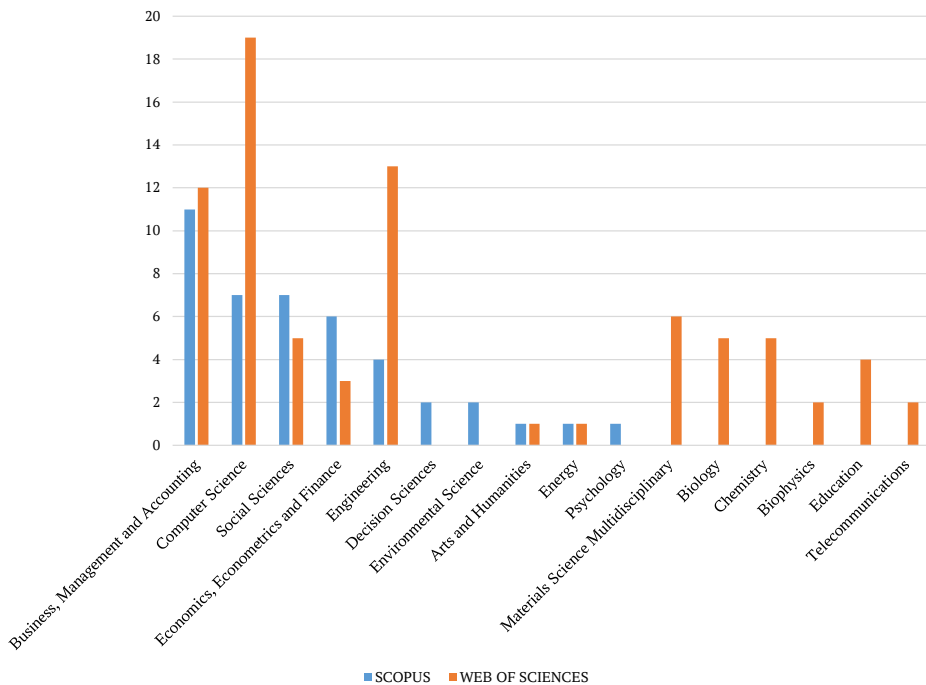


Fig. 2. Subject Areas in Scientific Publications (2019–2023) on Students' Entrepreneurial Potential Utilizing Artificial Intelligence, Indexed in Scopus and Web of Science

Source: elaborated by the authors based on the data of Scopus and Web of Science databases.

The articles by Coad and Srhoy [9, p. 541–565], Obschonka et al. [10, p. 386–396; 11, p. 1–19; 12, p. 13–23; 13; 14, p. 903–927] present an empirical analysis using AI and other big data methods to test phenomena and mechanisms that have already been studied by traditional methods in previous entrepreneurship studies. The analysis conducted by Coad and Srhoy is oriented towards forecasting the parameters associated with high-growth companies. Employing the Big Data methodology, they identify authentic predictive variables from a considerably extensive pool of potential candidate predictors. In the article authored by Obschonka et al., the primary focus lies in the domain of entrepreneurship within various regions. Their objective revolves around gauging and validating disparities in entrepreneurial personality across different geographical areas. This endeavour is accomplished by harnessing vast individual-level datasets, encompassing self-reported data from several million personality assessments, and applying advanced AI techniques for analysis.

The articles by Liebrechts et al. [15, p. 589–605], Zhang and Van Burgh [16, p. 607–626], the analytical report on AI by Zhang, Maslej, Brynjolfsson, Etchemendy et al. [17] present concept papers that develop theoretical thinking and knowledge about methods and data sources in the context of AI and

entrepreneurship (economics). The empirical papers by Kaminski and Hopp [18, p. 627–649], Prüfer and Prüfer [19, p. 651–672], von Block et al. [20, p. 239–250] show the use of AI/Big Data methods to explore relatively new research questions. Kaminski and Hopp analyse crowdfunding campaign data (text, speech and video) using a neural network and language processing. Their analysis provides interesting findings about successful crowdfunding campaigns. Prüfer and Prüfer in their paper examine the dynamics of demand for entrepreneurial skills through the analysis of 7.7 million data collected from job vacancies. They show which entrepreneurial skills are especially important for a particular profession, and also take into account digital skills. The study by von Block et al. presents an analysis of regional entrepreneurial activity by examining the potential relationship between media and entrepreneurship from a theoretical and empirical perspective.

Various academic studies have explored the efficacy of student entrepreneurship in different nations. For instance, a 2017 study conducted by the Global Entrepreneurship Monitor (GEM)¹ underscored the substantial economic impact of student entrepreneurship in the United States. In 2016, businesses operated by students in the U.S. were responsible for the creation of a remarkable 755,000 job opportunities and made a noteworthy contribution of \$5.2 billion to the national economy. Similarly, a 2019 research endeavour carried out in the United Kingdom illuminated the potential of student entrepreneurship in bolstering the Gross Domestic Product (GDP) and fostering job creation. Student-run businesses in the UK were found to generate approximately 5,000 job positions annually and make a significant contribution exceeding £100 million to the national economy. Furthermore, a 2020 study conducted in Germany demonstrated that student-led enterprises in the country played a pivotal role in generating more than 5,000 job opportunities each year, contributing approximately 250 million euros to the national economy.

These examples vividly demonstrate that student entrepreneurship can wield a significant economic impact, manifesting in the creation of new employment opportunities and substantial contributions to a country's economy. However, it is crucial to acknowledge that the effectiveness of student entrepreneurship can vary markedly based on the country, cultural context, and a multitude of other influencing factors.

In the Baltic countries, the efficacy of student entrepreneurship has been a subject of rigorous study. Various research initiatives, such as those conducted by the Estonian Centre for Entrepreneurship Research and universities in Lithuania and Latvia, have shed light on the topic. For instance, in 2018, student-run enterprises in Estonia created over 100 jobs and contributed approximately 700 thousand euros to the national economy.

¹ Global Report 2017/18, 2018, *Global Entrepreneurship Monitor (GEM)*, URL: <https://www.gemconsortium.org/report/gem-2017-2018-global-report> (accessed 08.06.2023).

Similarly, research by the University of Lithuania in 2019 revealed that student-led businesses in Lithuania generated approximately 300 jobs annually and made a notable contribution of over 1 million euros to the country's economy. A study conducted by the University of Latvia during the same year indicated that student-run businesses in Latvia were instrumental in creating more than 50 job positions and contributed around 100 thousand euros to the country's economy.

One of the articles by a team of well-known Latvian economists contains data on the effectiveness of student entrepreneurship in Latvia [21]. It presents an analysis of the theme and factors contributing to the transformation of traditional universities into entrepreneurial universities in Latvia. The Latvian study narrows its focus to two key aspects: firstly, the universities' capacity to grant students access to business incubators, and secondly, the extent to which universities are receptive to collaborating with external partners such as businesses, local municipalities, and government entities. The analysis of Latvian university-affiliated business incubators offering services to students, coupled with the examination of cooperative efforts between higher education institutions, local authorities, and entrepreneurs, reveals a discernible and favourable upward trajectory.

Noteworthy is the study of the Latvian-Portuguese research team "Comparative Analysis of Students' Entrepreneurial Intentions in Latvia and Other CEE Countries" [22, p. 75–88]. This work is aimed at analysing the entrepreneurial behaviour and motivation of Latvian students as compared to other countries of Central and Eastern Europe. The study examines the influence of micro- and macro-level factors, as well as those of entrepreneurial education. The results revealed several statistically significant differences between students from Latvia and other countries. Latvian authors emphasise that the desire for independence is an important motivating factor, and professional education, business training and business experience are factors contributing to success in entrepreneurship. Latvian students, in contrast to their peers in other Central and Eastern European countries, perceive the regulatory framework for conducting business as a significant hindrance to entrepreneurial pursuits. Recognizing the factors that impact entrepreneurial learning, as well as the micro and macro factors influencing the career choices and intentions of young individuals, holds the potential to inform public policy enhancements within the domains of both general and vocational education. Such improvements aim to bolster the effectiveness of entrepreneurship education and promote entrepreneurship as an attractive career path.

Theory and research methods

In this study, a combination of general and specialized research methods was employed, encompassing the following approaches: historical method was utilized to examine the historical evolution of knowledge surrounding the problem

under investigation; analytical-synthetic and comparative methods were applied to discern patterns and trends within the domain of media criticism by analyzing the empirical data; inductive method facilitated the generalization and systematic organization of the study's findings. A typological analysis was used to categorize and differentiate various facets within the media criticism studies. Content Analysis was employed to delve into the specifics of the documents studied. This combination of methods allowed for a comprehensive analysis of the textual content.

Entrepreneurial potential includes several elements that determine the ability of an individual to create and develop an entrepreneurial business. Researchers have identified the fundamental components within the concept of entrepreneurial potential, which encompass:

Personal Qualities. This encompasses attributes such as creativity, motivation, persistence, determination, risk tolerance, and others.

Entrepreneurial Knowledge and Skills. Proficiency in the knowledge and skills requisite for launching and managing an entrepreneurial enterprise, encompassing managerial expertise, market acumen, financial planning, and more.

Entrepreneurial Experience. Practical involvement in real-world scenarios and the decisions made therein.

Social Environment. This pertains to the milieu in which an entrepreneur grows and resides, including family and professional support systems, as well as access to resources and networks, all of which can bolster entrepreneurial potential.

Entrepreneurial Environment. The broader economic and political context within which entrepreneurial ventures operate, encompassing market viability, access to capital, and infrastructure, all of which can influence the attractiveness of entrepreneurship.

Each of these facets exerts a substantial impact on entrepreneurial potential and the eventual success of entrepreneurial enterprises.

In recent decades, the concept of 'mobility' has emerged as a significant element within the framework of entrepreneurial potential, particularly in the contemporary world marked by the Internet, social networks, and economic globalization. Entrepreneurs now have the capability to operate remotely, traverse the globe, and explore new markets, products, and services using the internet and information technologies. This universal mobility allows entrepreneurs to remain in a perpetual state of flux, swiftly adapting to evolving circumstances. Entrepreneurs who have gained experience in diverse cultures and geographic regions often possess a broader perspective and a deeper understanding of cross-cultural distinctions, which proves invaluable for business expansion. Hence, universal mobility can and should be recognized as a pivotal component of entrepreneurial potential in today's dynamic world characterized by rapid changes in technologies, markets, and business paradigms.

One of the first scholars who drew attention to the importance of mobility in the structure of entrepreneurial potential was McClelland [23]. For an entre-

preneur, a new understanding and measurement of mobility becomes the most significant condition for success [24, p. 236–245]. In 2020, the analysis of the entrepreneurial potential of Latvian students with the inclusion of mobility in its structure was presented in the article by Latvian scientists [25, p. 70–80].

The participation of Baltic students in entrepreneurship has both positive and negative aspects for their professional activities and the societies in general. The following positive aspects may be distinguished:

Economic Development: student start-ups have the potential to create new employment opportunities and contribute to increased economic development.

Skill Enhancement: participation in student entrepreneurship cultivates valuable skills like leadership, effective communication, and adept time and resource management.

Innovation: students engaged in entrepreneurship often generate and implement innovative ideas, fostering progress and innovation.

Boosted self-esteem: success in student entrepreneurship can bolster participants' self-esteem and confidence in their capabilities.

However, it's essential to acknowledge the potential drawbacks:

Risk of failure: student start-ups, like any entrepreneurial venture, carry the risk of failure, potentially resulting in the loss of participants' time and resources.

Distraction from studies: involvement in student entrepreneurship may divert students' attention from their studies, leading to lower academic performance and graduation delays.

Lack of support: some educational institutions and faculty members may not fully endorse student entrepreneurship due to concerns about its impact on academic standards or study distraction. Nevertheless, a growing number of universities and colleges recognize the value of entrepreneurship in education, offering resources and infrastructure to support student entrepreneurial endeavours.

Discussion and study findings

AI as a means of enhancing the entrepreneurial potential of students (international research experience). Technical tools with elements of artificial intelligence significantly increase production efficiency, freeing workers from routine and heavy operations. Figure 3 shows how many workers were needed between 1990 and 2020 in large companies to get an income of 1 million US dollars. In 2020, after the advent of AI, companies only needed 2 employees to generate \$1 million in revenue.

The use of technical tools with AI elements can significantly increase the opportunities and entrepreneurial potential of students. One of the most notable opportunities is the increase in the efficiency of business processes. With the help of AI, one can automate many routine tasks, such as data analysis, document processing, and more. This allows students to focus on more important tasks such as developing strategies and solving complex problems.

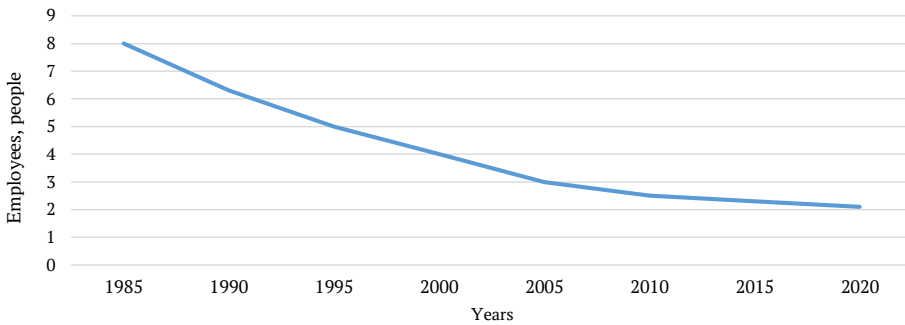


Fig. 3. Employees needed at S&P 500 companies to generate \$1 million in revenue in 1990–2020

Source: Workers needed at S&P 500 companies to generate \$1 million in revenue, courtesy of Semafor, 2023, *Reddit*, URL: https://www.reddit.com/r/neoliberal/comments/10qfpvg/workers_needed_at_sp_500_companies_to_generate_1/ (accessed 08.06.2023).

Another possibility is to increase the prediction accuracy. AI can analyse vast amounts of data and identify trends and patterns, allowing students to make better decisions and make more accurate predictions. Using AI-powered machines can help students find new business opportunities and create innovative products. Machine learning algorithms play a crucial role in identifying emerging trends and unmet market needs, thereby empowering students to develop products that align with current demand. The use of robotics and AI systems can greatly accelerate the development and production of products, which allows one to start business more quickly and make a profit. As a result, the use of technical tools with AI elements can increase the efficiency, accuracy, innovativeness and speed of business processes, which greatly enhances the entrepreneurial potential of students.

AI can be used to automate risk assessment, market analysis, and business idea potential. This will allow students to receive more accurate and objective information about the market and the risks associated with starting a business. AI can also be used to personalise entrepreneurial learning. Machine learning algorithms can analyse student learning and preference data and create customised learning plans that are tailored to each student. Finally, the use of robotics and AI systems can help students prototype and test their products, allowing them to develop and launch their business faster and at a lower cost.

In the virtual environment, there are already quite a lot of examples of projects using AI in the field of entrepreneurial education and information about their developers. Among them is ELSA (English Language Speech Assistant) — an application for learning English using speech recognition and machine learning technologies.¹ Carnegie Mellon University employs AI technology to assess stu-

¹ Meet ELSA, 2023, *ELSA*, URL: <https://elsaspeak.com/en/> (accessed 08.06.2023).

dents' business plans. Ametros Learning utilizes AI to tailor student learning experiences in the field of business. Stratifyd offers a data analysis platform that harnesses AI for automated data categorization and visualization through graphs and charts. Riid is a platform that harnesses AI to craft customized educational materials and assessments for students studying business and economics. Knewton is another platform leveraging AI to dynamically personalize student learning in real-time. Cognii uses AI to develop interactive courses and automatically assess assignments and tests. Coursera, an online learning platform, employs AI to personalize the learning journey and automate the grading of assignments. Duolingo, a language-learning platform, employs AI to customize learning experiences and grade assignments. Udacity, an online course platform, uses AI to generate personalized learning materials and automate assignment grading.

Numerous startups and companies have been founded by students and young entrepreneurs, leveraging AI technologies for innovative solutions. Among the most notable success stories in this domain are:

Grammarly: An online service that employs AI technology to check and improve grammar and spelling in texts.

UiPath: A company specializing in the development of software for automating business processes through robotic process automation (RPA).

DataRobot: A platform that harnesses machine learning and AI to analyze data and construct predictive models for business applications.

Zest AI: A company focused on automating lending processes using AI-driven tools.

DeepMind: A pioneering company in AI and machine learning, dedicated to developing algorithms that address complex challenges, particularly in healthcare and scientific fields.

These examples represent just a fraction of the successful startups and companies that employ AI technologies. Every year, new and innovative projects continue to emerge worldwide, with students actively contributing to the creation of fresh ideas and the development of groundbreaking technologies. Thus, technical tools with AI elements can be useful for entrepreneurship education, especially in the field of creating virtual business simulations, automating risk assessment processes and personalising learning.

One of the leaders of Microsoft, Jean-Philippe Courtois, in his review "How AI is transforming education and skills development" describes in sufficient detail the possibilities of new digital technologies in education.¹ Australian professor Kellermann demonstrated a new digital assistant "Beacon", recently launched by Staffordshire University in England. Its purpose is to alleviate the stress and anxiety that many students experience in their first year at university. Beacon is powered by the Microsoft Azure cloud computing platform and capitalises on the

¹ Courtois J.-P., 2019, How AI is transforming education and skills development, *Microsoft*, URL: <https://blogs.microsoft.com/blog/2019/10/07/how-ai-is-transforming-education-and-skills-development/> (accessed 08.06.2023).

fact that students at Staffordshire University, a leader in introducing digital technologies, are more likely to turn to their mobile phone for information and help than to university faculty and staff.¹

In addition to being used in traditional schools, AI can also help people re-train and acquire new skills. This is made possible by Microsoft's partnership with Ashoka, a global organisation that supports social entrepreneurs who seek innovative solutions to the most pressing social, cultural and environmental challenges. The new partnership is based on the Microsoft-Ashoka Accelerator programme, designed to develop an ecosystem of start-ups that use the power of cloud computing and artificial intelligence to solve social and environmental problems. Ashoka pays special attention to programmes for youth, recognising the benefits of helping a new generation of young entrepreneurs gain the confidence, skills and knowledge they need to apply advanced technologies in innovative social projects. Through its Youth Ventures Ashoka programme, Ashoka partners with over 500,000 young people around the world.

Achieved investment in global AI start-ups amounted in total to \$93.5 billion in 2021, more than double the investment of 2020.² The largest companies and countries in the world are competing for leadership in AI. Sundar Pichai, CEO of Google, said in 2016: "In the next 10 years, we will shift to a world that is AI-first." For example, across all US sectors for which data is available (excluding agriculture, forestry, fishing, and hunting), AI-related job postings increased on average from 1.7% in 2021 to 1.9% in 2022. Employers in the United States are increasingly looking for university graduates with AI-related skills.

There are numerous studies on the creation of artificial intelligence, a lot of research on human biological processes that conditionally control our natural intelligence. But how they interact with each other and what the specifics, price, losses, benefits from this interaction are, is much less clear [26]. It is estimated that half of today's students will work in professions that do not yet exist. A country and society that can develop better AI systems and use the existing ones will have a great development advantage over those countries that have not developed and implemented AI systems.³ The lag in the development of AI will mean a significant lag in the entire economy of the country.⁴

Artificial intelligence stands as one of the pivotal factors and essential tools in bolstering the entrepreneurial potential of students across the Baltic countries.

¹ Staffordshire University provides students with a digital assistant, 2019, *Microsoft*, URL: <https://news.microsoft.com/ru-ru/staffordshire-university-digital-assistant/> (accessed 08.06.2023).

² Artificial intelligence (world market), 2022, *TADVISER*, URL: [https://www.tadviser.ru/index.php/Статья:Искусственный_интеллект_\(мировой_рынок\)](https://www.tadviser.ru/index.php/Статья:Искусственный_интеллект_(мировой_рынок)) (accessed 08.06.2023).

³ Developing artificial intelligence solutions, 2020, *Latvian Government*. URL: http://tap.mk.gov.lv/doc/2020_02/IZ_MI%5b1%5d.2.docx (accessed 25.06.2023).

⁴ Artificial intelligence is the future of growth, 2023, *Accenture*. URL: <https://www.accenture.com/us-en/insight-artificial-intelligence-future-growth> (accessed 26.06.2023).

AI in secondary and vocational education is an important area of development in many countries, including the Baltic countries. In these countries, there are several initiative projects aimed at the use of artificial intelligence in education. In Estonia, for example, the Estonian Education Nation (Estonian National Education Initiative) launched the Education Nation AI project (National Educational AI Initiative), which aims at using artificial intelligence to improve education. The initiative aims to develop a comprehensive AI education programme for students of all ages, from elementary school to higher education. In addition, this project is aimed at developing expertise in the field of AI and its application in education. For this, special research groups have been created to study and analyse existing technologies, develop new methods for using artificial intelligence in education. In general, the Education Nation AI project is an important step towards the development of the use of artificial intelligence in education, and can become an example for other countries that also seek to improve the quality of their education with the help of modern technologies.¹

In Lithuania, there is an initiative project AI-Schools,² which aims to increase the level of knowledge of teachers and students in the field of AI. The project provides learning tools and materials, including online courses and guidelines. As part of the AI-Schools Project, students can study various aspects of AI, such as machine learning, natural language processing, computer vision, etc. They can also participate in competitions and projects related to the use of AI in various fields, such as medicine, transport, finance, etc. The goal of the AI-Schools project is to make AI learning accessible to all students, regardless of their age and level of knowledge in this area. It also aims to develop students' critical thinking and problem-solving abilities and help them recognise the potential and limitations of artificial intelligence.

In Latvia, the AI-Schools Project is implemented jointly with Microsoft, which provides technical support and cloud resources for training artificial intelligence. There are also other programmes in Latvia aimed at developing information technology skills among pupils and students. One of these programmes is the national initiative Digilab, which has been operating since 2018 and is aimed at improving the digital literacy of schoolchildren and students aged 7 to 25 years.³ There are other educational centres in Latvia that provide courses on various aspects of working with information technology. For example, the company Riga

¹ Estonia AI Strategy Report, 2023, *European Comision*, URL: https://ai-watch.ec.europa.eu/countries/estonia/estonia-ai-strategy-report_en (accessed 08.06.2023).

² European IT Certification Institute, 2023, *AI-Schools*, URL: https://eitca.org/eitca-ai-artificial-intelligence-academy/?gad=1&gclid=EAIaIQobChMI2YKc6oSM_wIVjQo-GAB3P1QtIEAAYASAAEgLSsfD_BwE (accessed 08.06.2023).

³ Digital transformation — support for SMEs development: Latvia shares examples with other countries, 2021, *Ministry Environmental Protection and Regional Development Republic of Latvia*, URL: https://www.varam.gov.lv/en/article/digital-transformation-support-smes-development-latvia-shares-examples-other-countries?utm_source=https%3A%2F%2Fwww.google.lv%2F (accessed 08.06.2023).

TechGirls organises courses and events for girls and women who are interested in technology and programming. Many universities and colleges in Latvia offer courses and programmes in information technology, including programming, databases, website development and other topics. These programmes are designed for students of various specialties and levels of training, including Bachelor's, Master's and Doctoral study programmes.

Some Latvian universities offer programmes that use artificial intelligence directly to develop the entrepreneurial potential of students. Riga Technical University implements master's programmes such as Computer Vision and Artificial Intelligence and Artificial Intelligence and Machine Learning, which are designed to train specialists in the field of artificial intelligence and its application in various industries, including entrepreneurship. Latvia University of Life Sciences and Technology offers master's programmes Artificial Intelligence and Machine Learning and Data Mining, which are designed to educate students in the field of artificial intelligence and its application in various fields, including entrepreneurship. The University of Latvia has a Department of Computer Science and Mathematics offering a master's programme Computer Science, which includes the study of artificial intelligence and its application in various industries, including entrepreneurship.

The first virtual assistant Una will celebrate this year its 5th anniversary of work in the Register of Enterprises (RE) of Latvia. Una has mastered many areas of RE activity and has learned to answer thousands of different questions about the creation, management and liquidation of companies in Latvian and English. The situation is more complicated in the private sector, where Latvia lags behind its neighbours Estonia and Finland, as well as the Scandinavian countries in the implementation and use of virtual assistants. Active and skilled youth, living in an environment of economic innovation, are becoming more demanding of product sellers and service providers, and will gradually force existing and new businesses to overcome the barrier of distrust, skepticism and fear, starting modern communication with their customers through virtual employees.¹

AI has emerged as one of the most promising and disruptive general-purpose technologies (GPT) with the potential to change every aspect of our lives and drive economic growth. The most popular 2022 Google search topics in the Baltics were 'marketing', 'artificial intelligence', 'computer programming', 'Internet bot', 'machine learning'.²

According to the data from the OECD Observatory of Artificial Intelligence Policy spanning the years 2000 to 2022, it is evident that AI research and sub-

¹ Kaspars Kauliņš, 2023. Latvia as a leader: artificial intelligence technologies in the public sector. *Delfi*, URL: <https://www.delfi.lv/news/versijas/kaspars-kaulins-latvija-lidera-loma-maksimala-intelektu-technologieju-publiskaja-sektora.d?id=55484212> (accessed 08.06.2023).

² Top ten search topics by country over time, 2023, *OECD.AI*, URL: <https://oecd.ai/en/data?selectedArea=ai-search-trends&selectedVisualization=evolution-of-top-google-search-by-country-and-subtopic> (accessed 08.06.2023).

sequent publications are predominantly conducted by certain institutions in the Baltic countries. In Latvia, noteworthy contributors include Riga Technical University, the University of Latvia, and Riga College of Business Administration. In Estonia, key players in AI research are Tallinn University of Technology, the University of Tartu, and Tallinn University. Lithuania boasts active AI research conducted primarily by Vilnius Gediminas Technical University, Kaunas University of Technology, and Vilnius University (Fig. 4).

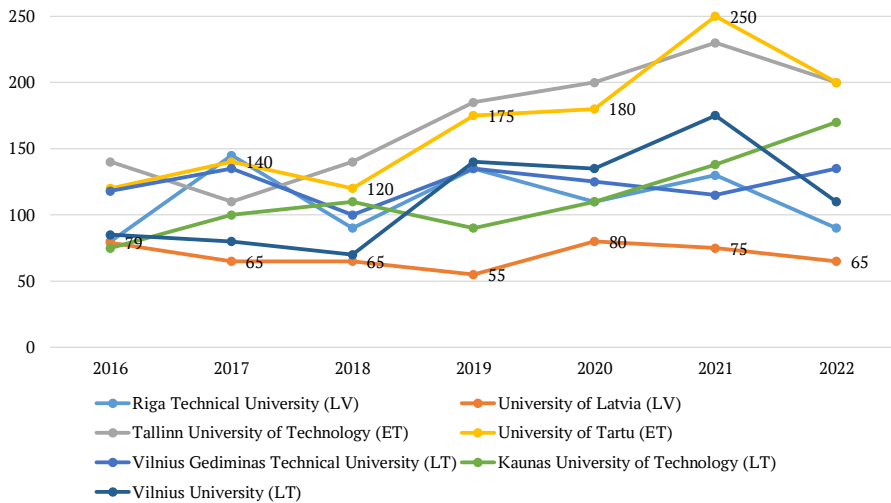


Fig. 4. Research on AI in higher education institutions in the Baltic States, number of publications

Source: elaborated by the authors based on the data of ORCD.AI.¹

Regarding the concentration of AI talent, which refers to the percentage of LinkedIn members possessing AI skills or being engaged in AI-related activities, it is noteworthy that in 2022, this percentage closely aligns between Lithuania and Estonia, both standing at 24%. In Latvia, while still significant, this percentage slightly lags behind at 18% (Fig. 5).

The data of Studyportals help identify national and international AI learning trends and assess educational resources and needs against national goals. Comparing AI-enabled education data across countries provides valuable information to inform education and labour market strategies and policies. In 2022, 37% of AI courses were offered in the US, 24% in the UK, and 18% in the 27 countries of the European Union including in the Baltic States — 0.1% – 0.3%.²

¹ AI research publication time series by institution, 2023, *OECD.AI*, URL: <https://oecd.ai/en/data?selectedArea=ai-research&selectedVisualization=ai-publication-time-series-by-institution>. (accessed 08.06.2023).

² AI courses by country in English, in time, 2023, *OECD.AI*, URL: <https://oecd.ai/en/data?selectedArea=ai-education&selectedVisualization=ai-courses-by-country-in-time> (accessed 08.06.2023).

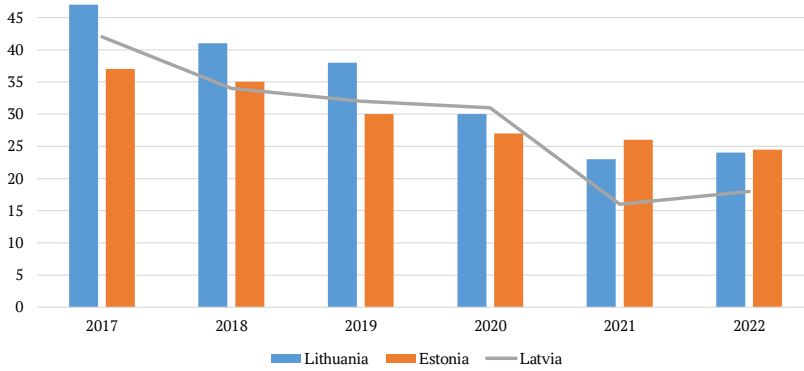


Fig. 5. Concentration of AI talent across the Baltics, % of LinkedIn members with AI skills or doing AI

Source: elaborated by the authors based on the data of OECD.AI.¹

Analyzing AI courses by discipline, it becomes evident that the majority of these courses are conducted within the subject area of Computer Science and Information Technology (100%). Additionally, AI courses are offered to a lesser extent in disciplines such as Business and Management (19%), Natural Sciences and Mathematics (18%), Engineering and Technology (11%), and Social Sciences (4%). When it comes to AI courses available in English for students within the EU, specifically in the Baltic countries, the percentage of these courses falls within the range of 0.6% to 1.54% as of the year 2022 (Fig. 6).

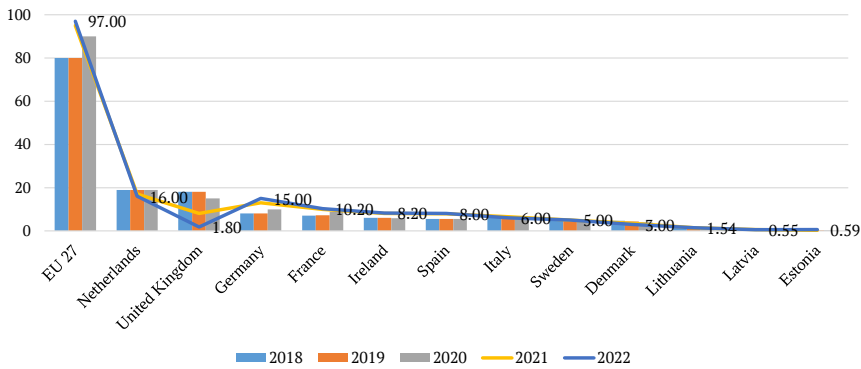


Fig. 6. AI courses in English in EU countries, by target audience, % of the total number of AI courses

Source: elaborated by the authors based on the data of OECD.AI.²

¹ AI talent concentration by country, 2023, *OECD.AI*, URL: <https://oecd.ai/en/data?selectedArea=ai-jobs-and-skills&selectedVisualization=ai-talent-concentration-by-country> (accessed 08.06.2023).

² AI courses in English by target population, *OECD.AI*, URL: <https://oecd.ai/en/data?selectedArea=ai-education&selectedVisualization=ai-courses-by-target-population> (accessed 08.06.2023).

For net migration flows of AI-skilled LinkedIn members (LinkedIn is an international social network for finding jobs and employees, exchanging experience and establishing business ties) from 2019 to 2022, see Figure 7.

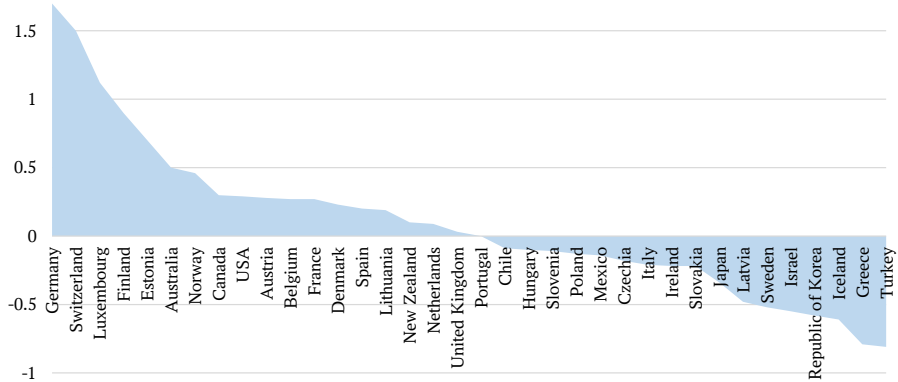


Fig. 7. Net migration of LinkedIn members between countries with AI skills, 2019–2022, % per 10,000 LinkedIn members

Source: elaborated by the authors based on the data of OECD.AI.¹

The dynamics depicted by the blue background of the columns illustrate the fluctuations in the number of LinkedIn members with AI skills across different countries. Estonia and Lithuania show a positive trend with an increase of 0.76 % and 0.18 %, respectively. Conversely, Latvia experiences a decrease, with a loss of 0.27 % of such participants.

Conclusions

The study conducted shows that the use of machines/algorithms with AI elements introduces significant changes in the economy, social sphere, science and education. An increasing number of universities and colleges in the EU and other countries are realising the importance of entrepreneurship in education and supporting students in their start-ups by providing resources and infrastructure for the development of entrepreneurship. The findings of international studies indicate an increasing interest in the topic of student entrepreneurship and the use of AI to nurture this potential. This trend is not unique to global research but is also evident in Latvia, Lithuania, and Estonia. These countries are witnessing significant advancements in employing AI to boost the entrepreneurial abilities of students. This development is crucial, especially considering the significant changes occurring in higher education. Universities now possess ample resources and opportunities to enhance the entrepreneurial potential of students who have a strong interest in entrepreneurship.

¹ Between-contry AI skills migration, *OECD.AI*, URL: <https://oecd.ai/en/data?selectedArea=ai-jobs-and-skills> (accessed 08.06.2023).

AI technologies have become one of the most promising and disruptive general-purpose technologies (GPT) with the potential to change many aspects of modern society and stimulate its economic development. The study's findings affirm that various initiatives are actively underway in Latvia, Lithuania, and Estonia to integrate AI into both general and vocational education across different educational levels. These initiatives are instrumental in bolstering the entrepreneurial potential of students in the Baltic countries. For example, Latvian universities offer Master's programs such as Artificial Intelligence and Machine Learning and Machine Learning and Data Mining, with similar programmes available in other Baltic nations.

Interestingly, a glimpse into the 2022 Google search trends in the Baltics reveals that topics like 'marketing', 'business and management', 'artificial intelligence', 'computer programming', 'Internet bots', and 'machine learning' stirred considerable interest. Conversely, the English language was of lesser interest, likely because the majority of active youth already possess proficiency in it. The participation of students from the Baltic States in entrepreneurship has positive (development of professional business skills; innovative development of activity; growth of self-esteem; creation of new jobs, etc.) and negative (risks of failure and loss of time and resources; distraction from studies; lack of external support, etc.) aspects for their professional activity and the development of societies in general. At the same time, the results of the work showed that in the Baltic countries, the scientific research in the field of entrepreneurial potential of students is not only differentiated, but also underdeveloped: only Estonia still corresponds to the pan-European level of research activity in this area. The activity of student entrepreneurship in the Baltic countries, in practical terms, is also varied. The most successful activity of student enterprises using AI is represented in Lithuania, where they create about 300 new jobs annually and already contribute more than 1 million euros to the country's economy. In Estonia (2018) and Latvia (2019), respectively, 100 jobs and 700 thousand euros; 50 jobs and 100 thousand euros.

The analysis of the international experience of studying the entrepreneurial potential of students in the context of an increasing role of AI in the economy and other areas of life shows that student entrepreneurship in the USA and certain EU countries using AI has a higher economic efficiency: it creates tens and hundreds of thousands of jobs and invests millions and billions of funds into the economy. Therefore, assessing student entrepreneurship and its potential in the Baltic States, it can be argued that it has great opportunities for growth and development, taking into account the experience and various economic (resource) and non-economic (socio-cultural) factors.

The activity of participants in LinkedIn, an international social network for finding jobs and employees, exchanging experience and establishing business connections with those possessing AI skills or doing AI, also varies in the Baltic countries. In Lithuania and Estonia, the number of such participants in 2022 was almost the same and amounted to 24%, in Latvia it was slightly lower and amounted to 18%.

Universities in the Baltic States have their own track record of boosting student entrepreneurial potential using advances in AI. Summarising the results obtained to identify further directions in the study of the entrepreneurial potential of students in Latvia, Lithuania and Estonia, the following can be stated. The expansion of this potential depends on existing and emerging new research teams in universities working on AI issues, and its containment depends on insufficient funding from European and national programmes and projects for researching AI. A positive decision of all stakeholders (businesses, universities, the state) on increasing funding for research teams studying AI issues would contribute to the expansion and growth of universities in the Baltic countries, which significantly increase the entrepreneurial potential of their students in scientific and practical aspects.

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THE SWEDISH INSTITUTE'S SCHOLARSHIP POLICY AS A SOFT POWER INSTRUMENT

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This paper examines how soft power, nation branding and academic cooperation came together in the scholarship policy pursued by the Swedish Institute (SI) from 1995 to 2023. An investigation of the organisation's materials, scholarship statistics and feedback interviews with SI programme alumni suggests that the implementation of the scholarship policy was erratic during the study period. A comprehensive analysis of the Institute's efforts was carried out to describe the relationship between nation branding, soft power and education. The focus was on the principles and practices behind promoting Sweden's image in an international educational setting, the evolution of the Institute's scholarship policy and the effect of soft power and nation branding on a grantee's academic track. Interactions between the SI and grantees during and after their stay in the country and scholarship distribution were examined to understand the dynamics behind the scholarship policy. The study draws on the concepts of nation branding and soft power to explore the corresponding elements in certain regional and national cases during the study period. It is concluded that the Institute is an effective tool of Sweden's soft power, with its scholarship policy promoting the Government's official position on global social, economic and political development. SI grantees complete their chosen programmes and get acquainted with the country's social and political institutions. As of today, the educational component seems to be subordinate to nation branding and soft power.

Keywords:

nation branding, soft power, Swedish Institute (SI), international academic mobility, Sweden, foreign policy, scholarship policy

Introduction

The globalization and internationalization of higher education in the late 20th and early 21st centuries are closely tied to a country's image promotion through public diplomacy. In this context, donor countries develop support mechanisms for incoming foreign students or interns, providing them with insights into the social, cultural, and political landscape of the host country. Until 2022, the schol-

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arship policies implemented by the EU and national foundations and agencies in Europe and America towards Russia generated mixed reactions. There has been a contentious debate surrounding the role of scholarship support in aligning the grantee with the foreign policy and soft power of the donor country. Following the Ukrainian crisis and subsequent tensions between Russia and Western nations, critical narratives began to emerge regarding Nordic foundations and their activities in Russia's North-Western Federal District. For example, Norwegian programmes were found to be closely intertwined with the soft power strategies of the country, and the organizations hosting these programmes experienced a significant surge in allegations of political and ideological influence.¹ However, it's worth noting that Norway's efforts to promote its national brand through education and academic mobility are comparatively less robust when compared to Sweden's initiatives.

This paper delves into an analysis of the Swedish Institute's (SI) activities, with a particular focus on its grant and scholarship policy, as well as the institute's role in the realm of soft power and nation branding between 1995 and 2023. Debates surrounding the allocation of resources to these facets of SI's work have remained a subject of considerable debate both within Sweden and among foreign stakeholders. According to the official stance of the Swedish Institute, all these pivotal initiatives align with its overarching mission. This mission is centred on fostering sustainable development and promoting international cooperation, with a specific emphasis on the Baltic Sea region.² The scholarship and grant policy can be viewed as integral components of both nation branding and soft power, aimed at strengthening Sweden's global influence. The Swedish Institute (SI) has specifically identified Russian students, doctoral candidates, researchers, and university teachers as target groups for its scholarship and grant programmes. Despite the fact that the SI among the other scholarship agencies suspended Russian participation in their programmes in 2022, an exploration of practices adopted in foreign nations can provide valuable insights for updating the nation's branding strategy and exploring new approaches in Russia.

To assess the relationship between soft power, nation branding, and education, it is essential to scrutinize the fundamental aspects of SI's activities. This examination begins by studying the positioning principles employed by Sweden as a country offering educational services. Subsequently, an analysis of the SI scholarship policy strategy and practices is crucial. Moreover, it is essential to ascertain the balance between the educational trajectory pursued by the grantee and their engagement with Swedish soft power and nation branding.

The rationale for focusing on these specific aspects is grounded in the close interconnection between the Swedish Institute's grant and scholarship policies

¹ What is behind the Western interest towards indigenous peoples of the Russian North? 2017, *State commission on development issues of the Arctic*, URL: <https://arctic.gov.ru/2017/10/30/> (accessed 10.05.2023).

² Our mission, *Swedish Institute*, URL: <https://si.se/en/about-si/our-mission/> (accessed 28.08.2022).

and the broader context of Swedish nation branding on the global stage.¹ Indeed, this connection significantly influences the selection of target groups for scholarship support and shapes the manner in which the Swedish Institute interacts with its program alumni. The Institute actively positions its grantees and alumni as ‘ambassadors’ representing Sweden and the universities where they pursued their education or internships.² This is undeniably associated with the cultivation of a favourable image for the country when an alum returns to their homeland after completing their education.

Contemporary state of the research

The examination of education as a soft power instrument has been a subject of increasing interest in a burgeoning body of literature over the past few decades. This interest originated in the late 1980s when Joseph Nye introduced the concept of ‘soft power’ [1, p. 153–171; 2, p. 223–232]. American scholars have often characterized the Scandinavian experience, particularly that of countries with limited ‘hard power’, as distinct from states combining both ‘hard’ and ‘soft’ power elements (Michael Brian, Christopher Hartwell, Wei Shanjing) [3, p. 64–75]. Another perspective within American academia regards soft power as a means of mitigating hostility towards the donor country in a specific region (William Rugh) [4]. It is important to note that Joseph Nye and his followers have criticized interpretations of his ideas as situations “without losing counterparts” [5]. Nevertheless, this perspective on soft power is discernible in the national Arctic strategies of the Nordic countries, with Sweden being a notable example [6, p. 156–159; 7, p. 90–99; 7, p. 54–57; 9, p. 18–28; 10, p. 127–136; 11, p. 289–308; 12, p. 97–103].

Russian researchers, such as Anatoly Torkunov, have concentrated on factors influencing competitiveness in BRICS educational exports [13, p. 85–93]. Anatoly Smirnov and Irina Kokhtulina have analysed soft power as a global security determinant [14]. Yuri Sayamov has studied it as a catalyst for sustainable development [15, p. 17–29]. Natalya Antonova, Anastasia Sushchenko, and Natalya Popova have highlighted the role of soft power through education in the competition for global leadership [16, p. 31–58]. The majority of Russian scholars have focused more actively on the case of the USA than on other countries (for instance, Ekaterina Antyukhova, Olga Frolova, Maksim Braterskiy, Andrey Skirba) [17, p. 123–136; 18, p. 86–98; 19, p. 197–209; 20, p. 49–54; 21, p. 130–144]. Additionally, the case of the Confucius Institute and its efforts

¹ Vår historia — SI 75 år! 2020, *Swedish Institute*, URL: <https://si.se/om-si/var-historia/> (accessed 02.02.2023).

² Sweden Alumni Network, *Swedish Institute*, URL: <https://si.se/en/how-we-work/alumni/> (accessed 02.02.2023) ; SI alumni visit Sweden with high-level delegation from Georgia, 2020, *Swedish Institute*, URL: <https://si.se/en/si-alumni-visit-sweden-with-high-level-delegation-from-georgia/> (accessed 02.02.2023) ; SI alumni among 33 sustainability talents, 2018, *Swedish Institute*, URL: <https://si.se/en/si-alumni-among-33-sustainability-talents/> (accessed 02.02.2023).

to promote the Chinese language and culture has been extensively discussed in Russian political and international studies (Tatiana Andreeva, Kristina Kern) [22, p. 25]. This experience can provide valuable insights when studying Sweden's case, given the country's interest in the Swedish language as a tool for self-representation on the global stage.

Yulia Shestova and Inna Ryzhkova conducted a study on academic mobility within the context of soft power. They reached the conclusion that educational export significantly influences the image of the donor state, particularly in cultural and civilizational dimensions [23, p. 153]. Researchers from the Lomonosov Northern (Arctic) Federal University and the Arkhangelsk Research Centre of the Russian Academy of Sciences, including Pavel Zhuravlev, Oksana Zaretskaya, Andrey Podoplekin, Andrey Repnevskiy, and Aleksandr Tamitskiy, examined research and education cooperation as a key driver of development in the Arctic region. Their focus was on the research cooperation infrastructure across the Arctic Eight countries and beyond [24]. However, the Swedish case remains relatively underexplored in this context. Its distinctive feature lies in the integration of nation branding, development assistance, and soft power strategies with scholarship, grant, and educational policies. Swedish scholars, Andreas Åkerlund and Nickolas Glover, have delved into the Swedish Institute's scholarship policy, emphasizing its role in combining elements of public diplomacy and development assistance [25; 26; 27, p. 147–167; 28]. Thomas Lundén has examined the reinforcement of Swedish influence in the Baltic republics through public diplomacy and academic cooperation during the final years of the USSR [29, p. 336–347]. Nevertheless, certain aspects and outcomes of these policies have remained underexplored, including the specific mechanisms of interaction with scholarship recipients and alumni of SI scholarship programmes [30; 31, p. 79–80]. Despite sustained interest in this subject [32], the specific Swedish case has received limited attention outside of Sweden. Surveys conducted within the country often have affiliations with the Swedish Institute, as seen in the works of James Pammement. He has focused on the mainstreaming and promotion of the country's image and its role in international communication on the global stage [33; 34].

Methodology of the research

This research integrates fundamental concepts of 'soft power', 'public diplomacy', and 'nation branding'. The concept of 'soft power', introduced by Harvard University professor Joseph Nye in the late 1980s, defines it as "the ability to influence 'the other' through one's own example and its voluntary acceptance by the recipient, without resorting to force or other coercive measures" [35, p. X]. Complementing this is the concept of 'public diplomacy', which involves exerting an informational influence on foreign public opinion. In the context of this study, it is significant as foreign students develop a positive perception of the donating country during their study period. Perceptions of an enhanced lifestyle and quality of life in the donating country act as the foundation for the voluntary transfer of practices, encompassing political, cultural, economic, and social development models [36, p. 33]. Additionally, the concept of nation branding is em-

ployed to analyse how Sweden constructs its image through scholarship, grant, and educational policies, as well as informational initiatives. In this context, the country's image functions both as a means of soft power and as its product [37, p. 27–30; 37]. These terms and concepts serve as the framework to elucidate their interconnections within the key actions of the Swedish Institute.

The research commences chronologically with the establishment of the Visby programme in 1995. This programme has manifested itself as an instrument for academic cooperation, nation branding, and exerting soft power by Sweden towards the Baltic states, Russia, Belarus, and Ukraine. The concluding chronological point for this study is the year 2023. By this year, the initial consequences of excluding Russia from the SI programmes in 2022 due to the Swedish official position towards Ukraine would have manifested.

The materials selected for analysis fall into distinct categories. The first category comprises official publications by the Swedish Institute available on its website: news releases, reports, and programme announcements. These sources offer insights into the financial trends of SI programmes, the organization's approaches to target groups, and the objectives set by the organization in specific contexts.

The second category of materials is feedback from the SI alumni. After the first presentation of the *SI Alumni Newsletter* in 2002 this form of information policy turned into regular practice.¹ Later the alumni feedback was published on the SI website under the heading *SI Stories*.² These publications give an opportunity to assess the impact of a programme on a grantee and his or her professional development. In addition, the alumni feedback makes it possible to analyze his or her perception of Sweden, its values and the possible transfer of Swedish practices to the country of origin. This is a small-numbered category of publications since it requires the alumni's consent and pre-moderation of the interview before release.

The Swedish Institute as a soft power and nation branding instrument

The Swedish Institute was established in 1945 with the primary aim of raising awareness about Sweden on the international stage and fostering international cooperation for the country, particularly in the realms of culture, education, and research.³ The Institute has carried out an active scholarship policy towards concrete countries and regions in various forms since the 1990s. The Swedish Institute also plays a pivotal role in executing the nation branding policy, as it is tasked with promoting Sweden as a nation that offers ideal conditions for top-tier higher education, impactful global social initiatives, and cutting-edge research endeavours. The Institute showcases these opportunities as a testament to the contributions of the Swedish populace and the embodiment of the inclusive Swedish mindset, which welcomes foreign students.

¹ *SI Alumni Newsletter*, 2002, N°1, *Internet Archive Wayback Machine*, URL: <https://web.archive.org/web/20060827223544/http://www.si.se/upload/Docs/Alumni/Alumni1-02.pdf> (accessed 15.05.2023).

² *Swedish Institute*, 2023, URL: <https://si.se/en/news/> (accessed 15.05.2023).

³ *Vår historia — SI 75 år! Swedish institute*, 2020, URL: <https://si.se/om-si/var-historia/> (accessed 02.02.2023).

Positioning Sweden as a country giving an opportunity to pursue higher education is a task of the *Study in Sweden* website launched in 2003.¹ These efforts are also reflected through various sections on the SI website. The website promotes the SI's mission as "cultivating and maintaining interest and trust in Sweden worldwide" while fostering cooperation in the Baltic region and contributing to global development. Consequently, the SI places a strong reliance on public diplomacy, actively encouraging interpersonal connections between the involved countries. The Institute also conducts assessments of Sweden's international awareness levels and proactively promotes the country's image through various media platforms.

According to the official stance of the Swedish Institute, Sweden is an exceptionally attractive destination for education due to the nation's advancements and the values upheld by its population. Swedish societal norms, particularly in economics, social organization, and environmental consciousness, are cited as compelling reasons for choosing Sweden as a study destination. The SI highlights Sweden's innovative business practices, alongside an optimal balance between work or study and personal life. Moreover, the SI emphasizes Swedes' readiness for collaborative work and cooperation, coupled with a deep respect for personal space, individual choices, and the principle of equal opportunities, as key attributes of the Swedish social fabric. Of paramount importance, according to the SI, is Sweden's openness to diverse cultures, including its willingness to immerse incoming foreign students in the national culture. The SI also underscores the ecological awareness of the Swedish population as a cherished national value and a motivating factor for selecting Sweden as a study destination.²

The *Study in Sweden* website vividly illustrates the SI's endeavours in showcasing Swedish society and academia as a highly conducive environment for pursuing education at all levels. It is prominently highlighted that international students can acquire not only valuable professional skills but also enriching socialization experiences within an international context. The 'Swedish way' in terms of social and economic development is presented as an optimal model of orientation for graduates of exchange programmes. This underscores the SI's role as a vital component of Sweden's soft power within its foreign policy framework. The organization actively lends its support to the promotion of Swedish national values and the dissemination of the country's development model on the global stage.

The SI scholarship policy correlations between academic cooperation, nation branding and soft power in the Baltic and the EU Eastern Partnership, 1995 – 2020

The evolution of the SI's scholarship policy aligns with the organization's priorities and the broader objectives of Swedish foreign policy. When we examine how Sweden positions itself and promotes its contemporary national values, it becomes evident that the scholarship policy has been linked with Swedish

¹ Study in Sweden, 2003, *Internet Archive Wayback Machine*, URL: https://web.archive.org/web/20031008160846/http://www.sweden.se/templates/SISFrontPage_4908.asp (accessed 18.05.2023) ; Plan your studies, *Study in Sweden*, 2023, URL: <https://studyinsweden.se/> (accessed 18.05.2023).

² Moving to Sweden, 2023, *Study in Sweden*, URL <https://studyinsweden.se/moving-to-sweden/the-swedish-way/> (accessed 02.02.2023).

soft power since the 1990s. Notably, the annual funding allocated to the scholarship policy has seen substantial growth from SEK 180 million in 1997 to SEK 470 million in recent years. In 2022, a significant portion of this budget, totalling SEK 294 million, was earmarked for scholarships and grants. This financial commitment underscores the central role of scholarship programmes in advancing Sweden's soft power and foreign policy objectives.¹ It proves the importance of the SI scholarship programmes for Swedish soft power, nation branding and academic cooperation.

The initial focus of the Swedish Institute's scholarship policy, nation branding efforts, and the projection of Swedish soft power through the SI was directed towards the Baltic states, Poland, and Russia. Notably, special attention was given to the regions encompassed within Russia's North-Western Federal District. This targeted approach was reflective of the SI's strategic efforts to engage with these regions and advance its objectives in the realms of education, culture, and diplomacy.² This collaborative engagement commenced in 1995 and took shape in two distinct forms. The first form involved the provision of scholarships to facilitate student, doctoral candidate, and professorial exchanges with Sweden. The second form of support was directed towards sponsoring cultural initiatives and promoting the teaching of the Swedish language.

In the framework of the Partnership for Culture (*Partnerskap för Kultur*), a wide array of cultural exchanges and activities was organised. These initiatives encompassed exhibitions, concerts, conferences, and media workshops, creating a vibrant platform for participation and dialogue including Sweden, Finland, Russia, the Baltic states, Poland, Belarus, and Ukraine. The overarching emphasis of these cultural initiatives was placed on reinforcing values such as freedom of speech, diversity, democracy, and collective resilience, resonating with the core principles of Swedish soft power and diplomatic efforts in the region.³ Therefore, after the socio-economic and political reforms in the post-Soviet area had taken place, the SI initiated its soft power activities to promote the Swedish understanding of democratic values.

The establishment of the SI Visby programme in 1995 served as a clear demonstration of Swedish foreign policy and national branding priorities. This programme was strategically designed to bolster academic cooperation and advance the goals of the Swedish Institute.

The SI Visby programme aimed to support exchanges at Swedish partner universities, offering students the flexibility of choosing between semester or aca-

¹ Our mission, 2023, *Swedish Institute*, URL: <https://si.se/en/about-si/our-mission/> (accessed 03.02.2023).

² VISBYPROGRAMMET, 1998, *Swedish Institute*, 1998, URL: <https://web.archive.org/web/19980205040731/http://www.si.se/stipendier/visby.html> (accessed 17.05.2023) ; *Ett årtionde med Central- och Östeuropa. En sammanfattning från Svenska Institutet*, 2001, Stockholm, s. 22.

³ *Ett årtionde med Central- och Östeuropa. En sammanfattning från Svenska Institutet*, 2001, Stockholm, s. 33.

demical year options. Beyond this, the programme facilitated the pursuit of master's degrees in Sweden and provided valuable opportunities for doctoral students and professors to engage in internships. These well-structured options played a crucial role in reinforcing academic collaboration between Swedish universities and their partner institutions in Russia, Poland, and the Baltic states, aligning with the broader objectives of Swedish diplomacy and international engagement.¹ The programme was named after the Swedish city of Visby on the island of Gotland, which used to be a Hanseatic trade centre until the 15th century. In the late 20th century, the Visby municipality became a part of the New Hanseatic League and spearheaded the creation of a youth forum known as the 'Younger Hansa'. The choice of branding for this initiative reflects its intended role as a successor to historical connections and the influence that Sweden had historically wielded in the Baltic region. However, the primary focus of this initiative was placed on fostering constructive Swedish influence on its neighbouring countries.

The first recipients began their studies with the support of the Visby programme in 1997. Over the period from 1997 to 2000, the SI allocated SEK 120 million in scholarship payments to students and professors from Russia, the Baltic states, Poland, and Ukraine. Approximately 7,000 students, doctoral candidates, and university educators received this support during their time in Sweden. The programme's outreach extended to include not only Russia, the Baltic states, Poland, and Ukraine but also Belarus, Moldova, Georgia, Armenia, and Azerbaijan.² The allocation of scholarships between 1997 and 2020 exhibited some fluctuations. In the initial year, there were 240 successful applications, but this number gradually declined to 64 in the academic year 2002/03. Subsequently, between 2004 and 2011, there was a gradual increase, with the number of scholarships fluctuating between 186 and 250. However, the numbers then declined again, reaching 92 successful applications in 2013–2014. In 2016, there were 105 applicants who received a positive decision [28, p. 41], and this number remained relatively stable until a major reorganization of the SI's programmes took place in 2020.³ Fluctuations in the number of scholarships were primarily driven by several factors, including the expansion of geographical coverage within SI scholarship programmes, the mobility of Swedish students and teachers abroad, and support for the teaching of the Swedish language in the North-Western region of Russia.

Prior to 2013, Russian citizens constituted the largest group of recipients of Visby scholarships. The number of Russian scholarship recipients reached its peak at 96 in the academic year 2010/11, after which it experienced a decline. In 2015, Ukrainian recipients surpassed Russians in the number of scholarships,

¹ The SI Visby Programme, 2017, *Uppsala Universitet*, URL: https://indico.uu.se/event/454/contributions/728/attachments/722/926/171213_UA_Visby_short.pdf (accessed 02.02.2023).

² Vår historia — SI 75 år! 2023, *Swedish Institute*, URL: <https://si.se/om-si/var-historia/> (accessed 02.02.2023).

³ Sverige i världen Svenska institutet 75 år, 2020, *Swedish Institute*, URL: <https://si.se/app/uploads/2020/11/sverige-i-varlden-svenska-institutet-75-ar.pdf> (accessed 02.02.2023).

with 36 positive decisions compared to 34 for Russians. Nevertheless, Russian recipients continued to be a significant and prominent target group for SI programmes [28, s. 41].

In the early years of the Visby programme, students and professors from the Russian North-Western Federal District constituted a distinct and special group. The Swedish government demonstrated its commitment to fostering cultural, educational, and academic dialogue in the European North through its support and initiatives in this region.¹ Meantime, the number of scholarships allocated for students and professors in social sciences and the humanities was slightly higher than for applicants specializing in natural sciences and engineering [28, s. 5]. This distribution reflects a close alignment with the concept of soft power, as it served as a mechanism for promoting the Swedish interpretation of key values such as freedom of speech, equality, democracy, a multi-party system, market economy, and the welfare state model. These values were disseminated through Western social and political theories, effectively broadcasting them to the post-Soviet space.²

Apart from Russia, the Visby programme extended its outreach to include Belarus, Ukraine, Poland, and the Baltic states. The scholarship policy toward these countries underscored Sweden's commitment to imparting its model of democracy, market economy, and the welfare state. Simultaneously, it aimed to promote the Swedish language and culture. Sweden's active role in assisting Poland and the Baltic states with their European integration immediately after their accession to the EU in 1995 was instrumental. Consequently, a significant proportion of scholarship recipients were from the fields of social sciences and humanities. This strategic approach sought to align the legal theory and practice, social policies, and political culture of these countries with those of Sweden and the EU. This emphasis can be observed in scholarship allocation statistics, particularly during the early years of the Visby programme's existence, where Polish, Estonian, Latvian, and Lithuanian recipients outnumbered their Russian counterparts [28, s. 41].

However, after 2004, the number of Polish and Baltic scholarship recipients began to decline, as these countries became EU members and other EU mobility programmes became available to them. Estonia, Latvia, and Lithuania were included in other student and teacher mobility support programmes within the EU.

With the initiation of the EU's Eastern Partnership in 2009, the Swedish Institute implemented a new approach to its scholarship policy. The organization shifted its priorities to focus on Belarus, Ukraine, Moldova, Armenia, and Azerbaijan. The objective was to strengthen EU cooperation with these countries, and Swedish efforts were strategically aligned with this overarching goal. Additionally, the SI designated Ukraine as one of the priority recipients of its scholarship programmes. This decision was closely connected to the special emphasis placed on Ukraine by both the EU and Sweden. The primary target group for these schol-

¹ *Ett årtionde med Central- och Östeuropa. En sammanfattning från Svenska Institutet*, 2001, Stockholm, s. 33.

² SI Alumni Newsletter, 2004, N° 3, s. 4-5; Högt deltagande av östeuropeiska studenter i sommarkurser runt om i Sverige, *Internet Archive Wayback Machine*, 2009, URL: <https://web.archive.org/web/20090831231518/http://si.se/Svenska/Innehall/Pressnyheter/Nyheter/Nyheter-2009/Hogt-deltagande-av-osteuropeiska-studenter-i-sommarkurser-runt-Sverige/> (accessed 18.05.2023).

arships included students intending to study fields such as social theory, political studies, journalism, EU law, global processes, and migration [28, s. 45]. This shift highlighted the prevalence of soft power considerations in the scholarship policy.

In 2014, the SI scholarship policy encountered new challenges as a consequence of the imposition of anti-Russian sanctions and a broader negative trajectory in cooperation with Russia. Consequently, in the academic year 2015/16, Ukrainian candidates received the highest number of scholarships. Russian recipients constituted the second-largest group [28, s. 41], but their numbers began to decline thereafter. This decline was also associated with the development of new scholarship programmes for other target groups in Europe and across the world, along with the subsequent reorganization of the SI mobility support initiatives.¹

In 2015, the Swedish Institute expanded the coverage of the Visby programme to include advanced-level Swedish language learning. Two years later, the Institute announced that applicants who wished to pursue their studies in Swedish would be recognised as a priority target group.² The SI justified it with the need to support the Swedish language teaching in the Russian North-Western Federal District. Besides, the SI became responsible for distributing scholarships within the *North2North* mobility programme of the University of the Arctic consortium designed to support inbound mobility to Swedish UArctic member universities. So, shrinking the Russian participation in the Visby programme was partially compensated via academic mobility support for the Arctic regions and Swedish language and culture teaching support in Russia. This shift in the Swedish Institute's scholarship policy signalled a change in priorities away from Russia and towards supporting nation branding efforts and collaboration with universities in the North-Western Federal District that offered Swedish language courses. This realignment was consistent with the rhetoric highlighting the Arctic as a region where constructive cooperation among its member states took precedence over disputes occurring in other parts of the world.³

In the final years of the Visby programme (2019—2020), the scholarship policy reflected Sweden's priorities towards Russia and the EU Eastern Partnership countries. These policies were designed to promote the ideals of democra-

¹ The Visby programme awarded an average of 10 out of 40-50 scholarships to Russian students in the last years of its operation in the postgraduate and post-doctoral internship track and 12 out of 63 scholarships for master's studies. For the academic year 2022/23, 19 out of 432 scholarships were awarded to Russians for master's studies at Swedish universities. Also, since 2015, a separate quota has previously been foreseen for learners of Swedish and those interested in studying it further in Sweden. SI Scholarships for Global Professionals (SISGP), *Internet Archive Wayback Machine*, 2022, URL: https://web.archive.org/web/20230206084632/https://si.se/app/uploads/2022/04/si-scholarship-recipients-2022_revised.pdf (accessed 03.02.2023) ; The Swedish Institute Visby Programme, *Indico*, 2017, URL: https://indico.uu.se/event/454/contributions/728/attachments/722/926/171213_UA_Visby_short.pdf (accessed 10.02.2023).

² The Swedish Institute Visby Programme, *Indico*, 2017, URL: https://indico.uu.se/event/454/contributions/728/attachments/722/926/171213_UA_Visby_short.pdf (accessed 10.02.2023).

³ International Arctic Forum outlines — 2019, 2019, *Arctic — the territory of Dialogue*, URL: <https://forumarctica.ru/the-forum/results/> (accessed 21.05.2023).

cy, equality, and the rule of law, including the dissemination of best practices associated with the ‘Swedish way’. However, it is worth noting that the number of scholarships for students specializing in natural sciences and engineering was relatively limited. For example, out of 65 scholarships in 2019, only 8 were designated for students in these fields,¹ and 10 from 63 in 2020.² In addition, more than a third of scholarship funds in 2019, and half of them in 2020 were given to Ukrainian and Georgian citizens. This was a way to implement the Swedish soft power concurring with policies of several EU countries towards Kiev and Tbilisi. This statement also holds true for Russia. Even though a relatively small number of scholarships were allocated to Russian candidates (10 in 2019 and 16 in 2020), the majority of students specialized in social studies and the humanities.

These study programmes operate within the framework of Western social and political theories that have been developed over the past few decades. Furthermore, under the guidance of the Swedish Institute (SI), students pursuing their degrees become familiar with the political and social systems of Sweden in specific cases, as exemplified in feedback interviews with alumni from Georgia.³ Another case with Ukrainian scholarship holders demonstrates their priorities to transfer Swedish digital interaction practices between the Government and citizens.⁴ Considering these facts, and the ‘Swedish way’ best practices promotion we can conclude that the SI understands the education programmes as a soft power instrument. The scholarship holder can keep his or her contacts with the SI via the *SI Network for Future Global Leaders* and *Sweden alumni network* associations upon graduation.⁵ The organization positions all its scholarship holders as prospective ‘global leaders’. So, the soft power instrument contains a feedback option as well.

¹ Swedish Institute Scholarship Programmes. Visby Programme — 2019/2020, 2019, *Swedish Institute*, URL: <https://si.se/app/uploads/2019/04/list-of-successful-candidates-visby-programme-2019.pdf> (accessed 02.02.2023).

² Swedish Institute Scholarship Programmes. Visby Programme — 2020/2021, 2020, *Scholarships in Europe*, URL: <https://www.scholarshipsineurope.com/wp-content/uploads/2021/05/list-of-successful-candidates-visby-programme-2020.pdf> (accessed 10.02.2023).

³ My years as an SI scholar will equip me to serve my country in advancing human rights protection, 2023, *Swedish Institute*, URL: <https://si.se/en/my-years-as-an-si-scholar-will-equip-me-to-serve-my-country-in-advancing-human-rights-protection-and-democratic-development/> (accessed 11.02.2023).

⁴ I want to be helpful for my country. It’s a mission I have, 2023, *Swedish Institute*, URL: <https://si.se/en/i-want-to-be-helpful-for-my-country-its-a-mission-i-have/> (accessed 19.05.2023).

⁵ The Swedish Institute graduates 370 international students at Stockholm City Hall, 2022, *Swedish Institute*, URL: <https://si.se/en/the-swedish-institute-graduates-370-international-students-at-stockholm-city-hall/> (accessed 11.02.2023) ; SI alumni among 33 sustainability talents, 2018, *Swedish Institute*, URL: <https://si.se/en/si-alumni-among-33-sustainability-talents/> (accessed 11.02.2023) ; SI alumni visit Sweden with high-level delegation from Georgia, 2020, *Swedish Institute*, URL: <https://si.se/en/si-alumni-visit-sweden-with-high-level-delegation-from-georgia/> (accessed 11.02.2023).

The Swedish Institute's scholarship policy since 2020: institutional and political changes

In 2020 the SI scholarship programmes merged into a single option called the *SI Scholarship for Global Professionals*. 420 applicants were awarded scholarships in the academic year 2020/21.¹ 359 applicants from 42 countries in 2021/22² and 432 students from 41 countries in the academic year 2022/23.³ 299 scholarships were awarded in the academic year 2023/24.⁴ Besides, the initiative became an SI Visby programme successor: Russia and the EU “Eastern Partnership” remained its participants. Nonetheless, the students coming from these countries were to participate in selection procedures competing with applicants from other countries on the same grounds.

During the transition period in the academic year 2019/20 the SI scholarship funds were subject to distribution among chosen target groups. The largest one included students from African, Asian and Latin American countries who aimed to pursue their master's studies at Swedish universities.⁵ Only the Republic of South Africa is subject to a separate category: 13 applicants from this country were awarded SI scholarships, a number comparable to that of Russian citizens.⁶ In addition, the SI introduced a special quota for applicants from Turkey and the West Balkans (Serbia, Bosnia and Herzegovina, Albania, Northern Macedonia, Kosovo). In this group, Turkish applicants were predominant, receiving 10 scholarships, a number comparable to the number of approved applications from Russia.⁷ This distribution policy aligned with the EU's soft power strategy, which aimed to encourage selected countries to voluntarily participate in EU policies in the region before 2022. This statement is particularly relevant to Turkey, South Africa, and Serbia.

¹ More than 400 scholarships awarded to international students, 2020, *Swedish Institute*, URL: <https://si.se/en/more-than-400-scholarships-awarded-to-international-students/> (accessed 13.05.2023).

² Swedish Institute Scholarships for Global Professionals, 2021, *Internet Archive Wayback Machine*, URL: <https://web.archive.org/web/20210815224331/https://si.se/en/apply/scholarships/swedish-institute-scholarships-for-global-professionals/> (accessed 13.05.2023).

³ The Swedish Institute award scholarships to 432 foreign students for studies in Sweden, 2020, *Swedish Institute*, URL: <https://si.se/en/the-swedish-institute-award-scholarships-to-432-foreign-students-for-studies-in-sweden/> (accessed 13.05.2022).

⁴ Scholarship recipients academic year 2023/2024, 2023, *Swedish Institute*, URL: <https://si.se/app/uploads/2023/04/si-scholarship-recipients-2023.pdf> (accessed 13.05.2022).

⁵ Swedish Institute scholarship recipients 2019/2020, 2019, *Swedish Institute*, URL: <https://si.se/en/swedish-institute-scholarship-recipients-2019-2020-swedish-institute/> (accessed 03.02.2023).

⁶ Swedish Institute Scholarships for South Africa (SISSA) — 2019/2020, 2019, *Swedish Institute*, URL: <https://si.se/app/uploads/2019/04/list-of-successful-candidates-sissa-2019-2020.pdf>. (accessed 03.02.2023).

⁷ Swedish-Turkish Scholarship Programme and SI Scholarships for the Western Balkans 2019/2020, 2019, *Swedish Institute*, URL: <https://si.se/app/uploads/2019/04/list-of-successful-candidates-turkey-w.-balkans-2019.pdf> (accessed 03.02.2023).

After Russia had launched a special military operation in Ukraine, the SI suspended Russian participation in its scholarship programmes and increased its support for Ukrainian educational and non-governmental organisations. The Institute places emphasis on projects related to supporting cultural and artistic activities, as well as civil society initiatives aligned with EU-oriented values and drawing inspiration from the ‘Swedish way’.¹ The academic year 2022/23 was the last one when the SI awarded scholarships for Russian applicants. 19 Russian students specializing in social studies, economics and the humanities received scholarship support that year. As of 2023, Russian applicants are unable to submit applications for SI scholarships. Although the Institute provides support to various Ukrainian educational and non-governmental organizations, the number of scholarships for Ukrainian applicants has remained relatively low. Only 16 applicants in 2022² and 7 applicants in 2023³ were awarded scholarships within the SI programmes. This fact is connected with the evolution of the SI priorities towards Ukraine.

Recipients of SI scholarships pursuing master’s degrees in Swedish universities come from diverse academic fields. The majority of those benefiting from SI Scholarships for Global Professionals are enrolled in programmes related to Natural Sciences, Medicine, and Engineering. This reflects Sweden’s self-presentation as a nation committed to aiding in the economic development and welfare systems of the recipients’ home countries.

For those pursuing degrees in social sciences and humanities, many have chosen programmes like International Leadership, Global Development Issues, and Gender Studies. These academic choices align closely with Sweden’s efforts to promote its vision of freedom, democracy, equality, multiculturalism, and welfare in developing nations through courses grounded in Western social theories from recent decades.

Among scholarship recipients from Turkey, Ukraine, Belarus, and the Western Balkans, students specialising in humanities make up a significant portion. These trends underscore Sweden’s focus on using education for foreign students as a tool of soft power, aimed at aligning these countries with Sweden’s foreign policy goals and fostering the European integration of several nations.

Conclusion

Since the 1990s, the Swedish Institute’s scholarship and grant policy has undergone significant transformations. Initially, the main focus was on promoting Sweden internationally and nurturing cooperation with its neighbouring countries. However, over time, it has transformed into a multifaceted soft power instrument. A pivotal component of this transformation has been the scholarship policy, which

¹ The Swedish Institute’s support to Ukraine 2022-2023, 2023, *Swedish Institute*, URL: <https://si.se/en/the-swedish-institutes-support-to-ukraine-2022-2023/> (accessed 19.05.2023).

² SI Scholarships for Global Professionals (SISGP) Recipients 2022, 2022, *Internet Archive Wayback Machine*, URL: https://web.archive.org/web/20220429200126/https://si.se/app/uploads/2022/04/si-scholarship-recipients-2022_revised.pdf (accessed 19.05.2023).

³ SI Scholarships for Global Professionals (SISGP) Recipients 2023, 2023, *Swedish Institute*, URL: <https://si.se/app/uploads/2023/04/si-scholarship-recipients-2023.pdf> (accessed 19.05.2023).

plays a vital role in furthering Sweden's official objectives and shaping a favourable national image. Through its scholarship programmes, the Swedish Institute exerts influence on Sweden's relations with the recipient countries while also encouraging the adoption of Swedish values and social and political practices. The exposure of scholarship recipients to these aspects serves as a means of popularizing the 'Swedish way' of life. Foreign students who pursue their education in Sweden are expected to promote Swedish values in their home countries and beyond. The Swedish model of social and economic development is presented as a globally suitable paradigm. This approach became particularly evident when the Swedish Institute shifted its emphasis towards Ukraine and curtailed its cooperation programmes with Russia. Prior to these changes, similar methods were used in collaboration with universities in the Russian North-Western Federal District, particularly in the promotion of the Swedish language and culture.

In response to narratives propagated by Sweden through scholarship policies and soft power, there is a need for specific countermeasures that encompass both institutional forms and content development.

The Swedish Institute's scholarship policy, as a soft power instrument, operates in two distinct forms. Firstly, for developing countries in Asia, Africa, and Latin America, it serves as a means of training specialists in natural sciences, engineering, and medicine. This showcases Sweden as a nation committed to aiding developing countries in addressing their social and economic challenges.

Secondly, for Russia, the Eastern Partnership countries, and Turkey, a different approach is taken. The emphasis here is on supporting scholarship recipients pursuing studies in social sciences and the humanities. In this context, the Swedish Institute places a strong emphasis on programmes that draw from Western social theories and related practices in conceptualizing human and minority rights, the relationship between authorities and citizens, multiculturalism, and more. Consequently, the implementation of this soft power instrument is geared towards encouraging the voluntary adoption of Swedish values and practices as a suitable development model by scholarship recipients and their home countries. The Swedish Institute, in collaboration with the Swedish government, now regards its scholarship programmes as a vehicle for exporting its social, cultural, and political practices abroad.

Positioning a graduate of a scholarship programme as a 'bearer' of Swedish values and practices reinforces the earlier assertion. The 'success stories' of the SI alumni programme, published by the organization, clearly indicate their alignment with the 'Swedish way' of development and their readiness to promote this model, which was formed and strengthened during their studies in Sweden. Consequently, the scholarship policy of the Swedish Institute has evolved into an increasingly powerful instrument for nation branding and soft power, particularly in the latter half of the 21st century. In this context, the SI international academic cooperation has become subservient to the objectives of soft power and nation branding.

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MODERN TRENDS IN PARADIPLOMACY: A CASE OF RUSSIAN-FINNISH REGIONAL COOPERATION

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For several decades, EU-Russian regional cooperation helped effectively respond to the local challenges. The EU terminated programmes for regional cooperation with Russia and Belarus in 2022. The existing paradiplomatic structure, however, may be of interest to scholars and policymakers as a model to be reproduced by Russia in cooperation with non-EU neighbours. The study aims to identify the main trends in paradiplomacy by examining Russian-Finnish regional collaboration. It reviews theoretical approaches to paradiplomacy, conducts a case study analysis of three forms of Russian-Finnish regional interaction and defines the main trends in paradiplomacy. The author concludes that paradiplomacy intensifies globalisation and regionalisation processes. In the past years, the main paradiplomacy trends in cooperation between Russia and the Baltic Sea region states, particularly Finland, were as follows: (1) project activity gathering momentum; (2) diversification of paradiplomatic actors; (3) equal and symmetrical partnership between Russia and the European states.

Keywords:

Russian Federation, Finland, Baltic Sea region, paradiplomacy, regional cooperation, cross-border cooperation

Introduction

During the past few decades, EU-Russian regional cooperation was a channel of interaction between communities on both sides and demonstrated its resilience even in times of crisis. The relations between Russia and Finland, in particular, were built on the common historical past and strong economic and political ties. In 2022, the European Commission stopped cross-border cooperation programmes with Russia and Belarus, and, later on, Finland froze intergovernmental and inter-departmental contacts, trade and economic cooperation between the countries, as well as projects in science, education, culture, and sport. However, the system of paradiplomacy that has developed between Russia and the EU, and in particular, Finland, is a vivid example of positive cooperative practices that need to be ex-

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plored theoretically. Moreover, these practices should be studied from a practical perspective as they contribute to the development of a similar institutionalized model of cooperation between Russia and the neighbouring non-EU countries.

The research aims at identifying the main trends in paradiplomacy by examining the experience of Russian-Finnish regional cooperation.

To achieve this goal, several objectives should be reached:

- to overview the theoretical grounds of the concept of paradiplomacy;
- to analyse three cases of regional Russian-Finnish cooperation;
- to identify and characterize the main trends of modern paradiplomacy.

Theoretical framework

Since the 1980s, academics have been deeply concerned about international cooperation of subnational entities. However, a unified definition of this phenomenon is still lacking. Except ‘paradiplomacy’, there are other terms describing external relations of subnational actors, such as ‘constituent diplomacy’, ‘regional diplomacy’, ‘sub-state diplomacy’, ‘microdiplomacy’, ‘multilayered diplomacy’, ‘catalytic diplomacy’, ‘protodiplomacy’, and ‘post-diplomacy’ [1, p. 25]. In our research, we will stick to the notion of paradiplomacy as an umbrella term that characterizes different aspects of subnational initiatives.

In the 1960s, Rohan Butler introduced the term “paradiplomacy” to describe the “personal or parallel diplomacy complementing or competing with the regular foreign policy of the government” [2, p. 13]. The modern understanding of paradiplomacy has become firmly established in academic literature following the publication of the works by Panagiotis Soldatos and Ivo Duhacek. According to them, paradiplomacy is an international activity of sub-national actors (regions, cities) that is “parallel to, often co-ordinated with, complementary to, and sometimes in conflict with their central governments’ diplomacy [3, p. 48]. Duhacek further developed the concept of paradiplomacy by identifying the following types of subnational initiatives in the international arena: (1) transborder regional microdiplomacy, (2) transregional microdiplomacy, (3) global paradiplomacy and (4) protodiplomacy [4]. Joenniemi and Sergunin identify two types of paradiplomatic methods. The first one is a direct method that implies the development of distinct foreign ties between cities and regions. The second one is an indirect method in which cities and regions impact national foreign policy [5, p. 23].

The presence of direct channels of communication is a central feature of paradiplomacy [1–3]. Emphasizing this aspect, Kuznetsov defines paradiplomacy as “a form of political communication for reaching economic, cultural and political or any other types of benefits, the core of which consist in self-sustained actions of regional governments with foreign governmental and non-governmental actors” [1, p. 31]. Cornago also focuses on communicational aspect and understands paradiplomacy as “non-central governments’ involvement in international relations through the establishment of permanent or *ad hoc* contacts with public or private entities, with the aim to promote socioeconomic or cultural issues”

[6, p. 40]. At this point, paradiplomacy might become an object of multi-level governance studies since multi-level governance reflects a system of interaction, which involves a wide range of actors and institutions at various administrative levels [7, p. 392].

Andre Lecours developed his paradiplomacy theory by introducing the concept of 'layers' of paradiplomatic activity [8]. According to Lecours, the first layer is represented by economic cooperation. In this context, regional governments seek to develop an international presence in order to attract foreign investments and international companies to the region and enter new markets. As noted by modern scholars, for instance, Mezhevich and Bolotov, economic cooperation creates additional financial opportunities for regional authorities, and over the past decades, it has transformed into a full-fledged regional development mechanism [9, p. 108–109].

The second layer of paradiplomacy involves cultural, educational, technical, and technological cooperation. At this level, paradiplomacy is more extensive and multidimensional as it pursues more complex objectives. These aspects of cooperation within the context of Russian-Finnish cross-border collaboration have been emphasized in the writings of Sebentsov [10; 11], Fritsch, Nemeth, Pippinen, and Yarovoy [12], as well as Koch [13].

The third layer of paradiplomacy is related to the political space. At this level, the local expression of identity (which may differ from the national one) emerges. Some scholars [6; 14] note that due to technological development, contemporary paradiplomacy operates not only in instrumental fields (such as international trade and global markets, environmental issues, scientific and technological cooperation, and transport), but also in “areas of social and political concern such as ethnic conflicts, public health, education, cultural diversity, human security, human rights, and humanitarian relief or development aid” [6, p. 6]. Therefore, all three layers adopted by Lecours tend to accumulate and intertwine with one another.

Paradiplomacy trends mostly replicate the general tendencies of international relations. In particular, paradiplomacy reflects the globalization and regionalization processes that increase the importance of non-state actors in international relations, especially subjects of federations or regions of unitary states, and megalopolises [15; 16, p. 43].

Materials and methods

Methods of the research. A case study is a central method of this research. A case study makes possible “an in-depth analysis of a single unit (...) where the scholar’s aim is to elucidate features of a larger class of similar phenomena” [17, p. 341]. Hence, a case study enables us to fulfill the objective of our research, which is to identify contemporary trends in paradiplomacy through an examination of the case of Russian-Finnish regional cooperation.

Apart from the case study, this work is based on comparative analysis and systems analysis. Comparative analysis allows us to match empirical evidence collected from the recording and classification of Russian–Finnish paradiplomatic activities. Moreover, following the logic of systems analysis, the paper summarizes the principles of cooperation between the regions of Russia and Finland and identifies general trends in paradiplomacy.

Methodology. The methodology adopted in this article is built on the approach proposed by Kuznetsov. According to him, qualitative techniques are more applicable for analyzing paradiplomatic activities than quantitative approaches due to the absence of adequate data sets. Complex operationalization and definition of the variables of paradiplomatic practices become the main problem for quantitative analysis. A case study, on the contrary, helps to “better cover the contextual peculiarities of the multidimensional phenomenon” [1, p. 15].

With particular emphasis on the EU – Russia cooperation, our article is based on the methodological findings of Koch [13], Laine [18], Khasson [19], and Sologub [20] who overview transborder relations through the analysis of the partners’ structure. It allows us to examine the range of entities involved in international activities and understand how they relate to each other. This analysis helps us uncover the specific traits of local participants and describe how they communicate with one another.

Materials. The methods of data collection and data themselves should be diverse in order to conduct an informative case study analysis in “a more synergistic and comprehensive view” [21, p. 12]. The materials for the analysis can be divided into the following groups:

- European documents as well as Finnish and Russian national documents;
- Joint Russian-European and Russian-Finnish documents;
- Cross-border cooperation projects’ websites and related statistics;
- Universities’ websites including programmes’ descriptions and curricula.

While working with the materials, special attention was paid to the reliability of the resources, therefore, only official websites and statistical resources were chosen for the analysis in order to exclude erroneous or inaccurate data. Moreover, in accordance with the methodology of Bobylev, Gadai, Kireyev, and Sergunin [22, p. 844–845], selected sources were considered representative as they demonstrated common characteristics of Russian-Finnish paradiplomacy that can be traced in all three case studies. Studying the trends of paradiplomacy top-down (through national regulations and joint documents) and bottom-up (through particular cross-border cooperation projects, universities’ programmes, and curricula) helped us to analyze in complexity the phenomenon of Russian-Finnish paradiplomacy.

Criteria for case selection. The case study implies a careful choice of case parameters. Based on the case study methodology proposed by Yin [23], the cases for the study were selected according to the criteria we defined: time frame, participants, place and process (table 1).

Table 1

Criteria for selecting cases for analysis

Case criteria	Description	
The timeframe	Years 2000—2020	
The participants	Subnational actors	
	Twin cities Imatra-Svetogorsk	Cities administration
	South-East Finland — Russia Cross-Border Cooperation Programme 2014—2020	Universities, businesses, NGOs, municipalities, regional authorities, and budgetary institutions (as project partners).
	Russian-Finnish Cross-Border University	University of Helsinki, University of Joensuu, University of Kuopio, Lappeenranta University of Technology, University of Tampere, St. Petersburg State University, St. Petersburg State Polytechnical University, Petrozavodsk State University, European University at St. Petersburg
The location	A transborder component of the cases	
	Imatra and Svetogorsk are located on the Russian-Finnish border 7 km apart from each other	
	Cross-border cooperation programme covers border regions of South Karelia, South-Savo, and Kymenlaakso (Finland) as well as St. Petersburg and Leningrad Region (Russia)	
	Russian-Finnish Cross-Border University: universities located in St. Petersburg and the Republic of Karelia in Russia, universities located in Pirkanmaa region, North Karelia, Northern Savonia, South Karelia, Uusimaa region (part of them is represented by bordering regions)	
The process	All the cases represent paradiplomatic activities between Russia and Finland. In our research, we view “paradiplomacy” as an umbrella term that describes a variety of international activities of subnational entities. More precisely, by “paradiplomacy” we mean an international activity of sub-national actors (regions, cities) that is “parallel to, often co-ordinated with, complementary to, and sometimes in conflict with their central governments’ diplomacy” [3 p. 48]	

Twin cities Imatra-Svetogorsk

Owing to globalization processes, nowadays cities play a significant role in transnational cooperation. This phenomenon is called “city diplomacy”, that is, “the institutions and processes by which cities engage in relations with actors on an international political stage with the aim of representing themselves and their interests to one another” [24, p. 7].

The term ‘twin cities’ originally described the phenomenon of cities located on opposite sides of an internal state border. Later on, it began to characterize cities separated by an external state border [25].

For urban areas to be distinguished as twin cities certain criteria should be met:

- both cities should be located on the state border;
- city dwellers should share a common historical past;
- the cooperation between twin cities should be conducted through institutional and legal mechanisms.

In addition, twin cities are often located on two sides of the same river, which is a natural geographical boundary. Plus, the residents of the cities are usually ethnically mixed and speak both languages [26]. Imatra and Svetogorsk meet most of these criteria, therefore, they are referred to as twin cities in academic literature [25; 26] and legal documents.¹

After the Second World War, the Soviet-Finnish border was redrawn. Then, two cities, Imatra and Svetogorsk, emerged as a result of partition and duplication. The settlement cluster around the Finnish industrial town of Enso was once a single entity. However, after the war, the settlement was divided into two cities on different sides of the state border. The part of the settlement that remained in Finland was renamed Imatra, while the part that was in the Soviet Union was renamed Svetogorsk. It was populated by people from different parts of Russia [27].

During the 1970s and 1980s, close ties were formed between the two cities as they worked together on a joint project to reconstruct the Svetogorsk Pulp and Paper Mill. At this time, the main facilities of the factory were built. Although the negotiations about the mill reconstruction were held at the state level and did not fully involve regional actors, a temporary border crossing and a growth of local contacts on both sides of the border stimulated mutual interest in further communication [28, p. 32].

Despite the fact that after the Second World War otherness was projected across the border, later on, twinning became a tool for strengthening the input of peripheral polities [29, p. 11] and the socio-economic development of bordering areas. In 1993, the signing of an agreement on cooperation between the neighbouring cities ushered in a new wave of cooperation. Intercity cooperation covered areas such as economy, education, culture, sports, youth policy, and environmental protection. Measurable outcomes of this interaction include air quality monitoring and air emissions measuring.²

Full-fledged cross-border cooperation began in 1996, when the cities launched their first joint initiative: the issuance of free visas and the construction of cross-border cycle paths.³ The cities continued to use the border as a resource

¹ Annex to the Cooperation Agreement between the Border Cities of Svetogorsk and Imatra, 20.01.1993. Protocol 21 of April 16, 2013. URL: http://www.svetogorsk-city.ru/regulatory/files/protokol_2013.doc (accessed: 19.06.2023).

² Cooperation agreement between the border towns of Svetogorsk and Imatra. 20.01.1993, *MOT*, URL: <http://www.espaces-transfrontaliers.org/en/resources/territories/cross-border-conurbations/imatra-svetogorsk/imatra-svetogorsk-2/> (accessed 24.01.2023).

³ Imatra-Svetogorsk, *MOT*, URL: <http://www.espaces-transfrontaliers.org/en/resources/territories/cross-border-conurbations/imatra-svetogorsk/imatra-svetogorsk-2/> (accessed 24.01.2023).

for exchanging positive practices aimed at cooperation and strengthening interaction. Later, the number of economic contacts increased, owing to the development of shopping and leisure tourism.

In the late 1990s, the self-positioning of Svetogorsk and Imatra as a ‘dual city’ began [27]. Until 2013, the local authorities had implemented the strategy of international cooperation “Imatra-Svetogorsk Twin Cities”,¹ which illustrates how the concept of “twin cities” passed from a theoretical category to foreign policy practice and entrenched itself in normative documents. As part of the strategy, working groups were created to prepare applications for funding within the framework of cross-border cooperation programmes. The groups also worked out ways to solve common logistical problems related to the development of automobile and railway communication.

In 2004–2006, the cities of Imatra and Svetogorsk participated in the project “City Twins Cooperation Network” aimed “to promote the exchange of best practice in the fields of local administration, education, culture, social affairs, economic development and cross-border cooperation”.² The project culminated in the creation of the Association of the Twin Cities in December 2006. As evidenced by all these stages of cooperation, practical initiatives were crucial for Imatra-Svetogorsk twin cities. This is consistent with the view of Joenniemi and Sergunin that the “instrumental aspects of twinning, including development issues, have increasingly been brought to the fore” [30, p. 452].

The case of Imatra-Svetogorsk twin cities illustrates three layers of paradiplomacy (Lecours [8]):

Layer 1 represents economic issues. Sub-state entities focus on “attracting foreign investment, luring international companies to the region, and targeting new markets for exports” [8, p. 2]. Shopping tourism from the Russian side to Imatra and the Finnish side’s readiness to invest in a railway hub in Svetogorsk exemplify the first layer of paradiplomacy.³

Layer 2 involves multidimensional cooperation (cultural, educational, technical, technological, and others). This layer is illustrated by all forms of Imatra-Svetogorsk cooperation within the agreement on cooperation between the neighbouring cities and mutual projects within the cross-border cooperation programmes: air monitoring, educational cooperation, youth policy initiatives, transport infrastructure building, and others.

¹ Annex to the Cooperation agreement between the border towns of Svetogorsk and Imatra, 20.01.1993. Protocol 21 of April 16, 2013. URL: http://www.svetogorsk-city.ru/regulatory/files/protokol_2013.doc (accessed: 19.06.2023).

² Imatra-Svetogorsk, *MOT*, URL: <http://www.espaces-transfrontaliers.org/en/resources/territories/cross-border-conurbations/imatra-svetogorsk/imatra-svetogorsk-2/> (accessed 24.01.2023).

³ Svetogorsk kak novyj transportnyj hub. Finny hotyat elektrichku Peterburg — Imatra k 2025 godu [Svetogorsk as a new transport hub. Finns want a St Petersburg — Imatra train by 2025]. *Fontanka*, 22.04.2019, *Fontanka.ru*, URL: <https://www.fontanka.ru/2019/04/22/042/> (accessed 12.06.2023).

Layer 3 of paradiplomacy reflects political considerations. At this level, sub-national governments may express a common identity (distinct from the national one) or try to impact the behaviour of a neighbouring region. In the case of Imatra-Svetogorsk, there is no evidence that they have sought to “affirm the cultural distinctiveness, political autonomy, and the national character of the community they represent” [8 p. 3]. However, the Strategy of International Cooperation “Imatra-Svetogorsk City Twins” and participation in the project “City Twins Cooperation Network” show that Imatra and Svetogorsk have positioned themselves as ‘dual’ or ‘twin cities’ in political discourse. This demonstrates that they share common interests and self-perception as a community.

South-East Finland — Russia Cross-Border Cooperation Programme (2014—2020)

Cross-border cooperation for a long time remained an important channel of interaction between the regions of Russia and the EU, particularly the regions of Finland. In our research, we view cross-border cooperation as a form of paradiplomacy and define it as a type of coordinated actions aimed at strengthening relations between neighbouring regions.

After the EU enlargement in 2004, the European authorities questioned how to build up relations with new neighbours. At that moment, the European Neighbourhood Policy (ENP) emerged to create a common economic, cultural, and social space based on shared interests with partner countries of the East and the South that would ensure stability in the region. However, Russian authorities insisted on the format of a strategic partnership. Consequently, Russia remained eligible only for cross-border cooperation programmes. In the year 2007, the European Neighbourhood and Partnership Instrument (ENPI) came into force substituting the MEDA instrument, TACIS instrument for the Eastern neighbours, and other financial means of support. The ENPI was a financial instrument for implementing the Action Plans which covered sixteen partner countries and Russia within Strategic Partnership in 2007—2013. In the year 2014, the European Neighbourhood Instrument (ENI) substituted the European Neighbourhood Partnership Instrument.² The main principles remain the same: commitment to democracy, human rights, the rule of law, good governance, market economy principles, and sustainable development based on political dialogue, trade-related issues, economic and social cooperation.

¹ European Neighbourhood Policy. What is it? *European Commission*, URL: https://neighbourhood-enlargement.ec.europa.eu/european-neighbourhood-policy_en (accessed 14.05.2023).

² Regulation (EU) No 232/2014 of the European Parliament and of the Council of 11 March 2014 establishing a European Neighbourhood Instrument, 2014, *EU-Lex*, URL: <https://eur-lex.europa.eu/legal-content/en/LSU/?uri=CELEX%3A32014R0232> (accessed 24.01.2023).

South-East Finland — Russia Cross-Border Cooperation Programme 2014—2020 was one of the seven cross-border cooperation programmes between Russia and the EU and one of the three programmes implemented directly between Russia and Finland.

The eligible territory of the programme consisted of the core regions: South Karelia, South-Savo, and Kymenlaakso in Finland and St. Petersburg and Leningrad Region in Russia. There also were adjoining areas: Uusimaa, Päijät-Häme, North-Savo, North Karelia, and Republic of Karelia, besides, partners from Turku and Moscow may participate in the projects to a certain extent if their experience can enrich a particular initiative.¹

The programme encouraged joint initiatives towards the solution of common challenges in cross-border areas and formulated the following strategic objectives:

- 1) promotion of economic and social development in bordering regions;
- 2) addressing common challenges in the environment, public health, safety, and security;
- 3) promotion of better conditions for persons, goods, and capital mobility.

The above-mentioned strategic objectives were reflected in thematic objectives in order to categorize projects and make their monitoring and evaluation easier:

- 1) business and SMEs development;
- 2) support of education, research, technological development, and innovation;
- 3) environmental protection, climate change mitigation, and adaptation;
- 4) promotion of border management and border security, mobility, and migration management.

The total budget of the Programme was 77.5 million euros. Half of this amount was contributed by the European Union and the other half was equally contributed by Russia and Finland.²

We believe that the CBC Programme formed a unique system of regional cooperation between Russia and the EU, and especially Finland. Some scholars highlight the following challenges during CBC programmes implementation: partners' readiness to participate in a programme, the capacity to responsibly manage the programme, the level of partners' knowledge, and the readiness of regional and local authorities to support a programme [22, p. 856]. Despite the challenges, CBC programmes have proven to be effective, as evidenced by the South-East Finland — Russia Cross-Border Cooperation Programme 2014—2020. The programme achieved both quantitative and qualitative results.

Firstly, both Russia and Finland were equally involved in the management of the programme. Originally, the ENI programmes were developed as European policy and European documents reflect a coherent structure of multi-level institu-

¹ South-East Finland — Russia CBC 2014—2020. Joint Operational Programme, *CBC*, URL: https://www.cbcpjoints.eu/wp-content/uploads/2016/02/South-East-Finland-Russia-CBC-2014-2020-JOP_EN.pdf (accessed 24.01.2023).

² Ibid.

tions responsible for cross-border cooperation. Some scholars argue that the ENI cross-border cooperation programmes are still hierarchical and are governed by the EU [13]. Despite this fact, we claim that in recent years Russia has remained a full-fledged partner. As it is shown above, the Russian party has participated on equal terms in the preparation and determination of strategic and thematic priorities and their financing, took part in decision-making, selection of projects, monitoring and assessing their results.

Secondly, for many years, cross-border cooperation programmes have been a unique mechanism helping to respond to local challenges while remaining relatively depoliticized. Some scholars approach the relationship between the European Union and Russia using the concept of ‘resilience’. This entails that the system displays adaptability in response to various challenges [31]. Cross-border cooperation had remained a robust means of communication until the spring of 2022, thereby affirming the validity of this concept.

Thirdly, the configuration of partners also garnered attention. On the Finnish side, the prevalent types of partners included non-governmental organizations (NGOs) and businesses, while on the Russian side, municipalities, NGOs, and universities. This aligns with the perspectives of Scott [32], Sebentsov [10; 11], and Koch [13] that cross-border cooperation, particularly within the ENI CBC Programmes, exhibited numerous characteristics of multi-level governance. This theory elucidates the diversification of actors and their alignment, encompassing both vertical and horizontal dimensions.

Finally, cross-border cooperation became ‘more cross-border’: projects moved from large cities to local centres located directly at the border. This trend emerged in the 2007–2013 programme period and consolidated in 2014–2020 [10; 11].

Hence, by 2020, an institutionalized system of collaboration between local entities in Russia and Finland had been established, a development that was also shaped by the South-East Finland—Russia Cross-Border Cooperation Programme (2014–2020).

Russian-Finnish Cross-Border University

Nowadays, universities actively participate in international cooperation and are involved in globalization as both its subjects and agents [33, p. 63–67]. Indeed, the growing role of knowledge diplomacy implies the increasing importance of universities as actors of soft power.

The Russian-Finnish cross-border university (CBU) was a vivid example of the agency of universities in international relations and, in particular, in paradiplomacy. The cross-border university consisted of a community of Russian and Finnish universities, which aimed to elaborate and develop joint master’s programmes. The language of instruction was English, and classes and research activities took place in both Finland and Russia. Master’s programmes lasted for two years, consisted of 120 ECTS, and included classroom training, internships, and master’s thesis defense in both universities.

Concerning the legal grounds of such cooperation, the initiative was conducted under the Finnish and Russian normative base. The Ministries of Education of Finland and Russia approved the project as it was compatible with the main goals of the “Strategy for the internationalization of universities in Finland”¹ and met Russian national priorities such as the development of academic mobility, strengthening of international research activities and implementation of joint and double diploma programmes [34].

One of the most significant and enduring connections was forged between St. Petersburg State University and the University of Tampere in Finland. In 2003, St. Petersburg State University professors developed a master’s degree programme “Baltic and Nordic Studies” and in 2004, the joint Master’s double-degree programme with the University of Tampere was launched.

The curriculum of the joint programme was flexible and combined courses from St. Petersburg State University and Tampere University.

Some of SPbU main courses were:

- Social and economic development of the countries and regions of the Baltic Sea;
- Foreign Policies of Baltic and Nordic Countries;
- History of International Relations in the Baltic region;
- Special Forms of International Relations in the Baltic region;
- Russian Policy in the “New North” Region.²

Courses offered by Tampere University were the following:

- Key Concepts in Political Science;
- Theory and Metatheory in International Relations;
- Political Leadership and Political Processes;
- Political Systems;
- Advanced introduction to Research methods, Argumentation, and Philosophy of science.³

As indicated by the curriculum, both SPbU and Tampere University incorporated not only general theoretical courses but also practice-oriented ones into the programme. Some of these courses were mandatory for the successful completion of studies, while others were optional, allowing students to select study fields that aligned with their research interests.

As noted by Hudolej, Novikova, and Lanko, the contribution of Finnish colleagues to the programme encompasses the advancement of theoretical underpin-

¹ Strategy for the Internationalisation of Higher Education Institutions in Finland 2009—2015, 2009, *Valtioneuvosto Statsradet*, URL: <https://julkaisut.valtioneuvosto.fi/handle/10024/77779> (accessed 24.01.2023).

² Baltic and Nordic Studies. *Saint-Petersburg State University*, URL: <https://spbu.ru/postupayushchim/programms/magistratura/issledovaniya-baltiyskih-i-severnoy-stran> (accessed 24.01.2023).

³ Master’s Programme in Leadership for Change, *Tampere University*, URL: <https://www.tuni.fi/studentguide/curriculum/degree-programmes/uta-tohjelma-1698?year=undefined&activeTab=1> (accessed 24.01.2023).

nings of pragmatism in international relations, critique of the liberal world theory, and the evolution of the gender-oriented approach [35]. This assertion finds support in the learning materials designed by Tampere University. For instance, the suggested reading list for the International Relations course in Tampere included numerous texts dedicated to critical approaches, feminist theory in the postmodern context, and interdisciplinary perspectives.¹

In turn, the unique features of the St. Petersburg State University research school include:

- The reductionist approach to foreign policy analysis involves examining the influence of domestic decisions made by a large state when analyzing various components of foreign policy;
- the historical approach to the dichotomy ‘small countries — big powers’;
- extensive use of foreign languages in education and science [35].

Courses from the SPbU curriculum, such as “History of International Relations in the Baltic Sea Region” and “Russian Federation Policy Towards the Baltic and Nordic Countries,” serve as examples that can illustrate these particular characteristics.²

The effectiveness of the Cross-border university can be gauged by factors such as the count of existing international programmes and the number of alumni who have acquired double degrees. Additionally, from a more conceptual standpoint, the effectiveness of this form of collaboration is rooted in the growing significance of universities in Russian-Finnish paradiplomacy. As mentioned earlier, there is a notable trend involving the active engagement of Russian and Finnish higher education institutions as partners in cross-border cooperation initiatives. Universities have become traditional participants in cross-border projects, particularly from the Russian side.³ That demonstrates how universities turn into significant actors of multi-level governance in the Russian-Finnish relations and in the Baltic Sea region in general.

Discussion and conclusion

As demonstrated by the theoretical framework, there is no singular definition for paradiplomacy. It serves as an overarching concept encompassing the international engagements of sub-national entities. Paradiplomacy employs both direct and indirect strategies [5] and is composed of multiple dimensions or layers that signify varying levels of cooperation [8].

¹ Theory and Metatheory in International Relations, *Tampere University*, URL: <https://www.tuni.fi/studentsguide/curriculum/course-units/uta-ykoodi-37572?year=undefined> (accessed 24.01.2023).

² Baltic and Nordic Studies, *Saint-Petersburg State University*, URL: <https://spbu.ru/postupayushchim/programms/magistratura/issledovaniya-baltiyskih-i-severnoy-stran> (accessed 24.01.2023).

³ Funded projects. CBC 2014—2020 South-East Finland — Russia, *Cross-Border Cooperation*, URL: <https://www.sefrcbc.fi/funded-projects-2/> (accessed 05.06.2023).

Through an examination of the modes of regional cooperation between Russia and Finland, distinctive as well as shared attributes were identified. These attributes were subsequently consolidated, forming the foundation for outlining the trajectories of paradiplomacy advancement within the Baltic Sea region and on a global scale (Table 2).

Table 2

Trends in the development of paradiplomacy at the regional and global levels

Baltic Sea Region	World
<p>The significance of project activities grew, both in the context of Russian-Finnish collaboration and across the broader Baltic Sea region.</p> <p>The variety of communication methods and the entities engaged in cooperation projects highlighted a shift toward multi-level governance.</p> <p>Russian-Finnish paradiplomacy, along with broader Russian-European paradiplomacy, displayed an ascending trend of becoming more equitable and symmetrical.</p>	<p>The Baltic Sea region strengthened its position as an actor in global politics, as paradiplomacy simultaneously strengthens globalization and regional political processes.</p>

As previously mentioned, paradiplomacy not only mirrors but also amplifies two pivotal trends in international relations: globalization and regionalization [15; 16; 36]. Cases of Russian-Finnish regional collaboration substantiate this assertion. City diplomacy, exemplified by the twin city initiative, and cross-border cooperation programmes showcase regionalization processes. Simultaneously, knowledge diplomacy and the internationalization of higher education, as demonstrated by the Cross-border university, underscore globalization processes.

The Russian-Finnish paradiplomatic experience can be generalized and described from a theoretical perspective as a distinctive system of regional cooperation. Generally, the Russian-European cross-border cooperation programmes evolved into structured institutions facilitating collaborative initiatives through which specific projects were implemented. The distinctiveness of this model lay in its amalgamation of both top-down and bottom-up approaches, while encompassing all three layers of paradiplomacy identified by Lecours [8]. Cross-border initiatives influenced two key aspects: (1) the establishment of particular links between local partners and interpersonal connections; (2) the shaping of strategic foreign policy priorities for Russia, Finland, and Europe. This phenomenon is theoretically explicable by the application of both direct and indirect methods of paradiplomacy [5].

Furthermore, certain forms of paradiplomatic engagement, such as the Cross-border university and twin cities, contributed to a distinct landscape of Russian-Finnish cooperation. They also heightened the role of regional actors, thereby reflecting the trend of increased project activity within the Baltic Sea region and the strengthening of the principle of multi-level governance [13; 20].

At the moment, the prospects for the development of Russian-Finnish regional cooperation appear to be uncertain. In March 2022, the European Commission suspended all cross-border cooperation programmes involving Russia and Belarus, a move followed by Finland. Consequently, in the short-term perspective, while certain communication channels might endure, the possibility of comprehensive cooperation seems improbable. As a result, the evolution of paradiplomacy will be shaped by the broader trajectory of Russian-European relations.

Nevertheless, this effective cooperation model holds the potential for replication in other border regions of the Russian Federation. Given that the current cross-border initiatives operated within the framework of European legislative instruments (such as ENI, ENPI policy, etc.), it was unilaterally suspended. To avert such situations and potentially pioneer paradiplomacy in the Far East and Central Asia, Russia could establish a cross-border cooperation system anchored in the national legislation and its own institutional frameworks. Hence, the positive experience gained from Russian-European cooperation could serve as the foundation for a comparable institutional model, fostering cross-border cooperation along other parts of the Russian national border.

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ECONOMIC GEOGRAPHY

ECONOMIC DEVELOPMENT OF RUSSIA'S NORTH-WESTERN REGIONS AND MIGRATION TO THE ST. PETERSBURG AGGLOMERATION

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This article aims to analyse the development of Russia's North-Western Federal District (NWFd) regions between 1998 and 2021, based on data from Rosstat. It focuses on how the territories responded to migration to the St. Petersburg agglomeration in the early 21st century and compares their progress with the cores of the St. Petersburg, Moscow, and Helsinki agglomerations. For building the models, regions with similar development dynamics were divided into four sectors: St. Petersburg, the Leningrad region, three less advanced northern areas, and the more successful NWFd territories. Before the 2008–2009 crisis, St. Petersburg and the Leningrad region outperformed the other north-western areas. However, the crisis led to a sharp decline in economic growth rates across the federal district, with manufacturing, agriculture, and forestry replacing the service sector as the main drivers. St. Petersburg's development slowed down, and it became less efficient compared to the Leningrad region and the other five territories, which excelled in manufacturing, agriculture, and forestry. Despite migration to the St. Petersburg agglomeration and an associated increase in employment, the city did not gain a significant advantage over the other NWFd regions due to insufficient investment and hindrance in the development of new economic sectors. Migration to the St. Petersburg agglomeration primarily involved younger people but did not significantly impact traditional industries, such as manufacturing, agriculture, and forestry, which remained at the core of NWFd regions' economic success. St. Petersburg's higher economic efficiency compared to Moscow and Helsinki was a result of greater investments in manufacturing.

Keywords:

St. Petersburg, migration, agglomeration, labour productivity, region, investments

Introduction

Russia's population is not growing, yet its concentration in major cities, primarily Moscow, St. Petersburg, and regional hubs, is on the rise. This trend is prevalent in both developing and developed nations. Urban agglomerations offer

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a notable advantage in terms of heightened innovation activity. These agglomerations foster new areas of activity that, in conjunction with conventional ones, stimulate a demand for enhanced skills and knowledge, thereby establishing a comparative advantage for cities [1]. The expansion of agglomerations is also linked to the rapid expansion of financial services, transportation, commerce, real estate transactions, construction, and warehousing [2; 3]. Notably, transport plays a pivotal role in agglomeration development, and the infrastructure required for transport comes with substantial and ever-increasing costs [4]. Larger cities generally exhibit improved economic productivity, except in polycentric urban configurations where their growth reportedly has minimal impact on productivity [5]. Simultaneously, agglomeration development hinges upon connections with nearby major centers, key transportation routes, and cargo flow [6]. Importantly, it should be noted that most urban agglomerations in Russia are advancing at a slower pace compared to those in developed countries.

Agglomeration effects are not always positive — high population densities in developing countries cause environmental degradation, problems with health care and education [7]. For developed countries, mathematical simulations have demonstrated that liberalization of commerce causes the least efficient entrepreneurs to concentrate in agglomerations. This explains the growth of poor neighborhoods in agglomerations in developed countries [8].

A more favourable development trend is observed in the Nordic countries, where agglomerations are relatively small and the level of innovation activity is higher. Knowledge-intensive industries in these countries are concentrated in urban agglomerations, particularly Helsinki [2; 9].

The share of intangible products with low logistics costs, mostly related to information and communication technologies (ICT), is growing in Nordic economies. In Finland, game software development companies tend to concentrate in university cities, as staff communication and inter-firm contacts are essential for them. In Helsinki, knowledge-based firms are usually located closer to the urban core and to universities, whereas the most narrowly focused clusters may be found in relatively peripheral locations [10; 11].

The 2008—2009 financial crisis had a severe impact on the development of Russian regions. It also had a tangible effect on the Finnish economy, slowing down its development and intensifying migration. In Finland, population growth has been minor, and agglomerations have mostly grown through migration. The population has migrated from the north and east towards the south, and to a lesser extent, to the Baltic Sea coast and university cities. The most attractive agglomerations have been those of Helsinki and Turku, which saw an acceleration of in-migration after the 2008—2009 financial crisis [12; 13].

St. Petersburg has consistently held the status of a central city for science and education. It boasts a robust level of innovation activity, comparable to that of Helsinki. In the Soviet era, St. Petersburg (formerly Leningrad) emerged as an educational, technological, and industrial hub. It played a pivotal role in advanc-

ing education and technology in its surrounding regions by dispatching its graduates to work in other areas. The progress of St. Petersburg, in turn, contributed to the progress of adjacent regions [14; 15].

Since the 2000s, Russia has witnessed an acceleration in the concentration of its population in the largest urban agglomerations. This trend is attributed to higher wages, improved working conditions, and more comfortable living standards [16]. The centralization of power corresponds to a concentration of financial resources. This means that the higher the level of the urban centre, the greater the capacity it possesses to establish favourable conditions for its residents [17–19]. The headquarters of major corporations are predominantly situated in Moscow, St. Petersburg, and other major agglomerations. The outward migration of the younger and more dynamic population increases with the distance from the regional centre, which often serves as the region's education nucleus [18; 20]. Unlike the previous era of the USSR, where a considerable number of graduates from higher and secondary vocational education institutions would leave the regional capital for more remote areas in exchange for certain social advantages, the prevailing trend among today's graduates is to either stay put, often not fully utilizing their professional skills, or to relocate to even larger cities.

Another factor apparently promoting migration to St. Petersburg is that the real budgets of other regional centres in the North-western Federal District (NWFD) are decreasing, with minor growth in only two of them [21]. As a result, there is no tangible growth of population in the capital cities of other regions in the NWFD (except for the exclave Kaliningrad Region), and the in-migration from the region's municipalities merely offsets the out-migration from administrative centres to larger cities. The largest and most attractive city in the NWFD is St. Petersburg, which is a separate federal subject — a status providing more budgetary rights. The registration of PJSC Gazprom in St. Petersburg in 2021 resulted in a 2.5-fold growth in the profit of the city's economy and augmented its budget revenues. The population of the Helsinki subregion is also growing faster than in the ten neighbouring subregions, and the farther away from the capital, the more challenging the situation becomes in terms of population dynamics.

The active population migration to the St. Petersburg, Moscow, and Helsinki agglomerations was accompanied by an increase in investments, but then the development of the agglomeration core gradually slowed down while the development of suburban areas gained pace.

There is also a possibility of other agglomerations forming in the NWFD. An analysis of potential agglomerations was carried out for northern regions [22]. Four agglomerations comprising the administrative centers were identified in the northern regions of the NWFD [23].

Research on interactions inside the St. Petersburg agglomeration revealed not only effects but also problems [24]. St. Petersburg significantly influences the adjacent parts of the Leningrad Region, furthering the development in some of them but causing a degradation of others. A study of the areas adjoining St. Petersburg

showed noticeable population growth to have occurred only in the northern and northeastern districts [25; 26]. Inequality in development is also evident across the Northwestern Federal District (NWFD) regions. Specifically, the three Baltic regions are progressing more effectively, whereas development in the northern regions is advancing at a slower pace [27].

When analyzing the upsides and downsides of urban agglomeration, researchers rarely cover the entire region, usually just stating the fact that territories outside of the agglomeration experience degradation [28]. Therefore, it appears interesting to examine the development of the NWFD at large and its specific regions, as well as the effects of the migration to St. Petersburg and its environs, since most other NWFD regions are losing the most valuable resource — the youth, who tend to concentrate in the St. Petersburg agglomeration after completing their education, thus augmenting the city's potential.

The aim of this article is to conduct a comparative analysis of the development of the regions within the Northwestern Federal District (NWFD) during the early 21st century, considering the backdrop of population migration toward the St. Petersburg agglomeration and the resulting shifts in the number of employed individuals across other districts. Additionally, it is of interest to examine the economic progression of St. Petersburg, Moscow, and Helsinki both prior to and following the crisis of 2008—2009.

Methods

The data on the NWFD regions were subjected to analysis spanning the period from 1998 to 2021. Various parameters were then plotted to identify correlations and connections between them. Consequently, economic sectors were delineated by clustering regions with comparable development characteristics. Equations were subsequently formulated for these sectors, elucidating the influence of the crisis on primary regional developmental indicators and the effectiveness of resource utilization.

The analysis of the development of the North-Western Federal District (NWFD) regions reveals the existence of four distinct sectors, each showing significant variations in terms of socio-economic indicator dynamics. Given that the St. Petersburg agglomeration includes a part of the Leningrad Region, it should be regarded as a separate sector.¹ As demonstrated previously, the development of northern regions in European Russia is substantially different from the rest of the country [29]. This means that in addition to St. Petersburg and the Leningrad Region separate consideration should be given to the three slower developing northern regions (the Republic of Karelia, the Komi Republic, and the Murmansk

¹ The absence of a metric to match GRP at the municipality level made it impossible to divide the Leningrad Region into two parts, isolating the municipalities included in the St. Petersburg agglomeration, and thus to analyze the St. Petersburg agglomeration, not St. Petersburg, as a sector.

Region) and the remaining five more successful regions (Arkhangelsk, Vologda, Novgorod, Pskov, and Kaliningrad Regions). The Nenets Autonomous Okrug was studied as part of the Arkhangelsk Region.

The change in labour productivity in the NWFED over the study period was broken down into the contributions of the four sectors (first summand) and the structural changes (second summand):

$$\Delta y(t) = \sum_i \frac{L_i(t-1)}{L(t-1)} \times (y_i(t) - y_i(t-1)) + \sum_i y_i(t) \times \left(\frac{L_i(t)}{L(t)} - \frac{L_i(t-1)}{L(t-1)} \right), \quad (1)$$

where $y(t)$ is labour productivity; $\Delta y(t)$ is the increase in labour productivity; $L(t)$ is the number of the employed; i is the sector; t is the year. Labour productivity was derived from the ratio between the gross regional product (GRP) and the number of the employed. As applied to individual economic activities, it was calculated as the ratio of gross value added (GVA) to the number of employed individuals. As the official activity classification procedure was changed (first the adoption of OKVED, then OKVED2), calculations using formula (1) had to be done separately for the periods during which each methodology was used.

Investment efficiency was estimated using fund elasticity, which is the percentage increase in production volumes (gross regional product, or GRP) provided by a 1% increase in cumulative investment over four years. The change in fund elasticity ε_K was estimated from smoothed data for each of the four sectors:

$$\varepsilon_K = \frac{\delta_Y - \delta_L}{\delta_K - \delta_L}, \quad (2)$$

where ε_K is the elasticity; $\delta_Y = \frac{\dot{Y}}{Y}$, $\delta_K = \frac{\dot{K}}{K}$, $\delta_L = \frac{\dot{L}}{L}$, are logarithmic derivatives; $Y(t)$ is the GRP; $K(t)$ is cumulative investments. The ultimate finding was the dynamics of the efficiency of investments into each sector.

However, even after data smoothing, the pattern of fund elasticity in the 2010s exhibited pronounced fluctuations. Therefore, to more accurately determine the trends of ε_K VES production functions (Heady—Dillon) had to be built for each sector and for the NWFED as a whole:

$$Y(t) = A \times K^\alpha(t) \times L^\beta(t) \times \exp(a \times K(t) + b \times L(t)), \quad (3)$$

where A , a , b , α , β are constants. Equation (3) helps detect trends in fund elasticity change and refine the calculations by formula (2).

Data and analysis

The study was based on regional data published by the Federal State Statistics Service (Rosstat) on gross regional product (GRP) dynamics, employment,

investments, population size, structure of the economy, and other indices in 1998–2021. Other inputs were data from Rosstat territorial units and Statistics Finland.

The technique for computing the indices under analysis (GRP and the number of employed individuals) has undergone two substantial revisions by Rosstat. However, as data for the same year calculated by different techniques were available, it was possible to plot the time series for regions and then also for sectors. Value indicators were converted to comparable prices. Analysis of the plots showed that they were significantly different before and after the crisis of 2008–2009. Therefore, two sub-periods were distinguished: 1998–2008 and 2009–2021.

The St. Petersburg agglomeration had been growing mainly due to the inflow of population from other NWFD regions, first of all the nearest and northern ones, and only migration from the exclave Kaliningrad Region was minor. Migration out of the federal district (mainly to the Central FD) did not exceed a third of the inter-regional migration. It has been previously demonstrated that population migration tends to be more active in northern parts of European Russia [29]. As compared to Moscow, which has expanded territorially, the migration gain in St. Petersburg was not so great. For example, in 2020, it was six times as much in the surrounding Leningrad region and twice as much in the Kaliningrad region. The migration gain of the working-age population in these two regions was higher than the NWFD average in 2019–2020. There are fast-growing cities in the Vsevolozhsky District of the Leningrad region whose residents mainly work in St. Petersburg (Murino, Yanino, Kudrovo, Sertolovo, Bugry, Novoye Devyatkinno).

The growth of regional economies in the NWFD in 1998–2008 came along with an increase in employment (except for the three northern regions). After the crisis of 2008–2009, employment started declining not only in northern regions but also in the quintet of other regions, and the Leningrad region joined in the decline starting in 2015 (Fig. 1). The region's positive migration balance coupled with a reduction in employment is evidence that most of the migrants work in St. Petersburg while living in its surroundings. Employment growth in St. Petersburg halted in 2015, as opposed to Moscow, where it continues. Accordingly, the share of St. Petersburg in the total employment in the NWFD increased by a mere 5 percentage points — to 45.3% in 2021 — owing to a decline in northern regions and the five other regions of the federal district. In the first sub-period, the share of St. Petersburg remained unchanged whereas the share of the fast-growing Leningrad region increased, slightly contributing to economic growth acceleration in the NWFD at large. Finland showed a similar pattern. Prior to the crisis, employment had been growing in all subregions around Helsinki, the growth rate in the nearest subregions being even faster than in Helsinki. After the crisis had ended, employment growth in Helsinki recovered in just a year, whereas in other subregions (except for the nearest Porvoo) employment has not been growing since then.

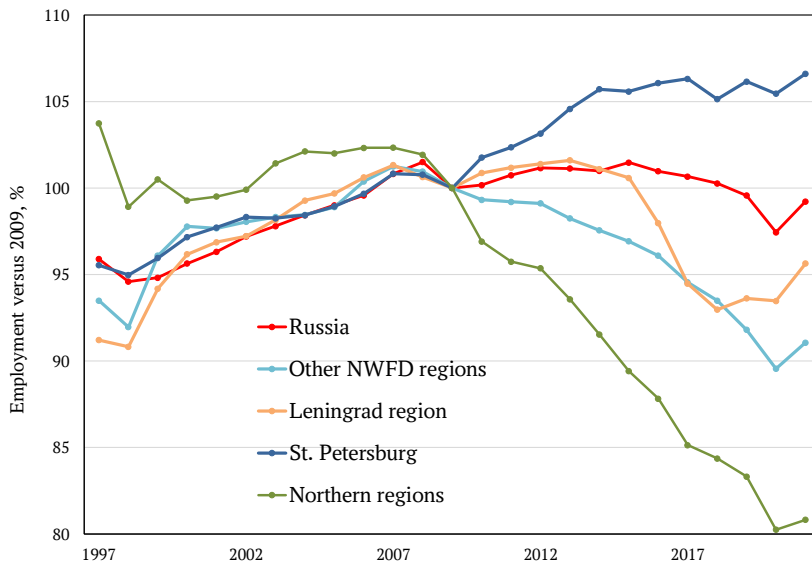


Fig. 1. Employment trends in four economic sectors of the NWFD versus Russia at large (2009 taken for 100%), %

Source: calculated by the author from Rosstat data.

Unexpectedly, investments into the economy of St. Petersburg and the mining-oriented northern regions before the crisis were growing slower than in the quintet of other regions (Fig. 2). In the first sub-period, investments in the Kaliningrad and Arkhangelsk regions increased almost 10-fold (carbohydrate deposits were developed in the Nenets Autonomous District and the Kaliningrad region had a special economic zone and was an implementation area of an ad hoc federal program). After the crisis of 2008–2009, investments continued increasing only in the Leningrad region and for a while in the northern regions. Investments into the St. Petersburg economy resumed growth after the crisis only in 2013, but it was unstable and insignificant. Overall, annual investments into the NWFD economy in 2019–2021 were smaller than in 2008. The contribution of the Leningrad region to the investment structure grew substantially at the expense of St. Petersburg, likely because some industries were translocated from the city to the region, but not so much as from Moscow. Investments into the economies of northern regions and five other NWFD regions have since 2004 been in most cases greater than investments into the St. Petersburg economy. The situation in the Central Federal District (CFD) was different – investments into Moscow’s economy have been increasing rapidly, by far exceeding the investments into all other CFD regions collectively and promoting employment growth in the capital [30]. Investments into the economy of Helsinki remained almost unaffected by the crisis, unlike in most of its surrounding subregions. Where before the crisis Helsinki’s share among 11 subregions had been almost invariable, after the crisis it started growing.

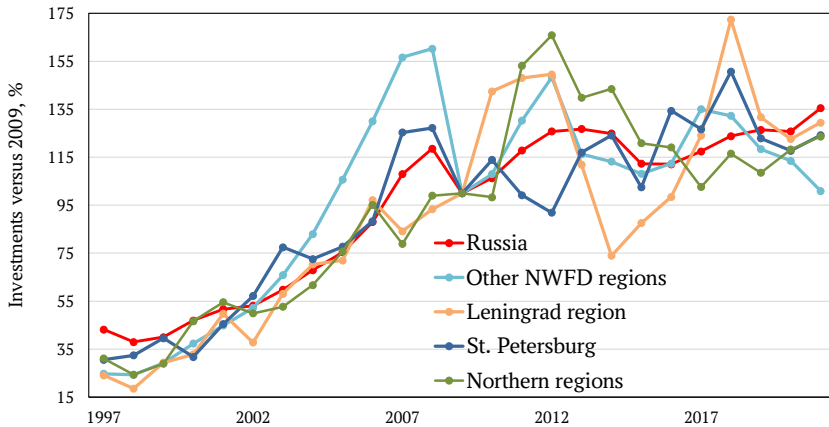


Fig. 2. Investment trends in four economic sectors of the NWFD versus Russia at large (2009 taken for 100%), %

Source: calculated by the author from Rosstat data.

The investment appeal of Moscow is evidenced by the fact that investments per person employed in its economy are twice that of St. Petersburg or Russia on average. Before 2009, specific investments had been on the rise in all four sectors of the NWFD, roughly matching the Russian average. The growth was faster only in the Leningrad region. After the crisis, specific investments in Russia, St. Petersburg and other NWFD regions stopped increasing, with St. Petersburg falling behind the other three sectors in specific investments. In northern regions they were growing rapidly in the early 2010s but then dropped to the same level as in other regions. In the Leningrad region specific investments continued growing, eventually matching Moscow's level. If St. Petersburg and the Leningrad region are considered together, their investments per employee are at about the same level as in the NWFD on average. The greatest specific investments averaged over the study period were found in the Leningrad region (St. Petersburg suburban area is developing actively), in the Komi Republic and the Arkhangelsk region owing to oil and gas development projects, while the lowest levels of specific investments were demonstrated by the Pskov, Novgorod and Kaliningrad regions and the Republic of Karelia, a substantial part of the investments there coming from the government budget. In some years, more than a half of investments in the Kaliningrad and Novgorod regions were budget investments, chiefly from the federal budget.

The proportion of investments from the regional budget in Moscow is almost twice as much as in St. Petersburg and 2.5 times as high as the Russian average, but a vast majority of the funds have to be invested in developing the transport infrastructure of the expanded capital. At the same time, the share of investments

in manufacturing in St. Petersburg and the Leningrad region is several times greater than in Moscow, influencing the development efficiency of these regions (Table 1).

Table 1

**Share of investments in manufacturing in investments
in fixed capital of regions, %**

Region	2018	2019	2020	2021
St. Petersburg	14.6	14.1	12.2	15.8
Leningrad region	15	18.6	25.1	32.2
Moscow	4.1	3.7	4.3	4.5
Moscow region	14.8	13.5	13	13.9

Source: calculated by the author using Rosstat data.

The higher average salaries in St. Petersburg are a major driver of migration to the agglomeration. The average salary in St. Petersburg grew relative to the national level until 2018 and currently exceeds it by more than 1.3-fold. However, salaries in St. Petersburg are still significantly lower than in Moscow.

In the mid-1990s, salaries in the northern regions were twice the Russian average. However, they have since decreased to slightly above the national average and lower than in St. Petersburg, which is a reason for out-migration. According to the census of 2020, the population of northern regions dropped by 16–18% since the 2002 census. In the quintet of other regions salaries have also gone down to about 80% of the Russian average, although in the late 1990s they were higher than in St. Petersburg and Russia in general. The decline was especially pronounced in the Vologda region — from 182% of the Russian average in 1997 to 79% in 2021. Average salaries in the Leningrad region used to be in parity with the Russian average but have decreased tangibly in the past three years, causing the region's residents to seek jobs in St. Petersburg.

The depopulation-affected northern regions of the NWFD had been growing slowly before the crisis, after which the growth almost came to a halt (Fig. 3). Two of the regions, the Republics of Komi and Karelia, were still below the 2007 GRP level in 2019–2021. Growth rates similar to that of St. Petersburg were demonstrated by the Arkhangelsk, Kaliningrad, and Novgorod regions. It is worth noting that economic growth in the Novgorod region was slower in the first sub-period than in the other two regions. However, in the second sub-period, growth slowed down in the Arkhangelsk region, which had previously experienced an economic boom due to oil and gas projects. Saint Petersburg and the Leningrad region were developing rapidly in the first sub-period, after which their development slumped down, so that St. Petersburg even lagged behind the Novgorod region in GRP growth rates. Nonetheless, the economic growth of

St. Petersburg was faster than in the rest of NWF D regions taken together and faster than in Moscow. After PJSC Gazprom became registered in St. Petersburg in 2021, the city's performance indicators grew notably.

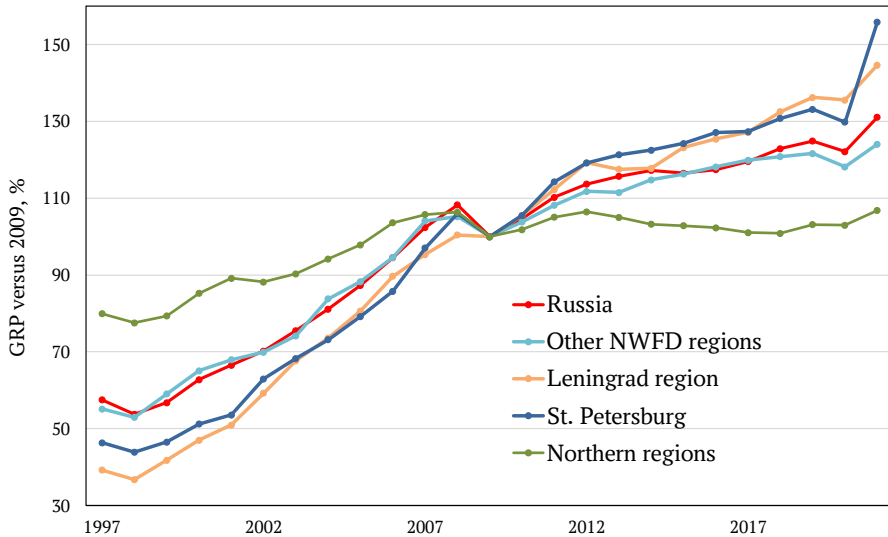


Fig. 3. GRP trends in four economic sectors of the NWF D versus Russia at large (2009 taken for 100%), %

Source: calculated by the author from Rosstat data.

In the first sub-period labour productivity was growing rapidly in the Leningrad region and somewhat slower in St. Petersburg, the Arkhangelsk and the Kaliningrad regions. In northern regions, the development was much slower (Fig. 4). In the second sub-period (especially after 2012) the development of all regions (except for the Murmansk region, whose economy saw a sharp increase in investments after 2011) slowed down. Labour productivity in St. Petersburg was growing slower than in the sector of five other NWF D regions, the reason being a slower increase in investments. The fastest growth in labour productivity was happening in the Leningrad and Novgorod regions. However, even if St. Petersburg and the Leningrad region are taken collectively, they lagged behind the quintet of regions and were at about the same level as northern regions in labour productivity growth rates before 2021. A thing to note is that labour productivity growth in NWF D regions on average in the second sub-period was approximately three times slower than in the first one. At the same time, labour productivity in Moscow, in contrast to St. Petersburg, has not grown significantly after the crisis of 2008—2009, still remaining below the 2007 level. Similarly, labour productivity in Helsinki has not been growing after the crisis, in spite of the continuing concentration of investments and employment in the metropolitan area.

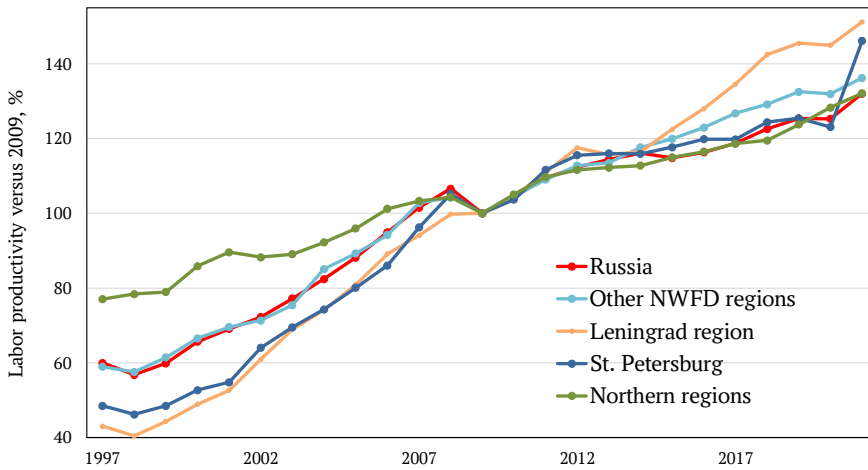


Fig. 4. Labour productivity trends in four economic sectors of the NWFD versus Russia at large (2009 taken for 100 %), %

Source: calculated by the author from Rosstat data.

Results of calculations

Calculations by formula (1) showed that the effect of structural changes on labour productivity in the NWFD has been minor (below 1 %) — negative before 2008 and positive after the crisis. Prior to the crisis, more than a half of the labour productivity growth was due to St. Petersburg and a quarter of the growth was provided by the group of five regions. The contribution of the northern regions and the Leningrad region was minor. The development of St. Petersburg slowed down after the crisis and the faster advancing Leningrad region and the group of five regions provided over 60 % of the total increase in labour productivity in the NWFD while St. Petersburg contributed a little over a quarter. As to the CFD, calculations showed that Moscow had almost no effect on labour productivity dynamics in this district in the second sub-period.

Based on the calculations from formulas (2) and (3), the economies of St. Petersburg and the Leningrad region exhibited the most efficient growth before the crisis. However, there was a slight decline in the fund elasticity within the region. The elasticity in the other two sectors was almost twice as low but with some increase happening in northern regions and a downward trend in the quintet of regions. In the second sub-period, elasticity was the highest in the quintet of regions, lagging far behind in the other three sectors (elasticity levels in the Leningrad region and St. Petersburg fluctuated, while in northern regions they fell to nearly zero). The efficiency of investments in Moscow and Helsinki after the crisis of 2008—2009 has been near zero.

As has been noted previously, the population trends and economic structure of NWFD regions depend on the distance to Moscow and St. Petersburg [20; 31]. Calculations show that the dependence for GRPs in the NWFD in the sec-

ond sub-period alone was the following: the greater the distance, the slower the region's economic growth ($R^2=0.58$). This relationship was the most vivid in 2010—2014. Labour productivity growth after the crisis of 2008—2009 was also slower in the more remote regions. In this case, calculations of the dependence on the distance to St. Petersburg excluded the Kaliningrad region, which is an exclave. Applying this analysis to 10 subregions around Helsinki, we find that before the crisis GRP and labour productivity trends were more positive in the ones nearest to the capital, but this relationship vanished after the crisis.

Discussion

After the crisis of 2008—2009, the development of the Russian economy slumped down and some regions, in particular the Komi and Karelian Republics, have not recovered to their GRP level of 2007 even now. Where before the crisis labour productivity growth in St. Petersburg had been only a little slower than in the Leningrad region and much faster than in the other two sectors, after the crisis it fell behind all regions except for the Komi Republic. Furthermore, the industry of the NWFD was developing at a slower rate than in Russia on average, its shares in both the district's GRPs and in total employment were declining, the steepest decline in the share of industrial employment happening in St. Petersburg and the Leningrad region [32].

After the crisis, manufacturing, extracting industries, ICT, agriculture and forestry in Russia started growing at a faster pace than the Russian economy at large. Accordingly, development since 2009 has been more successful in regions with a higher share of manufacturing, agriculture and forestry, and least successful in regions with a high and low share of services. The high share of services in many poorly developed regions that are not attractive for investments is predicated on the substantial share of budget-funded sectors. Coupled with minor growth of real salaries, which constitute a weighty proportion of the GRP, this hinders labour productivity growth. The stagnation of real income results in a slower labour productivity growth in some advanced regions with a high share of consumer services. A low share of services is found also in many mining-oriented regions, which feature slow labour productivity growth in the mining industry. The ICT sector is developing successfully, but its share is rather small even in the more advanced regions, and an increase in the share of ICT does not entail a noticeable rise in the efficiency of the region's economy in general.

Regions of the NWFD, especially southerner ones, place much focus on manufacturing, its share being notably higher than in Russia on average. The share of high-tech and advanced medium-tech industries is also high; e.g., it was around 50 % in the Novgorod and Kaliningrad regions, and about 35 % in St. Petersburg. Only in the three northern regions it ranged from 1.5 to 7 %. Investments in these industries have the highest efficiency, but in reality, not much has so far been

invested. The rapid labour productivity augmentation in the Novgorod region in the second sub-period was most likely a consequence of high innovation activity and a large share of high-tech industries.

Two Russian metropolitan cities have been developing differently after the crisis. A comparison of economic development indicators for Moscow and St. Petersburg showed that the significance of Moscow for the development of Russia's economy decreased in the 2010s, whereas the contribution of St. Petersburg has been growing [33]. Moscow's economic development efficiency has been very low after the crisis of 2008–2009. While consuming increasing amounts of resources, the city managed to surpass the 2008 level of GRP and labour productivity only in 2021. The economy of St. Petersburg has been growing, perhaps not so fast as before, but faster than the Russian average, while the increase in employment and investments has been minor.

The average annual GRP growth rate plummeted after the crisis in all regions included in the three agglomerations mentioned above (Table 2), with the heaviest reduction in Moscow. Labour productivity growth rates suffered an even greater reduction. The situation outside of Moscow, St. Petersburg and Helsinki was better. Before the crisis, labour productivity growth in Helsinki had outpaced the national average in Finland. However, following the crisis, there was a slight decline in this indicator within the city, whereas across Finland as a whole, productivity continued to grow, albeit at a reduced rate of approximately 0.7 % per year.

Table 2

Mean annual GRP and labour productivity growth rates before and after the crisis of 2008-2009, %

Region	GRP		Labour productivity	
	2000–2008	2009–2021	2000–2008	2009–2021
St. Petersburg	9.5	3.8	9.0	1.9
Leningrad region	9.9	3.1	9.3	3.5
Moscow	8.5	1.9	6.2	1.1
Moscow region	9.0	4.1	6.3	3.6
Helsinki	3.2	1.9	1.5	-0.06

Source: calculated by the author from data published by Rosstat and Statistics Finland.

The growth of St. Petersburg's GRP after the crisis was provided by the development of transport, ICT, real estate operations, professional activities, and health care, but because of the decline in manufacturing, construction and, lately, in commerce the growth has been rather limited. Hence, the GRP structure has been changing the share of real estate operations, professional and scientific activities, public administration in GVA is growing, whereas the share of manufacturing, commerce, and construction in GVA is decreasing.

Labour productivity growth in the economy of St. Petersburg has been due to the input of real estate operations, professional and scientific activities, health

care and, until 2016, transport and commerce. The inhibiting factor was a labour productivity decrease in manufacturing and construction. The positive effect of structural changes proved to be small (owing to an increase in the shares of transport, ICT, and real estate operations in employment) because of a decrease in the share of professional and scientific activities, where labour productivity is high, and a labour productivity decline in commerce, which has a high share in employment.

Almost no growth is happening in labour productivity in Moscow's economy because of its close correlation with the city's mounting problems. Ever more investments are needed for the development of transport, urban infrastructure, construction of new and maintenance of old residential buildings. Furthermore, employment has been growing the most significantly in construction, transport, and communications, where labour productivity is low.

Despite the rapid population growth within the city, the economic growth rate of Helsinki is not surpassing that of its surrounding subregions. A significant portion of Helsinki's economy is comprised of sectors with lower-than-average labour productivity, including healthcare, commerce, administrative, professional, and scientific activities. Notably, the labour productivity in the information and communication technology (ICT) sector is approximately fifty percent higher than the economy-wide average. The share of this sector in the employment structure is 8.6 % and growing.

Even faster however is the increase in the share of administrative, professional, and scientific activities. After the crisis of 2008—2009, the share of employment in ICT stopped growing for five years. Like in most big cities, employment was decreasing also in manufacturing, where labour productivity is a third greater than the economy's average. As has been pointed out, employment growth in Uusimaa and in the Greater Helsinki area occurred in the public sector and in non-market services, which did not help in enhancing the region's economic efficiency either [13]. At the end of the day, as the rise in employment related to population growth mostly takes place in low-efficiency sectors, labour productivity growth in Helsinki is slower than in Finland on average and in most of the surrounding subregions.

Conclusions

The impact of St. Petersburg and Moscow, extends beyond the immediate surrounding region. The St. Petersburg agglomeration attracts migrants from all areas of the NWFD. In contrast to the Central Federal District (CFD), investments within the NWFD are more evenly distributed, rather than solely concentrating on St. Petersburg.

The increase in employment in St. Petersburg resulted in a higher GRP growth rate compared to other regions of the federal district prior to 2008. After the crisis of 2008—2009 however, labour productivity growth in the city has been slower than in the Leningrad region and lately also slower than in the quintet of other

NWFD regions, where the share of manufacturing is higher. The more than four-fold decrease in labour productivity growth rates in St. Petersburg after the crisis is explained by its decrease in manufacturing and construction.

Labour productivity growth in other NWFD regions and in northern regions slowed down not so significantly, now exceeding that of St. Petersburg. The labour productivity growth rate accelerated even more in the Leningrad region, which has the greatest specific investments. The loss of high-quality human capital slows down the development of new sectors in peripheral regions, but it does not affect traditional sectors. This results in higher labour productivity growth rates in traditional sectors.

The St. Petersburg, Moscow, and Helsinki agglomerations continued growing after the crisis of 2008—2009, but the economies of their cores were now growing at a much slower pace and labour productivity growth was slower than in the surrounding regions, which had higher shares of manufacturing and agriculture in the economic structure.

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SPATIAL DIFFERENTIATION OF RURAL TERRITORIES IN THE KALININGRAD REGION: IMPLICATIONS FOR SOCIO-ECONOMIC POLICIES

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The article analyses the challenges associated with the development of rural areas in the Kaliningrad region. The author analyses trends in the development of agriculture, population dynamics, and settlement patterns, while also exploring their interconnectivity and external impacts. The research draws upon comparative-geographical, economic-statistical, and cartographic analyses utilizing official statistical data. The study reveals that since the early 2000s, agricultural production in the Kaliningrad region has been outpacing the national average growth rate. This is primarily attributed to the advancement of larger organisations, while the growth rates of household and small-scale farms remain comparatively low. This development trend is underpinned by a surge in labour productivity accompanied by a substantial reduction in the workforce. Consequently, rural residents are increasingly seeking alternative employment opportunities, either moving to urban areas or engaging in a different type of economic activities. Contrary to the situation in most regions of the Russian Federation, the rural population of the Kaliningrad region is growing. This growth is facilitated by an influx of individuals from other parts of Russia and other countries. Following the polarisation theory, population growth is driven by municipalities in the western part of the oblast, while eastern rural territories are losing population due to both natural decline (common to the oblast as a whole) and migration. Eastern municipalities have the demographic potential to increase the working-age population, while the western part of the oblast does not. The region has been implementing a policy of support for rural territories, especially for the peripheral eastern municipalities. However, there is a need for the policy to be further reinforced, alongside the development of a comprehensive spatial development strategy for the region. The article outlines proposals in this regard.

Keywords:

Kaliningrad region, rural areas, agriculture, population dynamics, rural settlement, regional disparities, polarisation

Introduction

Numerous works published in Russia and internationally have looked at the problems of spatial differentiation, with a special focus on rural peripherisation. This article draws on a range of ideas put forward in those works.

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Globally, the development of the rural economy and rural settlement patterns is significantly influenced by core-periphery dynamics and territorial polarisation, a relationship first brought to scholarly attention by François Perroux [26].

The influential concept of polarised biosphere was formulated by the Soviet, and later Russian, geographer Boris Rodoman [29]. Met with criticism in the Soviet Union, it is widely used today. The polarisation of the 1970s prompted the emergence of concepts such as the unified settlement system, where the works of Kazys Šešelgis [30] and Boris Khorev [16] had an essential role. It was at this juncture that Georgy Lappo [9] proposed his concept of the support framework for settlement.

A comprehensive approach to rural settlement, considered in conjunction with population replacement and advances in agriculture, first appeared in the works of Sergey Kovalev [7]. A multidimensional exploration of rural areas in line with this approach is carried out by Moscow scholars [3; 5; 11; 24; 25, etc.]. The core-periphery dynamics in rural areas have been studied extensively by international scholars [19; 21; 22; 27, etc.].

Researchers of rural areas in the Kaliningrad region may find of interest the works of Lithuanian authors [20; 23; 28, etc.]. The settlement system in Lithuania bears similarities to that of Kaliningrad, with comparable processes governing the organisation of agricultural production. The influence of the unified settlement system concept is visible in the articles of Lithuanian researchers, particularly in the descriptions of polycentric systems. Polarisation in Lithuania is even more pronounced than in the Russian region in question, with many family-owned farms having gone out of operation [18]. Polarisation becomes especially evident when considering changes in settlement patterns. Against the background of a 23 % population decline in the country (and a 25 % in rural areas) between 1990 and 2023, the decrease was particularly sharp in the periphery¹ despite the efforts the authorities made to retain youth in rural areas [31] or improve territorial planning documents [17].

The agri-food complex in the Kaliningrad region is highly dependent on international interactions. Therefore, in the face of the illegitimate sanctions policies, Russian regions meet challenges that are much more radical than those described by Tatyana Nefedova [10]. Additional support measures are needed to promote the development of the agricultural sector in the exclave of Kaliningrad. This includes stimulating import substitution, which is vital for achieving food security. It is also essential to take into account not only imports being rendered more difficult but also the need for securing exports of vegetable oils, soybean meal, rapeseed and grain from the region.

The study of the rural areas of the Kaliningrad region has a rich historical background. Economic and demographic rural studies at Kaliningrad State University

¹ In 2022, the population of Vilnius County was 93 % of the 1996 level; Klaipėda County, 82 %; the Kaunas County, 78 %; each of the other seven counties, in the range of 64–71 %. See: Population on 1 January by age group, sex and NUTS 3 region, 2023, Eurostat, URL: https://ec.europa.eu/eurostat/databrowser/view/DEMO_R_PJANGRP3/default/table?lang=en (accessed 05.06.2023).

date back to the 1970s. More comprehensive research has been conducted in the post-Soviet period by scholars from the Immanuel Kant Baltic Federal University (IKBFU), other Kaliningrad organisations, as well as experts from Moscow and St. Petersburg. In 2022, a collective monograph by IKBFU researchers titled *The Kaliningrad Village in the Early 21st Century: Production, Settlement Patterns and Social Innovations* appeared, which examined rural population, settlement, and the development and placement of agricultural production, considering their interrelations [6].

Studies focusing on the economy, population, and settlement patterns of the Kaliningrad region have demonstrated that its rural areas undergo processes similar to those observed in most other regions of Central Russia. However, the intensity of these processes and some other aspects are region-specific due to the interaction of various factors, including natural, historical, economic, social, demographic, and even (due to the enclave status of the region) foreign policy factors.

This study aims to identify territorial differences in agriculture, settlement patterns, and population in the rural areas of the Kaliningrad region, analyse the mutual effects of these dissimilarities, assess the emerging development challenges and associated disparities, and prepare recommendations for regional and municipal development and spatial organisation strategies.

Methods

Methodologically, this study employs a systemic and comprehensive approach to rural areas, at the core of which is the examination of elements within a system seen as a single whole interconnected by internal relationships. The territorial systems in question include the territorial-industrial system of production, the settlement system and the socio-demographic situation, which was defined by Nikolai Agofonov [2] as the relationships between a region's demographic and other socioeconomic components. This approach is comprehensive in that the elements are examined concerning their mutual connections and interactions with natural, ecological, historical, political, geopolitical, and other factors operating in the territory.

The hypothesis put forward in this study makes use of the confirmed assumptions about the applicability to the study territory of polarisation concepts, which has been revised and adjusted in the works of Aleksandr Kostyaev [8], Tatyana Nefedova, and other scholars [11; 12]. This research incorporates methodologies and findings related to the typology of rural territories [4; 13; 14], changes in the occupations of rural inhabitants, the functional categorisation of rural settlements [1] and the evolution of rural-urban partnership [14]. Patterns of rural area development in the exclave of Kaliningrad have been identified using the latest statistical data.

Comparative-geographical, graph-analytical, economic-cartographic and economic-statistical methods were utilised in the study, along with the empirical typologisation method. Data derived from sociological studies conducted when investigating social innovations in the region were also taken into account [15].

Rural population change and its territorial features

The Kaliningrad region is one of the few in Russia that witnessed an increase in the rural population, with the growth rate reaching 0.89 % in 2022. This rise is attributed to migrants from other, mostly eastern and northern, regions of the country, as well as from the CIS.

Despite this growth, the number of people employed in agriculture rapidly declined in the region from the mid-2000s to 2020. Only in 2021–2022 did a small increase occur (Fig. 1). Between 1990 and 2022, the region's rural population increased by 49,000 people (26 %), whilst the number of people employed in agriculture, forestry, hunting, fishing and fish farming decreased by 22,100, which amounts to a 50 % reduction. In 2022, there were 22,100 people employed in the industry, accounting for 4.4 % of the employed population. This includes 17,700 people involved in crop and livestock farming, hunting and related services, making up 3.5 % of the employed population and 7.5 % of the total rural population. Additionally, 1,700 were employed in forestry and timber harvesting, and 2,700 worked in fishing and fish farming.¹

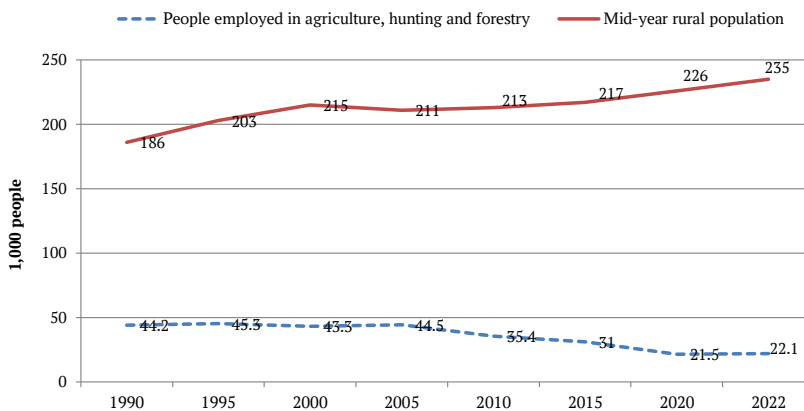


Fig. 1. Rural population change and the number of people employed in agriculture, 1,000 people, 1990–2022

Compiled based on: Population of the Kaliningrad region, *Kaliningradstat*, URL: https://39.rosstat.gov.ru/statistical_news/document/203423 (accessed 18.08.2023) ; Average annual number of employed in the economy since 2017, URL: <https://fedstat.ru/indicator/58994> (accessed 18.08.2023) ; Labour and Employment in the Kaliningrad region. Kaliningrad : Kaliningradstat, 2008.

The territorial variations in rural population change, observed over a sufficiently long period, align with the concept of polarization. The intra-regional socioeconomic zones identified with its help (the immediate and remote suburban zones of Kaliningrad, the periphery, see Figure 2) differ in terms of the demographic situation.

¹ The average annual employment in the economy since 2017, URL: <https://fedstat.ru/indicator/58994> (accessed 18.08.2023).

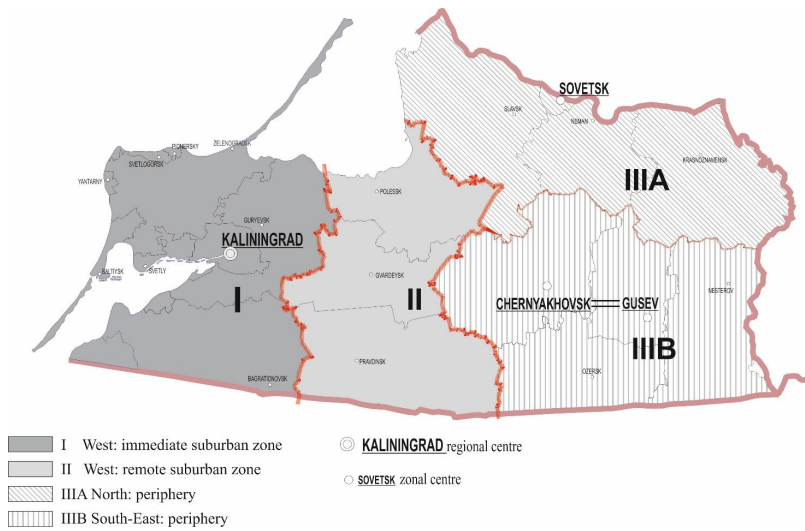


Fig. 2. Socio-economic zoning of the Kaliningrad region

As the change between 2010 and early 2023 figures suggests, despite the overall rural population growth observed across the Kaliningrad region, its eastern and northern municipalities continue to lose population. The most considerable growth was recorded in the municipalities of Kaliningrad’s immediate suburban zone (Fig. 3).

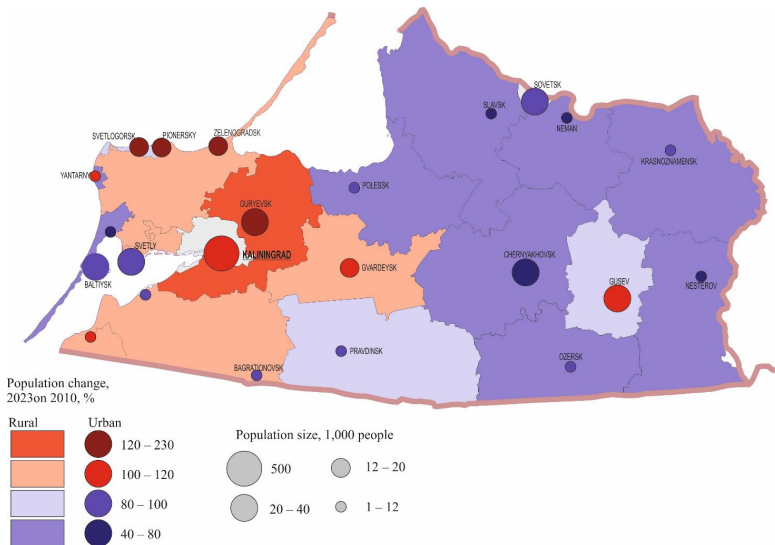


Fig. 3. Urban and rural population change, 2023 on 2010, % (as at the beginning of the year)

Compiled based on data: Key indicators of economic and social development of cities and districts of the Kaliningrad region. Kaliningrad: *Kaliningradstat*, 2011 ; Estimated population of the Kaliningrad region as of 1 January 2023, based on the recalculation of the 2020 All-Russian Population Census results, 2023, *Kaliningradstat*, URL: https://39.rosstat.gov.ru/statistical_news/document/203423 (accessed 09.06.2023).

Comparing the population change in rural and urban areas reveals that the differences between the territories are minimal when it comes to core-periphery relations. In all the peripheral municipalities, both urban and rural populations experienced a decline in population from 2010 to 2023 (except the Gusev district, where the number of residents increased despite the rural population decline).

In the remote suburban zone within each of the three municipalities, changes in the urban and rural population followed a similar pattern: population decreased in the Pravdinsk and Polesk urban districts and grew in the Gvardeysk municipal district.

Different trends developed in the immediate suburban zone. In the Guryevsk, Zelenogradsk and Mamonovo municipalities, urban and rural populations increased, whilst both declined in the Baltiysk urban district. In the Svetly district, the urban population decreased against a growth in the rural population; in the Svetlogorsk and Yantarny districts, the situation was the opposite.

Figure 4 illustrates the role of natural and migratory movements in the overall urban and rural population change at a municipal level from 2010 to 2022. It highlights demographic disparities in the periphery, which witnessed a substantial decline in the overall population. The districts of Gusev and Sovetsk, the latter having no rural population, experienced a less dramatic reduction in the population size. Municipalities in the remote suburban zone showed similar population decrease trends. In contrast, all municipalities in the immediate suburban zone, including Kaliningrad, saw an increase in population.

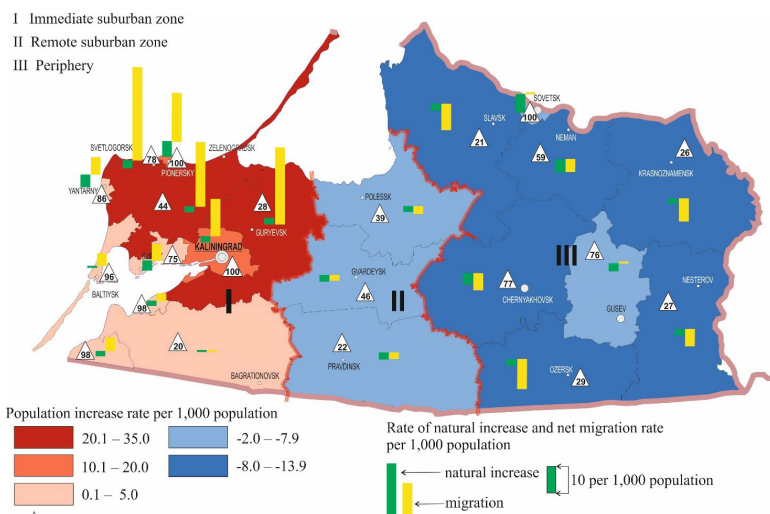


Fig. 4. The average contribution of urban population to the population growth in Kaliningrad municipalities, 2011 – 2022

Compiled based on data: Operational demographic indicators of the Kaliningrad region for January–December 2022, 2023, *Kaliningradstat*, <https://39.rosstat.gov.ru/storage/mediabank/Оперативные%20демографические%20показатели%20за%20январь-декабрь%202022%20года.pdf> (accessed 09.06.2023) ; Migration movement of the population of the Kaliningrad region in 2021 – 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/population> (accessed 09.06.2023).

In all the municipalities, except the suburban Guryevsk and Bagrationovsk districts, natural population decline occurred. There was also a migration outflow from all peripheral municipalities except Gusev. However, the net migration rate was notably lower in the district than the natural population decline, contributing to an overall decrease in the region's population.

In 2022, the pandemic and the increasingly challenging international political situation caused the intensity of migration to decrease. Peripheral municipalities, such as Krasnoznamensk and Neman, had a positive net migration rate and a relatively small population decline, whereas overall from 2010 to 2023, both urban and rural populations decreased significantly in these areas (see Fig. 1). In the Ozersk municipality, migration gains exceeded natural population losses, resulting in an increase in the number of residents. However, the situation worsened in the Gusev municipality, which, largely due to the success of the General Satellite technopolis, had shown population growth in the town itself and only a slight decrease in rural areas (Fig. 5).

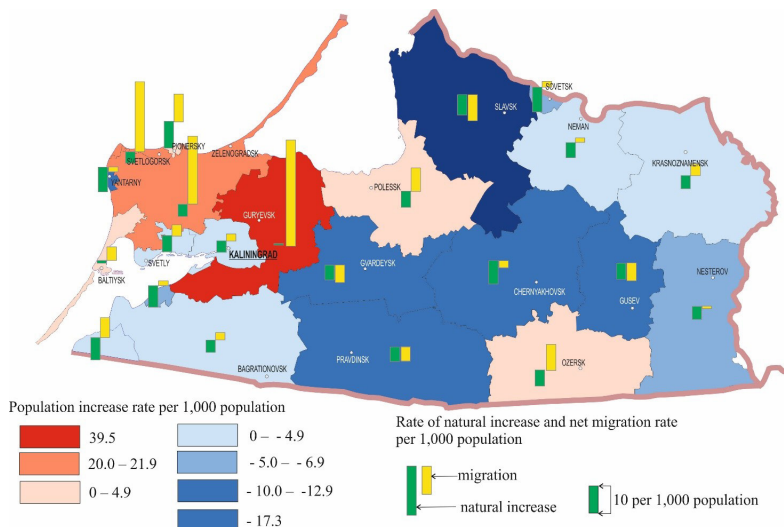


Fig. 5. Natural increase and net migration rate in the municipalities of the Kaliningrad region in 2022, per 1000 population

Compiled based on: Operational Demographic Indicators of the Kaliningrad region in January—December 2022, 2023, *Kaliningradstat*, <https://39.rosstat.gov.ru/storage/mediabank/Оперативные%20демографические%20показатели%20за%20январь-декабрь%202022%20года.pdf> (accessed 09.06.2023) ; Migration of the Population in the Kaliningrad region in 2021—2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/population> (accessed 09.06.2023).

In Kaliningrad's immediate suburban zone, the most considerable contribution to population change is made by the municipalities of Guryevsk, which abuts the regional centre, and Zelenogradsk, situated between Kaliningrad and

the coastal area. The difference from the period of 2010–2021 lies in a slight decrease in population in the Bagrationovsk municipality, Svetly, Ladushkin and Mamonovo districts. In the immediate suburban zone, the Polesk municipality, unlike the Gvardeysk and Pravdinsk municipalities, has seen an increase in the number of residents. Overall, the tendency of population concentration within the immediate suburban zone of Kaliningrad remains despite the noted differences in population change in 2023 compared to 2010–2023.

The municipalities have different age and gender structures in terms of both natural and migration movements (Table 1). The disparities observed in the rural areas closely mirror the variations in the characteristics of natural and migratory population movements. There are dissimilarities between districts classified as belonging to the immediate and remote suburban zones and the periphery. Even greater differences exist between municipal and urban districts. The latter often have only a small rural population, which may reside in close proximity to towns. Additionally, childbirths may be registered not at the parents' place of residence but at the municipality's urban centre. This may explain the extremely low proportion of children aged from 0 to 15 years in some urban districts within the immediate suburban zone.

Table 1

**Distribution of men and women in the rural areas of the Kaliningrad region
by aggregated age groups, % of the total, as of 1 January 2022**

Municipal and urban districts*	Men			Women		
	C	W	R	C	W	R
<i>Immediate suburban zone</i>						
Bagrationovsk urban district	20.5	66	13.5	19.9	51.1	29.1
Guryevsk urban district	18.4	68.7	12.9	16.5	55.6	27.9
Zelenogradsk urban district	17.7	69.3	13.1	16	56.1	28
Baltiysk urban district	11.9	80.6	7.5	13.8	59.9	26.3
Ladushkin urban district	4.9	56.1	39	8	56	36
Mamonovo urban district	29.4	52	18.6	23.7	47.3	29
Svetly urban district	16.6	65	18.5	13.6	50.2	36.2
Svetlogorsk urban district	14.2	73.3	12.5	15.7	53.1	31.2
Yantarny urban district	11.7	66.9	21.4	10.7	53.1	36.2
<i>Remote suburban zone</i>						
Gvardeysk urban district	18.8	66.6	14.6	18.2	47.7	34.1
Polesk urban district	19.8	65.5	14.8	17.8	51.7	30.4
Pravdinsk urban district	23.3	62.6	14.1	19.9	49.6	30.6
<i>Northern periphery</i>						
Krasnoznamensk urban district	23.3	63.9	12.8	21.1	52.4	26.6
Neman urban district	25.7	61.2	13	23.2	48	28.8
Slavsk urban district	19.3	67	13.6	19	52.8	28.2
<i>Southeastern periphery</i>						
Nesterov urban district	22.3	66.1	11.6	18.8	54.6	26.6
Ozersk urban district	23.3	64.9	11.8	22.3	51	26.7
Chernyakhovsk urban district	23.9	62.5	13.6	19	51.4	29.5
Gusev urban district	20.7	66.5	12.7	18	56.2	25.8

The end of the Table 1

Municipal and urban districts*	Men			Women		
	C	W	R	C	W	R
<i>Kaliningrad region</i>						
Rural	20	66.8	13.2	18.3	52.8	28.9
Urban	19.3	66.4	14.3	15.7	54.5	29.8

Legend: C stands for the population younger than the working age; W, for the working age population; R, for retired population.

* There is no rural population in the Sovetsk and Pionersk urban districts.

Compiled based on: Population size by gender and age in the municipalities of the Kaliningrad region as of 1 January 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/population> (accessed 09.06.2023) ; Population of the Kaliningrad region by gender and age as of 1 January 2015 – 1 January 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/> (accessed 09.06.23).

The differences between the suburban and peripheral districts can be summarised as follows. The suburban municipalities often have a higher proportion of both working-age men and women and a lower proportion of retirees.

In all the peripheral districts, except for Slavsk, the percentage of males younger than the working age is above the regional average; as for females, this proportion is below the average only in the Gusev urban district. This implies that the next 15 years will see the emergence of positive demographic trends for labour force replacement, with the number of retirees being another significant factor. In the suburban zone, there are limited opportunities for labour force replacement, as only the Bagrationovsk and Mamonovo districts have a population aged 0–15 that exceeds the regional average for both males and females.

Significant deviations from the regional average are influenced by various factors affecting the age structure. Although migration is usually the main factor, birth and age-specific mortality rates also matter. Demographic indicators, in turn, depend on different sets of factors and their quantitative differences in various municipalities.

There are certain differences in the gender structure of the region's rural and urban populations. In rural areas, there is a higher proportion of children (due to a slightly higher birth rate) and a lower proportion of the elderly population. Amongst the working-age population, the proportion of men is nearly identical in both urban and rural areas. However, for women, it is significantly higher in urban areas, which can be attributed to the migration of working-age females to towns.

Indeed, the contribution of men to the total population is considerably higher in rural areas than in urban ones. Therefore, the proportion of men in the overall population is higher in rural areas as well. In the other two aggregated groups, the percentage of men in rural and urban areas is roughly the same (Table 2).

Table 2

**The percentage of men in the aggregated age group in the rural areas
of municipalities as of January 1, 2022**

Municipal and urban districts*	T	C	W	R
<i>Immediate suburban zone</i>				
Bagrationovsk urban district	49.8	50.6	56.2	31.6
Guryevsk urban district	51	53.5	56.2	32.5
Zelenogradsk urban district	51.1	53.6	56.4	32.8
Baltiysk urban district	57.8	54.2	64.8	28
Ladushkin urban district	45.1	33.3	45.1	47.1
Mamonovo urban district	52.3	57.7	54.6	41.3
Svetly urban district	48	52.9	54.4	31.9
Svetlogorsk urban district	55.3	52.9	63.1	33.2
Yantarny urban district	51.9	54.3	57.6	39
<i>Remote suburban zone</i>				
Gvardeysk urban district	48.8	49.6	57.1	29
Polesk urban district	48.7	51.2	54.5	31.5
Pravdinsk urban district	46.6	50.6	52.5	28.8
<i>Northern periphery</i>				
Krasnoznamensk urban district	48.8	51.4	53.8	31.5
Neman urban district	46.7	49.3	52.8	28.4
Slavsk urban district	48.3	48.7	54.2	31.1
<i>Southeastern periphery</i>				
Nesterov urban district	48.7	53	53.4	29.3
Ozersk urban district	47.6	48.7	53.6	28.8
Chernyakhovsk urban district	43.7	49.4	48.5	26.3
Gusev urban district	46.4	50	50.7	29.9
<i>Kaliningrad region</i>				
Rural	49.2	51.4	55.1	30.7
Urban	46.4	51.5	51.3	29.4

Legend: T stands for total; C, for the population younger than the working age; W, for the working age population; R, for retired population.

Compiled based on: Population size by gender and age in the municipalities of the Kaliningrad region as of 1 January 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/population> (accessed 09.06.2023); Population of the Kaliningrad region by gender and age as of 1 January 2015–1 January 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/> (accessed 09.06.2023).

The municipalities differ significantly in the gender structure of the rural population. The low proportion of men in the Ladushkin urban district and the high proportion in the Mamonovo urban district are not indicative, as these random deviations from the average can be a result of their small population sizes. The same factor seems to be responsible for the relatively high proportion of elderly men in these municipalities and the Yantarny urban district. In the other municipal districts, the proportion of males fluctuates between 49 and 54% amongst those below working age, ranging from 28 to 33% amongst retirees.

The gender structure of rural populations depends crucially on the economic specialisation of their places of residence and the economic situation in the district centres. In the immediate suburban zone, it is also greatly affected by the workforce needs of Kaliningrad. For example, the Baltic urban district has the highest percentage of men (65 %) among working-age individuals because of its coastal location, an economic specialisation of the district centre that relies on male labour and the nearby villages functioning as ‘dormitory’ areas.

The age-gender structure of municipalities determines the possibilities for intergenerational workforce transition. Workforce transition coefficients are presented in Table 3, indicating the number of individuals entering the working age bracket each year per 1,000 new retirees, with age-specific mortality neglected. The coefficient value is more favourable for the rural area than the urban area: 950 against 850. In eight municipal districts, it significantly exceeds 1,000, ensuring a youthful labour surplus, even when accounting for age-specific mortality. Amongst these are five out of the seven peripheral municipal districts that have rural populations. Consequently, the peripheral municipalities, except Slavsk and Chernyakhovsk, have added potential for out-migration to urban areas or the more challenging creation of jobs in rural areas. Amongst the municipalities with a substantial share of rural population, the Guryevsk urban district, which skirts Kaliningrad, is least likely to reap dividends from intergenerational workforce transition.

Table 3

**Workforce transition coefficients* for 2024,
based on the age-gender structure as of January 1, 2022,
with age-specific mortality neglected**

Municipal and urban districts	Urban population			Rural population		
	Total	Men	Women	Total	Men	Women
<i>Immediate suburban zone</i>						
Bagrationovsk urban district	1010	630	1470	990	1020	960
Guryevsk urban district	1050	1200	920	770	720	840
Zelenogradsk urban district	780	890	670	840	850	820
Baltiysk urban district	810	880	760	1170	1630	800
Ladushkin urban district	860	1560	480	670	500	780
Mamonovo urban district	810	690	960	930	800	1080
Svetly urban district	1060	1130	980	730	960	540
Svetlogorsk urban district	670	830	520	830	740	930
Yantarny urban district	920	740	1140	500	330	1000
<i>Remote suburban zone</i>						
Gvardeysk urban district	510	940	330	1210	1120	1300
Polessk urban district	1030	1050	1020	910	1000	800
Pravdinsk urban district	1200	1000	1630	1120	1230	1030
<i>Northern periphery</i>						
Krasnoznamensk urban district	1230	1930	800	1180	980	1370
Neman urban district	950	1070	840	1190	1100	1270
Slavsk urban district	710	1080	500	940	810	1080

The end of the Table 3

<i>Southeastern periphery</i>						
Nesterov urban district	900	730	1070	1210	1170	1270
Ozersk urban district	750	860	650	1050	810	1340
Chernyakhovsk urban district	820	770	860	840	820	870
Gusev urban district	1050	1290	860	1450	1590	1320
Kaliningrad region	850	920	790	950	920	980

Comment: *the number of individuals entering working age per 1,000 new retirees. In 2024, individuals who turn 16 will enter working age, whilst men who turn 63 and women who turn 58 will retire. See: Retirement age in 2023: when men and women retire. URL: <https://ria.ru/20210409/pensiya-1727617636.html> (accessed 09.06.2023).

Values of 1,000 and above are highlighted in bold.

Compiled based on: Population size by gender and age in the municipalities of the Kaliningrad region as of 1 January 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/population> (accessed 09.06.2023); Population of the Kaliningrad region by gender and age as of 1 January 2015–1 January 2022, 2023, *Kaliningradstat*, URL: <https://39.rosstat.gov.ru/> (accessed 09.06.2023).

Agricultural production dynamics and industry consolidation

A monograph by Gintarė Pociūtė-Sereikienė provides a detailed analysis of the situation in agriculture [28]. Below, more recent data are presented comparing the dynamics of agricultural production and population in the Kaliningrad region.

Figure 6 shows that after a fall in the regional agricultural output to 0.46 % of the national total by 2001 (at the time, the region's rural population accounted for 0.55 % of that living across the country), the trend reversed as early as 2002: agricultural production in the region began to grow at a faster rate than the national average. The region's contribution to the total national output was increasing rapidly despite occasional weather-related challenges. In 2005, the region's contribution to national agricultural production (0.55 %) surpassed its proportion of the national rural population (0.54 %), yet it remained lower than its share of the total population (0.66 %). By 2021, this figure had risen to 0.73 %, surpassing the region's share of the rural population (0.62 %, compared to 0.55 % in 2005) and the national total population (0.70 %).

By 2022, grain and livestock production in the Kaliningrad region had increased dramatically compared to 2005. Yet, there was a slight decline in the production of potatoes and vegetables (Table 4). The growth was driven by large organisations entering the agricultural sector, with the production of all types of products listed in Table 4, as well as rapeseed, witnessing a significant increase.

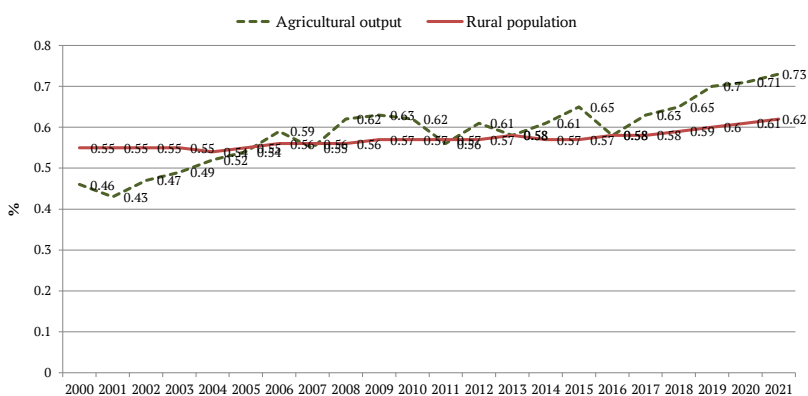


Fig. 6. Changes in the Kaliningrad region's contribution to the national rural population and agricultural output, 2000—2021, %

Compiled based on: Regions of Russia. Socioeconomic indicators, 2023, *Rosstat*, URL: <https://rosstat.gov.ru/folder/210/document/13204> (accessed 15.06.2023).

Table 4

Agricultural production dynamics in the Kaliningrad region by producer type, 2022 on 2005, %

Type of produce	Organisations	Smallholdings	Farms and individual entrepreneurs	Total
Grain (after cleaning and drying), 1,000 tonnes	299	468	194	280
Potato, 1,000 tonnes	374	52	245	96
Vegetables, 1,000 tonnes	430	37	573	83
Meat (dressed weight), 1,000 tonnes	510	50	139	370
Milk, 1,000 tonnes	342	64	138	174
Eggs, million	130	89	13	123

Compiled based on: the Kaliningrad region in digits. Statistical book. 2008. Kaliningrad: Kaliningradstat; the Kaliningrad region in digits. Statistical digest. 2023. Kaliningrad : Kaliningradstat.

The production of all types of products by smallholdings declined with the exception of grain, whose volume was not substantial to begin with. The decrease in the production of potatoes and vegetables by smallholdings was not compensated for by other types of producers.

The contribution of farms to the production of all almost types of produce grew, except for the plummeting egg production. Yet, it increased at a slower rate than that of organisations, with the notable exception of vegetables.

The degree of industry consolidation in the Kaliningrad region is above the national average, with organisations taking centre stage. In 2000—2021, concentration was growing in the region, as is evident from Table 5 showing the growing contribution of organisations to the total output of grain, potatoes, vegetables,

meat, milk and eggs. In this respect, the Kaliningrad region far outstripped the national average. As the table suggests, organisations take the lead in the production of all products considered except for potatoes and vegetables, where their contribution increased nevertheless between 2000 and 2021.

Table 5

Changes in the contribution of different types of producers to agricultural output, 2000–2021

Type of produce	Contribution to the total output of the product, %					
	Organisations		Smallholdings		Farms and individual entrepreneurs	
	2000	2021	2000	2021	2000	2021
Agricultural produce						
Russia	43.4	59.2	53.6	25.4	3.0	15.4
Kaliningrad region	40.9	70.8	53.0	21.8	6.1	7.5
Grain (after cleaning and drying)						
Russia	90.7	68.6	0.9	1.1	8.4	30.3
Kaliningrad region	80.9	89.3	0.4	0.3	18.7	10.4
Potato						
Russia	6.5	22.2	92.4	63.9	1.1	13.9
Kaliningrad region	10.6	28.7	83.6	46.8	5.8	24.5
Vegetables						
Russia	19.9	28.4	77.9	51.3	2.2	20.3
Kaliningrad region	8.2	14.2	85.4	46.1	6.4	39.7
Livestock and poultry (dressed weight)						
Russia	40.3	81.2	57.9	15.6	1.8	3.2
Kaliningrad region	50	94.4	45.3	4.2	4.7	1.4
Milk						
Russia	47.3	56.2	50.9	34.7	1.9	9.1
Kaliningrad region	37.6	61.8	56.3	29.6	6	5.1
Eggs						
Russia	70.9	81.2	28.7	17.6	0.4	1.2
Kaliningrad region	71.9	87	27.0	12.9	1.1	0.1

Compiled based on: Regions of Russia. Socioeconomic indicators, 2023, *Rosstat*, URL: <https://rosstat.gov.ru/folder/210/document/13204> (accessed 15.06.2023) ; Rossiyskiy statisticheskiy ezhegodnik, 2023, *Rosstat*, URL: <https://rosstat.gov.ru/folder/210/document/12994> (accessed 15.06.2023) ; The Kaliningrad region in digits, 2023, *Kaliningradstat*, URL: https://39.rosstat.gov.ru/statistical_compilations (accessed 15.06.2023).

Smallholdings make the most substantial contribution to the production of potatoes, vegetables and milk. In 2022, they accounted for 19.4 % of the total agricultural output, outperforming farms and individual entrepreneurs (8.4 %). The latter developed at a slower rate in the Kaliningrad region than across the country. They are most visible in the production of labour-intensive crop produce: vegetables and potatoes, accounting for 42 % and 25 % of regional total output respectively. Farms and individual entrepreneurs produce 13 % of the grain in the region.¹

¹ The Kaliningrad region in digits. Statistical digest 2023, 2023, Kaliningrad : Kaliningradstat, 138.

Territory-specific features of rural settlement

On 1 January 2022, there were 1,075 villages in the Kaliningrad region: 20 of them were unpopulated,¹ and four were former urban-type settlements. There were 23 urban locations, including 22 towns (21 of which were centres of eight urban districts and twelve municipal districts) and one urban-type settlement, a centre of an urban district. Six out of nine urban districts had a rural population.

The immediate suburban zone has highly populated rural settlements (Fig. 7). In most of the municipalities, the number of residents per village is above the national average, with the exception of the Ladushkin, Mamonovo and Baltiysk urban districts with small rural populations. Thirty villages have a population of over 1,000 people; two, about 5,000—6,000; nine, about 2,000—4,000.

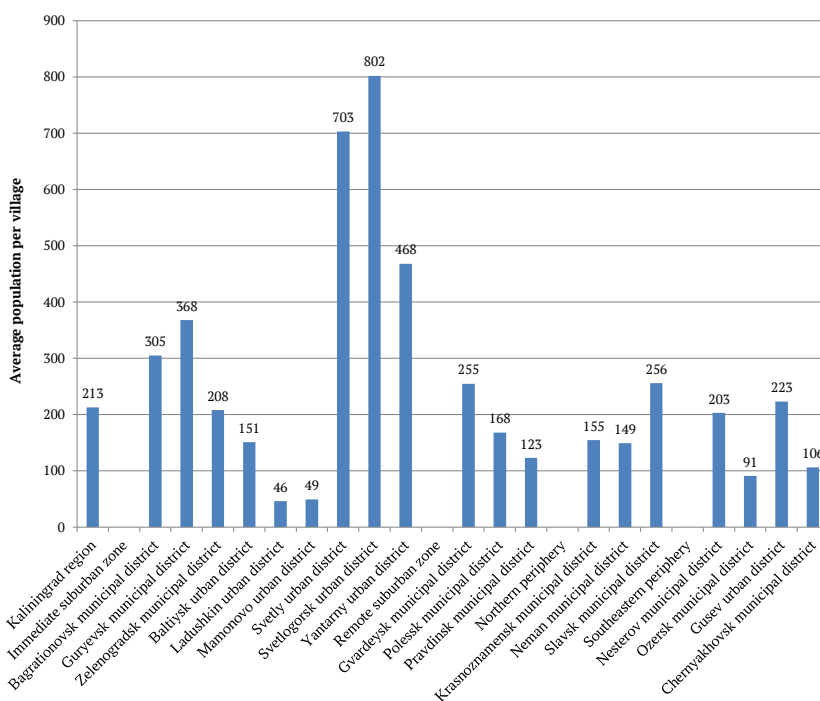


Fig. 7. Average number of residents per village in Kaliningrad municipalities on 1 January 2022, people

Source: Population of urban and rural settlements in the Kaliningrad region. 2022, Kaliningrad : Kaliningradstat.

The immediate suburban zone and the periphery have a smaller number of residents per village. In three municipal districts of the immediate suburban zone, there are five villages with a population of over 1,000 people (three of them have more than 2,000 residents, including two former urban-type settlements which have lost their status after the closure of the dominant enterprise).

¹ Population of urban and rural settlements in the Kaliningrad region, 2022, Kaliningrad : Kaliningradstat.

In the peripheral municipalities, six villages have a population of over 1,000 people; one over 2,000. The most densely populated peripheral district is Slavsk, located on polder lands drained by canals, with dam-bound settlements along the canal banks. The least densely populated is the Ozersk urban district in the southern part of the region. It is situated in a hilly terrain with irregular-shaped land parcels and small settlements.

In addition to a larger number of residents per settlement, villages in the immediate suburban zone have a higher density of rural population and usually shorter average distances between neighbouring locations, i.e., a smaller area per settlement (Fig. 8). The Ladushkin and Mamonovo urban districts are once again exceptions. The peripheral districts have lower population density and typically a larger area per settlement. The remote suburban zone falls within the middle range in terms of these measures.

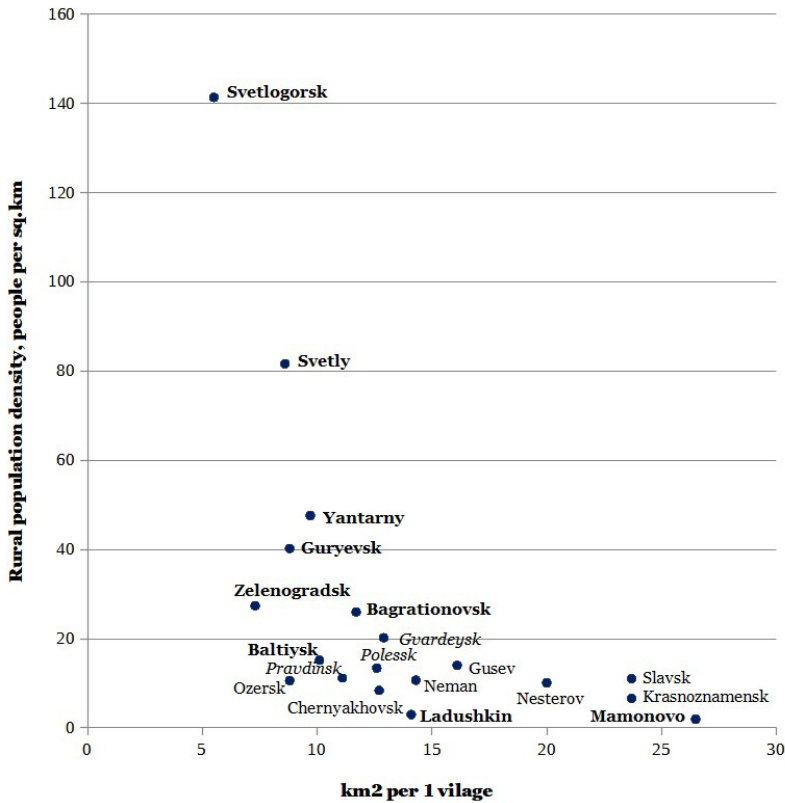


Fig. 8. Density of rural settlements

Legend: the districts of the immediate suburban zone are highlighted in bold, those of the remote suburban zone are in italics, and the peripheral districts are in regular font.

Comment: the area of the Zelenogradsk urban district used in the calculation does not include the area of the lagoons.

Compiled based on: Official statistics, 2023, *Kaliningradstat*, URL: <https://kaliningrad.gks.ru/ofstatistics> (accessed 01.05.2023).

Conclusion

The following conclusions can be drawn from the present study.

1. The Kaliningrad region has not been immune to the characteristic trend of current global development: its economy and settlement system are polarising, with the population concentrating in agglomerations and the periphery experiencing economic decline.

2. At the national level, polarisation is a result of large holding companies accounting for an increasing proportion of agricultural production, declining employment in the industry in the periphery, population outflow from peripheral municipalities and economic diversification in the rural areas.

3. In the case of Kaliningrad, the factors at play are as follows:

— the growing rural population of the urbanised western part of the region, attributed to a positive net migration rate and the rural population decline in the eastern periphery, which is occurring against the background of declining employment in agriculture;

— intensive rural-urban labour exchange, particularly in Kaliningrad's immediate suburban zone;

— the age-gender structure of the population in the periphery ensuring an intergenerational workforce transition without losses or even a youthful labour surplus, which is not the case in most municipalities of the suburban zone;

— the periphery underperforming the suburban zone in terms of social infrastructure development and eastern peripheral municipalities having, as a rule, more modest opportunities than western suburban districts for forging rural-urban ties and villages benefiting from the urban infrastructure;

— the absence of mutual horizontal ties between economic entities.

At the municipal level, the districts exhibit profound socioeconomic differences, partly accounted for by their geographical position. A beneficial factor is that each municipality has at its core a town that provides services, albeit not always in sufficient amounts, to surrounding villages. Here, it is advisable not to limit oneself to conventional socioeconomic regulation but to embrace social innovations, which cannot be introduced by villages alone (it is worth noting that opinion polls show that rural residents appreciate such innovations). In some areas, social innovations have already gained currency. These are household-driven rural tourism, production of new crops (asparagus, bog bilberry, mushrooms, etc.), breeding of new animals (quails, ostriches, rabbits, etc.), cow and goat cheese manufacturing, etc. Moreover, rural schools and libraries have recently become visible cultural actors.

The Kaliningrad region has been paying particular attention to the economic and social development of rural areas, particularly in the eastern municipalities. Villages have received both federal and regional financial aid.¹

¹ Report by Governor Anton Alikhanov on the regional budget for 2023 and the 2024–2025 planning period. *Government of the Kaliningrad region*. URL: <https://gov39.ru/poslanie/doklad2023/> (accessed 15.06.2023).

The Kaliningrad region is running 22 governmental programmes, two of them focusing on rural development: Development of Agriculture and Comprehensive Development of Rural Areas.¹ A branch of the Moy Biznes entrepreneur support centre operates in the region, overseeing amongst other things the Kaliningrad Regional Microfinance Fund.²

Eastern municipalities receive special treatment: within the Vostok programme seeking to attract investment and create jobs in the area long-term (up to 10 years) loans ranging from 2 to 50 million roubles are provided on a competitive basis with a preferential interest rate of 1%.³

There is a need for a regional spatial development strategy aligned with a new socio-economic development strategy, which is also yet to be developed. The documents should include the recommendations outlined in this article concerning the development of the region's rural areas, considering their territorial distinctions. When devising the strategies, it is advisable to cover both the conventional strategic objectives of regional development and relevant research findings. Appendix 1 lists measures pertaining to the rural areas of the region as a whole, whilst Appendix 2 outlines proposals for the immediate suburban zone and the periphery.

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Appendix 1

Rural development support measures to be included in the Kaliningrad region's strategic and spatial planning documents, based on the findings of the study

Regulation object	Suburban zone	Periphery
Economy and social impact industries	Mobile communication and Internet infrastructure development, modernisation of existing networks; spreading digital literacy	
	Implementation of social innovations adjusted to local specifics, incentivising 'pioneers of spatial exploration'	

¹ Consolidated annual report on the progress and effectiveness assessment of state programmes in the Kaliningrad region for the year 2021, *Government of the Kaliningrad region*. URL: <https://gov39.ru/upload/iblock/d48/cfebeejuostc4bw3n7xstrkzzan4jc3s/Svodnyy-godovoy-doklad-za-2021-god.pdf> (accessed 15.06.2023).

² Moy Biznes centre for entrepreneurship support in the Kaliningrad region, URL: <https://mbkaliningrad.ru/> (accessed 15.06.2023).

³ The Vostok programme, *Moy Biznes*, URL: <https://mbkaliningrad.ru/vostok/> (accessed 15.06.2023).

The end of the Appendix 1

Regulation object	Suburban zone	Periphery
Social impact industries	Establishment of library-based cultural and community centres, community centres, clubs, etc. to implement educational and cultural community programmes (digital literacy, entrepreneurship, self-employment initiatives), including in remote formats. Arranging exhibitions and organising patriotic and educational events at the centres	
	Enhancement of measures to support families with young children	
	Strengthening measures of social support for elderly rural residents	
	Full gasification of rural areas; wider coverage with centralised water supply	
	Online preparation of rural youth for enrolment to universities and vocational schools	
	Hands-on training and education in school to meet the needs of the labour market	
Economics	Providing incentives for agricultural consumer cooperatives engaged in crop production and livestock breeding, as well as cooperative centres for machinery repair and maintenance	
	Assistance to the development of rural tourism; tourism courses for rural residents	
	Putting idle land to economic use by allocating land plots to farms and individual entrepreneurs	

Appendix 2

**Rural development support measures for suburban zones
and the periphery to be included in the Kaliningrad region's strategic
and spatial planning documents, based on the findings of the study**

Regulation object	Suburban zone	Periphery
Settlement	Improving rural infrastructure, turning villages into cottage communities	Development of rural-urban partnerships
	Development of dormitory suburbs around Kaliningrad and resort towns	Creation of ecological tourism zones, including rural areas with villages and cultivated land
	Incorporation of a Kaliningrad agglomeration area and a resort zone into the territorial planning scheme	Enhanced role of districts (Sovetsk, Chernyakhovsk) and municipal centres in household and social services provided for rural residents

The end of the Appendix 2

Regulation object	Suburban zone	Periphery
Economy and social impact industries	Ensuring sustainable passenger transportation within the suburban zone	Expanding the network of inter-municipality and inter-settlement bus services and creating the necessary infrastructure in villages (bus stops, pedestrian crossings, etc.)
		Accelerated digitisation of the periphery; development of banking infrastructure (ATM networks, payment terminals)
Social impact industry	Housing and social infrastructure for accommodating part of the rural population of the periphery	Career counselling at rural schools in view of potential migration to the suburban zone towns
		Creating a positive image of rural life in the eastern part of the region in the media and online
Economy	Remote work opportunities for some rural residents employed in urban areas.	Creating remote employment opportunities for residents in peripheral areas and providing training to rural residents and entrepreneurs in remote work methods.
	Relocating part of production facilities from Kaliningrad to the surrounding rural areas	Diversification of the economic structure: stimulating non-agricultural activities and the manufacturing of new types of products
	Support for agri-food clusters and value-added chains in the agro-industrial complex	Support for production cooperatives engaged in equipment maintenance and repairs, fertilizer supply, and plant protection product manufacturing
	Import substitution: creating facilities for equipment maintenance facilities, seed production and animal breeding; creation of a breeding and genetic centre for poultry breeding	Additional funding for programmes supporting small-scale farming in rural areas. Expansion of the 'East' programme to create jobs in the periphery, including the utilisation of social innovations
		Merit-based beneficial loans for small production companies may be supplemented with allocating land plots

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GEOGRAPHY OF THE MOBILE INTERNET IN THE BORDER AND INTERIOR REGIONS OF RUSSIA

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Digital transformation of socio-economic processes is the basis for sustainable development of regions in the digital age. The foundation for such a transformation is the information and communication infrastructure and, first of all, the mobile Internet. The technological growth of mobile networks has provided a rapid increase in the number of users around the world, contributing to further digitalization. With the development of digital technologies, research in the field of human geography has received a new impetus. The impact of the Internet on all spheres of life has necessitated a rethinking of the existing geographical approaches to the study of physical space and the emergence of a new object of research — digital space. On the one hand, the latter is closely connected with traditional institutions and systems. On the other hand, it is characterized by its own patterns of construction and functioning. The problem of delimiting the boundaries of cyberspace makes it difficult to manage digital processes taking into account territorially determined needs and interests, while the current socio-economic unevenness of regional development results in the digital divide. Border regions, maneuvering within the dichotomy of ‘frontier — integration bridge’ models, can gain additional benefits from the development of digital infrastructure in the context of realizing their integration potential. This article assesses the geography of the mobile internet in Russia and its connection with the development of border regions. The authors use geo-information, statistical, and econometric analyses to assess the impact of mobile technologies on interregional information transfer, commodity-money flows, and migration. The study demonstrates the diversity in the availability of mobile internet access among residents in various categories of border and interior regions. Furthermore, the research establishes a link between the quantity of transmitted digital data, the import-export of goods and services, international migration, and two key metrics: the accessibility of 4G mobile internet and the number of mobile subscribers. The article pinpoints specific border regions within the Russian Federation, including Krasnodar Krai, Leningrad, Kaliningrad, Novosibirsk, Smolensk, Rostov, Chelyabinsk, Voronezh, Samara, and Kursk regions. These regions exhibit pronounced potential for executing integration functions through the advancement of digital technologies, particularly under favourable geopolitical conditions.

Keywords:

digitalization; border region; digital divide; national security; national digital space; Russian border; Internet coverage; information and communication infrastructure

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Introduction

In the 21st century, digitalization took centre stage, fundamentally altering many spheres of life. As of June 30, 2022,¹ almost 68% of the world's population used the internet, which makes this technology globally significant for subsequent digital growth. The internet has facilitated swift data and information exchange, fuelling scholarly debates about the reconfiguration of our familiar geographical landscape. This development has led to the emergence of a growing subfield within public geography, often termed cybergeography [1], digital geography [2], or virtual geography [3]. This subfield offers a robust theoretical and methodological framework for exploring the profound impact of ongoing digitalization on various social processes, encompassing socio-economic, political, and cultural dimensions. Cybergeography, in particular, focuses on unravelling the interactions between individuals, digital technologies, and geographical space. Moreover, it delves into the resulting changes in the role of geographical location within the digital realm, shedding light on emerging patterns in the territorial organization of the information society.

The increasing number of digital world studies is associated with the development of geoinformatics (geographical informatics, geomatics, geocomputer science, computer geography, or comgeography [4]). This research domain exists at the crossroads of geography and computer science and has gained widespread integration into educational curricula, particularly as a course centred on geoinformation systems and their practical utility as a research tool for analysing extensive geospatial datasets. This includes the incorporation of artificial intelligence and machine learning techniques [5; 6].

The widespread adoption of the internet and information and communication technologies (ICT) on a global scale has played a pivotal role in the development of open databases containing geocoded spatio-temporal data, which are now readily accessible for geographic analysis. This has formed the cornerstone for various fields of study focused on distinct facets of digitalization, such as the geography of information [7], information technology geography [8], the geography of the internet (including mobile technologies) [9], as well as studies related to communications and telecommunications (commonly referred to as telecommunications geography, telegeography, or geotelematics) [5]. Furthermore, this digital landscape has also given rise to research areas such as the geography of the information industry [10], among others. The evolution of digital technologies and their growing prevalence provide a compelling rationale for anticipating the proliferation of subjects for geographical inquiry. This, in turn, paves the way for their systematic organization within a unified interdisciplinary scientific framework. One such approach, as proposed by Blanuts [11], suggests the emergence of a coherent field like information and network geography.

¹ Internet Usage Statistics, The Internet Big Picture, 2023, *Internet World Stats*, URL: <https://www.internetworldstats.com/stats.htm> (accessed 20.04.2023).

This study advances geographical concepts regarding the distribution of digital infrastructure and the socio-economic dynamics of internet utilization. The primary emphasis is on addressing regional imbalances within the digital landscape of Russia, particularly in connection with the development of mobile network infrastructure. The objective of this research is to offer a comparative evaluation of mobile internet accessibility and technological adoption, considering the impact of the border factor. The distinctive nature of border regions, marked by their frontier status and often peripheral positioning in relation to economic hubs, plays a significant role in a heightened demand for accelerated digital infrastructure deployment within these areas.

The introduction of digital technologies may have a positive impact not only on intraregional socio-economic processes but also on improving connectivity for border areas with the main territory of the country. It can also enhance their role in international trade, including increasing the efficiency and safety of border and customs control services. A comprehensive utilization of the digital potential in border regions encompasses the development of both fibre-optic networks and wireless cellular and satellite technologies. This should enhance citizens' internet access (including in border areas) and reduce the digital divide in both domestic and international contexts.

Theoretical basis of the study

The widespread adoption of portable communication devices like smartphones and mobile phones, both in developed and developing nations, combined with telecom operators' efforts to extend mobile internet coverage to remote areas [12], has significantly improved mobile service accessibility. In many countries, these devices have now taken the lead as the primary means of accessing the internet, surpassing traditional wired connections. The ongoing technological advancements in mobile networks, such as bandwidth upgrades, increased base station density, optimized tariffs, and improved digital literacy, have collectively led to a surge in active internet users. This has, in turn, expanded the global digital sphere, establishing mobile internet as a cost-effective and accessible means of communication and data exchange.

Digital transformation has significantly reshaped our understanding of geography. It has introduced new criteria for gauging and reimagining space, closely linked to the accessibility of digital technologies and the density of information and communication infrastructure [13]. Nonetheless, this transformation has led to an unequal technological terrain [14], resulting in a shift from central to peripheral positions within the global cyberspace. Remarkably, the virtual realm is not isolated from the physical world; instead, it seamlessly integrates into daily life. Digitalization represents a remarkable phenomenon in which, on one hand, the digital environment diverges significantly from traditional institutions and systems, at times even conflicting with them. Yet, on the other hand, it actively supports and enhances their performance in the digital age [15].

Since institutional boundaries are inextricably linked with territorial and social ones [16], geography is still a significant factor in digital development. According to Kabanov [17], cyberspace increasingly affects real space, fuelling the scientific discourse around the state's role in managing digital flows and delimiting state borders in the virtual world to establish digital sovereignty. Thus, the metaphor of the electronic, or digital frontier as a mobile boundary for cyberspace development seems appropriate. Its permeability depends on the density of ICT infrastructure, the spread of digital technologies and their effectiveness, and the development of network structures and routine practices [18].

Russian researchers are actively involved in geographical studies on the national digital space development in terms of spatial accessibility and diffusion of ICT, the information society and the state (for the results see, for instance, thematic publications [19; 20]). Smirnov, focusing on international differences in the accessibility of the internet, believes they result from the cross-influence of economic and geographical factors, including urbanization, proximity to developed internet markets, infrastructure accessibility, local cultural specificity and population density [21]. Trofimova [22], studying the digital divide between Russian regions, comes to similar conclusions, defining three main groups of its factors: socio-economic, socio-demographic and cultural.

Regarding digitalization in Russian regions, key economic factors include the gross regional product per capita, which exhibits a positive correlation with the level of telecommunication development [23]. Additionally, the average monthly cost of mobile communication and internet services plays a pivotal role. When these costs are high relative to wages, it notably reduces the accessibility of ICT. Similarly, a significant portion of household income allocated to food expenditure also diminishes accessibility to information and communication technologies (ICT) [24]. The average age and level of education remain socially significant factors of digital disparity across Russian regions as they determine everyday use of the internet and digital technologies. The study by Zemtsov et al. [25] substantiates the positive relationship between the share of the urban population with higher education and the share of online shoppers in the total regional population.

A high degree of geographical heterogeneity persists across the Russian internet space [25; 26]. The digital divide between urban and rural areas, towns and large cities is still significant [27; 28]. The article by Shestak [29] shows that the larger the city's population, the more developed its internet services are. In line with global trends, we can observe a widening structural disparity in the development of mobile and fixed information and communication technologies (ICT) among Russian regions, and this disparity is still growing [30]. According to a 2014 online survey of internet users [31], in four out of eight federal districts (Southern, North Caucasian, Ural and Far Eastern), mobile internet is more widespread than broadband access. The presence of mobile networks in Russian regions is closely tied to economic hubs, such as areas with significant mineral

development and popular tourist destinations. Additionally, the quality of existing transportation infrastructure plays a role in determining the accessibility of mobile networks in these regions [32].

Digital technologies play a special role in border, peripheral and remote areas enhancing their cognitive proximity [33]. A clear example is the case of Kyrgyzstan [34] where mobile internet and social networks have positively impacted the connectivity of residents of remote mountainous areas, contributing to the transformation in the use of transport infrastructure. Moreover, ICT development facilitates the establishment of communication channels between neighbouring (including border) territories. Mobile technologies contribute to the formation and dissemination of geopolitical images of countries and regions [35].

Chinese researchers [36] have demonstrated that geographical proximity remains a significant factor in capturing online attention. Typically, people tend to engage with content that is geographically tailored, either created in their region of residence or specifically for it. Additionally, internet users in neighbouring countries, sharing cultural and linguistic commonalities, tend to exhibit similar online behaviour [37].

An investigation based on Russian borderland data [38] reveals that users from these regions actively seek information regarding border regions and cities in neighbouring states more actively than the national average. Consequently, the challenge of culturally and geographically positioning border areas within the cross-border information space becomes significant, mainly due to the scarcity of content available in the national languages of neighbouring countries [39].

In light of these findings, this study conducts a comparative assessment of the technological capabilities of border regions in generating digital content and explores the prospects of such content generation within the context of the current mobile network density.

Research Methodology

The study covers 85 out of the 89 Russian regions. It includes Moscow and the Moscow region, St. Petersburg and the Leningrad region, as well as Sevastopol and the Republic of Crimea, considered jointly. Notably, the study excludes the territories of the Donetsk and Luhansk People's Republics, as well as the Zaporizhzhia and Kherson regions due to a lack of available information. The geoinformation analysis of mobile internet coverage across the territory was conducted using aggregated data from Russia's largest mobile network operators, including MegaFon, Beeline, Tele2, and MTS (for the Republic of Crimea and Sevastopol — Vinmobile and Volnamobile). These data were current as of April 8, 2023.

It is worth noting that the number of telecom operators varies across Russian regions. Specifically, two regions (the Republic of Crimea and Sevastopol) have two operators, while 15 regions (including the Amur and Astrakhan regions, Chukotka and Nenets Autonomous Districts, Trans-Baikal Territory, Republics

of Yakutia, Bashkortostan, and Kalmykia, and regions within the North Caucasus Federal District) have three operators. In the remaining 68 regions, there are four operators providing services.

The method of calculating the integrated mobile internet coverage is based on a logical combination of raster layers of 3G and 4G mobile coverage from all telecom operators in the region according to the model developed by the authors (Fig. 1).

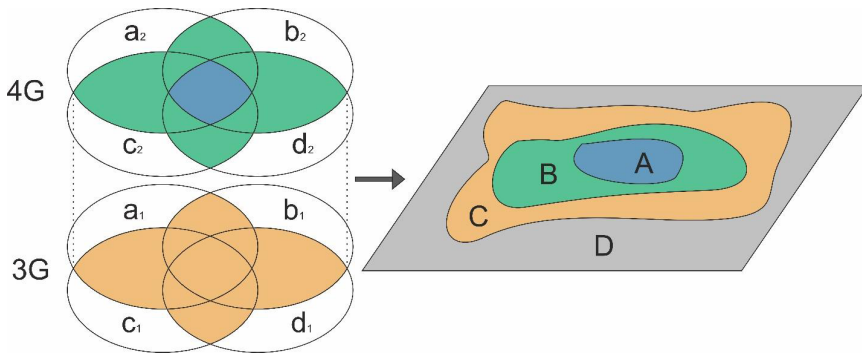


Fig. 1. Model for calculating the integral mobile internet coverage

Source: developed by the authors.

The calculations involved a two-stage process. In the first stage, we identified the overlapping areas of 3G and 4G/LTE mobile coverage from various communication companies. In the diagram, separate areas of 3G coverage from different operators were designated as A1, B1, C1, D1, and for 4G coverage — A2, B2, C2, D2. This initial analysis resulted in the identification of three main logical combinations of layers:

A — zones where mobile 4G internet is simultaneously available from all operators in the region (as depicted in Figure 1 in blue).

B — zones where 4G internet is available from at least one of the operators in the region (shown in green).

C — zones where 3G internet is available from any of the operators in the region (indicated in orange).

In the second stage, we aggregated the selected layers using the built-in tools of the “QGIS 3.28” software, through sequential superposition. The lower layer represents the C zone, which is subsequently overlaid by the A and B zones. Zone D represents territories with no 3G or 4G mobile internet coverage.

The result of geoinformation calculations is a set of quantitative values reflecting the spatial distribution of mobile internet in the Russian regions, including the communication quality and the diversity of operators. Four types of mobile coverage have been identified:

- A — 4G coverage from all telecom operators;
- B — 4G coverage from at least one telecom operator;
- C — 3G coverage disregarding the number of telecom operators;
- D — mobile internet is unstable or absent.

The study identifies their distribution in each Russian federal subject (Fig. 2) and provides quantitative data using median values along with the lowest and highest index values (Table 1).

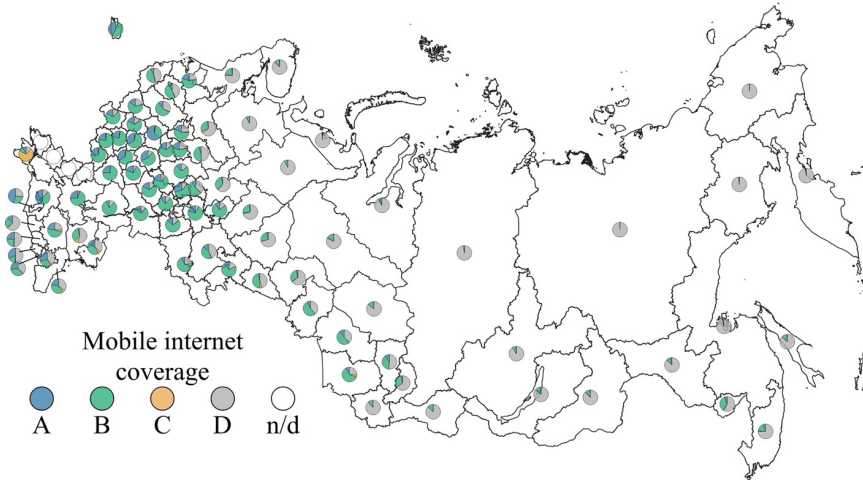


Fig. 2. The structure of mobile internet coverage in Russian regions, 2023

Note: Moscow and the Moscow Region, St. Petersburg and the Leningrad Region, Sevastopol and the Republic of Crimea are considered jointly.

Data source — Table 2.

Table 1

Types of mobile internet coverage in Russian regions

Part of the region with the type of coverage, %	Coverage type			
	A	B	C	D
Maximum	63.5	81.0	69.8	99.3
Median	8.6	37.6	0.5	36.7
Minimal	0.01	0.5	0.03	0.5
Number of regions with better than median mobile coverage	43	43	43	39
Region with maximum value	Moscow and the Moscow region	Volgograd region	Sevastopol and the Republic of Crimea	Chukotka Autonomous Okrug
Region with minimum value	Chukotka Autonomous Okrug	Chukotka Autonomous Okrug	The Voronezh region	The Voronezh region

Note: Moscow and the Moscow Region, St. Petersburg and the Leningrad Region, Sevastopol and the Republic of Crimea are considered jointly.

Data source — Table 2.

The study has employed statistical and econometric analysis methods to evaluate how the presence of digital mobile infrastructure and internet usage by residents influence the socio-economic development of Russian regions, while also

considering their economic and geographical positioning (including the impact of the border factor). Table 2 presents several key quantitative indicators chosen for regression models, with the index values referring to the most recent year available. The analysis was conducted using StatTech v. 3.1.6 software provided by StatTech LLC.

Table 2

Some key factors and indices of digital development in Russian regions

<i>Independent variables (factors)</i>		
Index	Expected impact	Data source, year
Number of mobile and internet operators in the region, units	+	Authors' calculations based on the data provided by mobile operators:
Part of the region with unstable or no mobile internet, %	-	MegaFon, ¹ Beeline, ²
Part of the region with 3G coverage (regardless of the number of telecom operators providing it), %	+	Tele2, ³ MTS ⁴ (for the Republic of Crimea and Sevastopol: Vin Mobile ⁵
Part of the region with 4G coverage from at least one telecom operator, %	+	and Wave Mobile ⁶), April 2023.
Part of the region with 4G coverage from all telecom operators, %	+	
Number of subscriber devices for mobile radiotelephone (cellular) communication per 1,000 population, units	+	EMISS, ⁷ 2021.
Share of subscription fee for cellular communication and internet access in the average per capita income, %	-	Calculated according to Rosstat ⁸ and ⁹ EMISS data ¹⁰ as of the end of 2021

¹ Retail outlet and coverage map, 2023, *MegaFon*, URL: <https://moscow.megafon.ru/help/offices/#coverageMap> (accessed 08.04.2023).

² Coverage map, 2023, *Beeline*, URL: <https://moskva.beeline.ru/customers/beeline-map/?lat=55.759999999999371&lon=37.6317&zoom=12> (accessed 08.04.2023).

³ Coverage map, 2023, *Tele2*, URL: <https://kaliningrad.tele2.ru/coverage> (accessed 08.04.2023).

⁴ Our network, map, 2023, *MTS*, URL: <https://moskva.mts.ru/personal/podderzhka/zoni-obluzhivaniya/nasha-set?on=g2> (accessed 08.04.2023).

⁵ Coverage map, 2023, *Win mobile*, URL: <https://www.mobile-win.ru/about/coverage> (accessed 08.04.2023).

⁶ Coverage map, 2023, *Volna mobile*, URL: <https://volnamobile.ru/help/map/> (accessed 08.04.2023).

⁷ The number of subscriber stations (subscriber devices) connected to mobile radiotelephone (cellular) communication networks per 1,000 population (at the end of the reporting period), *EMISS*, URL: <https://fedstat.ru/indicator/50444> (accessed 08.05.2023).

⁸ Subscription fee for cellular packages, month, *Rosstat*, URL: https://rosstat.gov.ru/storage/mediabank/io_1.3.16.xlsx (accessed 08.05.2023).

⁹ Subscription fee for internet access, month, *Rosstat*, URL: https://rosstat.gov.ru/storage/mediabank/io_1.3.14.xlsx (accessed 02.05.2023).

¹⁰ Average per capita income, *EMISS*, URL: <https://fedstat.ru/indicator/57039> (accessed 08.05.2023).

The end of the Table 2

<i>Independent variables (factors)</i>		
Index	Expected impact	Data source, year
The volume of postal services per capita, rub	+/-	Rosstat, ¹ 2021
<i>Dependent variables characterizing the development of a region in terms of its integration potential</i>		
Index	Characteristics of the freedom of movement	Data source, year
Information transmitted from/to subscribers of the mobile network of the reporting operator when accessing the internet, petabytes	Information flow	Rosstat, ² as of the end of 2021
Share of the region in national imports, %	Goods and capital flow	Rosstat, ³ 2021
Share of the region in national exports, %		
Share of the region in the total number of international migrants aged 15 years and older residing in the country, %	Migration flow	Rosstat, data from a sample household survey on the use of migrant labour, ⁴ 2019.

The selection of dependent variables was based on the integration functions of regions that act as crucial connectors between national and global economic systems [40]. Proximity to the state border, including maritime borders, facilitates the realization of international trade potential [41]. A study conducted by Savenkova et al. [42] provides substantial evidence of a direct and close relationship between foreign trade turnover and the gross regional product of Russian border regions. Furthermore, Russia's border regions actively engage in continuous international migration, which serves as both a source of population growth and a factor contributing to population outflows [43].

The movement of goods and people generates significant volumes of digital information. For instance, the research reveals a robust positive correlation between the balance of web traffic and the trade in services [44]. Consequently, regions that are actively fulfilling their integration potential in traditional spheres can be anticipated to exhibit a similar trend in the flow of digital data.

¹ The volume of postal services per 1 resident (according to the Ministry of Digital Affairs of Russia), *Rosstat*, URL: <https://rosstat.gov.ru/storage/mediabank/1.3.10.xls> (accessed 02.05.2023).

² The amount of information transmitted from/to subscribers of the mobile network of the reporting operator when accessing the internet (according to the Ministry of Digital Affairs of Russia, at the end of the year), *Rosstat*, URL: <https://rosstat.gov.ru/storage/mediabank/1.3.12.xls> (accessed 01.05.2023).

³ Foreign trade of the Russian Federation (according to customs statistics), *Rosstat*, URL: https://rosstat.gov.ru/statistics/vneshnyaya_torgovlya (accessed 04.05.2023).

⁴ Selective observation of migrant labour, 2019, *Rosstat*, URL: https://rosstat.gov.ru/free_doc/new_site/imigr18/index.html (accessed 08.05.2023).

In conducting this study, we employed two distinct approaches to classify Russian regions based on their economic and geographical characteristics.

The first approach draws from Fedorov's work [45] on the typology of Russian Federation subjects, taking into account the time at which they assumed their border functions. This approach categorizes regions into the following groups:

1. 'Old' border regions (comprising a total of 26) that became border regions before 1991.

2. 'New' border regions (22 in total) that became borderline regions after 1991. This group also includes the Voronezh and Rostov regions, which transitioned to the group of interior regions in 2022.

3. 'Newest' border regions (six in total) that were not included in the analysis. This group encompasses the Republic of Crimea and Sevastopol (since 2014), the Donetsk and Lugansk People's Republics, Zaporozhye, and Kherson regions (since 2022).

4. Interior regions (35 in total).

The second approach is based on Kolosov et al.'s research [46], focusing on evaluating the barrier function of the state border. It categorizes regions into five groups:

1. Regions bordering unfriendly European countries, such as Ukraine, Poland, Lithuania, Latvia, Estonia, and Finland (comprising 13 Russian regions with closely interconnected borders; the Murmansk region, which shares a border with Norway, is included in the Arctic group).

2. Regions bordering friendly and neutral post-Soviet countries, including Belarus, Kazakhstan, Georgia, Azerbaijan, South Ossetia, and Abkhazia (encompassing 22 Russian regions with borders of varying 'tightness').

3. Regions bordering friendly Asian countries, such as China, Mongolia, and DPRK (comprising seven regions with tight borders).

4. Arctic regions and those with maritime borders with the United States and Japan, with a total of 13 regions, nine of which operate under the RF Arctic zone regime.

5. Other 34 interior regions.

Research Results

Regional disparity in mobile internet coverage in the Russian Federation

The diversity of Russian regions by their socio-economic development and natural and geographical conditions makes the provision of equal access to mobile internet technologies difficult. Table 3 presents data on mobile coverage by type of region.

Table 3

Mobile internet coverage by type of region

Group of regions		Type of mobile internet coverage			
		A	B	C	D
		Share of the total territory, %			
<i>The first classification approach: by the period of integration potential accumulation</i>					
Old border regions	having a land and a maritime border	2.8	10	0.9	86.3
	having a land border	1.4	12.4	1.1	85.1
	having a maritime border	0.3	1.6	0.4	97.7
	having a maritime border with access to the economic zone of the Russian Federation	0.2	2.1	0.4	97.3
	the land border established in 1991 regions having a maritime border with access to the economic zone of the Russian Federation	30.5	40.1	3.4	25.9
	Total	1.1	4.9	0.6	93.4
New border regions	having a land border	10	57.6	1.8	30.7
	lost their border status after 2022	25.2	71.4	0.5	2.9
	Total	11.4	58.9	1.6	28
Newest border regions	having a land and maritime border	—	—	—	—
	having a land border	—	—	—	—
	having a maritime border	7.5	10.5	69.8	12.2
	Total	7.5	10.5	69.8	12.2
Interior	Total	6.2	27.4	0.9	65.5
<i>The second classification approach: by the 'tightness' of the border</i>					
First group	bordering unfriendly European countries	23.1	62.6	4.5	9.8
Second group	bordering friendly and neutral post-Soviet countries	10.3	52.4	1.8	35.5
Third group	bordering friendly Asian countries	1.3	8.7	0.7	89.3
Fourth group	Arctic regions and regions with maritime borders with the US and Japan	0.2	3.8	0.6	95.4
Fifth group	Other regions	6.4	31.3	0.9	61.4
	Moscow and the Moscow region	63.5	33.4	1.0	2.1

Data source — Table 2.

The evaluation of mobile internet coverage in Russian regions in 2023 underscores the persistent spatial disparities in digital infrastructure development. The frontrunner in mobile internet accessibility is a highly urbanized and economically advanced metropolitan conglomeration that encompasses Moscow and the Moscow region. This area enjoys comprehensive 4G coverage provided by all the telecom operators analysed. The average speed of 4G is three times higher than that of 3G, with a more substantial difference in maximum speeds, enabling the transfer of more digital data per unit of time.

In contrast, the Old border regions exhibit low aggregate indices of high-speed mobile internet coverage. Several factors contribute to this situation, including

dispersed settlement patterns, except in economically well-developed and highly urbanized regions like the Kaliningrad region, the Leningrad region, St. Petersburg, and the Krasnodar territory. Additionally, the northern and mountainous areas of some regions pose technical challenges to ICT development. Furthermore, within the Old border group, there are vast regions such as the Krasnoyarsk Territory and the Republic of Sakha, which, despite having a maritime border with access to the Russian Federation's economic zone, are essentially interior regions. Establishing digital infrastructure in these areas entails higher costs and often lacks economic viability. Typically, only the most densely populated and economically developed areas have access to mobile and internet connections.

The New border regions show high infrastructural availability of mobile internet: the share of the territory where it is unstable or absent is less than 30%. The leaders are the Voronezh, Kursk, Belgorod and Rostov regions which have almost full mobile internet coverage, including 4G. At the same time, with the inclusion of the new regions into the Russian Federation in 2022, the Voronezh and Rostov regions will gradually (after the resolution of the Ukrainian conflict) lose their integration functions and will become interior regions.

Our analysis encompasses the Republic of Crimea and Sevastopol, both classified as regions within the New border regions group. In these regions, the deployment of mobile internet infrastructure is undergoing a transformational phase, being largely influenced by institutional factors. Currently, mobile and internet services are provided by two operators in Crimea. Notably, Sevastopol boasts the best coverage compared to the rest of the peninsula, with 4G available in 50% of its territory, while in the Republic of Crimea, 4G coverage is limited to just 17%.

When employing the second approach for the classification, Russian regions bordering unfriendly European countries emerge as leaders in mobile coverage. These regions are characterized by their high levels of industrialization and urbanization. The significant capacity of their domestic markets and favourable natural conditions have enabled the deployment of ICT infrastructure across most of their territories, ensuring widespread access to high-speed internet.

Regions bordering friendly and neutral post-Soviet countries follow closely in mobile communication and internet infrastructure development. This group includes the republics of the Caucasus, whose territories feature mountainous terrain that poses challenges to mobile coverage. Consequently, there is a higher proportion of territory without mobile coverage, with an average of 35.5% within this group.

The regions bordering friendly Asian countries face the most significant challenges in terms of internet access. Almost 90% of their territory lacks mobile internet coverage. An even more critical situation is observed in the Arctic and eastern coastal regions, where 95% of the territory remains without coverage.

A preliminary statistical analysis was performed for each index using a block diagram with emission limiters to give an idea of the asymmetry of the data (Fig. 3). The calculations depended on the 'region type' categorical variable using the Kruskal-Wallis criterion allowing to determine the significance of the differences between the data sets for the median, minimum and maximum index values.

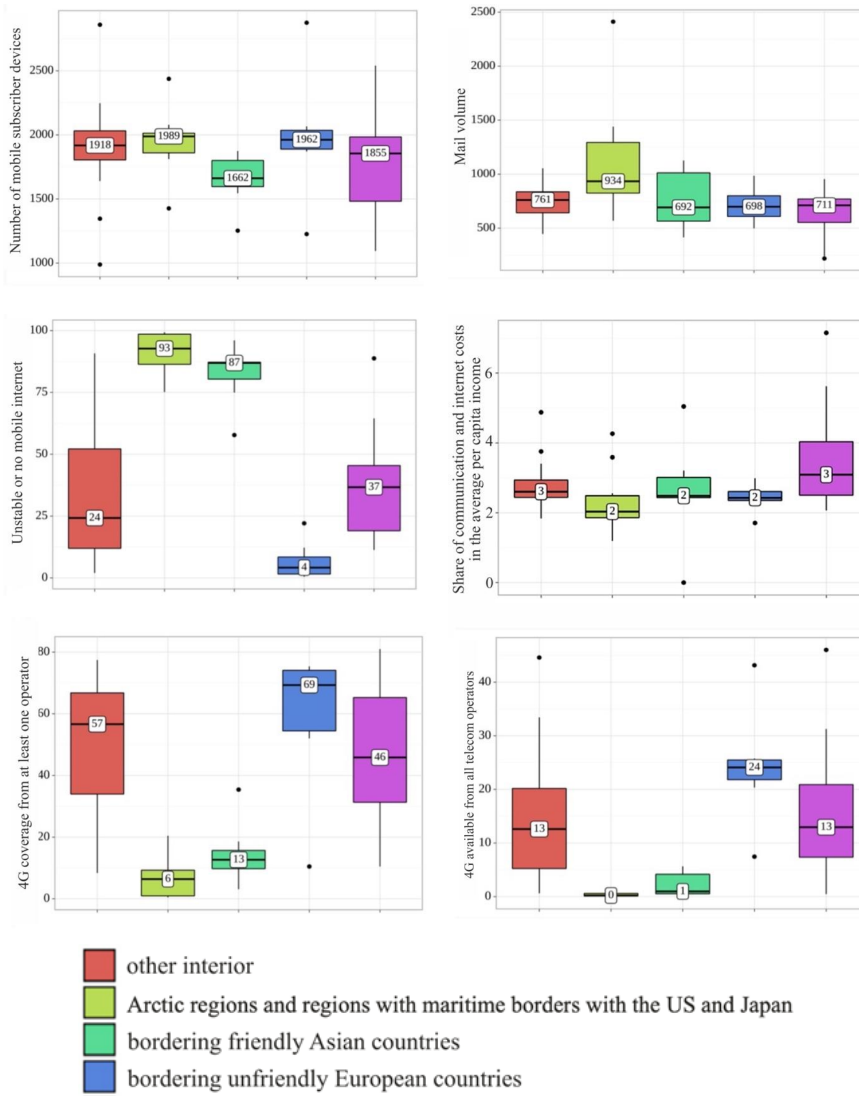


Fig. 3. Dependence of ICT development indices on the type of a region

Developed by the authors (data sources — Table 2) using StatTech v. 3.1.6 software.

The analysis results show that the differences between the groups of regions are statistically significant in most indices used in the study: the number of mobile devices, mail volume, the percentage of territory with unstable or no mobile internet access, the availability of 4G coverage provided by at least one telecom operator or by all telecom operators, as well as the proportion of communication and internet costs relative to the average per capita income. Consequently, these data are valuable for further comparative analysis. Additionally, the analysis provides statistical support for variances in the proximity of administrative centres to the nearest vehicle checkpoint for Russian regions with a land border, as depicted in Figure 4.

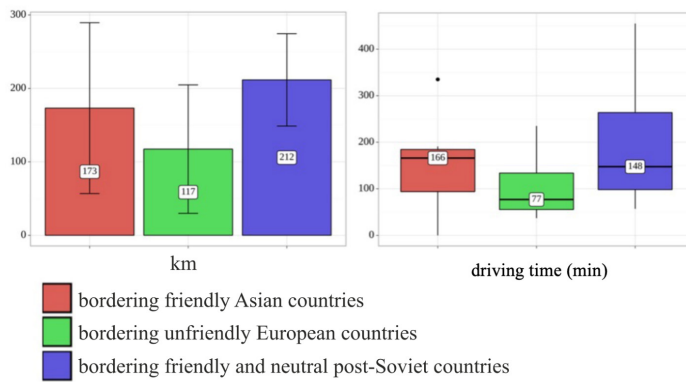


Fig. 4. Distance from the administrative centres of the Russian border regions to a border crossing point, km and min by car (by region type)

Developed by the authors (data sources — Table 2) using StatTech v. 3.1.6 software.

On average, the capital cities of the Russian regions neighbouring unfriendly European countries are the closest to the border. Previously, in a more favourable geopolitical situation, this factor was a catalyst for integration. However, at the moment, it is more of an inhibitor. The administrative centres of those Russian regions that border friendly and neutral post-Soviet countries are the most remote from the customs checkpoints. It seems logical that digitalization can serve as a compensatory tool they can use to promote cooperation.

The impact of digitalization on the integration functions of the Russian regions

Since the distribution of quantitative indices (Table 2) for the Russian regions differs from the normal one, the direction and tightness of the paired correlation between them were estimated using the Spearman Rank correlation coefficient. The analysis results identify four pairs of indices with a very tight correlation on the Chaddock’s scale (Table 4). All identified relationships are statistically significant at $p < 0.05$.

Table 4

Results of the correlation analysis of the development indicators of the Russian regions and the infrastructure and market factors of digitalization

Dependent variable	Factor	Spearman’s rank correlation coefficient
Share of the region in national exports, %	number of mobile subscriber devices	0.602
	share of communication and internet costs in the average per capita income	-0.589
Share of the region in national imports, %	number of mobile subscriber devices	0.635
	share of communication and internet costs in the average per capita income	-0.565

The end of the Table 4

Dependent variable	Factor	Spearman's rank correlation coefficient
Share of the region in the total number of international migrants aged 15 years and older usually residing in the country, %	number of mobile subscriber devices	0.426

Note. For this variable, there is the factor with the highest revealed value of the Spearman rank correlation coefficient (moderate) indicated. To avoid distortion, the calculations do not include highly urbanized Moscow and St. Petersburg agglomerations.

Developed by the authors (data sources — Table 2) using StatTech v. 3.1.6 software.

Significant correlations were found between the following indicators: ‘The share of communication and internet costs in the average per capita income’ and ‘The number of mobile subscriber devices’ (-0.620 , see Fig. 5); and ‘The number of mobile operators and internet providers’ and ‘The number of mobile subscriber devices’ (0.551). Therefore, the primary factor influencing the dependent variables that characterize the integration potential of Russian regions is the capacity of the subscriber network. The development of competition and the increase in the number of companies providing mobile communication and internet services have a positive impact on the number of subscribers while rising tariffs have a negative effect.

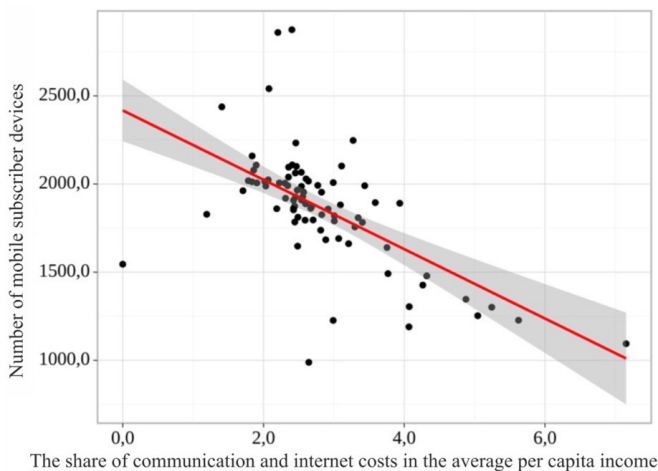


Fig. 5. Inverse relationship between the number of mobile subscriber devices and the share of communication and internet costs in the average per capita income of the Russian regions according to 2021 data

Developed by the authors (data sources — Table 2) using StatTech v. 3.1.6 software.

A further correlation analysis of factors and variables was carried out for several groups of Russian regions selected by their economic and geographical position (according to the approach proposed in [46]). The analysis considers only the indicators with significant statistical differences ($p < 0.05$).

The regions bordering friendly and neutral post-Soviet countries show the strongest dependencies between the four variables and the digitalization factors (Fig. 6). The diversity of mobile operators and internet providers, the capacity of the domestic market of communication subscribers and the mail volume have a great positive impact (4G accessibility having a significant impact) on the foreign trade turnover (in exports and imports) of these regions. The results show a strong correlation between the share of international migrants in the region and the number of mobile subscriber devices (0.708). High-speed internet accessibility and the concentration of mobile subscriber devices are significant factors for the volume of information transmitted from/to mobile network subscribers.

The regions from the other groups show weaker correlations. For instance, in the regions bordering unfriendly European countries, 3G mobile internet was a significant positive factor for the share of international migrants (0.786), while 4G mobile internet coverage from all operators was a significant positive factor for the volume of imports (0.813). An increase in the share of communication and internet costs in per capita income has a significant negative impact (-0.786) on imports to the regions bordering friendly Asian countries. In the Arctic regions, the lack of mobile internet (-0.610) is a negative factor for the increase in the share of imports, while the deployment of a 4G network is positive (the correlation for all operators is 0.566). The major negative factor for foreign trade turnover in the interior regions (for imports — -0.677 ; for exports — -0.526) is communication and internet charges compared to the average per capita income. At the same time, the increase in mobile subscriber devices in these regions is positively related to an increase in the share of imports (0.634).

In terms of foreign trade turnover (primarily exports), digitalization indicators have the greatest impact on the second group (regions bordering friendly and neutral post-Soviet countries). It is reasonable to conclude that in regions with a low or medium ‘tightness’ of the state border, the development of digital infrastructure has a positive impact on enhancing the integration potential of border regions, and facilitating the flow of goods, money, and people.

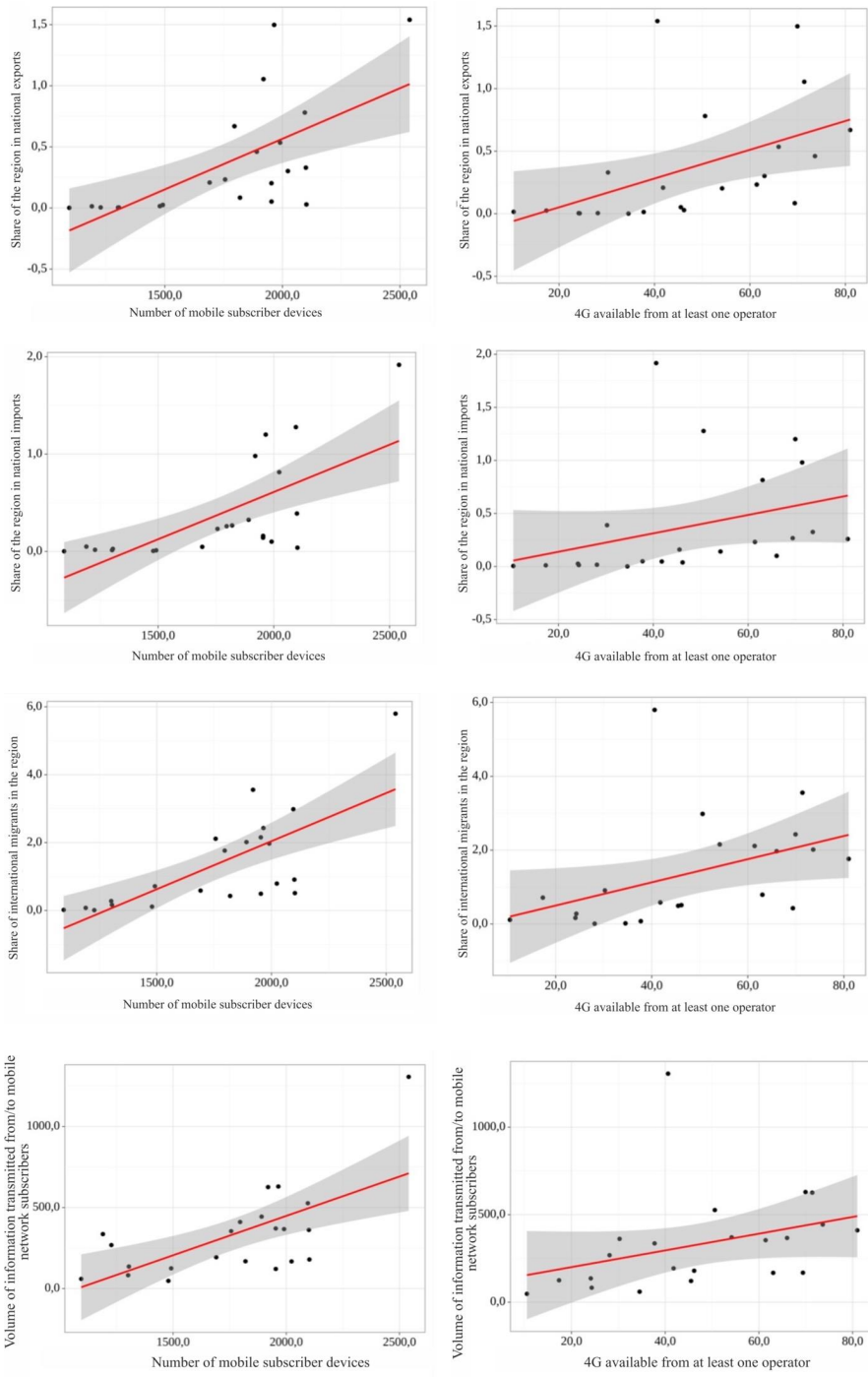


Fig. 6. Graphs of regression functions characterizing the dependencies between the development indicators of the Russian regions bordering friendly and neutral post-Soviet countries

Developed by the authors (data sources — Table 2) using StatTech v. 3.1.6 software.

Modelling the development of different types of Russian regions in the context of mobile digitalization

To assess the patterns of the border and interior regions' socio-economic development associated with a wider spread of mobile technologies using the linear regression method for each quantitative variable in the "StatTech v.3.1.6" software, we formed predictive models characterizing its dependence on the factors specified in Table 2. The final models included only the factors with statistically significant differences ($p < 0.05$) (Table 5).

Table 5

Predictive models characterizing the relationship of independent variables and factor variables for border and interior regions

Group of regions	Linear regression equation	Correlation coefficient (r_{xy}) / level according to Chaddock's scale	The percentage of the index dispersion
<i>The amount of information transmitted from/to subscribers of the mobile network when accessing the Internet (Y_{data})</i>			
Second group	$Y_{data} = -824.546 + 0.546X_{\text{subscriber devices}} + 12.808X_{4G_all}$	0.814 / strong	66.2
Fourth group	$Y_{data} = 391.582 - 0.192X_{\text{post}}$	0.586 / significant	34.3
Fifth group	$Y_{data} = 676.300 - 143.537X_{\text{costs}}$	0.422 / moderate	17.8
<i>Share of the region in national imports (Y_{import})</i>			
First group	$Y_{import} = -5.570 + 0.002X_{\text{subscriber devices}} + 0.123X_{4G_all} + 0.039X_{3G}$	0.995 / quite strong	98.9
Second group	$Y_{import} = -1.810 + 0.001X_{\text{subscriber devices}} + 0.020X_{4G_all}$	0.802 / strong	64.4
Fifth group	$Y_{import} = 1.981 - 0.558X_{\text{costs}}$	0.482 / moderate	23.2
<i>Share of the region in national exports (Y_{export})</i>			
First group	$Y_{export} = 3.722 + 0.149X_{4G_all} + 0.052X_{3G} - 0.010X_{\text{post}}$	0.972 / quite strong	94.5
Second group	$Y_{export} = -0.470 + 0.001X_{\text{subscriber devices}} - 0.009X_{\text{no internet}}$	0.729 / strong	53.1
Fifth group	$Y_{export} = 2.302 - 0.601X_{\text{costs}}$	0.437 / moderate	19.1

The end of the Table 5

Group of regions	Linear regression equation	Correlation coefficient (r_{xy}) / level according to Chaddock's scale	The percentage of the index dispersion
<i>Share of the region in the total number of international migrants aged 15 years and older usually residing in the country ($Y_{\text{migration}}$)</i>			
Second group	$Y_{\text{migration}} = -3.620 + 0.003X_{\text{subscriber devices}}$	0.725 / strong	52.5
Fifth group	$Y_{\text{migration}} = 1.971 - 0.439X_{\text{costs}}$	0.380 / moderate	14.5

Note: the models are statistically significant ($p < 0.05$).

X_{4G_all} — the territory of the region with 4G coverage from all telecom operators, %; X_{3G} — the territory of the region with 3G coverage, %; $X_{no_internet}$ — the territory of the region with unstable or no mobile internet, %; $X_{\text{subscriber devices}}$ — the number of subscriber devices of mobile radiotelephone (cellular) communication per 1,000 people, units.; X_{post} — mail volume per capita, rub.; X_{costs} is the share of communication and internet costs in the average per capita income, %.

To avoid distortion, the calculations do not include highly urbanized Moscow and St. Petersburg agglomerations.

Developed by the authors (data sources — Table 2) using StatTech v. 3.1.6 software.

Based on the presented models, it becomes evident that two of the examined indicators wield significant influence over the integration potential of both border and interior regions. These key factors include the extent of 4G mobile internet coverage provided by all telecom operators and the number of mobile subscriber devices per 1,000 population. The first factor encompasses both infrastructural and market dimensions. Firstly, it is tied to the presence of multiple telecom companies within the market, fostering healthy competition in the realm of mobile internet services and offering users a wider array of options. Secondly, the availability of 4G (and in the future, 5G) internet connectivity facilitates more extensive utilization of digital technologies by individuals and businesses, resulting in a substantial increase in the volume of digital data and information flows,

thus propelling economic and social activities forward. The surge in the number of mobile subscriber devices is not solely attributable to new users among the region's residents but also correlates with the diversification of their technical devices that rely on mobile internet connectivity. Consequently, this implies the normalization of digital practices within the population and an overall boost in digital literacy levels.

Only 12 interior regions (Moscow, the Moscow, Nizhny Novgorod, Kaluga, Yaroslavl, Orel, Tula, Ryazan, Lipetsk, Ivanovo, Vladimir regions, the Republic of Tatarstan) and 11 border regions (St. Petersburg, the Leningrad, Kaliningrad, Novosibirsk, Smolensk, Rostov, Chelyabinsk, Voronezh, Samara, Kursk regions; Krasnodar Krai) have both digitalization indicators higher than the national median (Fig. 7, 8). This can mean that their information, goods and capital, and migration flows are more likely to increase with the development of mobile technologies.

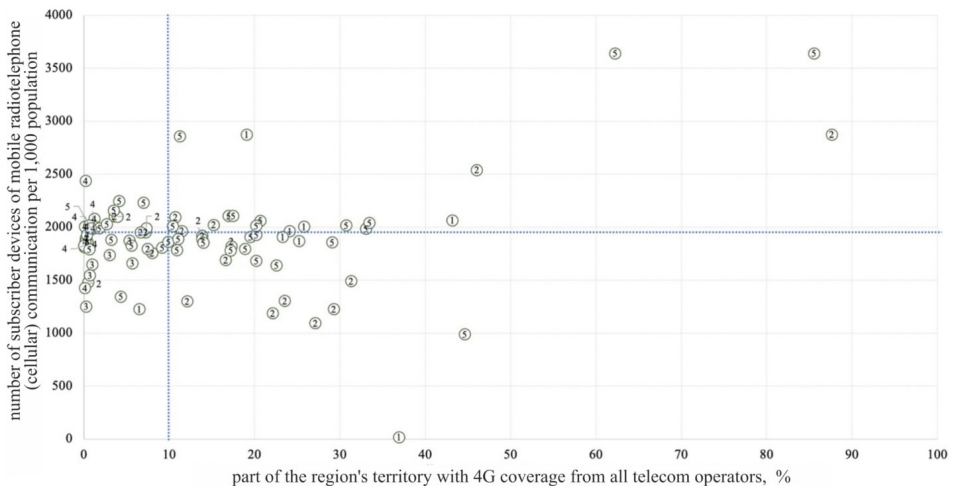


Fig. 7. Distribution of Russian regions by the most important factors of digitalization

Note. Groups of regions: 1 — bordering unfriendly European countries; 2 — bordering friendly and neutral post-Soviet countries; 3 — bordering friendly Asian countries; 4 — Arctic regions and regions having maritime borders with the United States and Japan; 5 — other regions.

Median values for Russian regions: 10.7% — the part of the region's territory with 4G coverage from all telecom operators; 1907.9 units — the number of subscriber devices of mobile radiotelephone (cellular) communication per 1,000 population.

Developed by the authors (data sources — Table 2).

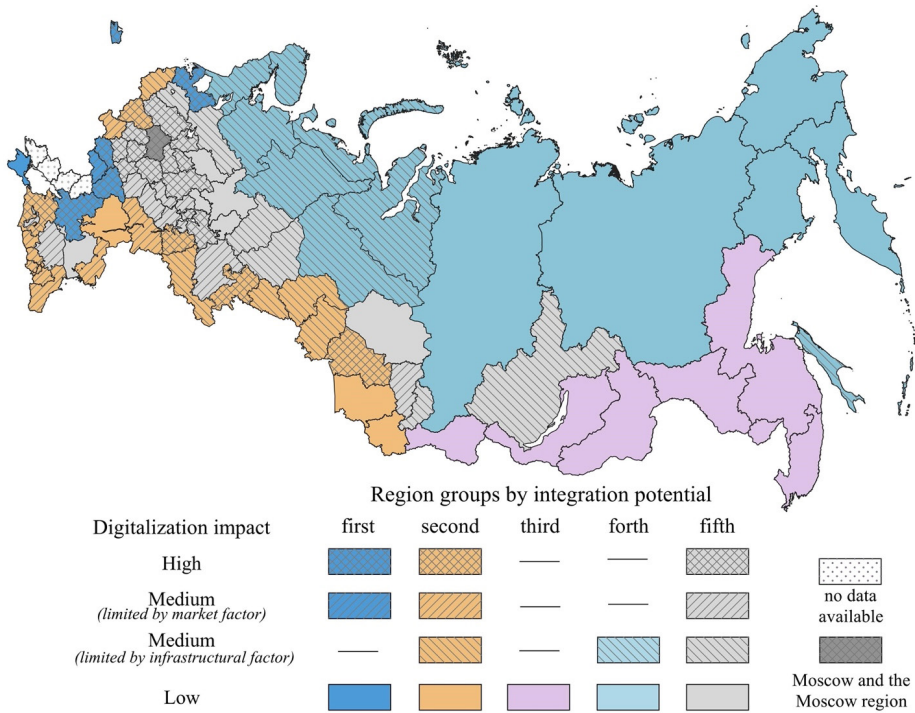


Fig. 8. Types of regions of the Russian Federation in terms of their potential for activating the integration function as a result of digitalization

Note: Groups of regions: 1 — bordering unfriendly European countries; 2 — bordering friendly and neutral post-Soviet countries; 3 — bordering friendly Asian countries; 4 — Arctic regions and regions with maritime borders with the United States and Japan; 5 — other regions.

Developed by the authors (data sources — Table 2).

Main results

A significant shift in the geopolitical landscape has highlighted the need for Russian border regions to adapt to new economic circumstances. This adaptation includes the transformation of foreign trade and the restructuring of socio-economic ties with neighbouring countries [47]. This research aligns with the emerging field of cybergeography and continues the tradition of studying the cross-border dynamics of territorial development.

A comparative evaluation of mobile internet accessibility in the Russian border and interior regions underscores the persistent disparities within the national digital space, particularly in the dimensions of ‘centre—periphery’ and ‘north—

south'. Notably, the Krasnodar Territory and the Kaliningrad region stand out as leaders in high-speed mobile internet availability in the border areas, although they still trail behind the Moscow agglomeration.

The regional discrepancies in mobile internet infrastructure development across Russia are primarily attributed to socio-economic, demographic, and environmental factors. Urbanised regions with high population density and economic prosperity tend to have better mobile internet coverage. Consequently, a digital divide exists between various types of Russian border regions, including the 'Old', 'New', and the 'Newest' border regions, both in terms of access to mobile services and mobile device usage.

Some Old border regions (e.g., the Leningrad region and St. Petersburg, Kaliningrad region, Krasnodar Territory) and New border regions (e.g., the Novosibirsk, Smolensk, Rostov, Chelyabinsk, Voronezh, Samara, Kursk regions) exhibit the most favourable technological conditions for facilitating the flow of data, goods, and people in the digital age.

In the digital era, mobile technologies have become an increasingly vital factor for border regions to unlock their integration potential. This study reveals the positive influence of mobile internet accessibility on international migration and foreign trade activities, including export growth, particularly in border regions with low to medium border 'tightness'. The advancement of mobile digital technologies further fosters the growth of cross-border trade and the e-commerce sector. Wider access to high-speed mobile internet serves as a technological foundation for amplifying the generation of digital information, including geographically tailored content, which is essential for positioning border regions in the information sphere. Therefore, the pivotal factors driving the socio-economic development and integration potential of Russian regions include the establishment and growth of mobile communication and internet infrastructure, expanded accessibility of mobile technologies to residents, and the encouragement of digital literacy and receptiveness. A favourable geopolitical situation also plays a significant role.

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