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Unveiling management trends in the public sector: A literature review and research agenda

ABSTRACT: *Scholars and practitioners have, for many decades, sought to address management issues related to public sector policies. This study examines the academic research on this sector focused on these topics by conducting an automated computer analysis of 17,928 documents indexed in Scopus and published between 1950 and 2021. Six clusters were identified within this literature: economic growth during crises, reforms for the future, human relations, successful practices, partnerships and public banking services. This study thus systematises the lessons learned over the past decades, thereby contributing to governments' ability to design public policies to meet future challenges and providing tools for dealing with the current coronavirus disease-19 pandemic.*

KEYWORDS: public sector, management, cluster, literature review

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INTRODUCTION

Public policies design

Central governments are tasked with delivering effective and efficient public services that rely on the general population's fiscal contributions. To achieve economic and social goals, the public authorities enact policies and make use of public organisations and facilities to implement these policies. The latter need to be appropriate for each specific public, environment and time. Political, social, management, financial and environmental events, among others, can trigger policy change, so officials' strategies need to be adjusted to match changing contexts.

Policy design must thus consider the relevant settings, while simultaneously paying attention to which assets are required to implement policies and the liabilities this process will imply. Public policies depend on taxes paid by resident populations. The better the policies are designed and the more reasonable the required fiscal contributions are, the more easily people will understand policies' social and financial beneficial impacts on their lives. In recent years, scholars have been paying more attention to the public sector's tax policies (Altshuler & Goodspeed, 2015), decentralisation policies (Baskaran & Feld, 2013), government finances and accounting issues (Buckwalter et al., 2014).

Public sector challenges

Over the years, management, finance and economic issues have been addressed, and authors have expanded this body of knowledge from different perspectives regarding the public sector's varied challenges in these areas. The coronavirus disease-19 (COVID-19) pandemic's effect on financial markets may mean that governments will have to design new public sector instruments to assist these markets and the real economy's recovery (Chubarova et al., 2020; Kovac et al., 2020).

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Research goal and questions

To ensure sustainable research paths focused on the public sector, new studies should be grounded in previous contributions and follow scholars' suggestions for future research, so that researchers can address the issues that have received inadequate attention.

The present study aims to provide scholars and practitioners with a bird's eye view of the literature on management, finance and economic issues in the public sector. Thus, the public sector organisations are the focus of this research, meaning that their particularities will be addressed in critical analysis, namely, problems of transparency and corruption (Ochrana & Pavel, 2013), as well as their expected collaborative approaches to policymaking (Batory & Svensson, 2019).

This research focuses on answering the following questions:

- RQ1: What thematic clusters stand out in the literature on management topics in the public sector?
- RQ2: What suggestions for future research have been made by authors who have critically analysed public sector studies in the field of management?

To address these questions, an extensive automated analysis of the literature indexed in the Scopus database was conducted and the scientific articles containing the most significant terms in each cluster were examined more closely. The results contribute to the existing knowledge on management, finance, and economic issues in the public sector, bring up future research directions about these topics, and help governments design better public policies.

THEORETICAL BACKGROUND

The public sector comprises various tiers of government (i.e. local, central and intermediate), governmental agencies (e.g. the police force and schools), public companies and non-governmental public sector organisations, which are mainly part of the healthcare sector (van Helden et al., 2008). The organisations in the different government tiers use various accounting tools to organise activities and resources for gaining insights on financial position, operations, debt or cash flows (Nasreen & Baker, 2022). Governments' accounting systems are important for keeping these organisations accountable in terms of not only finances and performance, but also political and social aspects (Boyce & Davids, 2009). These systems may differ across the levels of government according to the engagement they have with, for instance, financial or fiscal sustainability (Claeys et al., 2008). Scholars report that poorly designed accounting systems produce unreliable financial information that prevents officials from making sensible economic decisions and ensuring resources are properly harnessed in the interest of their country's economic development (Rahaman & Lawrence, 2001).

Over the years, multiple scholars have dedicated themselves to expanding the literature on accounting and management topics in public sector contexts. The existing research has contributed to the body of knowledge on public administration or management (Owen Hughes, 1991) by critically analysing public sector accounting rules and exploring new trends in finance (Ball, Heafey, & King, 2002) and economic indicators affected by public policies (Conte & Darrat, 1988). In previous studies addressing public sector management topics, the theoretical framework varies. Table 1 summarises some of these theories.

These theories were used as a framework for understanding how public sector organisations face management challenges, but the examination of literature proves that, as more and more papers are published, disagreements among authors and inconsistencies in the meaning and application of theories occur (Jones et al., 2017). Thus, previous studies of the public sector indicate that more literature syntheses are needed for this field of research. For instance, the public sector literature is characterised as lagging behind in terms of large-scale empirical studies (Trottier, Van Wart, & Wang, 2008), and the existing empirical research has failed to respond to previously reported conflicting evidence in some areas (Wright, 2001).

Although previous studies have identified specific gaps in the public sector literature, a broader review could facilitate a synthesis and evaluation of the existing knowledge generated by scholars and practitioners (Fink, 2019). This review's findings would provide readers with a more solid framework for understanding the currently available information on accounting and management topics within the public sector (Cheraghlikhani, Khoshalhan, & Mokhtari, 2019). Attention also needs to be paid to gaps in research (Besse, Lampe, & Mann, 2020), and a reflective approach to this subject matter should be encouraged (Walliman, 2011). A literature review focused on the areas of accounting and management that can be used by public sector researchers to develop and advance theory, close research gaps and identify topics overlooked by scholars (Nashruddin & Mustaqimah, 2020). The results could thus establish a more solid foundation for the future production of knowledge about the public sector.

Tab. 1: Main theories addressing public sector management topics

Theory		References
NPM	This theory empathises how the use of entrepreneurial behaviours shape and transform public sector	Funck & Karlsson, 2020; Weiss et al., 1995
Public choice theory	This theory focuses on the decisions that individuals make in government institutions, and it states that the individuals will prioritise their own interests over the public interest and social benefit	Emrah Firidin, 2022; James Buchanan & Gordon Tullock, 1958
Stakeholder theory	Based on this theory, organisations must consider the interests of all stakeholders, not just shareholders or managers. Though stakeholder theory explicitly emerged from private sector, scholars apply it to public sector organisations, namely, in regards to e-government initiatives	Freeman, 1984; Jones et al., 2017; Scholl, 2001
Contingency theory	This theory posits that the effectiveness of management approaches depends on the specific context in which the organisation operates, meaning that internal and external environments will shape decisions to achieve optimal functionality	Lawrence & Jay W. Lorsch, 1967; McGrandle, 2016
Transformational leadership theory	This theory indicates that leadership can inspire and motivate employees to stay committed and achieve common goals	Bass & Bass Bernard, 1985; van der Voet, 2016; Wright & Pandey, 2010

NPM: new public management

For practitioners, reviewing public sector–related literature contributes to improved public administration and policymaking practices. These professionals need assistance to overcome obstacles that prevent them from creating more resilient and agile management systems. Practitioners must also formulate policies that support public sector organisations’ ability to respond to massive global challenges such as climate change, demographic trends, and health and well-being promotion (Mazzucato, 2018).

METHODS

In recent decades, a large number of studies have been published in the public sector field. Analyses of this research are needed to identify research topic trends, their evolution across the years and gaps in the literature. A manual analysis, however, would be prohibitively costly and time-consuming and would imply introducing subjectivity into the results and errors while processing such a large volume of data. The present study thus used automated computer analysis methodology to examine the bibliometric data, applying the approaches that had been previously developed by other scholars (Modak et al., 2020).

The data were collected from 17,928 documents indexed in Scopus, which is the largest abstract and citation database of peer-reviewed literature. The entire research strategy is shown in Figure 1.

The data included the different types of documents listed in Table 2. The resulting dataset covered the literature on management, economic and finance topics in the public sector, which were located with the following search query: TITLE-ABS-KEY (“Public sector”) AND (LIMIT-TO (SUBJAREA, “BUSI”) OR LIMIT-TO (SUBJAREA, “ECON”)).

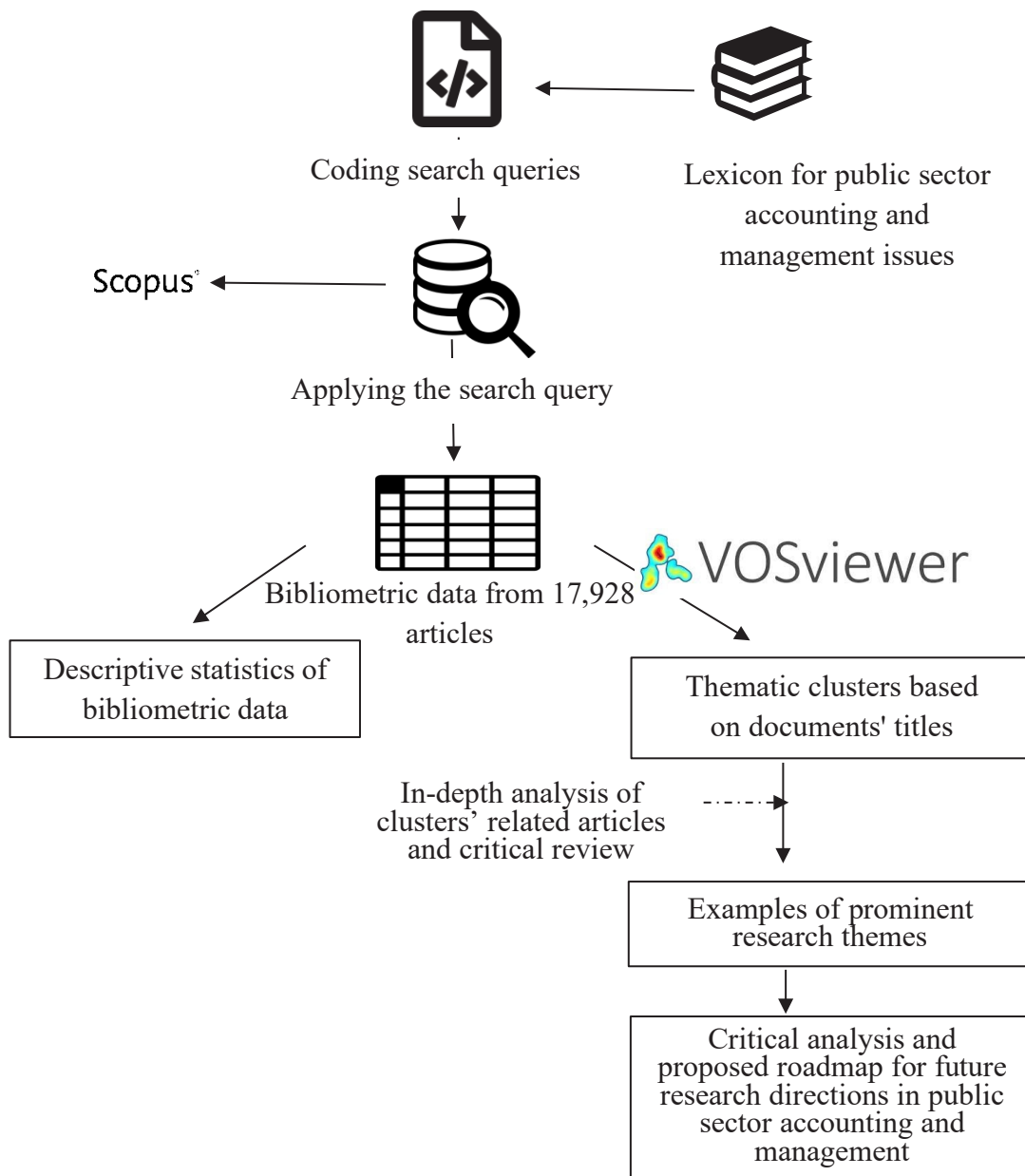
The methodology selected facilitated a descriptive content analysis of the bibliometric data including typology of access, date of publication, number of research team members, number of citations and journal or book in which the document was published. These details are indicators of researchers’ productivity and their contributions’ influence (Modak et al., 2020) on the specific fields of public sector management, finance and economics. Text mining and cluster mapping techniques were then applied in a co-word analysis of documents’ title using VOSviewer, a software frequently used by researchers (Verma & Gustafsson, 2020). A co-word map was created based on the number of links and total link strength between words, as had been done in previous studies (Santos & Laureano, 2022; Shah et al., 2019).

The necessary pre-processing steps in text mining included removing all stopwords (i.e. common terms with no significant meaning in the present research context). In addition, a lexicon was generated of relevant terms about the public sector subjects under

Fig. 1: Research strategy

Research questions

RQ1: RQ1: What thematic clusters stand out in the literature on management topics in the public sector?
RQ2: What suggestions for future research have been made by authors who have critically analysed public sector studies in the fields of accounting and management?



Tab. 2: Absolute frequency of data by document type

Document type	Absolute frequency
Article	14,386
Book chapter	1,159
Conference paper	869
Review	856
Book	350
Editorial	106
Note	99
Conference review	33
Short survey	29
Business article	11
Erratum	10
Letter	6
Retraction	1
Undefined	13

study, so that VOSviewer would treat the terms as fitting within the same domain. The current output revealed clusters emerging throughout the entire body of literature analysed, as well as the significance of the terms within each cluster. The software developed a semantic similarity and association strength matrix calculated based on the co-occurrence of 60% of the most significant terms that occurred more than 25 times in the dataset.

This study's second objective was to systematise suggestions for further public sector research in the area of management. Thus, systematic literature reviews of public sector–related topics (i.e. publications whose title mentions 'literature review') were separated from the remaining publications. To identify the authors' suggestions, the present study used traditional content analysis of the reviews, applying Shah et al.'s (2019) method to systematise main theoretical gaps that academics have been called to address. The study also applies the Khatib et al.'s (2021) analytical framework in regard to the use of VOSviewer algorithm.

FINDINGS AND DISCUSSION

The data analyses produced insights based on the characterisation of relevant documents published from 1950 to 2021, thereby reflecting the bibliometric data available. The co-word map identified six clusters of topics that have been addressed by public sector scholars.

Insights from bibliometric analyses

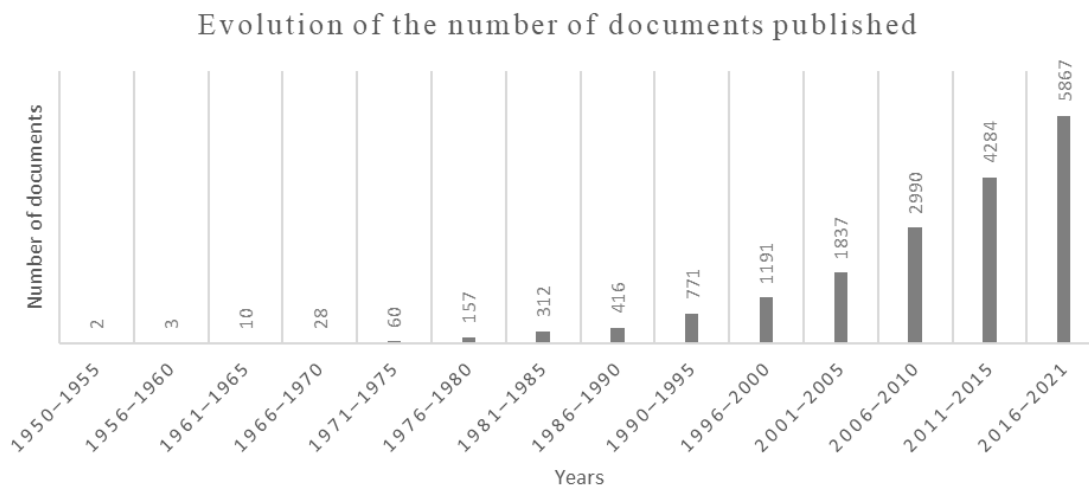
The number of publications has been consistently increasing over the years (see Figure 2). The oldest year of publication found in the database is 1950, meaning that this was the date when studies started being published. Despite the restrictions imposed by the COVID-19 pandemic, 2020 was when the most research addressing public sector issues was published.

The documents in the dataset are spread across 2,898 different journals and books. Table 3 identifies the publications in which the largest number have appeared (i.e. more than 100 documents). The top two journals have published almost 400 documents each.

Regarding the contributions' influence, the results show that a total of 287,492 citations refer to the documents in the dataset, which means that these sources were cited an average of more than 16 times each. However, a significant proportion of the documents received only one citation (i.e. 2,034 out of 17,928). The findings indicate that only four publisher agencies owned the 10 most productive journals (Table 4). Four of them were from Elsevier and three from Taylor & Francis.

Most authors were part of a research team, so about 63% of the documents were written by two authors or more. Overall, these scholars generally formed teams composed of two to four authors. The data collected over the last seven decades indicate that collaborations have become a success-driven strategy among scholars in this discipline (Figure 3).

Fig. 2: Bar chart with the absolute frequency of literature published from 1950 to 2021



Tab. 3: List of journals and books publishing more than 100 documents in the dataset

Journals and books	Number of documents
Public Money and Management	386
International Journal of Public Administration	378
Public Management Review	275
Public Personnel Management	209
Public Administration Review	206
Review of Public Personnel Administration	190
Financial Accountability and Management	170
Proceedings of the ECEG	143
International Public Management Journal	118
World Development	112
Public Choice	111
Journal of Public Administration Research and Theory	107
Applied Economics	101
American Review of Public Administration	101

ECEG: European Conference on e-Government

This success is shown in the average of citations received from the articles published by research teams (mean = 17.4) versus the ones published by single researchers (mean = 13.8). Indeed, the *t*-test for independent samples assuming unequal variances rejected the null hypothesis of the equality of the population means ($p < 0.001$).

Clustering by themes

The co-word map generated by VOSviewer software's automated analysis is shown in Figure 4. VOSviewer's algorithm grouped the themes identified into six clusters. The terms within each cluster are presented in larger circles if the term's frequency in the dataset is higher, based on full counting statistics.

Tab. 4: List of the 10 most productive journals on management in public sector publication and the most cited documents

Journals and books	Total citations	The most cited document	Publisher
Public Administration Review	15,335	West, 2004	Wiley-Blackwell
Journal of Public Administration Research and Theory	8,528	Dunleavy, 2005	Oxford University Press
Public Management Review	6,355	Voorberg et al., 2015	Taylor & Francis
Public Money and Management	5,588	Dunleavy & Hood, 1994	Taylor & Francis
World Development	5,172	Psacharopoulos, 1994	Elsevier
Research Policy	4,724	Edler & Georghiou, 2007	Elsevier
International Journal of Project Management	3,759	Bing et al., 2005	Elsevier
International Journal of Public Administration	3,671	Smith, 1995	Taylor & Francis
Accounting, Organizations and Society	3,479	Hood, 1995	Elsevier
Journal of Law, Economics, and Organization	3,362	la Porta, 1999	Oxford University Press
Financial Accountability and Management	3,332	Modell, 2004	Wiley-Blackwell

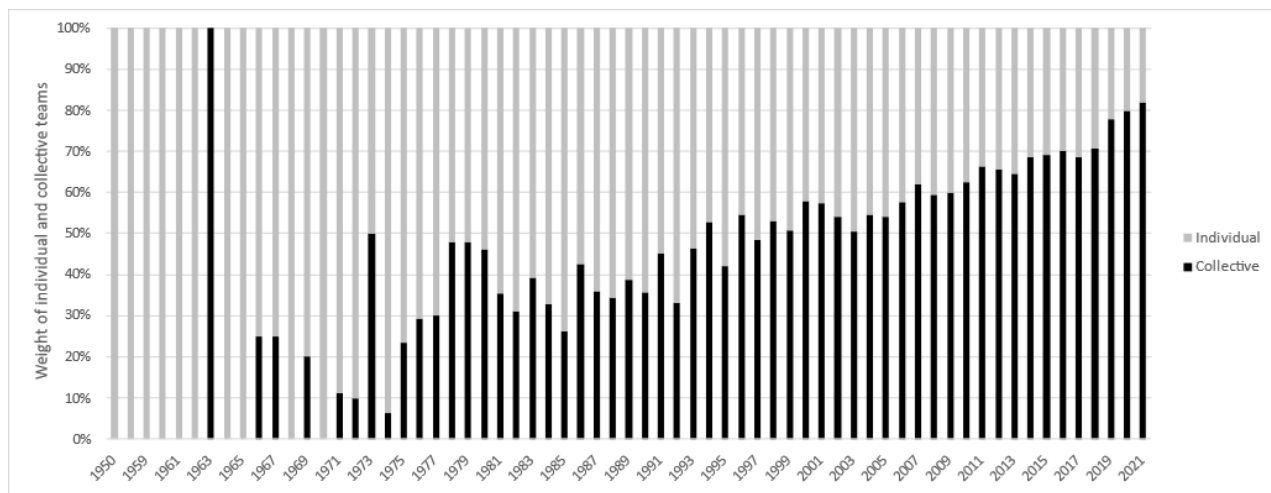


Fig. 3: Trends in management research partnerships in public sector

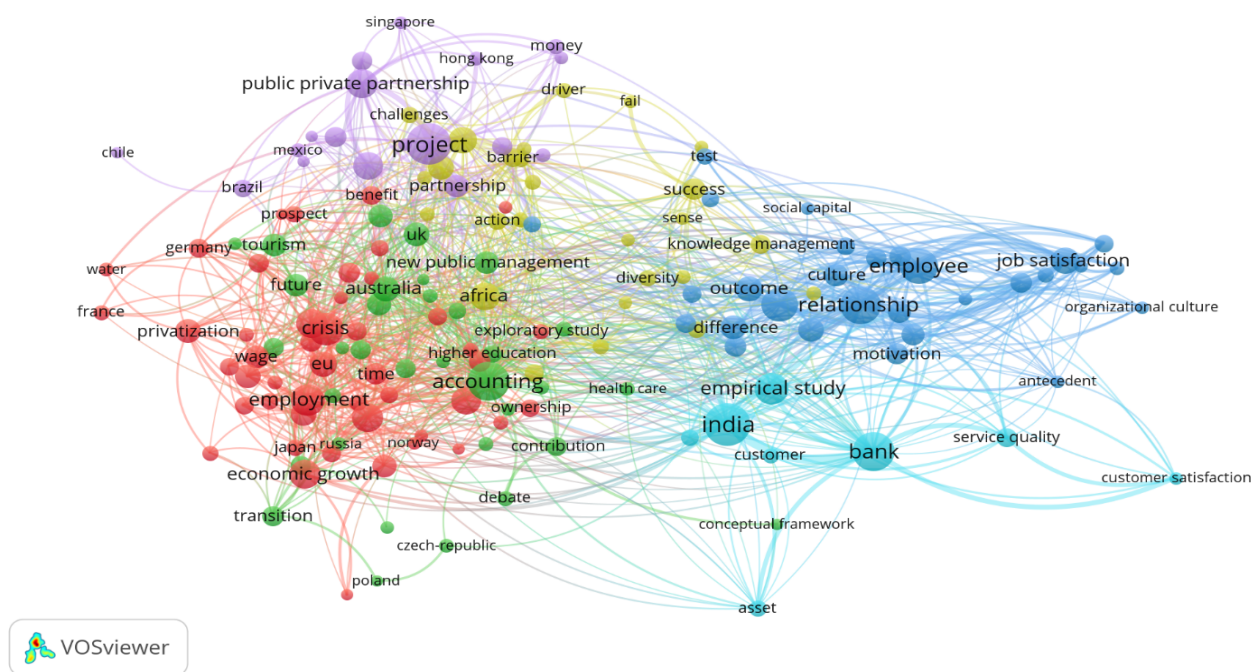
The six identified clusters within the literature on the public sector can be labelled as follows: economic growth during crises (cluster 1), reforms for the future (cluster 2), human relations (cluster 3), successful practices (cluster 4), partnerships (cluster 5) and public banking services (cluster 6). Table 5 lists the most frequent terms in each cluster and each term's number of occurrences.

Cluster 1 (shown in red in Figure 4) includes 47 terms related to research on economic growth during crises. The studies addressing these topics have investigated determinants of cost inefficiency (Sakata, 2004), developed cost estimation models (Tas & Yaman, 2005) and tested governments' growth models (Spann, 1977). Researchers have found evidence that government policies reduce operational costs, increase the number of firms in the market and create incentives to innovate (Baerlocher, 2021). After investigating public sector external debt's impact on economic growth, Silva (2020) concluded that external debt should be reduced and assigned to tradable sectors.

Regarding economic growth goals, Kriekhaus (2002) asserts that public sector efforts are crucial to mobilising financial resources for investment. Investment is overall a key term in this cluster. The studies addressing topics in this cluster have investigated the results of public investment in education (Patrinos, Psacharopoulos & Tansel, 2020; Stern, 2017), research and development (Walwyn, 2007) and innovation (Heher, 2006). Authors have also contributed to identifying return on investment metrics in the public sector (Cuganesan & Lacey, 2011), including efforts to expand the literature on public sector performance measurement.

Fig. 4: Term view of VOSviewer co-occurrence map

Cluster #	Cluster designation
Cluster 1	Economic growth during crises
Cluster 2	Reforms for the future
Cluster 3	Human relations
Cluster 4	Successful practices
Cluster 5	Partnerships
Cluster 6	Public banking services



Cluster 2 (shown in green in Figure 4) includes 33 terms that fall within research on reforms for the future, in which accounting, response, tourism, new public management, public sector reform, future and transition appear frequently. This cluster covers studies of accounting reforms (Christensen & Rocher, 2021; Cuadrado-Ballesteros & Bisogno, 2021; Jayasinghe et al., 2020) that highlight opportunities in this process (Koeberle, 2005). The authors focusing on topics in this cluster have a special interest in European countries' response strategies (Simonet, 2010), as well as those of Australia (Fraser-Baxter & Medvecky, 2018) and the United Kingdom (Male & Kelly, 1989). For the European nations, scholars have compared governments' different approaches to controlling healthcare costs. Other researchers investigating Australia's policies have highlighted the local media's important role in public and political responses to environmental issues. The final set of authors has discussed public sector clients' organisational responses to value management techniques and their implications for the United Kingdom's construction industry.

Cluster 3 (shown in dark blue in Figure 4) comprises 29 terms covering research in the human relations field. The main studies addressing topics in this cluster have focused on organisational human resources issues, namely, leadership, satisfaction and motivation. Tran, Nguyen and Hoang (2021) investigated the effects of leadership on accountability and public sector financial reporting. Various scholars have studied the cause–effect relationships between human resource management practices, organisational commitment and public organisation employees' satisfaction (Blom, 2020; McGrandle, 2019), providing evidence of policies' role in promoting job satisfaction.

Cluster 4 (shown in yellow in Figure 4) includes 26 terms from research specifically concentrating on Africa's reality, although not always exclusively. African studies have explored government legislation and policies' effectiveness in terms of promoting equal opportunities for men and women to move into senior and top management positions, reporting that no progress has been made and even that women's advancement has actually regressed (Mathur-Helm, 2005). Similarly, analysing policies' effectiveness but with

Tab. 5: Clusters' characterisation

Cluster	Most frequent terms	Number of occurrences
Cluster #1: Economic growth during crises	crisis	201
	employment	185
	cost	160
	economic growth	160
	investment	156
	education	153
	European Union (EU)	118
	competition	116
	privatisation	110
	union	108
Cluster #2: Reforms for the future	accounting	291
	Australia	122
	United Kingdom	116
	response	105
	tourism	98
	new public management	97
	public sector reform	97
	future	96
	transition	82
	collaboration	73
Cluster #3: Human relations	relationship	266
	employee	243
	leadership	216
	job satisfaction	136
	outcome	119
	difference	117
	trust	108
	culture	102
	organisational performance	94
	motivation	92
Cluster #4: Successful practices	Africa	145
	adoption	133
	opportunity	111
	success	90
	knowledge management	72
	barrier	70
	action	66
	transparency	61
	diversity	56
	challenges	52
Cluster #5: Partnerships	project	333
	public private partnership	157
	problem	153
	partnership	97
	performance measurement	80
	comparative study	71
	solution	67
	Brazil	60
	money	46
	Hong Kong	40
Cluster #6: Public banking services	India	358
	bank	292
	empirical study	188
	service quality	67
	asset	57
	citizen	51
	customer	45
	customer satisfaction	31

A substantial number of publications related to this cluster have explored success factors of and barriers to adopting systems and practices, as well as related opportunities. Researchers have detected differences between private and public sector organisations in their perceptions of critical success factors' significance and degree of development regarding the adoption of enterprise resource planning. Variations are apparently due to organisations' ability to tackle problems (Seres, Tumbas, Matkovic, & Sakal, 2019). In their comparative study, Céu Alves and Matos (2013) confirmed that private and public sector organisations find opportunities to engage in enterprise resource planning, through which these entities can obtain real-time information useful to decision-makers and can integrate business applications.

Cluster 5 (shown in purple in Figure 4) comprises 18 terms from research on partnerships, in particular, strategies for successful public-private partnerships. Academics have explored different data analysis techniques for identifying and characterising success in these partnerships through studies on Egypt's education sector (Helmy, Khoureshed, Wahba & El Bary, 2020), South Africa's water and tourism infrastructure projects (Dithebe, Aigbavboa, Thwala & Oke, 2019; Tshehla, 2018) and Ethiopia's road projects (Debela, 2019). In contrast, other investigations have sought to determine why public-private partnerships sometimes fail in the transport sector (Soomro & Zhang, 2016) or for prison contracts (English & Walker, 2004). The results contribute to a better understanding of how both partners' decisions and actions affect their ability to solve the problems arising in this type of partnership.

Cluster 5 also highlights scholars' analyses of performance measurement based on comparative studies. Previous research in this area has provided different perspectives on performance management's applicability in the public sector (Borst et al., 2014). In addition, studies have concentrated on how practices are borrowed from other management areas (e.g. marketing) (Modell & Wiesel, 2008) or how performance differs around the world with respect to public-funded and development organisations (Gangopadhyay et al., 2018).

Finally, Cluster 6 (shown in light blue in Figure 4) includes eight terms from research on public banking services. These publications are especially common from 2012 onwards following the financial crisis that started with banks' excessive risk-taking. These topics' greater concentration since the crisis is visible in the co-word map overlay (see Figure 5), in which terms in this cluster are mainly in light green and yellow.

The present study's results reveal that this cluster's topics are especially of interest to researchers focused on India's public sector, as shown by the significant number of studies they have published. Authors have assessed the global financial crisis's impact on this country's public sector banks (Bapat, 2012), commercial public sector bank capital and risk (Mohanty & Mahakud, 2018) and efficiency, returns to scale and changes in total factor productivity (Kumar, Charles & Mishra, 2016). Based on their empirical research, Kamble et al. (2011) also concluded that private banks are perceived to be superior in service quality dimensions compared to public sector banks with regard to effectiveness, access and tangibles. However, the latter cited scholars found that the public sector's banks are considered better in terms of price and reliability.

Future paths for research highlighted in the literature

Previous systematic literature reviews of public sector–related studies identified two areas of knowledge: accounting and management. Researchers who reviewed publications on accounting in the public sector have concentrated on, in general, accounting themes and, more specifically, financial accounting and management accounting topics. In the field of management, scholars have underlined the need to expand research on subjects such as citizenship, control, innovation, human resources, marketing and performance. Table 6 presents a systematisation of the topics mentioned by scholars who have suggested more studies of the public sector are needed.

Tab. 6: Suggested future research topics

Area	Subarea	Topics
Accounting	Financial accounting	Non-financial reporting formats
		Accounting standards
		Consolidated financial statements
Management	Management accounting	Insights into performance-based budgeting Management accounting in emerging economies
	Accounting in general	Public value and public sector accounting Accounting in the higher education sector
	Citizenship	Co-creation with citizens Organisational citizenship behaviour
	Control	Internal auditing Management control
	Innovation	Barriers to and governance strategies for digital and non-digital open innovation Innovation in developing countries
	Human resources	Talent management Intellectual capital Knowledge management
	Marketing	Branding
	Performance	Critical success factors of business process management
		Performance measurement
		From output to outcome measures Critical success factors of continuous improvement

Accounting

In accounting, scholars have pointed out that researchers need to conduct longitudinal studies of behavioural accounting in the higher education sector (Schmidt & Günther, 2016) and of accounting's creation of public value (Bracci, Papi, Bigoni, Deidda Gagliardo, & Bruns, 2019). A review of the research on non-financial reporting formats in public sector organisations confirmed that studies have failed to address sustainability reporting in the public healthcare sector (Manes-Rossi, Nicolò, & Argento, 2020). The process of adopting the International Public Sector Accounting Standards has also been underresearched. According to Schmidhuber et al. (2020), scholars must examine the adoption of accounting standards cross-nationally, carry out normative research and develop stronger theoretical foundations for studies on this topic. More work in this area could be especially important, given the evidence that accounting standards' implementation alone may not facilitate comparisons of adopters' financial reports (Hermosa del Vasto et al., 2019; Polzer et al., 2021).

In management accounting, cross-country and cross-sector analyses are evidently gaps that should be filled with further research. The findings could be particularly important to those seeking to improve performance-based budgeting in the public sector (Mauro, Cinquini, & Grossi, 2017). Scholars also need to pay attention to management accounting practices in this sector in emerging economies. van Helden & Uddin (2016) suggest that more studies will be necessary to develop a fuller understanding of how these practices are affected by the interplay between public management programmes and political, economic and cultural contexts.

Management

In management research, public sector organisations and co-creation with citizens have been widely studied. Scholars have developed systematised research agendas in this area, including that future studies should focus on conceptual research to explore further the concepts of co-creation, bureaucratic red tape, public leadership and public service motivation (de Geus, Ingrams, Tummers, & Pandey, 2020). In addition, empirical research could offer a better understanding of why co-creation barriers exist and how they can be removed (Baptista, Alves, & Matos, 2020).

Internal auditing and management controls are also areas in which scholars suggest further research is needed. Future studies should include cross-country and cross-market analyses to uncover additional evidence at the international and regional levels and to understand cultural, institutional and demographic characteristics' impacts on these controls (Nerantzidis, Pazarskis, Drogalas, & Galanis, 2020; van der Kolk, 2019). Public sector human resources have also received significant attention as comprehensive literature reviews have already been conducted of the literature on intellectual capital, talent and knowledge management. Franken et al. (2020) and Kravariti & Johnston (2020) call for more research on benchmarking better or worse talent management practices, as well as discussing how and why approaches' success is context driven.

Intellectual capital is another area in which few longitudinal and empirical studies have been carried out or frameworks and models have been tested in specific public sector contexts (Dumay, Guthrie, & Puntillo, 2015). In addition, quite narrow specialisations are required when journals and researchers seek to address knowledge management topics, according to Massaro et al. (2015). The cited authors suggest studies in this field require cooperation among authors from different disciplines to develop a synthesis of the knowledge already published and conduct critical analyses of this information.

Researchers who have investigated branding in the public sector have also called for new frameworks that are more accurate and suitable for dealing with this sector's particular management challenges (Leijerholt, Biedenbach, & Hultén, 2019). Because performance management is high on public sector organisations' agenda in times of decreasing resources, academics have conducted systematic literature reviews to map out paths for future research in this area. Business process management's critical success factors are further characterised as another important but underresearched area, particularly since few studies have been peer reviewed and published in leading journals (Syed, Bandara, French, & Stewart, 2018). Similarly, continuous improvement's critical success factors need more investigation but specifically with quantitative methods, such as in-depth interviews and questionnaires, to develop continuous improvement models for the public sector (Fryer, Antony, & Douglas, 2007).

Finally, regarding sustainability, Dal Mas et al. (2019) identified emerging topics, including strategy and entrepreneurship. The cited authors suggest academics should focus on output and outcome measures in the public sector in less-investigated public services and geographical areas. Long-term sustainability outcomes are also highlighted by these authors as needing additional research (Trireksani et al., 2021).

CONCLUSION

The literature on economics, finance and accounting in the public sector is already extensive. The current results provide evidence drawn from the bibliometric data collected from the Scopus database that this literature is still expanding, particularly in last two decades. The findings include six thematic clusters of topics addressed in publications: economic growth during crises, reforms for the future, human relations, successful practices, partnerships and public banking services.

This study's results add to the theoretical framework for public sector research in various ways. Based on the comprehensive map generated of academics' contributions published to date, cluster analysis produced a systematic compilation of the main directions in which research has flowed in the past. The findings comprise trends and topics over the years in thousands of documents, without excluding any relevant publications due to data processing constraints. Analysing such a large amount of data was made possible by text mining and visualisation tools that reflect current trends in analyses of unstructured datasets.

Added value

Drawing on the analysis of the literature, we propose an overarching map of the theoretical contributions in management in public sector organisations, which have not been mapped to date. The originality of this literature review lies in its analytical techniques that allowed to cover the content of the entire literature, avoiding providing insights based on only a sample. Thus, this study offers a consolidated view of theoretical and practices in the public sector field. Moreover, the study defines potential avenues towards addressing the sustainability and technological or human resource challenges in public sector.

Implications for theory and practice

The clusters identified in the entire sample of articles on the public sector that address accounting, finance and economics include active and non-active topics, providing scholars with a bird's eye view of this literature. The automatic computer analysis was complemented by traditional content analysis, which was applied to the documents covering topics related to each cluster. This in-depth analysis clarified which problems researchers have addressed in each area, how authors have employed empirical or conceptual approaches and what their main results are.

In addition to making contributions to theory, this study systematised the lessons learned in past decades, thereby assisting governments to design appropriate public policies for future challenges. More specifically, the analyses unveiled a cluster of knowledge about previous crises' impacts on accounting, economics and finance, providing practitioners and policymakers with a bird's eye view of the literature and topics being addressed. These findings can help public sector decision-makers and professionals become more aware of the practices contributing to making administrations and their laws more efficient and effective, as well as opportunities and new ways to implement improvements.

The results comprise a pool of thematic clusters organised, so that they can be critically analysed by public sector practitioners in light of their specific contexts and challenges. This critical reflection could be crucial to finding the best tools to deal with the current COVID-19 pandemic, which involves a complex mix of health, economic and financial issues. Resilience and agility grounded in innovative management practices and accurate accounting systems are critical capacities with regard to responding to not only this crisis, but also the on-going public sector challenges such as climate change, demographic trends and health and well-being promotion.

Future research

This review's findings also provide an outline of suggested paths for future research defined by scholars who reviewed the literature on public sector accounting and management. These systematised guidelines for further studies have implications for future investigations of economics, finance and accounting in the public sector.

More recently, resilience and recovery have become the mottos for organisations and individuals who must deal with the massive challenges arising from the COVID-19 pandemic. However, these terms do not appear frequently in the literature on the public

sector nor are they linked to any of the clusters identified. Scholars are evidently only now starting to address these topics. Researchers could investigate how accounting can help public sector organisations to increase their agility to change and adapt to crises and risks (Tallaki & Bracci, 2020) and to strengthen these entities' organisational capacity to build more resilient systems (Mazzucato & Kattel, 2020). Also, clusters show research in different public sector tiers (e.g. central government, state government and municipalities) and different issues with the management field, which provide researchers with paths for conducting a more in-depth study of those tiers in a narrowed down perspective.

Finally, the methodology applied in the present study has implications for future reviews as it includes a search query and lexicon of terms referring to the public sector. These tools can be used in future research on the same topic to ensure that the sample of articles collected reflects the relevant body of literature.

Limitations of the study

The present study uses Scopus database for collecting data that is on the basis of the results, which is a large abstract and citation database of peer-reviewed literature used in similar studies. Nonetheless, some authors opt to consider more restricted databases (e.g. Web of Science) to only consider the bibliometric data included in periodicals with the greatest impact on their fields. Moreover, this study does not include grey literature (e.g. books, or thesis) because they are not documents from indexed peer-reviewed periodicals, but others studies consider that those publications may also be considered in some cases to compare the differences between white (peer reviewed) and grey literature (not peer reviewed) (Santos & Laureano, 2021).

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Comparative Analysis of the European Centralised Public Procurement

ABSTRACT: *When analysing centralised public procurement models and solutions from the public administration point of view, attention needs to be paid to the specific features of public procurement as well as the institutional characteristics of the major central procurement organisations. In this paper, central procurement organisations in 11 European countries were compared based on interviews according to their activities, market positions and institutional characteristics. We shall address the issue of efficiency and stability of organisational structures by comparing the practice of the Central and Eastern European (CEE) and non-CEE European Countries. This comparison analyses the differences of the countries' centralised public procurement structures and reveals the diversity of analytic criteria, underlining that the legal regulatory background to public procurement is not necessarily predominant in determining specific features and characteristics. The stability and market-oriented characteristics of a centralised public procurement system have an impact on the innovativeness of central purchasing bodies (CPBs) and on the development of their service provider nature, which should be taken into account by the CEE countries with a less-developed public procurement culture.*

KEYWORDS: centralised procurement, innovative public procurement, central purchasing body, comparative analysis

JEL CLASSIFICATION: H4, O31

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INTRODUCTION

The role of public procurement is to ensure that public money is spent efficiently, while supporting goals important for society as a whole and economic development. It is well known that huge amounts of public money are spent by public procurement organisations, but the results of the literature also clearly show the importance of innovation (Edler and Uyarra, 2013; Uyarra and Flanagan, 2010; Rolfstam, 2013), environmental protection (Rainville, 2017; Cheng et al, 2018) or even the development of SMEs (Flynn, 2018/a; Ancarani et al, 2019; Hoekman and Taş, 2020). This paper examines a less-studied area, the organisational and economic background of public procurement, highlighting the issue of centralisation.

Public procurement-related researches have not paid much attention to the analysis of structures that form the basis of a centralised public procurement system. The stability and market-oriented characteristics of a centralised public procurement system have an impact on the innovativeness of central purchasing bodies (CPBs) and on the development of their service provider nature, which should be taken into account by countries with a less-developed public procurement culture. Economic literature has not paid much attention to the analysis of structures that form the basis of a centralised public procurement system, nor to those aspects which influence their stability and flexibility. International literature deals with the great extent of the structural study of procurement and public procurement practices (Patrucco et al., 2017, 2019; Aboelazm and Afandy, 2019; Flynn, 2018/b; Placek et al., 2018; Kakwezi and Nyeko, 2019). However, literature fails to develop such frameworks which help analyse and structure knowledge about the organisational forms. Analyses of the impact of centralisation are also appearing, where a positive linkage is found between the levels of centralisation, digitalisation and procurement performance in Italy and the USA (Patrucco, 2020). Preda (2019) makes comparisons within the European Union (EU), including one Central and Eastern European (CEE) country. These findings can

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also provide a basis for the evaluation and further consideration of individual European countries' frameworks. The significance of comparing CEE and non-CEE countries is that there are differences in development between the Member States regarding structural and efficiency issues. However, in the long run, learning about the differences can also provide an opportunity to learn about more complex benefits and societal impacts.

In this study, eight non-CEE European countries were chosen to be compared with three CEE countries. In addition to the identification and overall comparison of the central procurement organisations, the investigation focused, in particular, on legal forms, the nature of use, the structure of financing, and the products and services to be procured. We shall highlight the examples that are distinctive at the European level or largely different from those of the majority. A similar analysis of the issue of implementation of the European directives (2014/23/EU, 2014/24/EU, 2014/25/EU; hereinafter, directives) has not yet been carried out, given that the legal environment expressly emphasises and supports the activities of central purchasing organisations in CEE and non-CEE countries.

The aim of the paper is to compare the public procurement practices in European countries using a 'four-element theoretical framework' for describing centralised procurement solutions. The theoretical contribution of the paper is to make a comparison using the model setup, which shows that there are significant differences between the practices of different countries in terms of efficiency and stability. These differences are mainly geographical and are due to economic and political governance characteristics. A further significance of the results is that they highlight the need for further research on the ability of different national models to achieve the benefits of centralised public procurement identified in the literature.

This paper will be organised as follows. After a brief literature review and explanation of the research method, we highlight four factors that are important for the design and functioning of structures. We shall discuss the CEE and non-CEE countries' centralised public procurement characteristics in different settings. In the final section, we conclude the most important findings of our research.

LITERATURE REVIEW

The problem of centralisation in organisations is relevant in the literature. It is also reflected in both the corporate procurement– and public procurement–related researches. Recently, the pandemic situation in Europe has triggered studies (e.g. Vogler et al. 2022b; McEvoy, Ferri, 2020), while the issue of centralisation has also been addressed in several African countries (Nzimakwe, Biyela, 2021; Aboelazm and Afandy, 2019) and in the USA (Preda, 2019; Yukins et al., 2020).

Literature calls attention to a large number of advantages. According to Eriksson and Westelberg (2011), joint public procurement has an expressed positive impact on performance. Erridge (2000) reported on lower costs that can be achieved in the wake of professional training cooperation, that is, he expressly classified this mode of cooperation as a practical example of joint procurement. Kim et al. (2012) identified cooperating and opportunistic interorganisational forms of behaviour. Vogler et al. (2022a) studied pharmaceutical procurement and identified lower prices, improved bargaining power, improved governance and enhanced transparency among other advantages; so, they concluded that centralised pharmaceutical procurement (CPP) can be an effective policy tool if implemented wisely. The analysis of cooperation from the viewpoint of dependence is quite frequent. Ranjay and Sytch (2007) interpreted the so-called 'joint dependence' in procurement relationships. Several studies have addressed the reasons for and motivation of cooperation (Wang et al., 2005, 2006; Essig, 2000; O'Brien, 1995).

Centralisation does not necessarily mean an organisational framework, but can also be a temporary cooperation, which also results in economies of scale. Good examples are joint procurement initiatives. O'Brien (1995) expressly identified the objectives of cost reduction and service development as leading to joint procurement agreements in the sector of public service providers. According to Wang et al. (2005), there is motivation for procurers so long as the costs of coordination are sufficiently low. The study of Wang et al. (2006) analyses the conditions which lead to the choice of a joint procurement strategy. Teabok et al. (2006) studied the triad of joint procurement–production–supply, where joint procurement clearly presupposes an economical solution. However, some results suggest that some ecological advantages can be obtained more locally (Mélou, 2020).

The decision to go in for centralisation and its success in corporate procurement depends on a number of factors. Rosemeijer (2000) emphasised the relative homogeneity of demand and regarded the level of development and maturity of procurement as factors that have a direct impact on the mode of implementing centralisation. There are a number of interim solutions in between the individual levels of centralised procurement from the transfer of information through joint planning to the establishment of

a common procurement organisation which can be very diverse with respect to the content of their cooperation. Literature on procurement regularly describes a global approach and emphasises on synergies and the efforts required for implementing a common objective. For example, Trautmann et al. (2009) investigated private companies and proposed that integration approaches should vary depending on the three contingencies of category characteristics, supply environment characteristics and interdependence of the purchasing units. Smart and Dudas (2007) reported that pooling the requirement needs proper strategies and actions. Yet, public procurement literature on centralisation is relatively scarce and the number of studies is low even when research on joint procurement is considered (Patrucco et al. 2019). The majority of existing materials analyses joint procurement, realised through the party's own initiative and by their commitment. If, however, this is not the case, but it is a matter of centralisation determined by law, the implementation of the common objective by the central procurement organisation and the users is not necessarily identifiable and there is less emphasis on synergies and the global approach.

The literature on centralised procurement points to a number of benefits and implementation issues. The relatively small number of studies and the heterogeneous research focus make it difficult to draw a picture of the characteristics of the different forms of centralisation that have been implemented. There is very little comparative analysis in the literature. Yet, SIGMA (2010) is perhaps the only one to publish a comparative analysis where it has identified the characteristic features for some EU Member States. The study's analytical framework for centralised public procurement examines several policy and procedural issues including four focuses having economic consequences: financing model, range of goods and services, legal framework and its nature of use.

Literature review reveals that the centralisation of procurement is addressed in a small number of studies, which differ significantly in their research focus (geography, research question, etc.). However, because of these very different focuses, the results are difficult to generalise or to compare. Our study aims to address this research gap by comparing the institutional arrangements for centralising procurement in European countries and highlighting the differences from economic aspects.

CONCEPTUAL FRAMEWORK AND RESEARCH METHODS

A 'four-element theoretical model' was used as the research framework for the study. These elements are the following:

- A) Legal form: What type of legal entity is the CPB, and which organisation owns or controls it?
 - B) Nature of use: What are the characteristics of its use, and how contracting authorities can decide whether or not to join to the public procurement framework agreements, contracts of the CPB?
 - C) Financing: How is the budget of CPB financed?
 - D) Range of goods, services: What kind of products or services are centralised? How stable is this procurement scope of the CPB?
- These four factors are also reflected in the previously cited literature and are therefore suitable for identifying and comparing the main characteristics of each system. By examining the above four-element model, we seek to answer the following research questions:

RQ1: Is it possible to identify differences between the countries' central public procurement model studied based on the four-element framework?

RQ2: If differences can be identified, are they outlined for CEE and non-CEE countries?

The four aspects allow to compare the nature, flexibility and adaptability of the centralised public procurement service provider. Flexibility can be linked to the non-mandatory use of a central purchasing body, the use-based financing and the legal form of the central procurement organisation, and the diversified product range allows the institution more leeway.

To study the characteristics of centralised purchasing systems in practice, the Tenders Electronic Daily (TED) analysis and case study method was chosen. Our research was focused on examining the centralised public procurement systems of 11 European countries. In selecting the countries, care was taken to include small and large, old and new EU countries, and countries from the north, south, east and west. We focused on the largest central procurement organisations, whose activities have the greatest impact on the public procurement market of the given country.

First, the research examined public procurement data available on TED (www.ted.europa.eu). In examining the TED data, we concluded that TED is of limited use for examining the activity of central purchasing organisations in each country, as in many cases, the data on the long-term procurement methods (framework agreements, dynamic purchasing systems) used by central purchasing

organisations (see Table 1) are not stable and the contract size is very imprecise and difficult to assess depending on national rules. Even the European Commission's own methodology, the Single Market Scoreboard (SMS, 2019), does not take these data into account. Therefore, the pan-European TED database is currently not suitable for deeper data analysis for central purchasing organisations. However, it has been useful to examine the data to find the link between the so-called 'call for tender notices' (contract notice) and the 'result notices' (contract award notice) in a single database, which allows us to analyse the activities of central purchasing organisations in the Member States under study. Since it is mainly the framework agreements and dynamic purchasing systems that show the innovativeness of a CPB, it was possible to extract the relevant data after data cleaning and creation of a database.

Second, we used the case study method to analyse the Member States' central public procurement models. In the course of the research, we solicited the opinions of national experts and analysed and compared them. Using the expert panel method, we looked for experts who have been involved in public procurement for more than 10 years and whose CVs show that they have been involved in centralised public procurement, whether on the contracting authority, bidder or research side. In selecting the experts, it was important that the experts understood and were familiar with the four-element framework. Part of the training of the experts was presentation of the framework and the precise identification of the criteria for comparison in the given country. The experts were a mix of lawyers and non-lawyers. The communication was in English, and the terminology (e.g. CPB) was uniformly labelled for experts to ensure the same vocabulary. Following training, they prepared their national studies on the basis of a standard template, which was refined in several cases for the purpose of comparison. In writing the study, it was also necessary to provide legal provisions to support the descriptions to ensure verifiability. Before finalisation, the sources and references of the papers were checked and a comparison of the final studies could be started. The comparison was enabled by questions of identical structure. The analysis focused not so much on the legal background, although it presumed that the everyday activities of central procurement organisations are determined by nearly identical procedural rules and obligations as all the 11 countries are EU Member States.

The most important central procurement organisations concerned included the following (each CPB meets the definition of a central purchasing body as defined in Article 37 of Directive 2014/24/EU):

1. Austria – Bundesbeschaffungs GmbH (BBG, 2001)
2. The UK – Commercial Crown Services (CCS, 1991), National Health Service (NHS, 2006 as a successor)
3. France – Direction des Achats de l'Etat (DAE, 2016), Union des Groupements d'achats Publics (UGAP, 1985)
4. Germany – Beschaffungsamt beim Bundesministerium des Innern or Bundesbeschaffungsamt (BBA, 1995)
5. Sweden – SKL Kommentus Inköpscentral (SKL KI, 2011), SIC (SIC, 2011)
6. Finland – HANSEL Ltd. (HANSEL, 2003) KL-kuntahankinnat (KL, 2008)
7. Portugal – Entidade de Serviços Partilhados da Administração Pública (ESPA, 2012), Serviços Partilhados do Ministério da Saúde (SPMS, 2010)
8. Italy – Concessionaria Servizi Informativi Pubblici (Consip, 1997)
9. Hungary – Közbeszerzési és Ellátási Főigazgatóság, (KEF, 2004); Digitális Kormányzati Ügynökség (DKÜ, 2018), Nemzeti Kommunikációs Hivatal (NKO, 2015)
10. Romania – Oficiul Național pentru Achiziții Centralizate (ONAC, 2012)
11. Poland – Centrum Obsługi Administracji Rzadowej (COAR, 2010)

Assistance in selection of the procurement organisations was provided by national experts, as in several cases (Finland, Sweden, Germany, Romania, etc.), there are a number of central procurement agencies supplying individual regions characteristically upon municipal initiative. In this case, we tried to focus on major organisations covering the entire country. The above data also includes the date of establishment of the given organisation, which can be useful information during the analysis. We do not have precise data specifically on the size of the centralised procurement market. According to interviews, for example, in Austria, contracting authorities have spent around €1.2 billion in recent years through the central procurement organisation (BBG). In France, the procurement value of the most important central purchasing body UGAP's public procurement procedures has been around €2.4 billion in recent years, representing 10% of French gross domestic product (GDP). In Germany, the main central purchasing body, BBA, procured around €1 billion, while in Italy, Consip, procured around €18 billion.

In the course of the research, we divided the countries into two groups. The countries that procured in accordance with European public procurement rules were included in a group, while the three post-communist countries were examined in a separate group. The former comprise the non-CEE (1–8) block and the latter form the CEE block (9–11). The object of the study is to show to what

extent the centralised models belonging to the CEE block are similar to their non-CEE counterparts, whether some development direction can be detected in the CEE block and whether the trend that strengthens centralisation can be detected, similar to the practice of non-CEE countries.

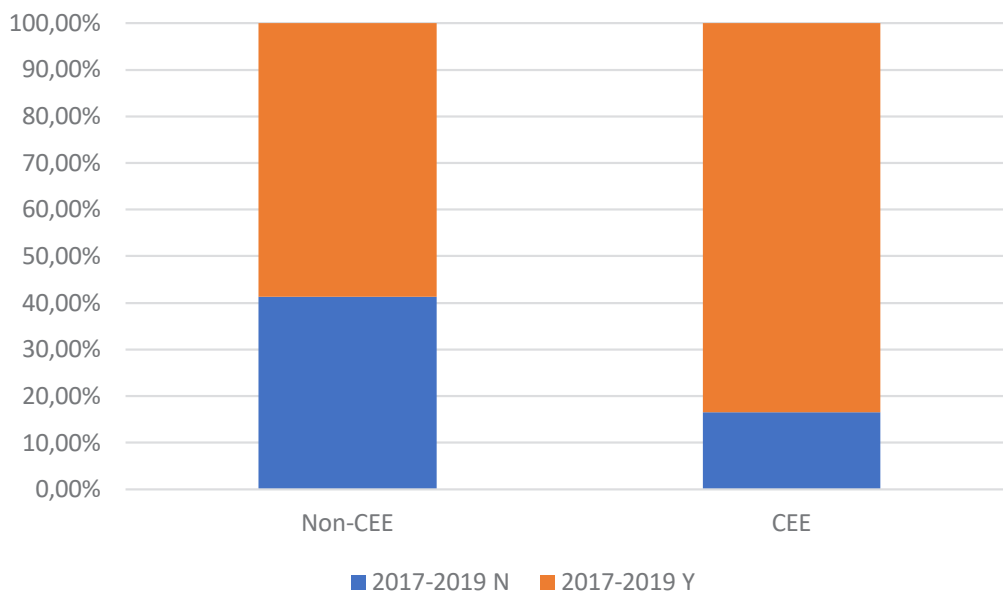
RESEARCH RESULTS

Every year, over 250,000 public authorities spend around 14% of GDP on the purchase of services, works and supplies in the EU, which takes about €2 trillion per year (EU, 2022).

If we look only at the activity of CPBs, the available TED database shows that CPBs in each Member State are very active in providing services to contracting authorities. They supply them with goods and services, typically using long-term procurement models, that is, framework agreements and dynamic purchasing systems. The two long-term models have the potential to enable large volumes and a wide variety of products to be procured by large purchasing organisations, with strong IT support, to supply themselves or their institutions. While the scope of a framework agreement is more fixed, the DPS acts as a pre-qualification system where new applicants can register at any time. Central purchasing organisations typically choose between the two models and also conduct specific public procurement procedures, depending on the type of services they provide and the extent to which they wish to serve their markets and contracting authorities in a flexible manner and at economies of scale.

Looking at the data from European countries, it can be seen that the value and number of procedures are increasing. However, if only the CEE countries are separated, the proportions change.

Fig. 1: Contract value of non-long-run procurement models and long-run procurement models of CEE and non-CEE countries (2017–2019)

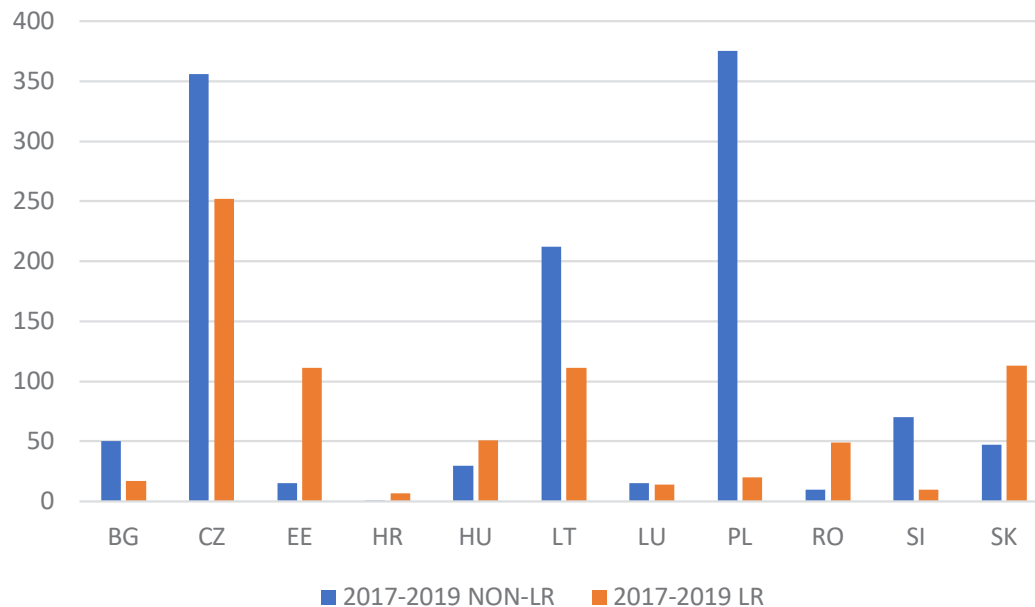


In terms of value, when comparing the amount of public money spent by central purchasing organisations using the long-term procurement model with the amount spent using the non-long-term procurement model, it can be seen that overall, CEE countries achieved a higher value than non-CEE countries between 2017 and 2019. However, the value of framework agreements, in particular, is hypothetical that should not be taken as a basis because it does not actually mean that this money will be spent by the contracting authority.

At the same time, the difference in the number of long-term procurement models and simple public procurement procedures in CEE countries between 2017 and 2019 shows that, with the exception of Romania, Slovakia, Hungary and Estonia, fewer long-term

procurement procedures are launched by CPBs in the other CEE countries. This is also an indicator of their maturity, as they try to cover needs through specific procedures.

Fig. 2: Number of non-long run procurement models and long-run procurement models of CEE countries (2017–2019)



Examining the available public procurement data and getting to know the trends is becoming more and more important. Many researches try to find a way to efficiency, to formulate proposals using data mining methods. However, real societal benefits and gains cannot be achieved by examining public procurement data alone. It is worthwhile to combine the knowledge of the institutional systems and examination of the organisational framework with the public procurement culture and practice of the given country. In international research, researchers in the EU typically do not examine CEE countries in a separate group, but are much less able to identify features that can help improve public procurement in Member States with less-developed public procurement cultures and histories. The organisational frameworks of procurement processes jointly carried out by organisations across borders or by separate organisations are at the centre of numerous procurement and public procurement research projects. As the main objective of both the corporate and public procurement activities is similar: supplying the organisation with inputs, so it may be interesting to consider the published results together.

Overall, the only official European public procurement database does not add any value to the hypotheses. Research should, therefore, be based on individual national studies. The next step in the research process is to present the results of the four-element model based on SIGMA (2010), first for non-CEE and then for CEE countries.

Main characteristics of central procurement organisations of non-CEE countries

This section first presents the structures of the non-CEE countries, highlighting the most important similarities and differences among the four model elements (legal form, nature of use, financing, range of goods and services).

Table 1 presents a general comparison of the individual countries based on their most important central procurement organisations. The criteria of the general comparison were compiled following the template sent to the national experts involving the same four factors on which our research is based.

We have indicated above that the four criteria – legal form, nature of use, financing and determination of the range of products and services to be procured – are subjects that unambiguously appear in literature and characteristically determine the activities of

Tab. 1: Main characteristics of eight non-CEE countries' most important CPBs

Legal form	Authority, agency GB – CCS, NHS FR – DAE, UGAP DE – BBA IT – CONSIP PT – ESPAP SE – SIC	Company in state of municipal ownership AU – BBG FI – HANSEL, KL PT – SPMS SE – SKL KI
Nature of use	Mandatory AU – BBG FI – HANSEL IT – CONSIP DE – BBA	Optional GB – CCS, NHS FI – KL FR – DAE, UGAP PT – ESPAP SE – SKL KI, SIC
Financing	Fee GB – CCS, NHS FI – HANSEL, KL FR – UGAP IT – CONSIP PT – ESPAP SL – SKL KI, SIC	Free of charge AU – BBG DE – BBA
Range of goods and services	Permanent AU – BBG GB – CCS, NHS FI – HANSEL FR – DAE DE – BBA PT – ESPAP, SPMS	Variable FI – KL, HANSEL FL – UGAP SE – SKL KI, SIC

the central procurement organisations. Below, we examine the individual central procurement organisations in the eight non-CEE countries with respect to these criteria. Presenting the general solutions, we shall also briefly discuss specific features, which make a solution characteristic from a certain point of view or differ from the model applied by the majority.

Legal form

The form of ownership has little impact on the activities of the procurement organisations, whether they are authorities or agencies or companies in state or municipal ownership. Their success depends much more on their financing, legal background and the efficiency expectations. It is typical that extreme control characterises only a few countries (Italy); this, however, is not aimed at the central procurement organisation, but it is generally a part of the struggle against corruption in the given country. Many of the countries studied are ones where CPBs can act as independent market players in the form of a company, which motivates them (Austria, Finland, Portugal). In the case of the authority, agency group, this status does not mean complete dependence in all cases either. In the case of the NHS, for example, there is detailed legislation on the independence of the CPB. Typically, CPBs operate as authority or agency, while organisations in Finland, Austria and Portugal function specifically as companies.

Nature of use

The individual central procurement organisations typically administer framework agreement procedures, the use of which is partially mandatory, justified by criteria of economies of scale.

In Austria, the tasks of BBG include the compilation of needs to obtain better prices and terms and conditions from suppliers, as well as the standardisation of public procurement to reduce the costs of processing and legal risks. BBG's clients may draw down certain products and services via an electronic platform based on framework agreements concluded by BBG.

It is a general rule in the UK that there are no legal requirements of mandatory force for the contracting authorities concerning applying any given procurement route, any given framework agreement or any given financial model. Policy regulators, however, may render certain routes of procurements, certain framework agreements or financing models mandatory or may only prefer them in the case of certain types of contracts.

The famous NHS comprises central procurement organisations; the procurement regulations pertaining to them set a number of objectives for the procurers, including meeting the needs of patients and improving the quality and efficiency of services. In the case of healthcare procurement, the interests of the patients are paramount in the course of procurement.

In Finland, the goal of the major central procurement agencies is to position themselves as the ‘champions’ of developing national public procurement practice and to be innovative in public procurement, sustainable public procurement and the use of electronic instruments. Hansel Ltd., the largest central procurement organisation, reduces tendering-related risks by providing expertise with regard to public procurement legislation and monitoring the tendering process of the company. The company uses internal guidelines and a system of quality assurance for tendering. During the tendering phase, the financial, technical and professional capabilities of all the suppliers under a given framework solution are studied and evaluated to see whether they are truly able to supply the products or services to be procured. Contracted suppliers are monitored throughout the period of the contract. In cooperation with a risk management expert, Hansel regularly carries out major risk identification projects, the results of which are presented in detail in their report on corporate responsibility.

In France, the government’s objective in setting up the DAE service was to increase savings year by year through global procurement and efficient strategies. To achieve this objective, the decree setting up DAE created coordinators in every ministry and every region to develop cooperation and economies of scale. In addition to DAE, UGAP is the only central procurement agency in the country, inviting bids for a very wide range of services. Its legal standing renders it to be a special company: its objective is not to make profit, but exclusively to optimise public procurements. Thus, the price enforced vis-à-vis state authorities includes internal costs, but not a commercial margin. In the case of other contracts, UGAP itself manages implementation of the contract in cooperation with the suppliers. In the cases of more complicated procurements, UGAP makes personalised bids to public procurers. In such cases, the state authority contacts UGAP and determines its needs. UGAP then makes its bid in relation to the suppliers already selected, and the state authority confirms this. In the case of services of this kind, UGAP concludes exceedingly broad, open framework agreements, where the final selection is based not on price competition, but on the ability of the individual bidders to satisfy the accurate need. In such cases, UGAP’s role is first to assist state agencies to determine their needs, then to select the appropriate economic agent from among the preselected candidates based on the framework agreement.

In Germany, the procurement of certain products and services via BBA is mandatory for all federal ministries and agencies.

The situation is the same in Italy regarding Consip. Consip’s role is of outstanding importance as in Italy, the procurement capabilities of the contracting authorities are evaluated, thus establishing expertise in public procurement, where the role of the largest procurement agency stands out.

In Portugal, ESPAP monitors the use of the individual framework agreement by the contracting authorities, which is decisive as it helps to better understand the needs and to achieve as high savings as possible. Through the rational use of joint state resources and providing shared services, ESPAP indirectly contributes to improving efficiency, which is the very objective of its establishment. The healthcare sector has by far the largest budget for procuring goods and services, hence it set up a separate central procuring organisation, called SPMS, to manage these procurements.

In Sweden, the objective of the central procurement agencies is to gather information on the procurement practices and needs of their customers to be able to offer them framework agreements of the needed version. Yet, contracting authorities are not required to report anything to the central procurement organisations. In practice, the information used to plan the operation of the central procurement agencies is based on formal and informal negotiations with the customers. The national central procurement organisations can rely on the information that was given to them and what they can obtain from the suppliers under the framework agreements. In other words, their activities are based on maintaining contact and cooperation.

Financing

The financing models show a rather mixed picture. In Austria, the contracting authorities at provincial and local levels and the other agencies making use of BBG services pay 0.2%–2% – 1% on average – of the drawdown value of the framework agreements (the value of the final contract). The services are free of charge for the federal agencies. The exact percentage depends on the savings achieved in

the course of procurement relative to what the federal, provincial or local agency achieves when it carries out the procurement itself. The base subsidy by the Federal Ministry of Finance covers the part of the costs of BBG's operation not financed by the percentages (fees) due to it on the contracts it concluded.

In the UK, whether a contracting authority has to pay for access depends on the terms and conditions of the numerous framework agreements of CCS. CCS may carry out public procurement on behalf of the contracting authorities or public service providers also. Generally, CCS charges a service fee for such services to the contracting authorities or public utilities. The level of the service fee changes according to the type of the contracting authority/public utility, the type of the public procurement contract and the services provided by CCS.

In Finland, all the central procurement agencies finance their costs of operation from the service fees collected from the selected suppliers. This fee-based system encourages central procurement agencies to set up desirable framework agreements and to sell them. The service fee is a percentage of the sales realised by the supplier through the framework agreements. This percentage varies between 0.7% and 1.5% for various types of framework agreements.

In France, the objective of UGAP is not to make a profit, but exclusively to optimise public procurement. Thus, the price charged to state authorities includes internal costs, but no commercial margin.

In Germany, the customers of BBA are not required to pay for the services. Numerous smaller German central procurement organisations provide their services free of charge, that is, the operation of the procuring organisations is directly financed from state funds.

In Italy, the service fee charged by Consip may be at the most 1.5% of the procurement value net of value-added tax (VAT) payable by the contracting authorities. In Italy, the budget of Consip is covered by the repayments of special projects paid by agencies of public administration, which concluded concrete agreements with the company. As they wanted to reduce the weight of public expenditure spent on Consip activities, they introduced a repayment mechanism, on the basis of which the economic agents having won framework contracts and framework agreements pay.

In Portugal, ESPAP charges a relatively limited fee for its services to all contracting authorities every time they make use of a framework agreement.

In Sweden, SKL Kommentus and SIC cover their operation from the service fees collected from the selected supplier. Kommentus is financed by service fees, ranging between 0.4% and 2.0%.

Range of products

Albeit the range of products to be centrally procured in the individual countries changes continuously, depending on demand, yet, in the majority of cases, the procurement of characteristic product groups can be identified.

In Austria, the products and services procured by BBG are the following: IT and telecommunications, mobility (vehicles), energy, real estate management, services, food, office stationery and furniture, medical and laboratory devices. They frequently offer additional services, such as the 'e-Reisen' (e-travel), which is an online booking instrument enabling BBG customers to organise planning of their trips, including booking flights, hotels and car rentals.

In Finland, the following products and services are centrally procured: printing services, electricity, fuel and other petroleum products, office furniture and equipment, IT equipment and accessories, software and licences, data and mobile network services, cars and related services, travel services, vocational health care.

In Germany, every federal ministry and agency procures certain products and services through BBA, where the typical subjects of contracts are services, IT, telecommunications, vehicles and accessories.

To be able to specify the volume and specification of procurements, in Italy, Consip and the agencies summarising public procurement collect data from the contracting authorities. In addition, Consip may study the goods and service needs of the central state agencies. These include the goods and services procured for the healthcare sector, armed security services, facility management, office cleaning, security service, maintenance of buildings and plants. In 2016, 13 initiatives were launched in the healthcare sector and in various sectors (postal service, ITC equipment, insurance services, elevator maintenance, postal and transport services, furniture, printing of voting slips) by way of the dynamic procurement system in public administration.

In Portugal, the products procured by ESPAP include computer equipment (both procurement and rental); natural gas supply in a free market system; maintenance of heating, ventilation and air-conditioning systems; electricity supply under a free market system;

paper and other office supplies; maintenance of elevators; infrastructure for ICT technologies; furniture; hygienic and cleaning products; procurement of software licences and related services; supervision and security. Products procured by SPMS include vaccines, contraceptives, medications, medical and laboratory materials, different kinds of medical instruments and special services.

In France, the procurement scope of DAE and UGAP is extremely broad, adapting to needs, similar to CCS in the UK, while the NHS is responsible for healthcare procurement.

In Sweden, SIC manages roughly 1200 framework agreements in almost 40 areas, including IT products and services, office furniture and equipment, travel services and accommodation, services, hotels and conferences, security, transportation and vehicles, mixed services (management consulting, temporary employment services, translation and interpretation services, etc.). The management of SKL (Kommentus' parent company) continuously gets recommendations from municipalities, county councils, regional institutions and companies concerning the goods and services, which can be suitable for nationwide aggregated procurement, on the basis of which they draw up their annual public procurement plan.

Main characteristics of central procurement organisations in CEE countries

This section first presents the structures of the CEE countries, following the four model elements (legal form, nature of use, financing, and range of goods, services).

Table 2 shows a general comparison of the CEE countries based on their most important central procurement organisations.

Tab. 2: Main characteristics of three CEE countries' most important CPBs

Legal form	Authority, agency PL – COAR RO – ONAC HU – KEF, DKÜ, NKOH	Company in state of municipal ownership
Nature of use	Mandatory PL COAR RO – ONAC HU – KEF, DKÜ, NKOH	Optional
Financing	Fee HU – KEF, DKÜ, NKOH	Free of charge PL – COAR RO – ONAC
Range of goods and services	Permanent PL – COAR RO – ONAC HU – KEF, DKÜ, NKOH	Variable

Legal form

In terms of organisational system, CPBs do not operate in a corporate form, but without exception within an agency or specifically in an official form. In the Polish, Romanian and Hungarian examples, the model of the independent profit-oriented firm does not appear. This is reinforced by the fact that the regulatory environment is also very detailed, with ministries typically exerting a strong influence on individual CPBs. The definition of their activities is accordingly much more regulated, allowing less flexibility to these organisations.

Nature of use

Use of the services is mandatory for all three countries. Typically, framework agreement procedures are carried out. The dynamic procurement system took place in only one case in the case of KEF. It is very interesting that the Romanian, Polish and Hungarian

models do not allow centralised public procurement to be subject to competition. This does not mean that the mandatory nature is mandatory for all contracting authorities, but it means that for certain groups of contracting authorities, this is the model to follow, and that the framework agreement of the central purchasing body must be used for certain procurement objects, which is also defined by legislation. Overall, legal form and mandatory nature are strongly correlated in the CEE countries.

Financing

The financing is typically free of charge; only in the case of Hungarian CPBs the service is provided for a fee. This is important because the service fee must be paid without having the option of not using the service. Service fees are very high at 1%–2%, but in the case of DKÜ, the definition is banded for very-high-value projects. Overall, the mandatory nature and the obligation to pay do not adequately motivate market participants to innovate and retain markets. In the other cases (Romania, Poland), the service is free. In itself, the free service is not a problem, but to develop the service, individual organisations have to ask the government for funding, which hinders their development. The CPB, which is partly or entirely self-sufficient, is more compelled to develop services by seeking out what procurement contracts for items the market needs.

Range of goods, services

In the Polish example, there is a central organisation that gradually expands and provides its services to public bodies. The model is still rudimentary, typically with few framework agreements.

In the Romanian example, ONAC's service typically involves the provision of health procurement, which is covered by the procurement of the Ministry of Health. A process of development is currently underway in centralised public procurement, and a new organisation is being set up, the activities of which overlap with ONAC.

In the Hungarian model, the role of KEF as a long-standing central purchasing organisation was partly taken over by DKÜ. The DKÜ is for IT. NKOH, in turn, is responsible for procuring a specific package of services, government communication services.

The three models are constantly evolving. Although the focus is on a constant range of products, in the case of Poland, the organisation that supplies some of the contracting authorities is gradually developing its activities. In the Romanian example, two organisations focus on a given product range, while in the Hungarian example, more and more central purchasing organisations are being established, practically taking away the right to procure certain procurement items from each other.

In the research process, after examining the four-element model for CEE and non-CEE countries, the next step is to answer the two research questions.

DISCUSSION

In the case of these 11 countries, a fully identical directive background determines public procurement regulation and accordingly, the central procurement organisations may administer identical types of procedures. A characteristic solution continues to be conducting framework agreements, which are limited and fail to provide the kind of flexibility that the contracting authorities served by the central procurement organisations would like to have.

The role of the central procurement organisation is on the increase in Europe, reinforced also by the Public Procurement Directives, which give a greater degree of freedom to the central procurement organisations. Having studied the activities of the highly important central procurement organisations of 11 European countries, we analysed four criteria in depth.

Both in the case of companies and public procurements, one of the most important objectives of centralisation is the search for more efficient solutions. More efficient solutions may appear in the efficiency of the process (the number of procedures administered in parallel declines), but this also raises the question of how the costs of the central organisation can be financed. Another area of improving efficiency is the synergy that can be achieved in the procured products.

With respect to efficiency and economies of scale, it can be established that the more advanced models focus on cooperation and on obtaining accurate knowledge of market needs, that is, in the course of centralisation, they are not satisfied with requiring the mandatory use of centralised public procurement. The characteristic subjects of procurement are greatly varied, typically the health-

care sector receives attention beside logistical services, IT products and other products and services that are indispensable from the viewpoint of running a government.

In most cases, financing is proportionate to the use of the framework agreements, charging 1%–2%; yet, it can be established that the financing of those organisations, which also undertake additional activities, can be regarded as resolved. The state participates in financing in several cases, specifying additional objectives for the central procurement organisations. Quality services or typically in the case of the health-care central public procurement organisations, the criteria of the patients override the criteria of efficiency. Similarly, market needs frequently override the criteria of economies of scale, that is, use of certain framework agreements is not made mandatory, or exemptions are provided from using the contracts of the central procurement organisations to acknowledge at the state level that a contracting authority may have needs not covered by standard framework agreements.

Opening the use of the framework agreements not only to central state actors indicates that a central procurement organisation may become a genuine service centre, even though this makes procurement hard to plan; it reduces administration for a wide range of contracting authorities and permits them to focus on genuine procurement issues and not on the complicated conduct of the procedure.

Eleven European countries under study continuously renew the activities of their central procurement organisations. Yet, the majority do not directly monitor them; instead, their expectations must be complied with by the central procurement organisations. In terms of organisational framework, these organisations exhibit more flexible, more market-like behaviour, which is exemplary for the contracting authorities. It is not fortuitous that mandatory centralisation and the free use of framework agreements give rise to so much debate, because there is a genuine risk that the organisation becomes too comfortable, if it is mandatory to make use of its services. In the absence of this, however, these organisations cannot be called to account for economies of scale, or to put it more accurately, there is a greater pressure on these organisations to provide true services to the contracting authorities, making their activities more attractive, offering the right subjects of procurement and successfully financing themselves.

This is the interaction between the financing, subject matter of procurement and efficiency criteria studied by us, for which every European country invented its own models. At the same time, synergies are utilised only at nation-state level, and they do not make use of the services of the central procurement organisations of other countries.

Regarding non-CEE countries during the preparation of the interviews, the examination of the stable operation of each organisation was raised. In our view, the system of public procurement institutions is practically stable in the studied countries. The division of labour and the scope of activities of the individual actors change slightly, but the stability of the organisational background can be perceived. This is reflected in the fact that the rules have changed little in relation to the four aspects examined, mainly the system of conditions for which products can be procured independently of the central organisations. This example shows well that it does not make organisations unstable, but, on the contrary, encourages them to provide the right services and introduce innovative solutions.

The centralised models of the CEE countries can be considered clearly underdeveloped. The interviewees reported a clear lack of development and constant change. It is interesting that both the obligation and the definition of objects in the legal sense dominate; the organisational nature of the state dominates, while the centralised public procurement is constantly looking for its place in the system. All these support Karjalainen's (2011) important focus on the cost side and Patrucco's (2017) service-centric approach. There is a perceptible difference in the approach between the CEE and non-CEE countries. The CEE countries are not yet able to break out of a regulation-oriented, less-stable, less-mandatory, less-innovative model. Continuing to create new organisations or re-regulate existing ones does not necessarily mean moving forwards. The CEE examples are typically not used as a basis.

The comparison reveals that there are significant differences in the functioning of centralised public procurement organisations in CEE and non-CEE countries (RQ1), which are well described by the four elements of our research model. The answer to question RQ1, whether it is possible to identify differences between the countries under study on the basis of the four-element model, is that yes, such differences can be identified. We then turn to the answer to question RQ2.

To the question whether differences between CEE and non-CEE countries can be outlined, we can also answer yes. The trends in the two groups also differ (RQ2). Non-CEE countries are more service oriented and innovative, focusing more on new products and services. Their funding is rather market dependent, but as they meet government procurement needs, it is not risky to maintain a large pool of experts. This is also a key to their success, while in the case of CEE countries, the quasi 'government office' status and secure funding also make them comfortable. Continuous organisational change, even if there is room for improvement, makes it impossible to operate in a stable way. This is not always the case in the CEE region, but the trend in the countries studied shows it. A fixed scope of procurement does not necessarily in itself promote stability, since it is worth defining a flexible scope precisely

to allow the CPB to respond flexibly to the needs of contracting authorities, as was necessary in the times of coronavirus disease (COVID). In neither the CEE nor the non-CEE case was the provision of logistics by CPBs typical, but the provision of market research and procurement services appeared in the CEE countries, while in the non-CEE case, we found examples of CPBs acting as quasi ‘authorities’ (DKÜ, NKOH) and dealing with procurement authorisations, procurement plan reviews and the possibility to take procedures away from contracting authorities and to carry them out themselves. The direction of operation as a public authority is even further removed from the service-oriented, innovation-driven CEE countries, which are increasingly combining framework agreements with DPS. The trend is, therefore, towards a kind of lower-level centralisation in the CEE countries, with a strong IT support by a skilled professional staff as the key to future development, for which the highly developed CPBs in non-CEE countries can provide good examples.

CONCLUSIONS

Our research looked at the public procurement systems in non-CEE and CEE countries. It concludes that there are significant differences between countries and between the practices of each group. The differences are both structural and efficiency related. The service-oriented approach, the connection to needs, the non-binding nature or the legal form of an independent market participant CPB is far from the CEE approach. The solutions of the CEE countries are inflexible, not service oriented, and cultural differences and a short history of public procurement do not yet allow the adoption of innovative models. The implementation of a profit-oriented Finnish or Italian example or building a think tank organisation requires stability, flexibility and openness, primarily learning about the European examples that our present research has undertaken. The stability and market-oriented characteristics of a centralised public procurement system have an impact on innovativeness. Signs that call for a profit-oriented operation, mandatory recourse, can serve as a basis for future development. It is clear that the same legal regulatory background to public procurement is not necessarily predominant in determining specific features and characteristics.

The added value of our research is the identification of characteristics that can serve as a model for developing centralised public procurement organisations. The characteristics of each country illustrate the extent to which they are going their own way, while more innovative solutions (service nature, flexible procurement scope) could build a more efficient organisation that could also increase security of supply. A major challenge in the post-COVID-19 period may be the ability of central purchasing organisations to meet demand in a crisis situation, based on a more innovative approach, a stable organisational background and efficient operations with adequate freedom of decision.

There are many studies on the benefits of centralised procurement systems. However, our research has shown that there are substantial differences between some centralised procurement solutions. A further possible research question could be whether the benefits outlined in the literature also apply to these different models.

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Costs and Revenues Balance: The Case of Municipal Delegated Competences in Slovakia

ABSTRACT: *Local authorities' financial resources should be commensurate with the competences provided for by the law. However, in most countries, representatives of local self-governments claim that their total revenues are insufficient to deliver allocated tasks at a standard scale and level of quality. Such statements are somewhat problematic, especially in less-developed countries, where cost-center accounting is not used and service standards are not defined. This paper analyzes the relationship between the costs of delegated competences and the resources provided to cover these costs in Slovakia. We found that Slovak municipalities (with some exceptions) do not know the exact costs of delegated competences, and that the state does not cover the total costs of delegated competences, which contradicts the Slovak constitution. Our short comparison in the discussion shows that the Czech situation is very similar, suggesting that the problem might be common for all post-Soviet countries.*

KEYWORDS: public administration, delegated competences, fiscal federalism, Slovakia.

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INTRODUCTION

The arrangement of public administration levels, as well as the performance of individual public finance functions covered by these levels and the system of financial relationships between the levels and units of public administration (intergovernmental fiscal relationships), differs in many countries. However, in each country, vertical financial relationships between different levels of public administration and horizontal financial relationships between different units of public administration at the same level determine the efficiency of the performance of public finance functions.

The degree of decentralization of public finances and the optimization of financial resources in the budget system (concerning its vertical and horizontal structure with the aim of effective distribution and the use of public finances within various sources of public budgets) are crucial issues for discussion (Schapiro, 2020). Fiscal decentralization often brings problems in the form of vertical and horizontal imbalance when the revenues of public administration units at different levels (vertical) or at the same level do not correspond to the expenses associated with the exercise of the competences entrusted to them.

Delegated competences are a specific case. Municipalities realize these competencies on behalf of the state: the state delegates the execution of those decisions to lower (mainly local) levels, which ensures they are executed more effectively in this way than in the case of their execution from the central level. According to the Constitution of the Slovak Republic (Article 71), the following applies: “Performance of specified tasks of local state administration can be delegated to municipalities and higher territorial units by law. The state covers the costs of such a delegated performance of state administration.” Similar provisions are contained in the legislation of most developed countries.

However, in every country, local governments “complain” that the amount of resources provided by the state for performing the delegated competences does not cover the costs associated with the performance of the given tasks. Therefore, it is surprising that only

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a very small number of academic studies have analyzed the relationship between the costs of delegated competences and the rate of reimbursement of these costs. Indeed, a Google Scholar search using the words “financing delegated responsibilities” did not identify a single study dealing with this issue. Of course, this does not mean that more generally focused studies by Kim (2018), Hagemann (2018), or de Mello (2000) investigating municipal finances do not address this issue at all. However, it is evident that a fundamental research gap exists in the given area.

The paper aims to determine the extent to which delegated competences (carried out by local governments on behalf of the state) are financed in practice in Slovakia. The authors’ direct research is the fundamental source of primary data. The entire basic set of 2890 municipalities in the Slovak republic was obtained from a questionnaire. In the “Discussion” section, the findings from Slovakia are compared with the situation in the Czech Republic, which the authors analyzed using an informative sample of municipalities based on a report by EEIP Praha and Accendo Ostrava (2018).

The structure of the paper is as follows: the introductory part presents a theoretical introduction to the issue and interprets the current state of art. In the methodological part, we describe the samples and the research methods used. The analytical part maps in detail the level of financing of delegated competences in Slovakia. The discussion summarizes the results, verifies their informative value, and provides an interesting comparison with the situation in the Czech Republic.

LITERATURE REVIEW

Controversies exist (Schapiro, 2020; Bird, 1999) regarding the degree of decentralization of various public finance functions to lower levels of public administration, especially in connection with the fulfillment of the requirement in the democratic society of functioning (Prud’homme, 1995; Fjeldstad, 2001 or Rafaj et al., 2022). Here, a consensus is found in delegating the allocation function of public finances through public services provision to lower levels of public administration. The decentralization of public administration in a democratic society, according to the theory of fiscal federalism (Oates, 1972), enables the coordination of supply and demand for public services provided at the level of public administration closer to the citizen (Engineer, 1990) and creates healthy competition between territorial units (Brennan and Buchanan, 1980), which increases the efficiency of the local public services provision.

When defining fiscal federalism, we start from the basic term “federalism,” which indicates the way of governance and points to the division of authority in the exercise of certain competences (Schapiro, 2020). The power to implement the given competence is distributed between the central and regional governments when both parties achieve a certain degree of autonomy in the given political area (Law, 2013). The process of dividing political powers among individual levels of public administration is accompanied by the subsequent distribution of fiscal management within the framework of the implementation of public finance functions. Fiscal interactions in intergovernmental fiscal relations arise among individual levels of public administration (Oates, 1972, 2008; Breton and Scott, 1978; Tanzi, 2000; Fossati and Panella, 1999; Židonis and Raišienė, 2020). An appropriately set mechanism of fiscal federalism should have a positive effect on the provision of public services, which is the core content of the key theories of fiscal federalism, including Tiebout’s (1956) model of local public goods, Buchanan’s (1965) economic theory of clubs, Oates’s (1972) decentralization theorem, and Brennan and Buchanan’s (1980) decentralization hypothesis.

Olson (1969) draws attention to the connection between decentralization and the spillover of the benefits of local public goods beyond the borders of the local government or, conversely, the failure to cover the whole territory of the local government with the offer of local public services when fiscal equivalence is violated. For this reason, it is necessary to find a balance between the centralization and decentralization of public finance functions and the extent of the delegation of powers to lower levels of government.

The Brennan–Buchanan decentralization hypothesis solves the range of powers in providing public goods at the local government level (Brennan and Buchanan, 1980). Here, the dominant idea is that the needs, preferences, and ability to pay for public goods differ, and they are transformed in relation to the geographic location of citizens. Better information for local governments about the preferences of the inhabitants in a territory enables them to respond by offering public goods more appropriately than from the central government (Halásková and Halásková, 2020; Tkachenko, 2020; Engineer, 1990), resulting in greater efficiencies in good public provision at the local level.

In the context of fiscal federalism, the key issue is the optimization of financial relations in the budget system concerning vertical and horizontal structure—namely, the effective creation, distribution, and use of public finances within different levels of public budgets (Schapiro, 2020; Bird, 1999).

Funding of Delegated Competences

As indicated in the “Introduction” section, it is rather difficult to find studies in the world academic literature that directly address the procedures and levels of financing of delegated competences that municipalities provide on behalf of the state. This topic marginally appears in studies that analyze local finances from a regional or national point of view (e.g., Revelli and Tovmo, 2007; Borge et al., 2008; Bruns and Himmler, 2011; Sørensen, 2014; Balaguer-Coll et al., 2007; Giménez and Prior, 2007; Balaguer-Coll et al., 2010; Benito et al., 2010; Zafra-Gomez and Muñoz-Perez, 2010). Regarding the conditions in Slovakia, the paper by Balážová and Dienerová (2012) is probably the most significant academic output directly focused on the topic of financing delegated competences. Balážová et al. (2020) subsequently dealt with the exercise of the competences within the Slovak Republic, describing in more detail the legal environment regarding the exercise of municipalities’ competences, analyzing the exercise of municipalities’ competences as per the number of inhabitants, and pointing out the powers of self-governing regions in relation to municipalities’ powers. Their study presents the performance of delegated competences in areas such as road transport, civil protection, and social services.

Regarding relevant domestic analytical studies, Mederly and Černecký (2020) published their study in Slovakia in 2019. Their study characterized the system of local self-government in Slovakia and the system of original and delegated competences. They then provided a detailed analysis of the legislative anchoring, organizational security, method of financing, and performance parameters of the delegated performance in the areas of education, building regulations, local and purpose-built roads under the jurisdiction of the special planning and building office for local and purpose-built roads, housing, registry office, reports of residence and population register, elections and referendum, and environment and social services. The researchers drew extremely critical conclusions, stating (p. 110) *“the idea that the state covers the costs of delegated performance is a fiction. In practicality, the state does not even have the mechanisms to know how much [...] the competences cost. In addition, in several sections [of the] state [it] appears that the costs have not changed since decentralization (that [was] about 15 years ago). So, in this key element—funding—the whole system is afloat. This system forces municipalities to continuously violate the Act on Budgetary Rules of Local Self-Government. A municipality cannot spend [its] own resources on activities that are not the activities of a specific self-government.”* Mederly and Černecký (2020) further state that in the most financially significant delegated competence, which is education, the state does not finance a whole range of activities connected with the performance of this competence. They also remind readers that the universal transfer of competences to all municipalities, regardless of size, represents an “automatic source of disturbances” in the conditions of the excessive territorial fragmentation of Slovakia.

In the Czech Republic (whose situation we only marginally address in the discussion of the results), the question of delegated competences financing has been addressed by, for example, the study “Validation and variants of possible modifications of the system of financing the delegated performance of the state administration, including relevant underlying analyses” (EEIP & Accendo, 2018). This study attempted to determine the cost of delegated competences and then propose new methods of financing them. The study’s conclusions were the starting point in 2020 for creating a new methodology for financing delegated competences.

MATERIALS AND METHODS

The aim of the research is to analyze the extent to which delegated competences carried out by local governments on behalf of the state are financed in Slovakia. In this regard, we developed two research questions:

RQ1: Do the municipalities know the total costs⁵ of exercising delegated competences?

RQ2: What is the level (extent) of financing of delegated competences according to the municipalities?

The key methods of scientific research are the methods of classification analysis, comparison and abstraction in the creation of the theoretical–methodological framework of problem solving, methods of primary data analysis in the application part of the study, and the methods of synthesis and partial induction in drawing conclusions. The primary data collection was conducted through

⁵ Municipalities often calculate the costs of providing the service only in the amount of expenses from the budget due to the nonfunctionality of cost centers—the costs calculated in this way do not include indirect costs associated with providing the service—overhead costs

Tab. 1: Research sample

Sorting character		Number of municipalities in the base set	Number of municipalities in the sample set	% of the base set
Population	1–999	1919	27	1.4
	1000–4999	855	28	3.3
	5000–9999	65	4	6.2
	10,000–49,999	78	6	7.7
	50,000–99,999	9	1	11.1
	Total	2799	66	2.36

Source: Authors

the questionnaire and interview methods. Analysis focuses on financing of delegated competences in the areas of civil registry and planning and building offices at the local government level for the selected municipalities included in the research sample. It is possible to observe the differences between the departments of the registry office and the planning and building office within one municipality, as well as the differences between municipalities.

A survey was conducted between September and October 2022, focusing on the performance of delegated competences in selected sections of local government.

To obtain data, we used a questionnaire, with which we electronically addressed the entire basic set of 2890 municipalities and, based on their consent, we visited 66 municipalities (Table 1). We collected data in the visited municipalities to ensure the accuracy of the data. A sample of 66 municipalities has an almost representative character from the point of the number of municipalities.

When investigating, we decided to focus on two delegated competences: the registry and planning and building offices. These competences, especially in the planning and building office, are among the most important tasks of the state carried out through municipalities (the most complex and most expensive delegated competence is primary education, but original and delegated competences overlap in this area; therefore, we did not include it in this research). The choice to include the analyzed competences was mainly determined by the fact that the scope and content of the given competence's performance were clear and easily identifiable.

A registry office, in its delegated competence, keeps the state register of persons who were born, married, or died in the territory of the Bratislava-Nové Mesto municipal district. The registry office records data on the personal status of citizens and other facts necessary to establish and verify the personal status of citizens based on public documents. Extracts (birth, marriage, and death certificates), which are public documents, are issued by the registry office. The register of births, marriages, and deaths comprises a register of births, a register of marriages, and a register of deaths. The planning and building office, in its delegated competence in territorial proceedings and building regulations under the Building Act, issues planning decisions, building permits, and building approval decisions and decides on penalties for breaches of the Building Act.

We asked each municipality if they knew the exact costs of the delegated competence. In the case of a positive answer, we also asked about the method of ascertaining (calculating) these costs. We evaluated the municipalities' responses to the second question, which is a control question. Based on the description of the cost calculation procedure provided by the municipality, we placed them in one of the three selected categories: (a) the municipality does not calculate the costs, (b) the municipality calculates direct costs, or (c) the municipality calculates/knows the total costs. In several cases, a situation arose where the municipality stated that it knew the costs. However, the description of the calculation procedure clearly showed that the reality was different (e.g., municipalities confused the fact that they knew the revenues for the exercise of the competence with the fact that they knew the costs). A final question asked about the municipality's opinion on the level of coverage of costs for the delegated competence from the state budget.

For a simplified comparison of Slovakia with other countries, we conducted a framework survey of the situation in several municipalities in the Czech Republic. We use the results (due to their incomparability) in the "Discussion" section.

RESEARCH RESULTS

Practical context: self-governing system and methodology of financing delegated competences in Slovakia

The current form of the local self-government system in Slovakia is based on the changes that occurred in the former Czechoslovakia after 1989. In 1990, the Act on Municipal Administration (no. 518/1990 Coll.) was adopted, which created a modern local self-government responsible for the competences of the former national committees (Nemec et al., 2000). This law remained in effect even after the division of Czechoslovakia and the establishment of the independent Czech and Slovak republics on January 1, 1993. It has not been significantly amended during its validity.

The core competences allocated to municipalities in 1991 were as follows: management of movable property and real estate in the ownership of the municipality, public order in the municipality, and local public transport in large cities; construction, maintenance, and management of local roads and parking places, public spaces, public greenways, public lighting, marketplaces, cemeteries, local water resources and wells, water supply networks, sewerage and water cleaning establishments in small municipalities, local cultural establishments, children's homes, part of the ambulatory health services establishments, and part of the sport, leisure and tourist establishments; establishment of the basic social services; and supporting education, environmental and heritage protection, culture and artistic hobbies, physical culture and sports, humanity activities, and municipal police forces and fire services (Nemec et al., 2000).

The main problem at the time of establishing local self-government was the preservation of many municipalities. Indeed, Slovakia is one of the most fragmented countries in Europe, with almost 3000 municipalities in a population of 5.5 million. The average Slovak municipality has an area of approximately 17 km². Only two cities, Bratislava and Košice, have a population greater than 100,000 inhabitants (approximately 430,000 in Bratislava and 250,000 in Košice). The decentralization reform of 2000–2005 resulted in more fundamental changes in the functioning of local self-government, when the current fiscal decentralization system was created. Municipalities acquired additional competences in the areas of road communications, water management, citizen registration, social care, environmental protection, education (elementary schools and similar establishments), physical culture, theaters, health care (primary and specialized ambulatory care), and regional development and tourism (Klimovský, 2010).

Slovakia signed the European Charter of Local Self-Government (Charter) in 1999, with reservations. On July 31, 2002, Slovakia declared it considered itself bound by Article 6, paragraph 2; on May 16, 2007, Slovakia declared it had extended its obligations and considered itself bound by the remaining charter provisions. The charter was incorporated as an acceptance of an international treaty, meaning that the charter would supersede domestic laws. The most recent Council of Europe monitoring report, entitled “Local and Regional Democracy in the Slovak Republic,” was approved on March 24, 2016, and the council expressed satisfaction with the overall positive situation of local and regional democracy in Slovakia.

Slovak municipalities spent approximately 7% of the country's gross domestic product (GDP), meaning Slovakia remains a centralized country from the perspective of local government spending. Its tax revenues still represent only a small share of municipal financial resources—indeed, among the lowest in the Organization for Economic Cooperation and Development (OECD)—while its share of central government transfers is among the highest of OECD countries (for more on this, see, e.g., Plaček et al., 2020). The main item of these transfers is financing primary schools' delegated competence.

The method of financing delegated competences in Slovak municipalities is described in detail in Mederly and Černecký's (2020) study. The area of primary education contains an extensive range of delegated competences, part of which (according to the mentioned study) is not in any way financed by transfers. Therefore, we can consider the fact that the state finances the operation of elementary schools and the activities of school authorities in the area of education as decisive. Since January 1, 2004, the financing of these schools has been based on the principle of normative financing based on the number of pupils.

Regarding the delegated competences in the area of building regulations, according to the current legislation, every municipality is a planning and building authority (even the smallest municipality with only tens of inhabitants). These delegated competences are financed by a simple methodology: the number of inhabitants of the municipality multiplied by the monetary coefficient determined by the Ministry of Transport, Construction, and Regional Development of the Slovak Republic. The financing of the delegated competences for local and purpose-built roads is similarly carried out, as the amount of the monetary coefficient is determined by the Ministry of Transport, Construction, and Regional Development.

Implementing and financing the delegated competences in the area of housing are ensured only by the municipalities in the district headquarters. This area covers a range of activities related to providing support from the State Housing Development Fund

as one of the essential economic instruments for housing. In this case, the monetary coefficient is also applicable. The Ministry of Transport, Construction, and Regional Development determines the amount.

In the area of performance and financing delegated competencies in registry offices, the agenda is regulated by a separate law determining the rights and obligations in connection with reporting life events from citizens and public authorities. The registry offices that perform these tasks are located in approximately one-third of the Slovak municipalities. The method of financing primarily takes into account the number of inhabitants and, to a lesser extent, the number of implemented operations. The grant covers the registrar's salary and insurance, goods and services, and an allowance for clothing expenses. The Ministry of the Interior, which is in charge of this agenda, keeps detailed statistics on the operations carried out by individual registry offices.

In the area of delegated competencies in reporting residences and the register of residents, a reporting office for residences is located in each municipality; in the cities of Bratislava and Košice, they are city districts. The competence is financed by the Ministry of the Interior, which determines the amount of the monetary coefficient per inhabitant.

In the area of delegated competences in elections and referendum, which is a regularly recurring activity, the one-time nature corresponds to the method of financing, which is significantly different from ensuring the performance of other delegated competences. Municipalities receive advances for this competence from the Ministry of the Interior, which they subsequently account for; the Ministry reimburses them in full for all costs associated with the tasks defined in the law.

The performance and financing of the delegated competences connected with the environment include a wide variety of activities financed by the Ministry of the Environment, which determines the amount of the monetary coefficient per citizen of the municipality.

The study also addresses the issue of financing social services, noting that many uncertainties persist in this area and that the boundaries between original and delegated competences are unclear. Therefore, the state preserves and maintains an extensive subsidy scheme that finances investment and noninvestment measures in various social services.

Total costs of performing the delegated competences

Through direct research, we mapped the extent to which municipalities know the amount of costs for the two chosen delegated competences: the registry and planning and building offices. Tables 2 and 3 present the results.

In the case of small municipalities, the answers indicating that municipalities do not know the total cost for the performance of the delegated competences are not surprising. For example, municipalities of up to 1000 inhabitants cannot objectively have the capacity to collect these data. Larger municipalities mostly answered that they know these costs (only one municipality with more than 10,000 inhabitants indicated that it did not). However, our control question, which asked about the calculation method, demonstrated that these answers were only partially true.

Larger (and some smaller) municipalities monitor selected direct costs for competence performance (mainly wages). However, only a very small number of them also try to determine overhead costs. The fact that the municipalities need to understand the issue better is also evidenced by the fact that, in many cases, the examined competences are carried out through a joint municipal office. In such cases, the municipality knows exactly how much it contributes to the operation of this office; however, in most of these cases, the municipalities stated the costs they do not know (they may not know the cost structure of the joint performance of the competence, but they know their individual share).

The obtained data on the opinion of the municipalities on the level of cost coverage for the delegated competences are related to the quality of cost monitoring. Specifically, the municipality needs to know the costs to know the level of their financing by the state. Despite this, the excessive dispersion of data is surprising, which is significant even in the case of municipalities that know, at least to some extent, how much their competence performance costs. For example, with the registry office, one municipality stated that it calculates the salary and contributions of the employee in the registry office (so, it should know the direct costs); at the same time, it stated that the financing rate is only 3%.

These data demonstrate the generally interpreted fact that, in Slovakia, the state insufficiently finances the performance of delegated competences and thus directly violates the Constitution of the Slovak Republic (as we stated in the "Introduction" section, according to the Constitution of the Slovak Republic, the costs of the delegated performance of state administration must be covered by the state). Moreover, only two small municipalities reported a cost coverage rate of 100%, although they also stated that they did not know the actual cost amount.

Tab. 2: Costs for the delegated competences in the registry offices

Method of exercising competence		Municipality knows the exact costs			Method of calculation		Cost recovery rate
Separately	Joint office	Yes	No	None	Calculates direct costs	Calculates/knowns the full costs	%
Municipalities up to 999 inhabitants							
12	13	5	20	22	3	0	1–100
Municipalities from 1000 to 2499 inhabitants							
18	0	10	8	13	4	1	10–100
Municipalities from 2500 to 4999 inhabitants							
10	0	9	1	7	2	1	11–95
Municipalities from 5000 to 9999 inhabitants							
6	0	5	1	3	2	1	45–90
Municipalities from 10,000 to 49,999 inhabitants							
6	0	4	2	5	1	0	50–80
Municipalities over 50,000 inhabitants							
1	0	1	0	0	0	1	95

Source: Authors

Tab. 3: Costs for delegated competences in the planning and building offices

Method of exercising competence		Municipality knows the exact costs		Method of calculation			Cost recovery rate
Separately	Joint office	Yes	No	Separately	Joint office	Yes	No
Municipalities up to 999 inhabitants							
14	11	10	15	15	1	2	1–80
Municipalities from 1000 to 2499 inhabitants							
12	6	5	13	17	0	1	2–80
Municipalities from 2500 to 4999 inhabitants							
5	5	4	6	10	0	0	18–80
Municipalities from 5000 to 9999 inhabitants							
5	1	3	3	5	0	1	3–80
Municipalities from 10,000 to 49,999 inhabitants							
4	2	5	1	2	2	2	25–85
Municipalities over 50,000 inhabitants							
1	0	1	0	0	0	1	75

Source: Authors

DISCUSSION

The results from our analysis document two basic facts:

1. municipalities mostly do not know (and many of them probably do not even need to know) the total amount of the costs of delegated competences and
2. the state finances only part of the costs incurred by municipalities in the exercise of delegated competences.

We expected the first result because with the excessive territorial fragmentation of municipalities and nonexistent cost accounting, which would be needed to allocate overheads to specific activities, knowing the costs is impossible (see, e.g., Oplotnik et al., 2012). However, such a minimal capacity (and willingness) to calculate exact costs, even among larger municipalities, was surprising.

The second result also confirms an expected outcome. As discussed in the literature review, existing relevant studies came to the same conclusion (see, e.g., also Alibegovic et al., 2013). However, again, the excessive and unrealistic dispersion of municipalities' opinions on the level of coverage of the costs of delegated competences, which includes extremely high and extremely low values, was surprising.

For illustration purposes, we compared the results obtained in Slovakia with the situation in the neighboring Czech Republic, which has similar conditions from the point of view of the functioning of local governments (Matějová et. al., 2017). In the Czech Republic, municipalities are divided into three categories: those with basic powers, those with an official municipal office (municipalities of category II), and those with extended powers (municipalities of category III). This categorization eliminates one of Slovakia's specific problems: the fact that every, even the smallest, municipality in Slovakia exercises the same range of delegated competences.

In the Czech Republic, similar to Slovakia, no data set takes Alibegović into account (a) the amount of the contribution to individual municipalities in the context of the costs delegated to competences or (b) the distribution of the contribution between individual agendas concerning their cost and the necessary scope.

In 2020, the Czech Republic's Ministry of the Interior prepared a methodology for determining the costs of the performance of state administration in the delegated competences (Ministry of Interior, 2020). However, it mainly deals with methods of financing the delegated competences. Subsequently, the financing model for the performance of delegated competences was updated, which has its own application interface (web application) and contains both methodologies and illustrative examples of contribution redistribution. The contribution changes yearly depending on the parameters (the number of inhabitants changes) and since another agenda for funding can be added.

Unlike Slovakia, where the Constitution of the Slovak Republic directly imposes the obligation to finance delegated competences, the Czech Act on Municipalities does not assume total financing or cover the costs (contribution). Thus, it is expected that the municipalities in the sections where they collect administrative fees will use these resources to cover the costs of the delegated competences.

The question of how much the financing system reflects the actual costs is the subject of great discussion at professional forums and conferences. From time to time, it is also the subject of criticism in the media, especially from local government representatives. Such criticism is primarily due to the bias in providing compensation for the state administration's performance concerning disadvantaged municipalities, such as having a bad social situation (Nogol, 2020). For the purposes of our paper, we conducted our own anecdotal investigation (October–November 2022), during which we asked municipal representatives about the calculation of the cost of delegated competitions, namely, whether the representatives of the municipalities do the calculations and in what way. Finally, we anonymized the answers we received. Selective evidence from individual authorities confirms the difficulty and complexity of determining costs and the skepticism of municipal representatives in this area.

As one representative of a municipality told us, *“For the municipalities, the exact quantification of the costs of performing the delegated competence is difficult. No one orders a separate record of costs for independent and delegated competence, which is probably why no one keeps it consistently. The costs of employees' delegated competences who only perform full-time can be easily identified. The problem is with employees who perform both functions or with the municipality's management, where it is necessary to estimate the ratio of both activities for each such employee.*

It is nearly the same as the other costs of running the office. Only a fraction of them is demonstrably related to only one type of scope; for most costs it would again be necessary to estimate the ratio of both activities. It would make sense for municipalities to keep such demanding records only if they were the basis for reimbursement of costs by the state; otherwise, they have no reason to do so and it does not make sense from the point of view of the entire system” (email communication, November 9, 2022).

Another representative of the municipality was quite skeptical about the determination of costs: *“I don't know if they do it in any office; we don't do it in our country and I haven't come across it anywhere in practice. I can tell you from my own experience that it is very complicated. I once did a bachelor's thesis on this topic. With a mixed model of delegated and independent competence, it is quite complicated. The same goes for personal expenses for workers who perform only one function, but many employees participate in the performance of separate and delegated functions. They carry out some activities irregularly and perhaps only a few times a year, so it is poorly defined”* (email communication, October 15, 2022).

Another respondent pointed out that the calculation can even be done based on separate records and by finding the employment ratio for the state administration and the local government: *“As for the calculation procedure, some expenses are tracked separately in accounting due to the subsidy. I multiplied the other expenses (officials' salaries, operation of the municipal office, employee benefits, depreciation of the municipal office property) by a coefficient based on the ratio of duties of the state administration and local government.*

We are a member of a benchmarking initiative, which has a method of dividing duties between state administration and local government, and I drew input data from it. It is certainly not the most accurate result, but we believe that we have obtained a relevant result in a short time” (email communication, November 9, 2022).

A respondent from another municipality confirmed that he performs the calculation for his own needs, and that they identify the appropriate ratio of employees who perform independent and delegated competences: *“We have around 130 employees; we identify how many of them with independent competences and how many with delegated competences, or proportionally, and thereby determine the total independent/delegated competences ratio. The remaining (service) employees are indistinguishable, and their total costs are then calculated according to this ratio and the operation or any investments. It is calculated annually”* (email communication, November 9, 2022).

The situation in the Czech Republic is relatively similar to that in Slovakia, even though only larger municipalities can exercise more complex delegated competences. Moreover, Czech municipalities cannot calculate the costs of delegated competences, and the state pays only a part of the actual costs of the performance of state administration, which is carried out by the municipalities themselves within the framework of delegated competences.

We believe that the situation is similar in other post-socialist countries, where, to date, it has not been possible to build high-quality management information systems in public sector organizations, that is, systems that would accurately map the total costs and allocate them to individual cost units. This problem was described long ago, but despite some experiments, no progress has been made (see Nemec et al., 2008, Nemec, 2018).

CONCLUSION

This research aimed to analyze the extent to which delegated competences, which local governments carry out on behalf of the state, are financed in the conditions of Slovakia. In this direction, we developed two research questions. First, based on the data from 66 participating municipalities and the results of our analysis, we can draw several conclusions.

Concerning our first research question (i.e., Do the municipalities know the total costs of exercising the selected delegated competences?), we found that in the main, the municipalities do not know the total amount of the costs of delegated competences in the selected areas.

Specifically, the costs of the performance of delegated competences in registry offices were reported to be known by 34 municipalities, but 50 municipalities do not calculate them. As for the costs of delegated competences in the planning and building offices, only 28 municipalities stated they know the costs, but 49 do not calculate them. The control question, which asked about the method of calculation, demonstrated that the answers to the first question, verified by the mayors’ signatures, were partially true. Indeed, a municipality cannot know its exact amount if it does not calculate the costs.

Municipalities confuse the costs of delegated competences with the income (transfers) they receive for this performance in the sense that “I received such a volume of funds for the given delegated competence, I spent this amount on it, and that is my cost.” However, when answering our questions, they did not consider the actual costs or include overhead costs.

The calculation of real total costs for the performance of delegated competences is an exception, and we encountered it only in the case of one larger city. Smaller municipalities do not know these costs, and thus, the cost centers formally introduced by legislation in the conditions of local governments do not really work. The financial need to ensure the performance of delegated competences is determined on the basis of the previous year’s budget, which is not the correct approach. The overwhelming majority of municipalities do not know the costs of the performance of competences delegated to them, and thus we cannot determine the actual percentage of coverage of these costs by the contribution allocated by the state for the performance of delegated competences.

This situation is related to our second research question (i.e., RQ2: What is the level [extent] of financing of delegated competences according to the municipalities?). If the municipality does not know the costs, it cannot know whether their financing by the state is sufficient (i.e., what the level of funding of the delegated competences by the state is). However, according to the municipalities’ answers, the state finances only a part of the costs incurred by the municipalities in the performance of delegated competences. At the same time, the coverage rate varied significantly depending on the size of the municipality. For all size categories, the variance in the answers was significant. For example, in municipalities with a population of 2500 to 4999, the coverage rate in the registry office services ranged between 11% and 95% and the coverage rate in the planning and building office services ranged between 18% and 80%. These estimates suggest that the state is violating its own law, the Constitution of the Slovak Republic itself, which stipulates that the state shall pay the costs of delegated state administration.

It is possible to talk about the existence of a vertical fiscal imbalance (the contribution allocated to the state for the performance of transferred competences is insufficient, and municipalities describe the need for additional financing for the performance of transferred competences from their own resources), but we can neither determine its extent due to the nonfunctioning of cost centers nor the amount of the optimal state contribution. If we compare the financing situation of the transferred competences in the monitored sections of the register and the building office, the results of the survey identify significant problems with the calculation of costs and the degree of their coverage by the contribution allocated by the state in the section of the building office.

One limitation of this research is that it focused on one country (with only a partial comparison to the neighboring Czech Republic). Due to the numerous reforms of local administration and the high fragmentation of public administration, Slovakia represents an interesting example from Central and Eastern Europe (CEE). Other CEE countries are likely to be in a similar situation, especially those with a socialist past. Future research could thus focus on expanding this research to other countries, mapping the methodology of financing delegated competences, and identifying the situation regarding monitoring the costs of delegated competences. As it transpired, Slovakia's costs are unknown, but the municipalities seem fine without knowing them. If we rule out capacity obstacles, the question remains: Why do municipalities not want to (or why are they unable to) calculate the exact costs?

The conclusions of our research confirm the results of research by Mederly et al. (2019) characterizing the system of local self-government in Slovakia and the system of original and delegated competences, legislative anchoring, organizational security, method of financing, and performance parameters of the delegated performance of the state administration. The conclusions of the research are critical—the state has practically no mechanisms for calculating real costs in any of the sections. The study also reminds that the universal transfer of competences to all municipalities regardless of size represents an “automatic source of disturbances” in the conditions of excessive territorial fragmentation of Slovakia, which is also confirmed by the results of our research. The solution is operationalization of cost centers, calculation of real total costs for the performance of delegated competences, and identification of the extent of the vertical fiscal imbalance, which is the starting point for its solution by the functioning of inter-level financial relations, so that the incomes of public administration units at their various levels correspond to the expenses associated with the performance of the competences entrusted to them.

DISCLOSURE STATEMENT

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Readiness Toward the Implementation of Open Science Initiatives In the Republic of Moldova

ABSTRACT: *Open Science paradigm involves transformations throughout the entire cycle of scientific research. Decision-makers play the key role of paradigm change facilitators. Consequently, the promotion of Open Science requires a political commitment. Even though Open Science movement emerged at the international level back in 2002, its principles are being implemented quite slowly in the Republic of Moldova.*

Thus, the current study aims to analyze the importance and benefits of Open Science policy implementation, the strategic priorities of the Republic of Moldova on Open Science, barriers in transition to Open Science in the Republic of Moldova, and identification of the key actors in development, adoption, and implementation of Open Science policies in the Republic of Moldova.

The study employed a mixed method: survey among members of the scientific community (quantitative data collection) and semi-structured interviews of the key informants in Open Science policies and practices (qualitative data collection).

KEYWORDS: Open Science, Open Access, Open Data, scientific community, Republic of Moldova

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INTRODUCTION

Open Science is the new paradigm of scientific research and involves transformations throughout its entire cycle. These changes can only happen, granted the involvement of all stakeholders and the use of different tools. The role of process facilitator rests mainly with the government and government policies.

Political commitment is needed to promote Open Science and integrate it into government agendas. This requires Open Science policies to be formulated and developed in clear strategies, as well as resources to be allocated for the implementation of the policies (Gema Bueno de la Fuente, 2016). An effective Open Science policy must be supported by adequate financial and human resources (UNESCO, 2022).

At the international level, there are several approved documents that emphasize the importance of public policies for the promotion of Open Science and consequently recommend states to develop and implement these. The relevant policies reinforce the fact that Open Science is becoming a focal point of the political agenda, at both national and international levels, and the pertaining policies and measures for its implementation are increasing in number and efficiency.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) Recommendation on Open Science, approved in November 2021, states that countries should establish or encourage an enabling environment (at institutional, national, regional and international levels) that supports the operationalization of Open Science and the effective implementation of its

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practices. The document recommendations refer to developing national policies and effective regulatory framework via a transparent, participatory, multi-stakeholder process, involving dialogue with the scientific community and other Open Science actors, approving relevant policies at different levels, encouraging actors to implement such policies, respecting the diversity of approaches, developing, implementing, and monitoring funding and investment policies and strategies in scientific research, based on the values and principles of Open Science, and so on (UNESCO, 2021).

Open science is a policy priority of the European Commission and the standard operating method for its research and innovation funding programs because it improves the quality, efficiency, and responsiveness of research. When researchers share knowledge and data as early as possible in the research process with all relevant stakeholders, it helps to disseminate the latest knowledge. Also, when partners from academia, industry, government, and citizen groups are invited to participate in research and innovation, creativity and confidence in science grow (European Commission, 2020).

The policies and mechanisms developed and implemented at the European Union (EU) level are diverse, supporting the needs of the various actors involved. The EU has developed an advanced comprehensive framework on Open Science, which addresses the development (including expert groups and advisory platforms), implementation (including projects and infrastructures) and monitoring (including the Open Science monitor and studies) of policies. The EU policy aims at Open Access to all publicly funded research results and access to research data, based on the principle “as open as possible and as closed as necessary” (European Commission, 2020).

Open Science policies should be based on internationally recognized principles, but adapted to local environments. National public policies must take into account not only specific conditions, governance structures, and legal regulations, but also issues related to commercial interests and the need for data protection. Decision-makers are also faced with the challenge of keeping the balance between opening up science and guaranteeing competition in scientific research. UNESCO recommends the alignment of Open Science policies, strategies, and actions from individual institutions to the local and international levels, their development and implementation in collaboration with national science academies, young researchers’ associations, as well as the business sector (UNESCO, 2021).

National Open Science policies, developed by the EU Member States according to local specifics, can be classified into major groups: 1) national policies and legislation (e.g., Law 2016-1321 in France or Law 14/ 2011 on science, technology, and innovation in Spain); 2) funder policy (e.g., Deutsche Forschungsgemeinschaft [DFG], Germany’s main research funder has adopted Open Access policies); 3) national plan (e.g., the Belgian Code of Ethics or the Dutch National Plan); 4) declaration and concordat (e.g., Greek Declaration, UK Concordat, or Italian Memorandum of Understanding); and 5) acknowledgments and recommendations (e.g., the governmental document mentioning Open Access as a priority direction in Latvia, efforts to form a national strategy in Albania, National Guidelines in Estonia, Data Principles and Guidelines in Norway, the Luxembourg institutional recommendations, or the Swiss White Paper) (Toli et al., 2020).

Thus, the current study aims to analyze the importance and benefits of Open Science policy implementation, the strategic priorities of the Republic of Moldova on Open Science, barriers in transition to Open Science in the Republic of Moldova, and identification of the key actors in development, adoption, and implementation of Open Science policies in the Republic of Moldova.

LITERATURE REVIEW: THE ROLE OF PUBLIC POLICIES FOR OPENNESS OF SCIENCE

The documents developed by different international structures focus on public policies in promoting Open Science and its various aspects, including the documents and reports of the Organization for Economic Cooperation and Development (OECD, 2020, 2022), International Science Council (Boulton, G.S., 2021; ISC, 2021), European University Association (EUA, 2022; EUA, n.d.), and especially those developed by UNESCO (UNESCO, 2021; UNESCO, n.d.). These documents are based on studies and surveys and therefore reflect the opinion of different stakeholders toward Open Science policies. The EUA survey from 2017 to 2018 showed that universities believe the policies promoted in the EU, especially the mandatory policies on Open Access to research publications and the research data management, are significant factors for Open Science advancement (Morais and Borrell-Damian, 2019). The UNESCO Recommendation on Open Science, highlighting the role of public policies in opening up science, was based on a broad consultation process, including all countries and stakeholders, such as the Member States, the scientific community, main international and national scientific organizations, other relevant UN agencies, and citizens and owners of traditional knowledge, all united under a Global Open Science Partnership (UNESCO, n.d.).

Although most scientific studies do not explicitly address the role of public policies in opening up science, most of them conclude with recommendations for Open Science public policies or analysis of their impact. This fact highlights the importance of a national Open Science policy framework. In developed countries, especially in Europe, governments, upon acknowledging the significance of Open Science, took the lead and played a dominant role in Open Science movement (Gong, 2022). At the national level, several European states have adopted efficient public policies to stimulate Open Science (Maddi et al., 2021). On the other hand, even though the trends toward Open Science are positive, strategies are needed to encourage relevant negotiations within the scientific community and the willingness to experiment scientific communication needed to shape the future criteria of science (Heise and Pearce, 2020).

One of the studies, examining closely the influence of Open Science policies on research processes and outcomes, which involved interviewing UK biologists, showed that understanding the implications of these policies means paying particular attention to the variety of shapes that openness can take at different stages and places of the research cycle. Diverse and sometimes contradictory government policies on Open Access and open data not only encouraged the sharing and dissemination of publications and data, but also impacted on decisions regarding certain intellectual property licenses that define the use, reuse, and sharing rights (Levin et al., 2016).

The importance of an Open Science policy derived from national needs is inferred from the survey results of Colombian researchers, which revealed that 93.75% of respondents believe the country should have an integrated Open Science public policy and its main priorities should be developing strategies and tools to guarantee free access to scientific information in a timely manner (91% fully agree), improving the skills and competence of researchers in using information systems (83% fully agree) and designing effective incentives for the scientific community to get involved in Open Science (Pardo Martínez and Poveda, 2018). The acceptance and need for policies supporting Open Science has also been demonstrated for domain-specific researchers, for example, biomedical scientists from the US National Institutes of Health, regarding the Open Access policy (O'Hanlon et al., 2020).

A study conducted in South Korea highlights the limited progress in Open Science due to the lack of a comprehensive national policy in this area. This situation is caused by insufficient political will, inadequate coordination among national stakeholders, and the lack of a holistic approach at the government level regarding systematic implementation of Open Science; limited number of national and institutional legal instruments that explicitly encourage or enforce Open Science; the lack of reward mechanisms for Open Science practices as part of researchers' assessment; and so on (Shmagun et al., 2022). The significance of national policies is also illustrated by survey results of Australian researchers, indicating that successful transition to Open Science is possible when the responsibility for strengthening transparency and openness lies not just with scientists and researchers, but also with research funding and support agencies, and even those beyond the research and innovation sector (Lacey et al., 2020). The policies of research funding councils are crucial in promoting Open Science in the UK, USA, and Canada. These councils are seen as key actors in Open Science debates and should, therefore, focus their efforts around the demands of various stakeholders, consisting of governments, academic and research communities, and publishers. At the same time, building an effective research infrastructure for Open Science means more clarity in terms of approaches and tools employed by research councils to better understand the direction of policies and institutional frameworks that support Open Science internationally (Lasthiotakis et al., 2015). The need for a policy on Open Science funding also emerges from the survey of Polish researchers, who claim that the principles of Open Science are insufficiently supported by the national funding agency (Ostaszewski, 2014).

Some studies demonstrate the existence of positive correlations between the adopted policies and different components of Open Science, for example, data sharing (Abdullahi et al., 2021; Cook-Deegan et al., 2017; Gewin, 2016). Research methods, processes, settings, and goals are highly contextual, therefore, Open Science policies must account for the diversity of research contexts. Openness is not always justified or useful, and it definitely is not a general policy that applies indiscriminately to all stages of research in various fields. Unfortunately, the diversity and contextual nature of openness are not always considered in broad Open Science policies and recommendations (Levin et al., 2016).

Studies show that national public policies should recognize the specific characteristics of scientific communities and adjust accordingly, depending on case. Efforts to impose a single approach on Open Access may lead to a dead end, definitely not Open Science (Schöpfel et al., 2016). At the same time, there is a discrepancy between Open Science policies and their implementation (Manco, 2022). However, more empirical research is needed to show how Open Science policies, including Open Access and open data policies, have implications for peer review procedures, fostering excellence, and sharing (or not) research data (Levin et al., 2016).

METHODS

Overview of research design

Research design can be divided in three basic types: exploratory sequential designs, explanatory sequential designs, and convergent designs (Creswell, 2015). The exploratory design begins with qualitative data collection and analysis phase, which builds to the subsequent quantitative phase. The explanatory design begins with quantitative data collection and analysis phase, which serves as input for the qualitative research phase. Convergent design means the simultaneous collection and analysis of quantitative and qualitative data, followed by an integrated analysis.

The current study employs an explanatory design, with mixed sequential methods, to investigate the outlook of the scientific community in the Republic of Moldova on Open Science, as well as the actions needed to create a favorable framework for open research and alignment with the European Open Science practices.

The reason for sequential explanatory design of the mixed method is that often, “quantitative data and their subsequent analysis provide a general understanding,” while “qualitative data and their analysis refine and explain those statistical results” (Ivankova et al., 2006). Most of the literature suggests that quantitative methods usually take precedence (Creswell and Plano Clark, 2018; Doyle et al., 2016; Harrison and Reilly, 2011; Jeanty and Hibel, 2014; Stentz et al., 2012; Walker and Baxter, 2019).

In this framework, an initial quantitative investigation (Study 1) informed the subsequent qualitative study (Study 2). Therefore, the qualitative study was based on the results of the quantitative study (Creswell, 2015, p. 37).

The integration of quantitative and qualitative data as a central element of mixed methods has been increasingly highlighted (Brannen, 2005; Hands, 2022; Morgan, 2007; O’Cathain et al., 2007; Santos et al., 2017). Integration is an intentional process by which the researcher brings together quantitative and qualitative approaches in a study (Creswell, 2015, p. 2). Quantitative and qualitative data then become interdependent in addressing common research questions and hypotheses (Bazeley, 2012, p. 816).

Most commonly, the use of a mixed methods design is determined by pragmatic issues: the increasing demand for cost-effective research and the shift from theory-based research to research that meets the requirements of policymakers and practitioners, as well as competition for research funding (Brannen, 2005; O’Cathain et al., 2007).

When qualitative and quantitative methods are integrated in a single study, one method usually takes precedence over the other. In such cases, the purpose of the study, the rationale for using mixed methods, and the ratio of each method determine whether and how the empirical results are to be integrated (Östlund et al., 2011). Mixed methods can also help highlight similarities and differences between certain aspects of a phenomenon (Bernardi et al., 2007). Mixed methods research provides a more balanced perspective, joining the benefits of both methods, as well as compensating the weaknesses resulting from a single method (McKim, 2017).

This robust approach takes advantage of the strengths of both types of research. In Study 1, a survey was conducted on the attitude of the scientific community in the Republic of Moldova regarding Open Science. In Study 2, semi-structured interviews were carried out, gathering in-depth perspective on the beliefs and attitudes of political decision-makers and administrative and management staff of research and university institutions, regarding the adoption of Open Science policies in the Republic of Moldova, as well as the actions needed to create a favorable framework for open research. This allowed for the quantitative measures for the adoption and use of Open Science practices, as well as the exploration of policy actions that could potentially influence the expansion of these practices.

Target population, sample size, and sampling

Study 1

An online survey of scientific actors was conducted to explore the attitude and identify the awareness of Open Science practices of the scientific community in the Republic of Moldova.

The target population of the quantitative study was the scientific community in the Republic of Moldova, including researchers, scientific and teaching staff, administrative and management staff from the Research–Development–Innovation (RDI) area, doctoral students, postdoctoral fellows, librarians, as well as RDI decision-makers. The minimum sample size, needed to assess socioeconomic factors associated with Open Science practice, was estimated using the Krejcie and Morgan calculations (Krejcie and Morgan, 1970).

Based on these suggestions, a minimum sample size of 389 respondents was estimated. Anticipating a certain nonresponse rate, 685 responses were collected for the online survey. Several types of nonresponse rates are typical for web surveys (Vicente and Reis, 2010, p. 253). Experimental comparisons between web surveys and other types of survey have not identified any changes (Daikeler et al., 2020). The analysis has not identified any concerning differences in survey noncompletion rates, based on the survey type – online or paper based (Denscombe, 2009, p. 289); also, it has not identified any statistically significant difference in the average nonresponse rate in online surveys, compared to other survey methods (Čehovin et al., 2022, p. 15).

Six hundred and eighty-five participants answered at least one question, and therefore were considered for the survey. Of them, 532 (77%) participants who started the survey had filled it in online and provided their informed consent for participation in the study. The remaining 153 (23%) participants did not finish the survey (answering only the sociodemographic items). Out of 532 valid responses, 423 were complete (79.5%), with answers for all survey items. All valid responses have been included in the analysis (Table 1).

Tab. 1: Details on respondents

Variable	Level	Frequency	Percentage
Current position	Administrative and management staff	109	20.49
	Researchers	71	13.35
	Pedagogical staff in higher education institutions	262	49.25
	Academic fellows (doctoral and postdoctoral students)	51	9.59
	Librarians	32	6.02
	Other positions	7	1.32
Total		532	100

Source: Own elaboration based on the survey results

For details on sampling technique, representative sample size, and data collection for this study, see Tırman et al. (2022).

Study 2

Qualitative approach was applied to achieve the declared objectives of this research. When a concept is quite new or not well addressed, qualitative research is preferred because it provides a deeper understanding and illuminates the attitudes and differences of the interviewees (Creswell and Poth, 2018). Semi-structured interview is the most common method of data collection in qualitative research (Qu and Dumay, 2011).

We used a qualitative approach to study the results gained from the semi-structured interview. Semi-structured interviews are superbly suited for a number of valuable tasks, particularly when more than a few of the open-ended questions require follow-up queries (Adams, 2015), and for gathering information from key informants who have personal experiences, attitudes, perceptions, and beliefs related to the topic of interest (DeJonckheere and Vaughn, 2019). The key premise is that the people chosen for the interview should be in a position to provide rich data on the topic and answer research questions (Morris, 2015, p. 43).

The target population for the qualitative component consisted of the key informants in Open Science policies and practices. A total number of 12 key informants were selected, based on their willingness, their knowledge of and first-hand implication in Open Science Movement, their existing interest and involvement in Open Science discussions and practices, and their availability for the study. Most of these participants come from organizations that develop policies and manage projects related to Open Science.

We carried out semi-structured interviews with universities' top management staff and project leaders employing Open Science practices, several selected experts, as well as policymakers (see Table 2).

Tab. 2: Details on interviewees

Participant ID	Group	Title	Institution	Gender	PhD
PM 1	Polymakers	Director	National Agency for Research and Development	F	Yes
PM 2	Polymakers	President	The Academy of Sciences of Moldova	M	Yes
PM 3	Polymakers	President	National Agency for Quality Assurance in Education and Research	M	Yes
PM 4	Polymakers	President	The Court of Accounts of the Republic of Moldova	M	Yes
AMS 5	Administrative and management staff	Vice-Rector	Moldova State University	F	Yes
AMS 6	Administrative and management staff	Rector	Technical University of Moldova	M	Yes
AMS 7	Administrative and management staff	Rector	State Agrarian University of Moldova	M	Yes
AMS 8	Administrative and management staff	Head of Research Department	"Nicolae Testemitanu" State University of Medicine and Pharmacy	M	Yes
AMS 9	Administrative and management staff	Deputy director	Institute of Legal, Political and Sociological Research	M	Yes
-	Polymakers	NA	Ministry of Education and Research		
-	Polymakers	NA	The culture, education, research, youth, sports and media commission of the Parliament		
-	Polymakers	NA	Presidency of the Republic of Moldova		

Source: Own elaboration based on the interview results

The respondents selected for this study are not characteristic of the national research community, but are rather a representative sample of actors who are involved in and can contribute to the implementation of national and institutional policies/strategies on Open Science in the Republic of Moldova. We explicitly chose interviewees, who made public statements and/or participated in projects related to Open Science policies, as well as polymakers in charge of developing Open Science policies.

The purpose of the interview is to consult the political decision-makers, funders, and promoters of Open Science on the actions to be taken by decision-makers at the national and institutional levels to open research in the Republic of Moldova and the opportunities that Open Science offers to research actors throughout this process.

Each interview was about the concept of Open Science, Open Science Policy, and openness of research data, the expected benefits of making Open Science a national strategic priority, and barriers and challenges in the transition to Open Science in the Republic of Moldova.

These interviews helped us understand what are the views of key actors on the need and goals of a national Open Science Policy.

Research instruments

Quantitative data collection took place from October 25, 2021 until December 6, 2021, using specialized software (SurveyMonkey) to develop the questionnaire, collect data, and analyze results. The purpose of the quantitative study was to understand the attitude regarding Open Science practices and adoption of a national policy on Open Science in the Republic of Moldova. The questionnaire

had five sections with 27 questions. For this article, only the opinions of the scientific community from the Republic of Moldova regarding the Open Science Policy are analyzed and presented.

Qualitative data collection took place from December 2021 until April 2022, applying the interview protocol. Before the study, the respondents were notified and appropriate meeting place and time were agreed upon.

Semi-structured interview questions were sent by e-mail. E-mail communications are emerging as an alternative method for conducting interviews in qualitative research (Dahlin, 2021; Walker and Baxter, 2019). While a mixed mode interviewing strategy should always be considered when possible, semi-structured e-mail interviewing can be a viable alternative to face-to-face interviews, especially when time or financial constraints are barriers to an investigation (Meho, 2006, p. 1293). There are a number of advantages of using an e-mail interview rather than a face-to-face interview (Fritz and Vandermause, 2018; Hamilton and Bowers, 2006; Hawkins, 2018; Hunt and McHale, 2007; Oltmann, 2016): cost, practical alternative to overcome geographic barriers, financial concerns, range of participants, access to participants, time for reflection, saying things that would not be said face-to-face, working with a set of interviews simultaneously, rapport, overcoming interviewer effects.

In particular, the interview protocol addressed the four main dimensions generally linked to Open Science:

1. Changes in terms of Open Science policy for the alignment of the Republic of Moldova with the EU provisions on Horizon Europe Programme and the European Research Area.
2. National and institutional actions required to open the science.
3. Barriers and challenges in implementing/transitioning to Open Science in the Republic of Moldova.
4. The expected benefits of making Open Science a national strategic priority in the Republic of Moldova.

For each of these dimensions, the interview protocol included open-ended questions on the understanding and opinion of the interviewee, the state of the art, and advantages and problems as perceived by the interviewee. Each interview included particular questions related to the interviewee's Open Science practice.

The interview protocol also included an introductory letter, explaining the content, structure, length, and the actual and future use of the collected data, to fully inform every interviewee on the purpose and requirements of the interview.

NVivo software was used to process interview results.

The first phase of the analysis included reading the answers, highlighting relevant fragments according to the research question, and assigning a code to them based on the content of the fragment. The second phase involved a second analysis, based on the interview answers and the results of the previous analysis. For the second phase, an open coding process using NVivo software was used.

RESULTS AND DISCUSSION

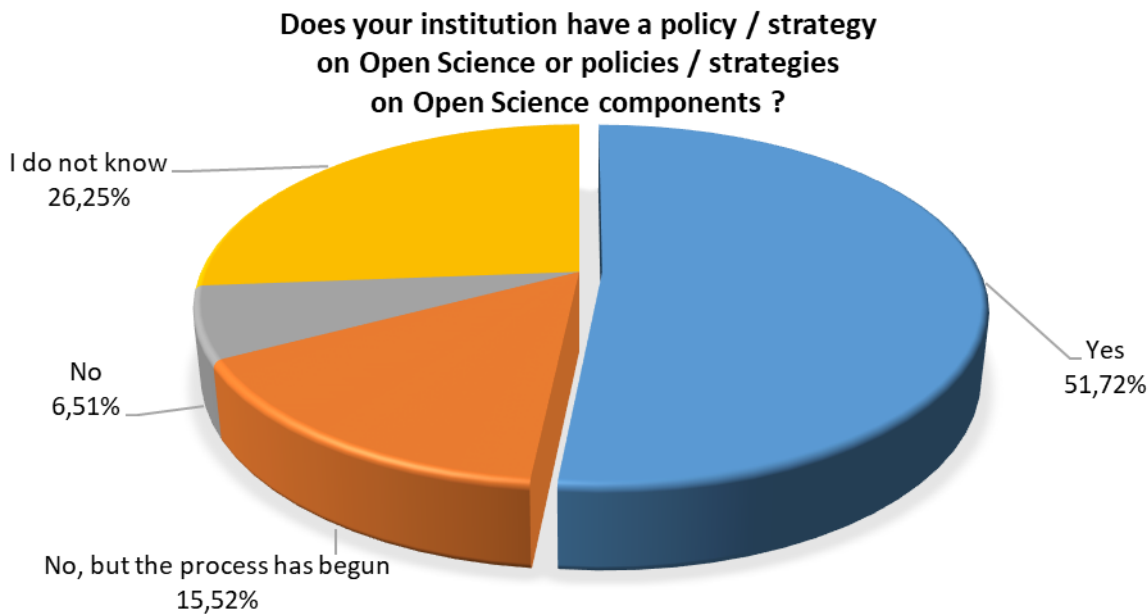
Importance of Open Science and the strategic priorities of the Republic of Moldova

One of the important topics discussed in the framework of the quantitative study concerned Open Science policies or strategies. These documents or directives describe the actions that are focused on promotion of Open Science principles and recognition of Open Science practices. Open Science policies or strategies are usually set by research-performing organizations, research funders, governments, or publishers.

To assess the situation and the opinion of the scientific community and academia on this subject, the respondents were asked whether the institution they are affiliated to has adopted a policy or strategy on Open Science or policies/strategies related to Open Science components. This question collected 522 answers. More than half of the respondents ($n = 270$; 51.72%) confirmed, and another 15.52% ($n = 81$) affirmed these documents are under development by the institution. Over a quarter of the respondents ($n = 137$; 26.25%) were not aware (Figure 1).

Respondents who confirmed were asked to specify the types of Open Science policies at the institutional level. Despite 51.72% ($n = 270$) of respondents answered "yes" to the previous question, only 254 of them specified the exact type of document and the remaining 16 respondents were unable to provide details.

Fig. 1: Presence of a policy or strategy on Open Science at the institutional level



Source: Elaborated by authors based on the survey results

The majority of respondents who answered affirmatively ($n = 153$, 60.24%) specified an Open Access policy adopted at the institution; more than a third of them ($n = 90$, 35.43%) were convinced that there is a single policy covering all aspects of Open Science at the institutional level. More than a quarter ($n = 71$, 27.95%) believed there is a Policy on Open Educational Resources at the organizational (especially, the university) level. A proportion of 17.72% ($n = 45$) of respondents thought there is a Research Data Management Policy adopted by the institution, and 16.93% ($n = 43$) believed there is an Open Evaluation Policy. The Open e-Infrastructure Policy was mentioned by 10.63% ($n = 27$) of the respondents (Figure 2).

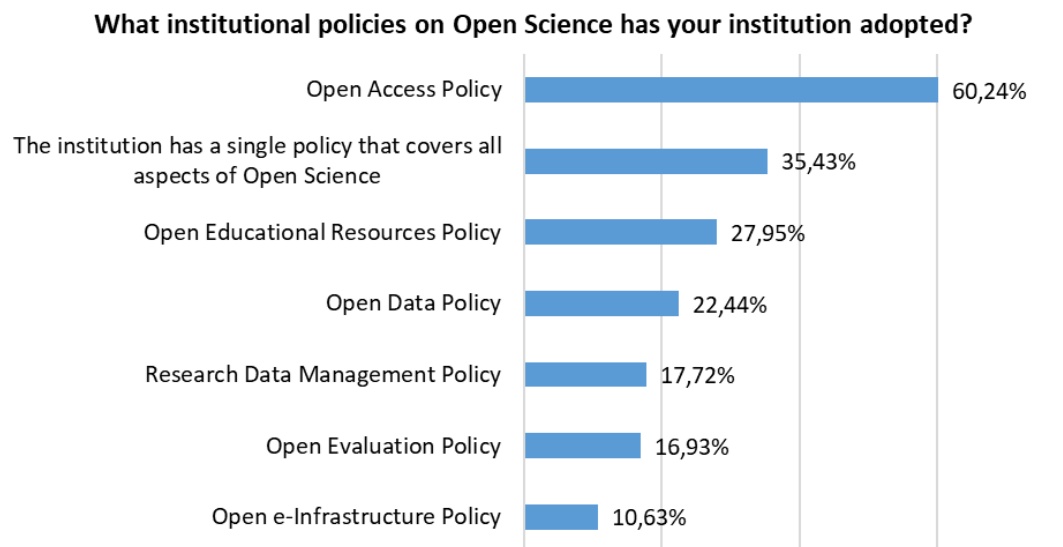
In fact, at present, the national strategies and policies dedicated to Open Science are not yet developed in the Republic of Moldova. The most relevant national strategic document referring to Open Science was the *National Roadmap for the Integration of the Republic of Moldova into the European Research Area for the years 2019–2021* (Government of the Republic of Moldova, 2018). This document provided one of the specific objectives connected to the Priority of the European Research Area, “Optimal circulation, access, and transfer of knowledge,” being mentioned that “for the Republic of Moldova, it is a major priority to contribute to the elaboration of policies for strengthening the link between science and industry and raising the role of research in the public and private sectors in ‘Open Innovations’ and ensuring Open Access to results and scientific services.”

The distribution of responses by organization shows that most institutions have adopted both a policy and strategy covering all aspects of Open Science, as well as separate documents for each aspect, which is not true. This denotes that a significant proportion of the personnel is either not aware of the real situation at the institutional level in terms of promoting and implementing Open Science policies or is not yet familiar with the concept.

Although, the implementation of several international projects (Țurcan and Cojocaru, 2022) has stimulated research institutions and universities of the Republic of Moldova to adopt institutional Open Access policies and institutional strategies on Open Science, currently, 14 institutional policies on Open Access and only three institutional strategies related to Open Science are approved in the Republic of Moldova.

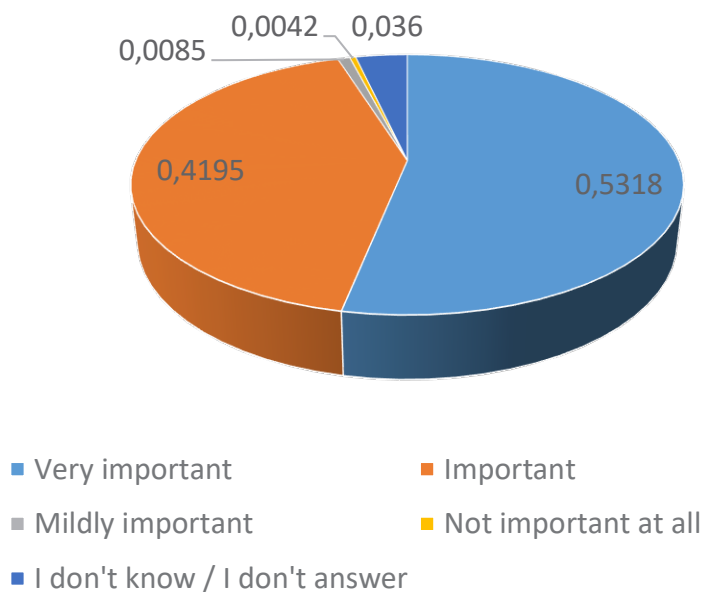
The Open Science movement in the Republic of Moldova has emerged at the institutional level, the champions being the Information Society Development Institute and university libraries, but it is crucial to gain support and promotion from the national decision-makers. In this context, the respondents were asked to assess the importance of having an Open Science policy or strategy at the national level.

Fig. 2: Types of institutional policies or strategies on Open Science



Source: Elaborated by authors based on the survey results

Fig. 3: Opinions on the importance of a national policy or strategy on Open Science



Source: Elaborated by authors based on the survey results

Even though a significant proportion of respondents are not yet familiar with the concept, 95.13% ($n = 449$) of them consider a national Open Science policy or strategy very important (*Very important* and *Important* answers) (Figure 3).

The small standard deviation value speaks of the uniform opinion of the respondents on this matter (Table 3).

The distribution of responses on the importance of a national Open Science policy or strategy per scientific area reveals that respondents from various areas exhibit interest in this subject (Figure 4).

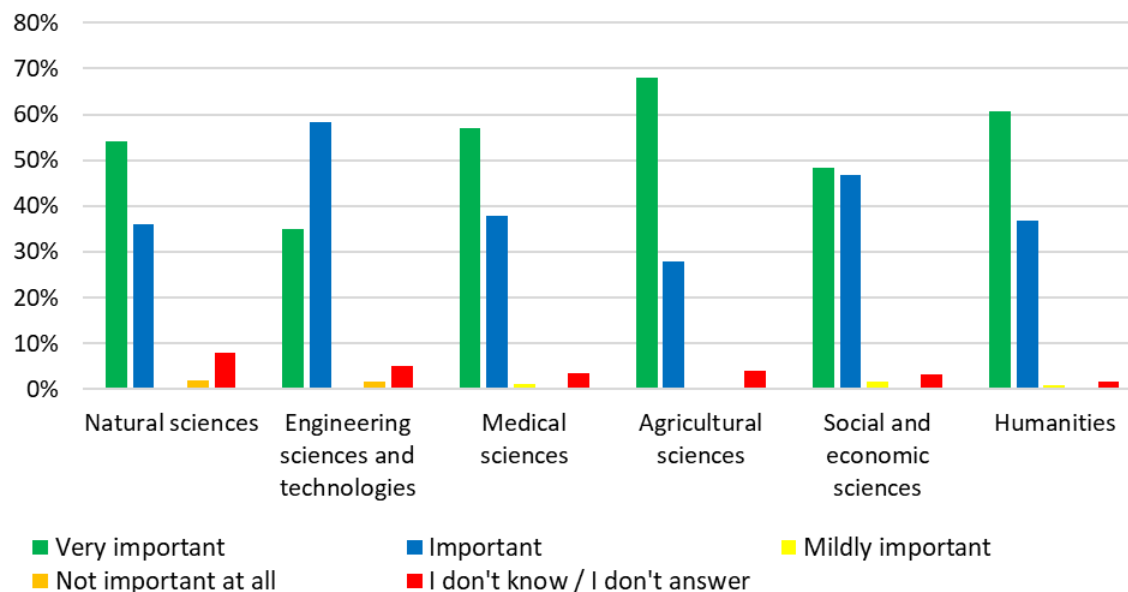
Tab. 3: The importance of a national policy or strategy on Open Science

Question	Mean score	Standard deviation
In your opinion, how important is it to have a national Open Science policy or strategy?	3.54	0.542

Notes: Four-point scale (1 = not important at all, 4 = very important)

Source: Elaborated by authors based on the survey results

Fig. 4: Opinions on the importance of the existence of a national policy or strategy related to Open Science, distributed by scientific fields



Source: Elaborated by authors based on the survey results

The respondents believed that Open Science is a new model for organizing the research activity, increasing its quality and impact.

Respondents also mentioned the importance of Open Science and Open Science policies. Comments focused on the importance of Open Science include: “only joint efforts, the availability and exchange of knowledge, information and data at a global level can contribute to achieving the strategic priority objectives of the Republic of Moldova” (AMS 7); “adopting the Open Science model would accelerate the development rate of the Republic of Moldova” (AMS 8); “it makes research more effective and credible, also by implementing traditions of collaborative interaction inside the scientific community and in society in general” (PM 2); “could contribute to increased visibility, relevance and impact of the scientific activity” (PM 1); “Open Science adoption could be a decisive factor for the implementation of research results in industry” (PM 3).

Open Science adoption at the level of a national strategic priority could offer a series of benefits, as well as contribute to efficiency of research in the Republic of Moldova.

All interviewees were asked about the expected benefits of Open Science as a strategic priority for the Republic of Moldova (Table 4).

Experts’ opinions were unanimous, supported by the following statements: “Promoting Open Science at the national level would make researchers more accountable towards research and tax-payers” (AMS 6); “Open Science policy can offer many advantages for research, such as faster circulation of scientific ideas or increased collaboration among researchers” (AMS 9); “should lead to a closer collaboration between the science and the industry, ensuring continuous development of the Republic of Moldova from an economic, social, etc. point of view” (PM 4); “it can increase the relevance and impact of scientific activity by facilitating access to research results and publications, boosting the transfer of knowledge to education and industry, creating opportunities for the reuse of research data, but also for a wider

Tab. 4: Expected benefits of making Open Science a national strategic priority

Expected benefits of making Open Science a national strategic priority	PM 1	PM 2	PM 3	PM 4	AMS 5	AMS 6	AMS 7	AMS 8	AMS 9
– Sharing and reusing research data			*		*			*	
– Faster implementation of research results	*	*							*
– Wider involvement of citizens in the decision-making process	*		*						
– Objective and transparent evaluation of research outputs			*		*		*	*	
– Wider access to research results and publications			*				*	*	
– Easier access to high-performance infrastructures			*						
– Faster circulation of scientific ideas							*		*
– Facilitates collaboration among researchers		*		*	*			*	*
– Increasing accountability toward research and citizens		*				*			
– Increasing research quality		*						*	
– Increasing the funders' level of trust	*							*	
– Fraud elimination		*							
– Excludes duplication of expenses					*				
– Greater visibility and promotion of research results					*				

Source: Elaborated by authors based on the interviews analysis

involvement of civil society in the decision-making process” (PM 1); *“the possibility of integration into macro-level interdisciplinary research and the benefits of reusing existing knowledge and data”* (AMS 5). At the same time, *“developing an Open Science legal framework”* (PM 1) was highlighted as a major priority.

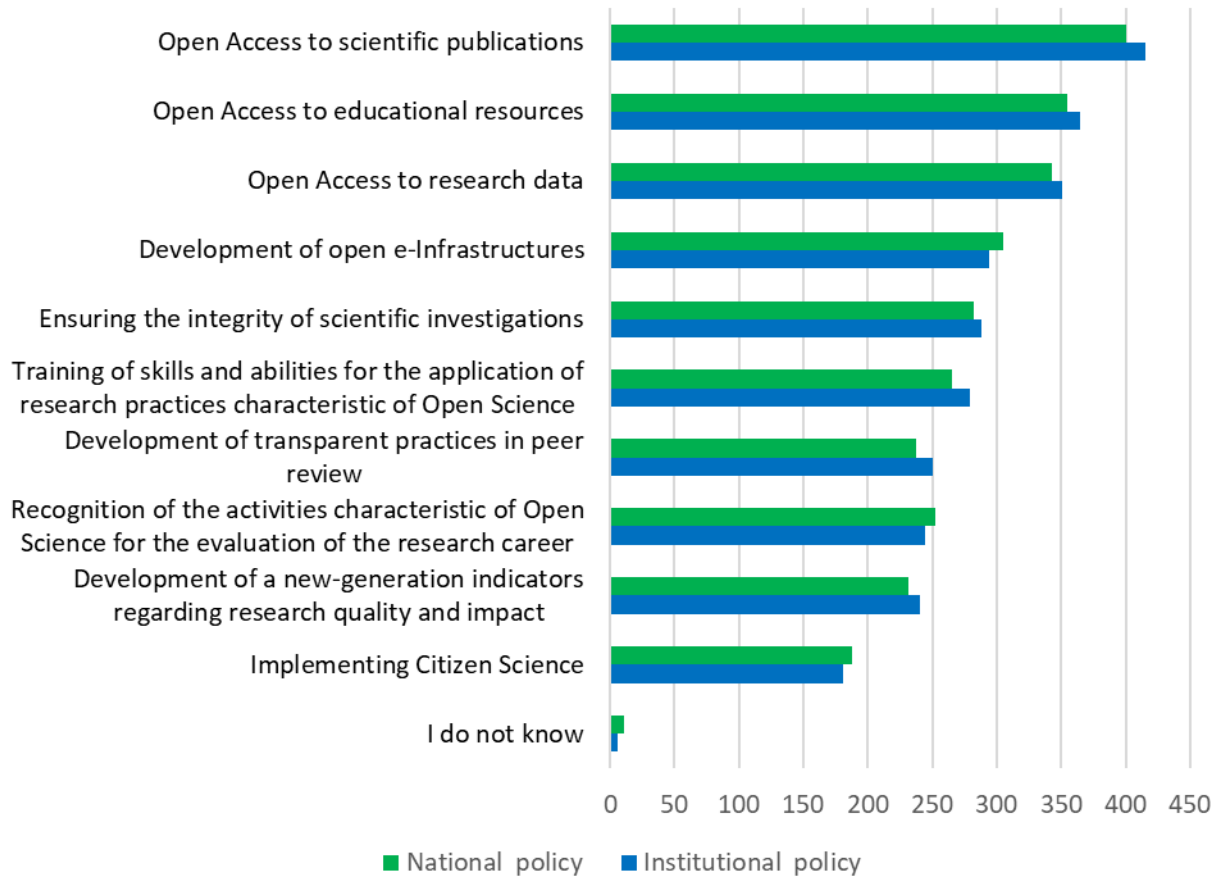
Implementing Open Science components

Open Science encompasses various aspects, therefore it was important to establish which of them are better known or considered more valuable by scientific and academic community in the Republic of Moldova.

Four hundred and seventy-two respondents provided their input in terms of key aspects to be taken into account when implementing an institutional Open Science policy or strategy (multiple responses possible). The data presented in Figure 5 shows that over 70% of respondents considered Open Access to publications, educational resources, and research data as the most important Open Science practices. Less than half mentioned the importance of Citizen Science ($n = 181$, 38.35%), even though the lion's share of research in the Republic of Moldova is funded from the public budget.

The analysis and benchmarking regarding the institutional Open Access policies and Open Science strategies (Cheradi et al., 2023) had shown that all 14 institutional policies regulate the self-archiving of publications of scientific and teaching staff in universities and research institutions in institutional repositories with Open Access, as well as stimulate publication in Open Access journals. The institutional Open Access policies declare the storage of all scientific publications developed on the basis of state-funded research projects and grants. However, these policies differ in certain segments, establishing institutional rules for storage, retention, and access to employee publications. The three institutional strategies on Open Science, approved in 2022 within the MINERVA project “Strengthening research management and Open Science capacities of HEIs in Moldova and Armenia” (2018–2022), covered various key components of Open Science. Thus, the Open Science strategies of the Academy of Economic Studies of Moldova, Technical University of Moldova, and State University of Medicine and Pharmacy of Moldova include Open Access, Open Data, Open Evaluation, and Open Science tools. In addition, the strategy of the Technical University of Moldova addresses open education.

Fig. 5: Key issues to be included in institutional and national Open Science policies or strategies



Source: Elaborated by authors based on the survey results

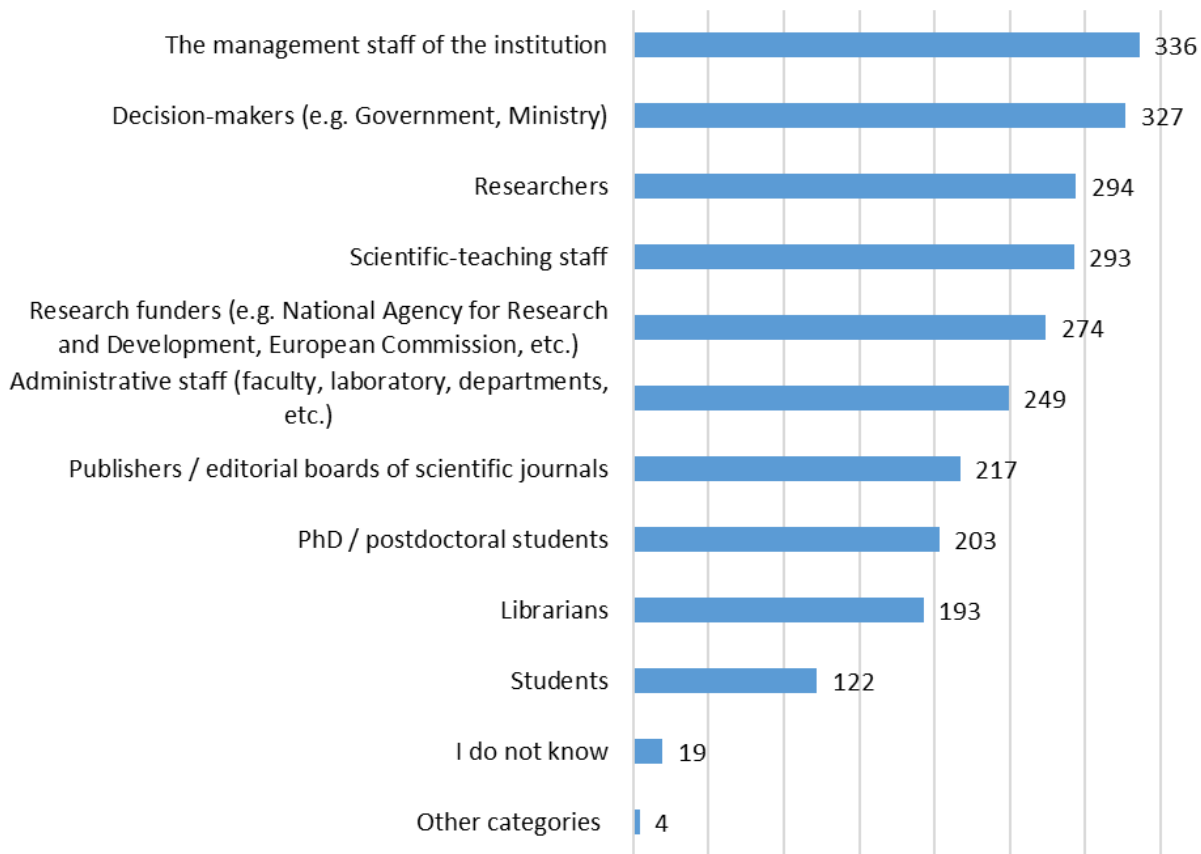
In terms of key aspects to be accounted for in a national Open Science policy or strategy, the respondents ranked the issues similar to those for an institutional strategy or policy (Figure 5).

The experts shared the same opinion, underlining that all Open Science components are important “*because they contribute to achieving the Open Science goal*” (PM 3), as well as “*they are interconnected and thus bring more value when they are implemented together*” (AMS 5). The expert mentioned the importance of all Open Science components “*although some are not applicable to all research areas*” (PM 2), still some key components were highlighted, depending on the expert’s position and affiliation, for example, “*Open Evaluation, Open Education, Research Data Management, Open Access to scientific publications*” (PM 2); “*Open Access to publications, Research Data Management, FAIR Data, Open Education, Open Evaluation, Citizen Science*” (AMS 6); “*Open Access to research publications, Research Data Management, data sharing, setting up repositories, Open Education, Open Evaluation, Citizen Science*” (AMS 7).

Key actors in Open Science adoption

According to the respondents, different stakeholders involved in the research process should be responsible for adopting an Open Science policy or strategy (Figure 6), but primarily it refers to decision-makers at the institution ($n = 335$, 71.19%) and country ($n = 327$, 69.28%) levels; researchers ($n = 294$, 62.29%), and the academia ($n = 293$, 62.08%) were ranked third and fourth, respectively. This opinion is also validated by the answer to another question, where 90.46% of respondents agreed and fully agreed that a national

Fig. 6: Actors who should apply an Open Science policy or strategy



Source: Elaborated by authors based on the survey results

strategy to support Open Science should be developed by the state. On the other hand, libraries, which are Open Access pioneers in the Republic of Moldova, are positioned at the end, being selected by only 40.89% of the respondents ($n = 193$).

In terms of developing and adopting national and institutional Open Science policies, political decision-makers, as well as the administrative and management staff of universities and research institutions should be held accountable. The experts highlighted: *“The policy/policies, as well as the related action plans, should be developed with the involvement of such parties as: Ministry of Education and Research (MER) – the policymaker in education and research; the founding ministries of research and innovation organizations; the Ministry of the Economy, the Ministry of Infrastructure and Regional Development, the Ministry of the Environment – major beneficiaries of the research results, in addition to the founding ministries; the Ministry of Finance – could potentially evaluate if research results are efficiently implemented in economy and the social sector, could assess the potential benefits of Open Science policy adoption, National Agency for Research and Development, National Agency for Quality Assurance in Education and Research, Academy of Sciences of Moldova, the Council of Rectors, the Council of research organisations’ directors; professional associations, NGOs representing the business sector, etc. – as potential beneficiaries of knowledge transfer from the research sector to industry”* (PM 1). In particular, it is necessary to attract for Open Science policy development *“representatives of the business sector, civil society to ensure a greater impact on the development of the Republic of Moldova”* (PM 4), and it is necessary to establish *“a national working group under the authority of MER, that will develop policies and action plans, concerned with implementation of all Open Science components”* (AMS 5).

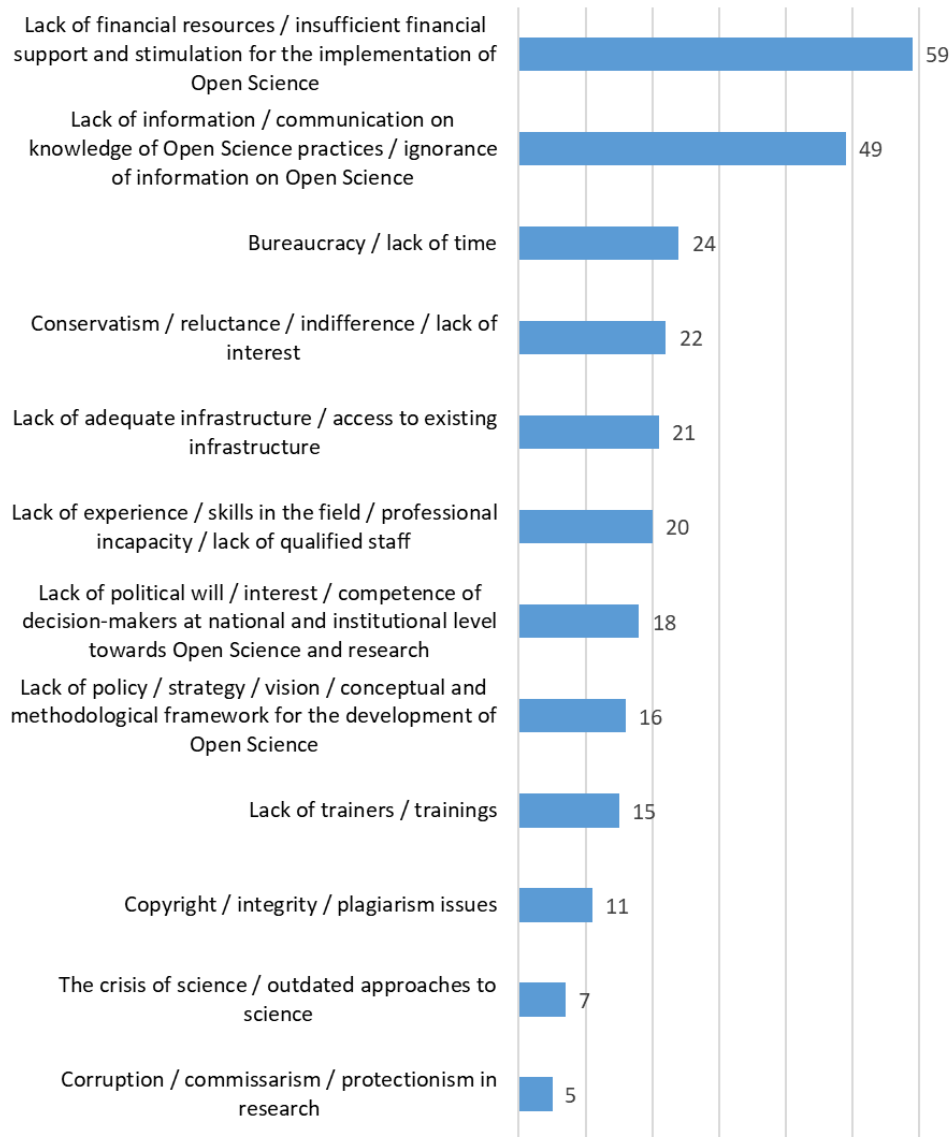
Based on the provisions of the *Code on science and innovation of the Republic of Moldova* (259/2004) and subsequent government decisions, the Ministry of Education and Research is the entity responsible for the development policies in the research sector, which *“should be based on the involvement of the entire scientific community, as these regulations target every researcher”* (PM 2); however, *“high-*

level political support is mandatory, because these activities require laws to be adopted, funds to be allocated, personnel in various institutions, in order to ensure the feasibility and continuity of processes, including at the implementation level” (AMS 5).

Barriers to Open Science transition

Even though the Open Science movement emerged at the international level about 20 years ago (Budapest Initiative for Open Access, 2002), Open Science principles are being implemented in the Republic of Moldova quite slowly. Aiming to determine the causes of this phenomenon, the respondents were asked to identify the obstacles to Open Science practices (open-ended question). The answers were grouped according to their meaning, and the most frequent reasons (mentioned by five and more respondents) are presented in Figure 7. The figure shows that lack of funding is perceived as the most significant impediment to implementation of Open Science

Fig. 7: Opinion on obstacles to the development of Open Science practices in research institutions and in the Republic of Moldova



Source: Elaborated by authors based on the survey results

practices. The respondents consider it is imperative for both governments and institutions to fund and adopt better practices aimed at embedding Open Science in the research cycle.

All interviewees were asked about the perceived barriers to implementation of Open Science practices in the Republic of Moldova (Table 5).

Tab. 5: Barriers to Open Science transition in the Republic of Moldova

Barriers to Open Science transition in the Republic of Moldova	PM 1	PM 2	PM 3	PM 4	AMS 5	AMS 6	AMS 7	AMS 8	AMS 9
– Issues with providing access to publications and data			*						*
– Low quality of research results				*			*		
– Lack of skilled and competent staff for practicing Open Science	*			*	*		*	*	*
– Unawareness of the benefits and opportunities of Open Science	*		*		*		*	*	
– Lack of open scientific culture		*							
– Insufficient funding for adoption of Open Science practices	*	*		*	*		*		*
– Lack of interoperability			*	*					
– Lack of incentives and rewards		*	*						
– Lack of adequate infrastructure		*		*				*	*
– Lack of regulations/legislation supporting Open Science practices	*	*	*	*	*	*	*	*	*
– Lack of transparency				*					
– Doubts regarding the ethical use of research results			*				*		

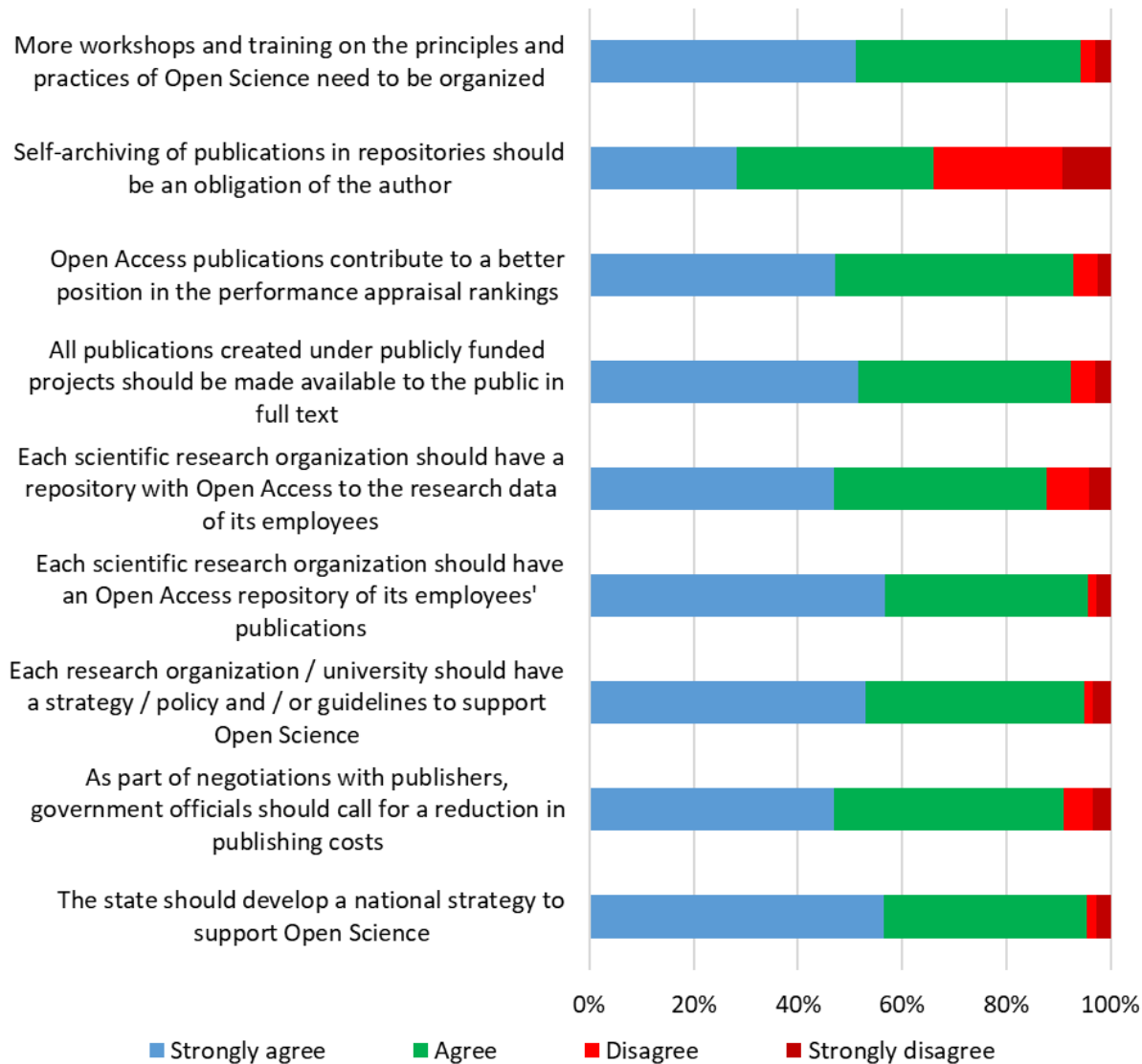
Source: Elaborated by authors based on the interview analysis

Interviews have revealed at the moment, it is not possible to effectively implement all Open Science components in Moldova, and “*the resistance to change and fear that research results will be plagiarized and IP rights will be infringed*” (AMS 6) is perceived as a major problem by many experts. Some of the most frequent financial, legislative, and logistical obstacles mentioned by experts are access to research results, infrastructure, research quality, skills and awareness, interoperability, integration, incentives and rewards, transparency, and others. Some expert opinions regarding the barriers and challenges in transition to Open Science in the Republic of Moldova at the national and institutional levels refer to “*low quality of scientific results, [...] scarcity or lack of competent human resources*” (AMS 7); “*the majority are not aware of the importance of Open Science for the social-economic development of the Republic of Moldova. The worst is that this was not and is not understood by any Government*” (PM 1); “*researchers’ unwillingness to share their ideas*” (PM 4); “*lack of a national interest for this initiative*” (AMS 5); “*researchers’ reluctance to share research results [...] insufficient knowledge of the benefits of Open Science*” (AMS 8); “*insufficiency of skilled personnel in Open Science practices*” (AMS 9); “*no efforts made to set up scientific and technological platforms for common use*” (PM 2). The experts also pointed out that the biggest barriers to Open Science adoption are the following: “*the existing regulatory framework doesn’t provide enough levers to promote the principles of Open Science*” (PM 3); “*long-term investments in digital infrastructures are missing*” (PM 4); “*research is insufficiently integrated with the educational and business sectors*” (PM 3).

Respondents were asked to what extent they agreed with the transfer of responsibilities regarding Open Science implementation. The answers are presented in Figure 8.

The data show that more than 80% of respondents agreed in general with most of the statements, except for the obligation to self-archive publications in repositories, which was supported by 57% of the respondents.

Fig. 8: Opinions on the transfer of responsibility for Open Science implementation



Source: Elaborated by authors based on the survey results

The standard deviations presented in Table 6 show that the most varied responses were generated by the statement regarding the self-archiving of own publications (0.94), compared to the values of the standard deviations for the remaining statements, ranging from 0.67 to 0.79.

As shown, it seems the scientific community and academia in the Republic of Moldova is ready to hand over the responsibilities regarding Open Science adoption to other stakeholders, but is less ready to accept more responsibilities at the individual level.

Another finding of our study referred to the expectation that the researchers have from for state institutions, such as the government, the Ministry of Education and Research, and the National Agency for Research and Development, to set an example in adopting Open Science principles, especially in terms of accessibility of research data and scientific publications, resulting from publicly funded research. The existing Open Access publishing system of publicly funded research results comprises 57 Open Access accredited scientific journals (IDSI, 2022), the provisions of the contract on public funding of research projects (Government of the Republic of Moldova, 2019), as well as access to publications from national, institutional, and thematic repositories

Tab. 6: Opinions on the transfer of responsibility for Open Science implementation

Statement	Mean score	Standard deviation
The state should develop a national strategy supporting Open Science	3.49	0.672
As part of negotiations with publishers, government officials should call for a reduction in publishing costs	3.34	0.742
Each research organization/university should have a strategy/policy and/or guidelines supporting Open Science	3.44	0.701
Each research organization should have an Open Access repository of its employees' publications	3.49	0.674
Each research organization should have an Open Access repository of research data of its employees	3.30	0.789
All publications produced in the framework of publicly funded projects should be accessible as full text	3.41	0.722
Open Access publications contribute to a better positioning in performance evaluation rankings	3.37	0.692
Self-archiving of publications in repositories should be an obligation of the author	2.85	0.940
More workshops and trainings on the principles and practices of Open Science are needed	3.42	0.692

Notes: Four-point scale (1 = strongly disagree, 4 = strongly agree)

Source: Elaborated by authors based on the survey results

(IDSi, n.d.). Unfortunately, this existing system at the national level is not concerned with Open Access to research data or a national or institutional data repository, as part of research infrastructure. The experts acknowledged this situation could be improved significantly: *“the availability of national repositories for scientific results and publications would facilitate access to research data [...], would support the identification of trends in the sector, the calculation of certain scientometric estimates, evaluations of research organizations and research and teaching staff, rankings aimed at displaying and boosting research performance”* (PM 3); *“a single repository with publications of researchers from the Republic of Moldova is needed”* (PM 1); *“Republic of Moldova should have a single online national platform providing access to all research outputs produced in the country”* (AMS 8). At the same time, some experts believe, *“it is neither rational nor economically efficient to develop several repositories”* (PM 1); *“I would rather advocate for Moldova to join a European or international repository, developed with the use of blockchain-like technologies and complying to FAIR principles”* (PM 2); *“the opportunities to contribute to European and international Open Science movement are currently numerous and open to groups, institutions, even the whole country”* (AMS 5).

The interviewees also noted the need of raising awareness and involving all members of the academic community in the implementation of Open Science practices, especially national level decision-makers, to develop the regulatory framework to support the transition toward Open Science. Certain practices are adopted at the institutional level, aimed at developing strategies, action plans on Open Science, funding Open Access publishing, setting up institutional repositories, organizing events promoting Open Science, trainings for researchers, teaching staff and students on Open Science skills, implementing open education components, and so on. However, more concerted efforts are needed, such as *“embed Open Science principles in calls for project proposals and during project implementation”* (PM 1); *“support research projects, which provide for employ transparent research practices and publish results in Open Access”* (PM 2); *“use open and participatory evaluation procedures”* (PM 3); *“collaborate closely with the civil society”* (AMS 9); *“Open Science requires the co-participation of government bodies and institutions in the entire research process”* (AMS 5).

LIMITATIONS OF THE STUDY

Although the paper presents relevant information on the perceptions by the scientific community of the Republic of Moldova about the Open Science movement and its preparation for the implementation of Open Science practices, the study also has some limitations.

Given the field of study, it is important to recognize the unequal distribution of respondents from various research institutions and universities, as well as different research fields, which could influence the results. Unlike the respondents from the universities,

the share of which was 79.89% ($n = 425$), the respondents from the research institutions were much more passive in participating in the survey (16.54%, $n = 88$). There was also a gap in the representation of some research areas. For example, of all respondents who represented science disciplines, only 53 (9.96%) were from natural sciences and 27 (5.08%) were from agricultural sciences. Also, compared to statistical data (50% of researchers are women), a higher share of women (68.61%) participated in the study.

Since the sample is mainly composed of researchers of advanced career level (85.52% of respondents were over 35 years old), the conclusions cannot be generalized to researchers at the beginning of their career (up to 24 years old), the share of which is only 1.32%.

These limitations suggest that further research could be carried out on the differences in attitudes toward Open Science and its components between different groups of stakeholders from different research fields (agricultural sciences, medicine, humanities, etc.), as well as with different levels of experience (young researchers, administrative staff, librarians, etc.). Further research could help identify the most relevant information, training, and incentive actions for the application of Open Science practices.

The main limitation of qualitative research is represented by the difficulty of collecting and obtaining enough data to be representative not only from the decision-makers responsible for the elaboration and approval of national policies in the field of science (e.g., the Ministry of Education and Research, the relevant committee of the Parliament of the Republic of Moldova), but also from the administrative and managerial staff of some institutions, who have experience in developing policies and strategies, as well as in implementing Open Science practices at the institutional level.

Although this article mentions the benefits of e-mail interviewing, using this method for data collection also has some challenges and potential drawbacks. One limitation of an e-mail interview is that preparing written responses takes longer than an oral interview. Also, responses to the interview conducted by e-mail limit the full understanding of the participant's experience and impose certain constraints on individuals.

Despite these limitations, our paper offers important new perspectives on the practices of implementing Open Science initiatives in the Republic of Moldova.

CONCLUSIONS

Our study revealed that members of the scientific community believe a regulatory framework must be developed at the national and institutional levels to support the transition to and implementation of Open Science principles. Political decision-makers and the top management of universities and research institutions must shoulder most of the responsibility for the development and approval of national and institutional policies on Open Science. Unfortunately, the decision-makers are not open for discussing and sharing opinions on their position in terms of Open Science and the national policies regarding the transition toward Open Science in the Republic of Moldova.

The data gathered during the study also demonstrate that most of the respondents are not aware of the real situation in their organizations, in terms of Open Science regulations at the institutional level.

At the same time, the data show that most of the respondents generally agree with most of the statements regarding the transfer of responsibilities related to implementation of Open Science, but they are less prepared to self-archive their own publications in repositories.

Both the opinions expressed by the representatives of the scientific community, as well by the interviewed experts from the Republic of Moldova confirm Open Science implementation as a national strategic priority could bring a series of benefits for the Republic of Moldova and contribute to research efficiency. *Open Access*, *access to educational resources*, and *open research data* were highlighted by researchers and academia as the top three most important Open Science components to be considered when developing a national or institutional policy or strategy. The interviewed key actors and decision-makers alike noted the importance of all Open Science components, ranking *Open Evaluation*, *Open Education*, and *Research Data Management* as top priorities.

The respondents focused not only on the need for awareness raising and involvement of decision-makers in the development of regulatory framework, but also on incentivizing members of the scientific community to implement Open Science practices.

At the national and institutional levels, solutions are being sought for the adoption of Open Science practices and knowledge transfer models that support Open Access to publications and research data. Discussions and debates regarding the benefits and importance of Open Science should result in major political decisions, focused primarily on the modification and updating of the legislative framework on Open Science in the field of research and innovation.

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The Impact of Gender Inequality on Gdp in Eu Countries

ABSTRACT: *In recent years, gender inequality has been considered the main characteristic of insufficient gross domestic product (GDP) growth. This paper discusses the evolution of GDP per capita in 21 countries of the European Union between 2015 and 2019. Using panel regression, we investigated the change in GDP per capita through five variables. The analysis results showed that female employment rate is the most statistically significant and positive variable on GDP. Gender Equality Index also appeared to be an essential variable. The second part of our analysis consisted of an explanatory spatial data analysis of all variables to examine the spatial dimension of the variables. To explain spatial econometrics, we used selected methods, namely, choropleth maps, Local Indicators of Spatial Association (LISA) cluster analysis, Moran's scatter plots, and Moran's I statistics. Based on the visualization of choropleth maps, GDP per capita did not change during the observed period, even though the values of the explanatory variables changed. For GDP per capita, the same applies in the case of LISA cluster analysis. At the end of the monitored period, the countries were included in the same cluster as at the beginning. When plotting Moran's scatter plot, it was found that GDP per capita did not tend to have positive or negative spatial autocorrelation or no spatial autocorrelation. Moran's I statistic showed that GDP per capita values were not randomly dispersed; they were grouped according to a specific formula into clusters.*

KEYWORDS: Gender inequality, gender policy, spatial econometrics, European Union

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INTRODUCTION

Many unique gender equality measures have been developed worldwide and across various areas. Gender contents have been added to many gender-blind measures, and gender mainstreaming is presented as crucial for successful policy achievements. Therefore, public policymakers expect an improvement in the gender situation at the global level. The European Union (EU) activities and mechanisms in the field of public policy serve to create a unique European identity based on the diversity of national and cultural traditions. In the process of the creation of gender policy, public policy must reflect and take into account gender dynamics in the policy formulation processes, which can significantly influence the success of adoption and subsequent outputs of specific measures.

Gender equality is an important moment of the public policy of the EU and its member countries. The issue of gender equality applies to various areas of public policy. The indisputable advantage of public policy is that it can be implemented as a response to current developments in the country. Among the essential priorities of the public policy of almost every country nowadays is the solution to gender inequality, which, like any other economic or social factor, affects the country's economic growth. Despite the initial rejection of the impact of gender inequality on the financial situation in the country, the application of this issue is firmly anchored in the field of public policy, through which it offers a solution to the current problem. The EU public policy was shaped by

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other goals of gender equality policy, which eventually transformed into all EU policies in the international context. The goal was to incorporate the perspective of gender equality into mainstream politics.

To demonstrate the success of gender equality policy measures, reviewing them after they have been adopted is essential. For example, this policy can be built on a combination of different public policy instruments, a process of inclusive empowerment, or gender transformation as the final result. Implementing proper gender and political measures is crucial for successful political outcomes. The political process is complex, but engaging in gender politics can bring positive results in many areas (Engeli & Mazur, 2018).

In recent years, women and men have become increasingly alike regarding education (EDU), earnings, and employment. These changes impact the country's economic inequality, especially if partners within the household have similar levels of education and income. Increased equality within the household can create favorable as well as unfavorable situations. The results show that higher similarity between partners does not increase inequality to a relevant degree. The influx of women into employment contributes to reducing inequality between households. The increase in inequality is caused by increased polarization between low- and high-income families in the spread of income within family types (Grotti & Scherer, 2016).

Decades of continuous progress in reducing gender inequality in developed and developing countries appear to be only apparent as 2000 saw stagnation and regression in many countries in various areas of gender inequality. This decline is most visible in the labor market. The solution to gender inequality is to put together effective policies (Klasen, 2020). Gender mainstreaming is a commonly discussed field nowadays. It plays a role in many aspects of human life related to employment, social inclusion, and social protection policies (European Commission, 2019). Whatever aspects of human life are considered, the profession plays its role. Also, when aiming at the young population (PEP), youth work is a critical perspective (Council of Europe, 2019). However, this is important for more than just the young PEP; the policies also focus on the entire PEP (National Commission for the Promotion of Equality, 2008).

Many authors state a strong correlation between gender attitudes and the economic situation of each country. To avert negative consequences, it is essential to correctly determine which determinants affect them (Elveren et al., 2022).

The essential goal of the paper is to map the situation of core indicators, deliver quantitative analysis, and formulate policy recommendations in the EU member countries. The selected socioeconomic indicators demonstrate the explored field's statistical significance. The paper offers an overview of gender inequality through the selected socioeconomic determinants regarding the female aspect. Firstly, the theoretical background is offered to demonstrate recent research in the examined field. Secondly, the investigated data is described along with reasoning for the selected observed variables and the employed methodology. Thirdly, the analytical outcomes are shown, and subsequently, the discussion demonstrates the obtained findings from interpreting the desired outcomes and the policymaking process.

THEORETICAL BACKGROUND

The EU is committed to advancing gender equality and ensuring everyone has equal opportunities and rights. The EU has implemented various gender policy instruments to promote gender equality across member states. These instruments include directives, regulations, and recommendations for equal pay, work–life balance, and gender-based violence prevention. The EU also funds programs and initiatives supporting gender equality goals. Also, the European Institute for Gender Equality (EIGE) serves as a resource center for information and research on gender equality issues.

The EU policy aimed at eliminating gender inequality has made significant progress in recent years. The main tools for applying gender equality are legal regulations, including a gender perspective in all policies, and various measures to support women. The EU fulfills its commitment to achieving gender equality through multiple strategies. Within the framework of the strategy for gender equality for the years 2020–2025, it adopted binding measures to ensure the transparency of remuneration. As part of this strategy, the European Commission also adopted a new draft of the EU directive on combating violence against women and domestic violence. It started implementing a campaign to combat gender stereotypes (European Commission, 2023).

The EU is constantly creating anti-discrimination policies aimed at addressing multiple inequalities. However, not all of them achieve the desired results. Some mechanisms of the established legislation may cause resistance to introducing such an anti-discrimination directive due to institutionalization. It is also important to realize that each country may react differently to the specified demands, and not all will positively affect equality (Lombardo & Giorgio, 2013).

Gender inequality and its impact on the economic performance of countries were researched by many authors with different purposes and conclusions. Various economic outcomes are influenced by trust, individualism, gender attitudes, human capital, or economic development, and the factors mentioned positively impact financial results (Dutta & Sobel, 2022). Despite various political initiatives to empower women, gender inequality remains (Mukorera, 2020). Examining the impact of perceptions of economic inequality with conspiracy thinking confirms that this thinking can reinforce it. This is because economic inequality is perceived as a form of crisis that affects the entire social structure of the society, which also increases the perception of anomie within the collective (Jetten et al., 2022).

In export-oriented economies, where women provide most of the labor force in the export sector, gender inequality contributes to relatively lower wages for women. Gross domestic product (GDP) growth positively affects gender wage inequality (Seguino, 2000). Gender inequality decreases as countries grow through different mechanisms. With the help of the development process, it is possible to explain the relationship between GDP and gender inequality, while not forgetting other specific factors of each society. For example, in some vulnerable countries, cultural norms that exacerbate gender inequality by favoring men persist (Jayachandran, 2015). Gender differences in many countries are unfair and reduce the country's economic performance. It is difficult to determine the effects of gender differences on GDP and to calculate how much GDP would be more significant if gender differences were eliminated. Results from different countries confirm that reducing the gender gap in EDU leads to higher economic performance in countries (Klasen, 2018). Reducing gender inequality contributes to social justice and human development. It also positively impacts various institutions' productivity, reducing GDP growth and poverty (Verdier-Chouchane, 2016). Globalization and gender equality significantly impact the economic growth of individual countries. The study shows that the ratio of women to men in the labor force positively affects economic growth (Farooq et al., 2020).

The impact of gender inequalities is seen in many sectors of the economies of the EU member countries. A proper policymaking process brings benefits for all the touched actors. For instance, the forestry sector aims at the rural policy. Female employment is considered necessary in every field and as well as area. Information communication technologies represent the sector where hiring women could be more obvious, even in the geographic part of the world where the female PEP does not have such a representation as in developed countries. Female gender inclusion has become a crucial point in the national policy to mitigate differentiation and enhance the development of particular economies (Asongu & Odhiambo, 2020). A supranational perspective, as seen in the EU, is missing in other parts of the world. As it is seen, this raises plenty of issues related to gender inequality. The developing countries demonstrate a lower consideration of diminishing this differentiation. Therefore, it is necessary to point to the international policies created by the international institutions that would play a role in supranational regulations. For instance, higher EDU in Kenya has problems with gender inequality. Ocean science is discussed to be one of the most touched fields.

Moreover, evaluating the performed national policies would bring an overview of the explored field to suggest further steps for enhancing the investigated field. The female PEP forms a minority in higher EDU in Kenya. However, some study programs demonstrate its dominance also. It is the desired outcome of the focused national policy (Ojwala et al., 2022).

There is a close link between educational inequality and economic inequality (Blanden et al., 2023). When examining women's EDU in low- and middle-income countries, the factors that can eliminate gender inequalities in these countries are primarily sought. The effectiveness of national policies in promoting EDU and the overall progress achieved by individual countries are examined (Bennell, 2023). Gender equality and EDU are positively linked to economic growth (Minasyan et al., 2019). EDU is critical in increasing household income and wealth (Vo & Ho, 2022). EDU can have both direct and indirect effects on GDP per capita. The results indicate that an increase in the Gender Equality Index (GEI) in primary, secondary, and tertiary EDU increases GDP per capita.

In the same way, reducing gender inequalities in the educational attainment of different age groups positively affects GDP per capita. Therefore, it is in the interest of countries to implement policies that reduce gender inequality for sustainable economic growth (Assoumou-ella, 2019). Women's EDU positively benefits the economy of the state and society. In contrast, women's EDU level and its increase can affect the next generations' EDU level. A long-term relationship exists between gender inequality in EDU and a country's economic growth (Yumusak et al., 2013). Political institutions, culture, or even religion can be behind gender inequality in EDU. However, the study results indicate that even if political institutions have some influence, this influence is insignificant. On the contrary, culture and religion play a primary role in the emergence of gender inequality in EDU (Cooray & Potrafke, 2011).

Gender inequality is more pronounced in developing countries and arises due to insufficient measures in public administration and social and religious institutions. A study shows that gender equality and religious tensions influence gender inequality in the

neighboring countries. Increasing economic growth and reducing religious tension in a given country promote gender equality and positively impact neighboring countries (Iqbal et al., 2022). The market drives economic development, women's employment opportunities, and gender inequality in households (Matthews & Nee, 2000). The development of the female labor force positively impacts income inequality (Heathcote et al., 2017). The most important drivers of increasing female labor force participation are changes in preferences and growth in women's relative wages, and changes in marriage patterns have a similarly significant impact.

Since the beginning of the 21st century, trends in income inequality have undergone a significant shift, whether in developed or developing economies. Since then, it has started to have a downward tendency. Every country's challenge is reducing inequality despite unexpected situations and market developments (Anderson, 2022). The results show that economic growth improves subjective well-being in the long run when income inequality decreases (Mikucka, 2017). The main factors contributing to gender inequality are the increasing inequality in working hours and the growing covariance between working hours and wages (Beckmannshagen & Schröder, 2022). The difference in the remuneration between women and men, the difference in participation in employment, and also women's earnings are the problems in all countries (Anastasiou et al., 2015). Political support for basic income also affects gender inequality. Interest in the primary salary decreases with the increasing level of job qualifications of job seekers (Day, 2022). Examining wage inequality within a French firm showed that this difference relates to the firm itself and not to sectors or occupations. The cause of gender inequality is the automation of production (Domini et al., 2022).

One of the ways to allocate labor resources more efficiently, improve the economic performance of border regions, and also to reduce territorial and economic inequality is cross-border commuting. Cross-border commuting results from push and pull factors that affect employees differently. However, they generally react in the expected way to wages, job availability, unemployment, distance, and language. However, results that assess age, gender, EDU, and the occupational sector show that the reduction in inequality is minimal and may even be increasing (Edzes et al., 2022).

In managing inequalities, it is essential to analyze, among other factors, the role of financial development and the development of financial technologies (Frost et al., 2022). Technological change, the primary driver of long-term economic growth, can be positively related to women's political empowerment, and this relationship also applies vice versa. Women's political empowerment positively affects technological changes (Dahlum et al., 2022).

DATA AND RESEARCH METHODOLOGY

The panel data consists of annual observations from 2015 to 2019 for 21 countries of the EU, all available in the Eurostat and EIGE databases. The European Commission carries them out. The following 21 countries of the EU are distinguished – Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden. It is to be noted that six states were omitted from the analysis because of missing data.

A total of six variables are investigated in the analysis. Gross domestic product (GDP) represents the explained variable. The remaining five variables perform as the explanatory variables, and these are the Gender Equality Index (GEI), the Gender Pay Gap (GPG), the Employment Rate (ER), the Population (PEP), and the graduates in tertiary by educational level (women per 100 men) (EDU). We draw data on GPG, ER, PEP, and EDU according to females. The GDP variable is calculated as the ratio of real GDP to the average PEP of a particular year. The GEI variable is a composite metric using three dimensions: reproductive health, empowerment of women, and labor market. The GPG variable means unadjusted GPG. It represents the difference between male and female paid employees' average gross hourly earnings as a percentage of male paid employees' average gross hourly earnings. The ER variable represents the ER of women. It is calculated by dividing the number of women between the age of 20 and 64 in employment by the total female PEP of the same age group. The PEP variable includes all main labor market characteristics, such as the total PEP, employment, ER, full-time and part-time employment, and activity rates. The EDU variable covers indicators and statistics of the crucial aspects of EDU.

The research aims to test the state of gender inequality in selected EU countries in terms of GDP influenced by various indicators. Our research consists of two parts. In the first part, we use panel data regression analysis to explore the data set. We start with a model using longitudinal data represented by the following regression scheme:

$$\text{GDP}_{it} = \beta_{0it} + \beta_{1it} \text{GEI}_{it} + \beta_{2it} \text{GPG}_{it} + \beta_{3it} \text{ER}_{it} + \beta_{4it} \text{PEP}_{it} + \beta_{5it} \text{EDU}_{it} + u_{it} \quad (1)$$

To test the stationarity of our data set, we use augmented Dickey–Fuller (ADF) test (Dickey & Fuller, 1979). The F test is applied to obtain the overall significance of our linear regression model. The model is tested for potential errors. Autocorrelation is explored through the Durbin–Watson test. Heterogeneity is explored through the Breusch–Pagan test. The normal distribution of data is explored through the Jarque Bera test, and multicollinearity is tested using the Variance Inflation Factor (VIF). To differentiate between fixed effects and random effect models in panel analysis, we perform the Hausman test (Croissant & Millo, 2018).

Spatial econometrics is used to test the spatial dimension of the variables. Firstly, choropleth maps are created. A choropleth map is a thematic map where geopolitical areas are colored-shaded or patterned concerning a value. Visualization patterns depend on data distribution, sizes, classifications, and boundaries between classes (MacEachren, 1982; Tennekes, 2018). Secondly, to show the presence of spatial autocorrelation, we carried out Local Indicators of Spatial Association (LISA) cluster analysis. LISA analysis represents the extent of significant spatial clustering of similar values around this observation, with the LISA sum for all observations proportional to the global spatial association indicator (Anselin, 1995). The cluster analysis can reveal the inner relationships between the explored variables (Lipták et al., 2015; Gavurova et al., 2019). Below, Moran’s scatter plots are shown.

The Moran scatter plot consists of a plot with the original variable on the x-axis and the spatially lagged variable on the y-axis. An essential aspect of visualization in the Moran scatter plot is the classification into four quadrants. Positive spatial autocorrelation corresponds to the upper-right and lower-left quadrants. Negative spatial autocorrelation corresponds to the upper-left and lower-right quadrants. It means that here we can find similar values at neighboring locations. Such a view demonstrates the territorial links between the examined objects (Gavurova et al., 2016).

On the contrary, we can find different values in these two quadrants at neighboring locations (Anselin, 1996). The last step in the second part of our analysis is a measure of spatial autocorrelation through Moran’s *I* statistics. It is calculated as a randomly positioned test of the null hypothesis. Rejection of the null hypothesis increases the comprehension of the data set and its spatial structure. It measures the location of a spatially mean value and spatially weighted neighboring value of a variable. If *I* is greater than 0, we reject the null hypothesis. Positive spatial autocorrelation means the value of a variable in one location depends positively on the value of the same variable in neighboring locations (Anselin, 1995).

According to the mentioned methodologies and observed data, the following research questions are formulated:

1. Is there any link between GDP and selected gender-related indicators?
2. What are the values and geographic distribution of gender-related indicators in the EU?

RESEARCH RESULTS

The influence of gender-related indicators on GDP

In the first part of our analysis, we use panel data analysis, and the results of the tests are shown in Tab. 1. According to the ADF test, the panel data are stationary. The adequacy of fixed effects model, random effects model, and Pooled model is tested using the Hausman test. The result is the use of FEM model.

The results of the panel regression using fixed effects as a preferred specification based on the Hausman test show that an increase in GEI affects GDP per capita positively. The explanation might be tight to the claim that gender-balanced countries show better economic results. The negative sign of the beta estimate of GPG seems to be as expected. Many studies show a relationship between GDP per capita and income inequality (Barro, 2008; Scognamiglio et al., 2016; Bilan et al., 2020). However, this variable is insignificant in our model, with no effect on GDP per capita. The female ER is the most significant influencing variable on GDP per capita. It confirms the results of many studies that point to the significant and positive impact of women’s employment on the country’s economic results and highlight the importance of supporting women’s employment (Klasen & Lamanna, 2009; Lee et al., 2012; Kabeer & Natali, 2013). According to our results, the size of the female PEP does not directly affect GDP per capita. The negative sign of the beta estimate of the levels of women’s EDU is unexpected. However, it is a tertiary EDU that is considered to be above standard, which may be why this variable in our model is shown to be statistically insignificant when evaluating the impact on GDP per capita.

Tab. 1: Results of panel regression models

Model	FEM		REM		Pooled	
variable	Estimate	significance (<i>p</i> -value)	Estimate	significance (<i>p</i> -value)	Estimate	significance (<i>p</i> -value)
GEI	103.8315	* (0.0768)	134.9978	* (0.0438)	767.4512	*** (0.0002)
GPG	-35.1447	- (0.6136)	-51.2419	- (0.5193)	-828.2484	** (0.0077)
ER	312.0235	*** (<0.0001)	290.4494	*** (<0.0001)	598.8017	* (0.0456)
PEP	0.2875	- (0.6866)	0.1763	- (0.7297)	-0.8835	* (0.0174)
EDU	-8.6735	- (0.6576)	-18.6857	- (0.4093)	-389.8658	*** (<0.0001)
Panel diagnostics			Collinearity diagnostics			
Test	<i>p</i>-value		VIF test			
F-test	<2.22e-16			GEI		
Jarque–Bera	0.5462			GPG		
Durbin–Watson	0.0002			ER		
Breusch–Pagan	0,1870			PEP		
				EDU		

Source: Own elaboration by the authors based on Eurostat and EIGE

Notes: *** denotes 0.01 significance level, ** denotes 0.05, and * denotes 0.1.

Factors that affect economic growth (GDP) are among the most discussed points in the field of country economics. According to Abdullah (2022), when using panel data examining the impact of various indicators (labor, capital, technological progress, institutions) on GDP per capita, it was found that the labor force participation rate negatively affected economic growth. The study further showed that economic growth and employment varied across countries based on income groups. Costantini and Paradiso (2018) confirm the relation between inequality and GDP per capita by studying panel data. Taş et al. (2013) analyze macroeconomic indicators of economic growth of the EU countries using panel data. The dependent variable is GDP, which is analyzed by 11 independent variables, including the unemployment rate, PEP level, and others. One of the main findings is the result of the model, which confirms that the PEP level positively affects economic growth. Rodríguez (2017) analyzes panel data, where she observes the relative increase in women's participation rate in the labor force and its effect on countries' economic growth. The result indicates that women's empowerment in the labor market has a positive effect on the economic growth (GDP) of countries. Here, space is being created for public policy, which should aim to increase the participation of women in the workforce.

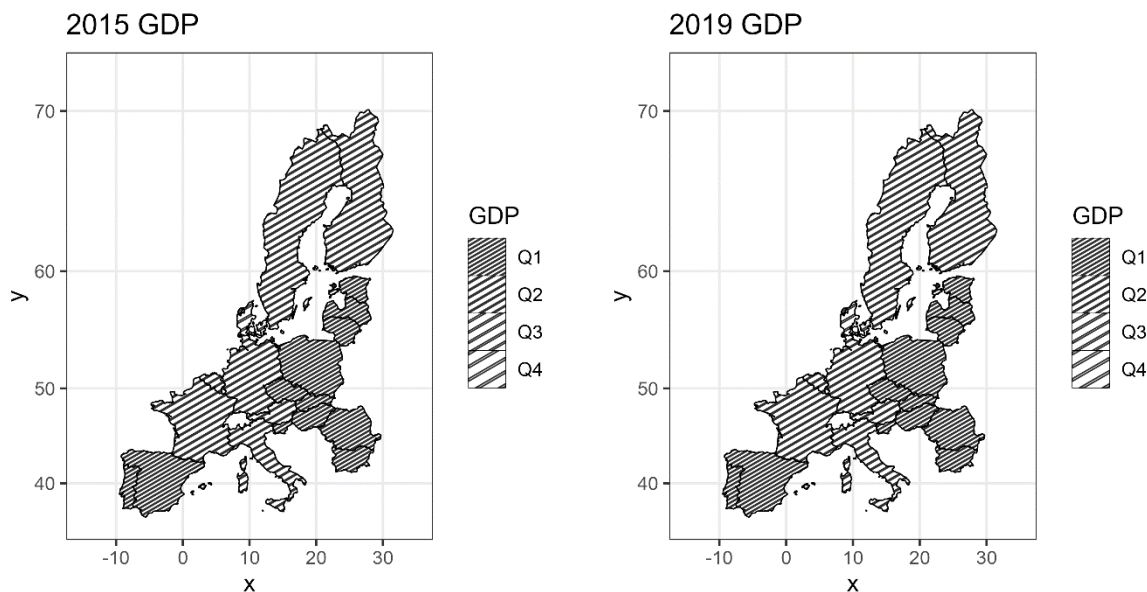
Geographic distribution of gender-related indicators in the EU

In the second part of our analysis, we perform an explanatory spatial data analysis of all variables to examine the spatial dimension of the variables. Choropleth maps illustrate that some part of the EU is more developed than other parts. The choropleth maps reflect, in some cases, East–West inequalities among countries, but North–South differences are more visible.

When we investigate our explained variable in Figure 1, GDP, in monitored countries through the EU, we can see no differences, enhancements, or deterioration in the GDP value during the period we monitored. GDP per capita ranges from 5.700 EUR in Bulgaria in 2015 to 83.590 EUR in Luxembourg in 2019. As the map shows, the countries with the lowest GDP per capita are in the southeastern part of the EU, where neighboring areas are in a similar shade. Quadrant Q1 includes the countries of the eastern EU (Romania, Bulgaria) and the countries of the Central EU (Estonia, Latvia, Lithuania, Poland, Slovakia, Hungary, and Slovenia). Other parts of the EU, mainly the Nordic countries, are among the countries with a higher amount of GDP per capita.

The second choropleth map in Figure 2 is about GEI and its score in individual EU countries. In 2015, the GEI scores ranged from 51.2 in Romania to 79.7 in Sweden. It means that this year, Romania was the least gender-balanced country. In 2019, the least gender-balanced country was Hungary, with a score of 51.9, and the highest score of 83.6 for this year was again shown by Sweden.

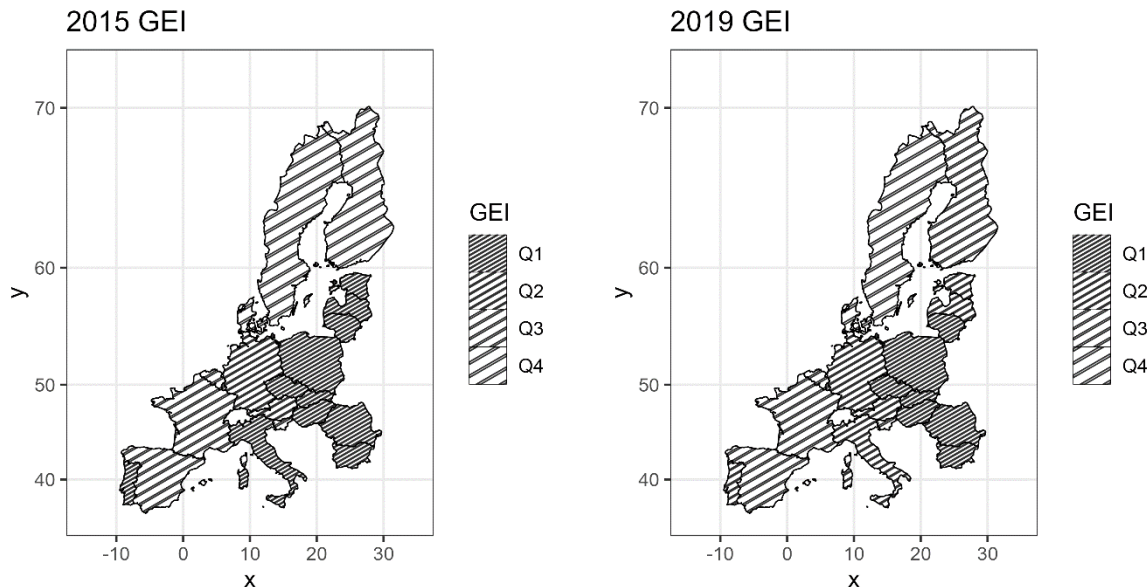
Fig. 1: GDP per capita for the years 2015 and 2019



Source: Own based on Eurostat and EIGE

Note: Q1: the quadrant with the lowest EUR value of GDP per capita; Q4: the quadrant with the highest EUR value of GDP per capita

Fig. 2: Gender Equality Index for the years 2015 and 2019

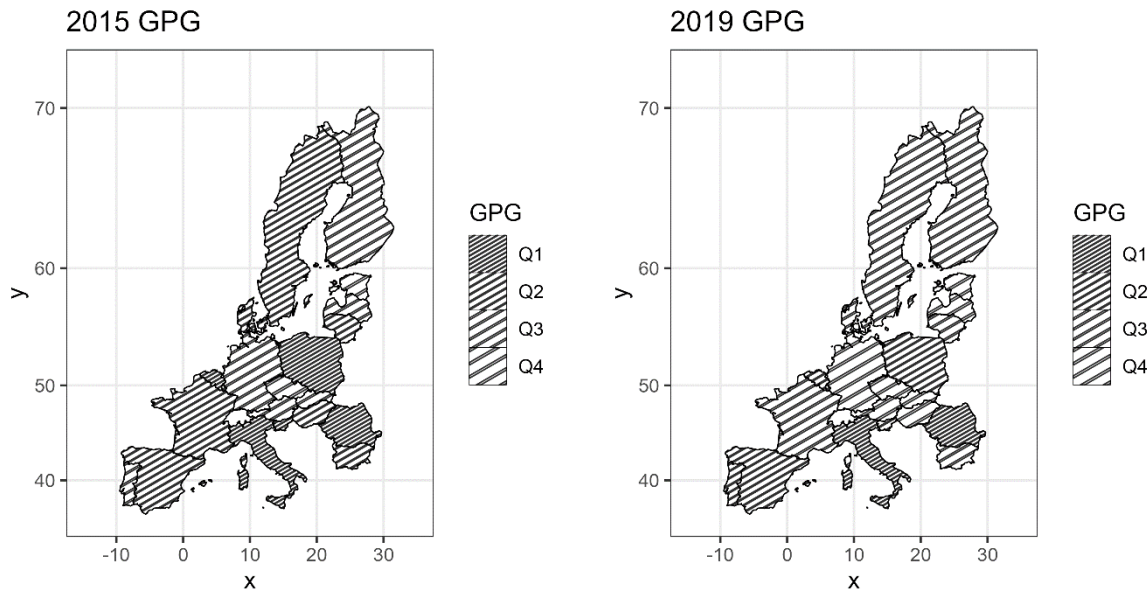


Note: Q1: countries with low scores; Q4: countries with high scores

GEI data reflect a precise level of inequality through the EU countries. We can observe that Sweden holds the lead in achieving gender equality for the entire monitored period. Its GEI value is at the level of 80 (where a score of 100 means that the country achieves full equality between women and men).

Choropleth map in Figure 3 explains GPG. When looking at the difference in earnings between men and women, we can see only a small number of EU countries where the difference is up to 10% (Q1). Estonia has the highest wage gap rate during the

Fig. 3: Gender Pay Gap for the years 2015 and 2019



Source: Own based on Eurostat and EIGE

Note: Q1: lowest wage differences expressed in %; Q4: the highest wage differences expressed in %.

observed period. In 2015, the lowest difference in remuneration between women and men, valued at 4.7%, was in Luxembourg. On the contrary, the highest difference, with a value of 26.7%, was in Estonia. In 2019, the lowest wage gap was again in Luxembourg, with a much lower value, only 1.3%, which means almost completely eliminating the gender wage gap in this country. This year, the highest difference was again in Estonia, but with 5% lower value than at the beginning of the monitored period, that is, 21.7%.

The other choropleth map in Figure 4 is about ER of women. When we investigate ER of women in the EU countries during the entire observed period, this rate is found to be the lowest in Italy and Romania (Q1). We can also see North–South differences in the EU countries, and ER of women is higher in the northern part of the EU and, conversely, lower in the countries in the southern part of the EU.

Another variable, shown in the Figure 5, is PEP of women in individual EU countries. The size of the female PEP did not change during the monitored period, and it was the same for 2015 as for 2019. As can be seen on the map, the Nordic countries and some Central EU countries have fewer women. The highest number of women is in Germany.

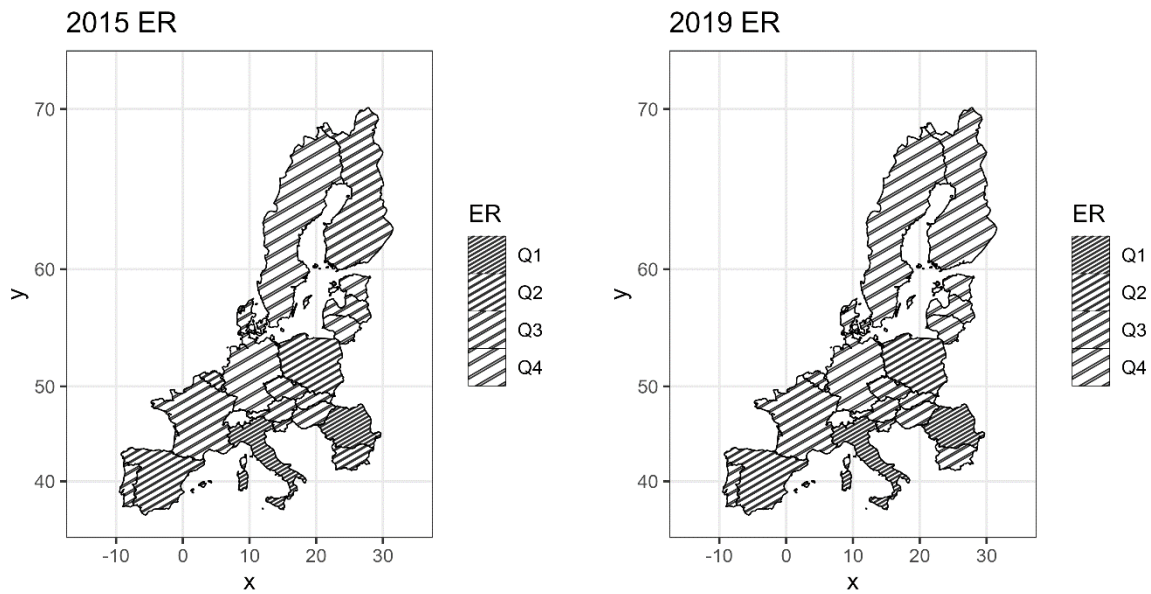
EDU data in Figure 6 reflect evident level differences among monitored countries. Countries with the highest number of women completing tertiary EDU include Poland, Latvia, Estonia, and Lithuania. This situation is the same for both years, 2015 and 2019.

We bring out LISA cluster analysis to show the presence of spatial autocorrelation. The existence of heterogeneity is repeated in the distribution of LISA analysis. LISA indicates significant local clusters (high–high or low–low) or local spatial outliers (high–low or low–high). LISA analysis has two essential features. In addition to providing statistics for each location with a significance rating, it establishes a proportional relationship between the sum of the local statistics and the corresponding global statistic (Anselin, 1995). In Table 2, we can see the classification of countries into individual clusters 1–4, which are arrived at based on LISA cluster maps.

Our first LISA cluster is about GDP in individual EU countries. Based on LISA cluster analysis, we have 12 countries in the Low-Low area, located in the east and west of the EU. The rest of the EU is in the High-High area with a significant global spatial autocorrelation (8 countries), except Austria as a spatial outlier in the High-Low area. This situation is the same at the beginning and end of our monitoring period.

The second LISA cluster is for GEI and the value of its score for individual EU countries. The situation at the end of the monitored period is similar to the case at the beginning. We can see that the whole eastern part of the EU is in the low–low area and the northern part of the EU and some countries of Western Europe are in the high–high area, which means that a significant global spatial autocorrelation is present.

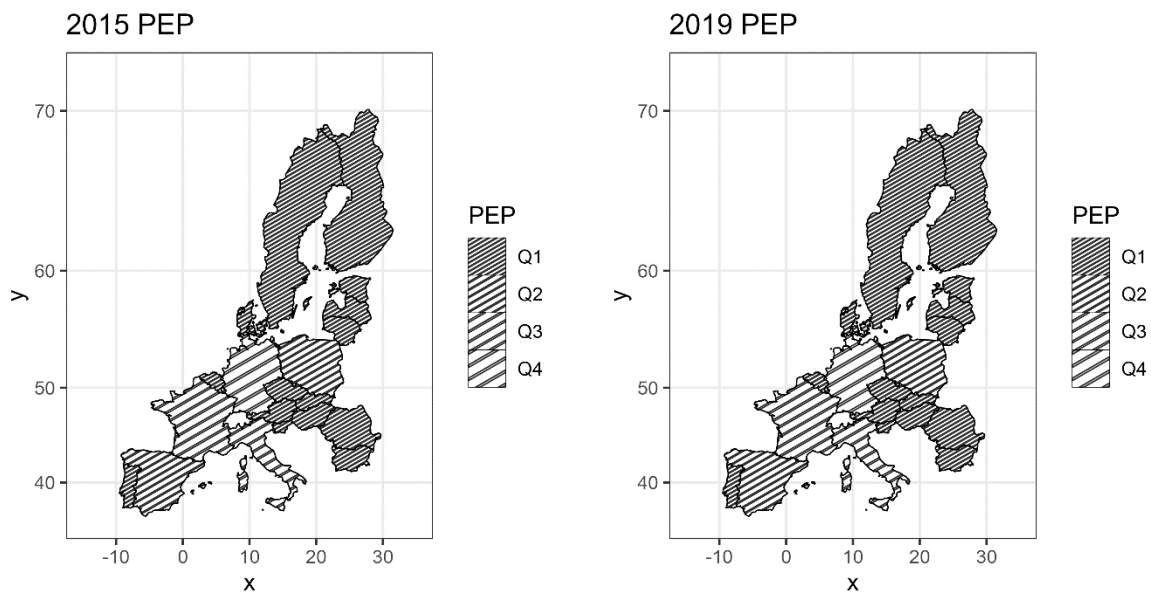
Fig. 4: Female employment rate for the years 2015 and 2019



Source: Own based on Eurostat and EIGE

Note: Q1: low female employment rate in %; Q4: high female employment rate in %.

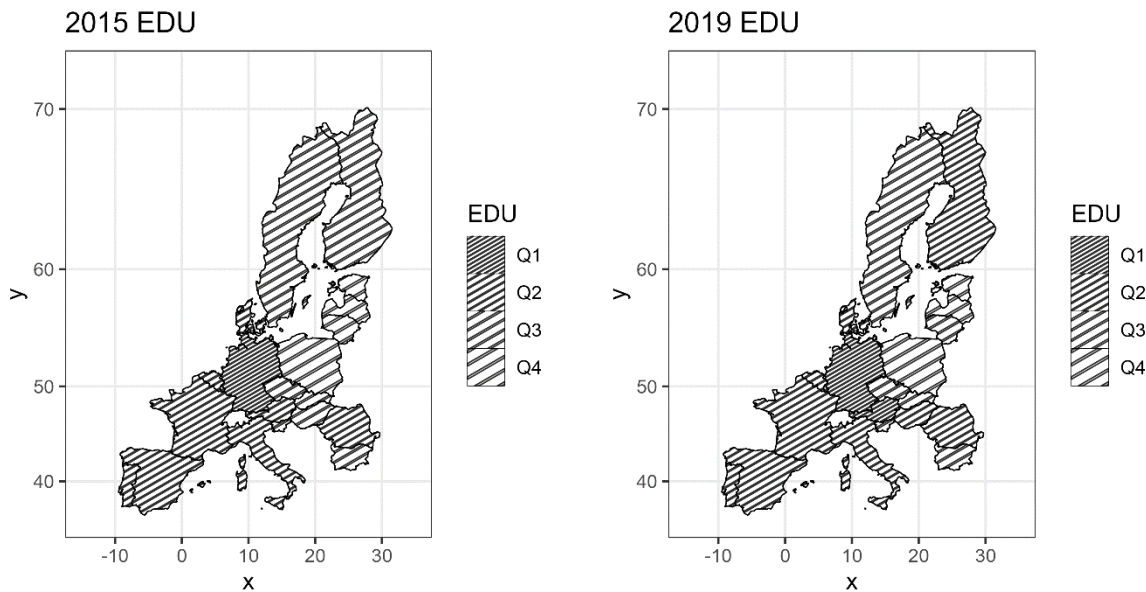
Fig. 5: Population of women for the years 2015 and 2019



Source: Own based on Eurostat and EIGE

Note: Q1: the lower number of the female population (1000); Q4: the higher number of the female population (1000).

Fig. 6: Graduates in tertiary education by education level for the years 2015 and 2019



Source: own based on Eurostat and EIGE

Note: Q1: the lowest number of women with tertiary education (women per 100 men); Q4: the highest number of women with tertiary EDU (women per 100 men).

LISA cluster map, which is about GPG, shows a very high disparity. Almost all EU countries are included in the high-low or low-high area, which means they are located as spatial outliers without significant spatial location. When evaluating this variable, only a few countries are included in the high-high area, and the same applies to 2015 and 2019.

The distribution of female ER values changed during the monitored period. Some countries (Spain, Romania) in the low-low area at the beginning of the monitored period were already in the low-high area at its end or vice versa. The Nordic countries were in the high-high area all along, and the situation in other countries changed over time.

As regards the size of the female PEP in individual EU countries, the situation at the LISA cluster did not change in the monitored period. A lower number of countries represents countries belonging to the high-high areas, and the north of the EU and countries in the southeast are in the low-low area.

The last LISA cluster is about the graduates in tertiary EDU by EDU level (women per 100 men) in the EU countries. Countries in high-high areas with a significant spatial location are mainly in the Central EU, and Western countries are entirely in the low-low area. The number of female tertiary EDU graduates did not change significantly during the monitored period. There was no change in Western EU countries during the monitored period. The cluster change occurred only in four cases (Czechia, Hungary, Austria, and Bulgaria). Czechia and Hungary moved from cluster 1, that is, from a cluster with a high spatial autocorrelation, to a cluster representing spatial outliers.

Moran's scatter plots show the spatially lagged variable on the y-axis and the original variable on the x-axis. We can find the data points in four quadrants. Positive spatial autocorrelation of values that are higher or lower than the mean of our sample is indicated by the data points in the upper right (or high-high) and lower left (or low-low). Observations that exhibit negative spatial autocorrelation, which means that these values carry little similarity to their neighboring ones, are shown in the upper left (or low-high) and the lower right (or high-low).

Firstly, when we investigate GDP using Moran's scatter plot in Figure 7, data points do not reflect clear positive or negative autocorrelation. Points are almost evenly dispersed in each quadrant. Therefore, we cannot unequivocally confirm which of the quadrants is dominant. Also, we cannot determine the tendency toward positive or negative spatial autocorrelation or no spatial autocorrelation of this variable.

Tab. 2: Results of LISA cluster analysis

Country	2015						2019					
	GDP	GEI	GPG	ER	PEP	EDU	GDP	GEI	GPG	ER	PEP	EDU
Belgium	1	1	4	3	3	4	1	1	4	3	3	4
France	1	1	2	2	1	4	1	1	2	4	1	4
Germany	1	1	2	1	2	4	1	1	2	2	2	4
Italy	1	3	4	3	2	4	1	3	3	3	2	4
Luxembourg	1	1	4	3	3	4	1	1	4	3	3	4
Denmark	1	1	1	1	3	4	1	1	1	1	3	4
Portugal	4	3	2	3	3	4	4	3	4	2	3	4
Spain	4	2	3	4	1	4	4	1	4	3	1	4
Austria	2	4	1	2	3	2	2	2	1	2	3	4
Finland	1	1	2	1	4	3	1	1	2	1	4	3
Sweden	1	1	3	1	4	1	1	1	3	1	4	1
Czechia	4	4	1	1	3	1	4	4	1	1	3	2
Estonia	4	4	1	1	4	1	4	4	1	1	4	1
Hungary	4	4	4	2	4	1	4	4	2	2	4	3
Latvia	4	4	1	1	4	1	4	4	1	1	4	1
Lithuania	4	4	4	2	4	1	4	4	2	2	4	1
Poland	4	4	3	4	1	1	4	4	3	3	1	1
Slovakia	4	4	1	4	4	1	4	4	1	1	4	1
Slovenia	4	2	4	4	4	2	4	2	3	2	4	2
Bulgaria	4	4	2	4	4	2	4	4	2	4	4	1
Romania	4	4	4	4	4	3	4	4	3	3	4	3

Source: Own elaboration by the authors

Note: 1 – high-high area; 2 – high-low area; 3 – low-high area; 4 – low-low area; 2015: GDP: 1 – (25,860–82,820); 2 – (36,140); 4 – (5700–23,090); GEI: 1 – (64.9–79.7); 2 – (66.1–67.4); 3 – (54.4–56.5); 4 – (51.2–61.3); GPG: 1 – (15.1–26.7); 2 – (15.5–21.8); 3 – (7.3–14.1); 4 – (4.7–14.2); ER: 1 – (66.4–77.6); 2 – (66.2–72.2); 3 – (50.5–65); 4 – (50.3–64.6); PEP: 1 – (6688.6–11,693); 2 – (8895.8–16,588.9); 3 – (106.1–2037.1); 4 – (272.1–3326.1); EDU: 1 – (153.32–193.7); 2 – (123.92–156.38); 3 – (139.85–149.66); 4 – (100.6–147); 2019: GDP: 1 – (27,230–83,590); 2 – (38,090); 4 – (6630–25,180); GEI: 1 – (66.9–83.6); 2 – (65.3–68.3); 3 – (59.9–63); 4 – (51.9–59.8); GPG: 1 – (14–21.7); 2 – (13.3–19.2); 3 – (3.3–11.8); 4 – (1.3–10.9); ER: 1 – (71.7–78.9); 2 – (72.1–77.4); 3 – (53.9–68.1); 4 – (69.4–70.2); PEP: 1 – (6730.7–11,937.4); 2 – (9231–17,398.1); 3 – (122.9–2174.3); 4 – (278.2–3387.7); EDU: 1 – (151.02–192.75); 2 – (150.04–157.57); 3 – (144.12–144.88); 4 – (98.24–144).

In the case of GEI in Figure 8, we can confirm the presence of positive spatial autocorrelation. In 2015 and 2019, data points were concentrated in the upper right and lower left quadrants.

Moran's scatter plot showing the interrelationships of the GPG variable displays data points in all four quadrants in Figure 9. Therefore, we cannot confirm positive or negative spatial autocorrelation.

Similar to the display of the relationship between GDP and GPG, we cannot confirm a positive or negative correlation in this Moran's scatter plot, which shows the relationship between ER of women and the average value of its neighbors for ER of women in Figure 10. Data points are scattered in all four quadrants. In 2019, we can observe the dominance of these data points in the two quadrants, but one confirms the presence of a positive and the other a negative spatial autocorrelation.

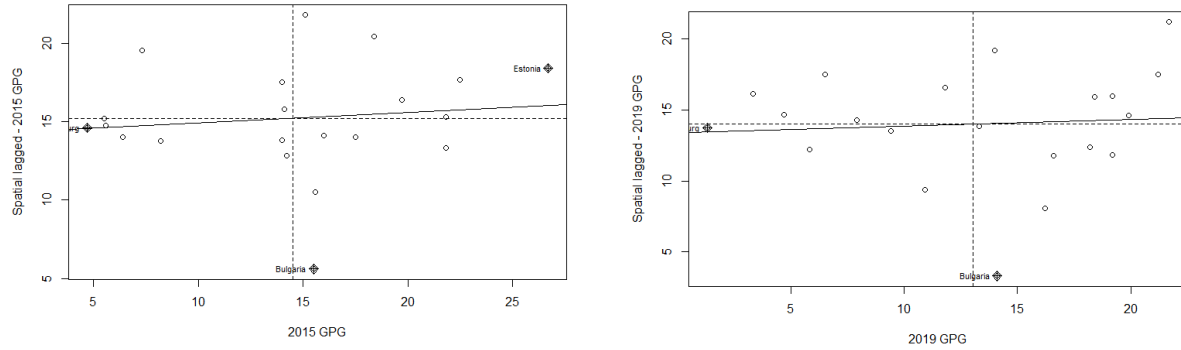
Moran's scatter plot of the female PEP centers data points in the lower left part, which we can see in Figure 11. Since the data points already dominate in the mentioned quadrant, we can confirm the positive spatial autocorrelation.

Moran's scatter plot about EDU in Figure 12, has data points concentrated in the upper right and lower left quadrants. Based on this dominance of points, we can confirm that this variable shows positive spatial autocorrelation.

We can determine whether the data is randomly dispersed based on the p -value corresponding to Moran's I . Table 3 provides an overview of the results for Moran's I statistics.

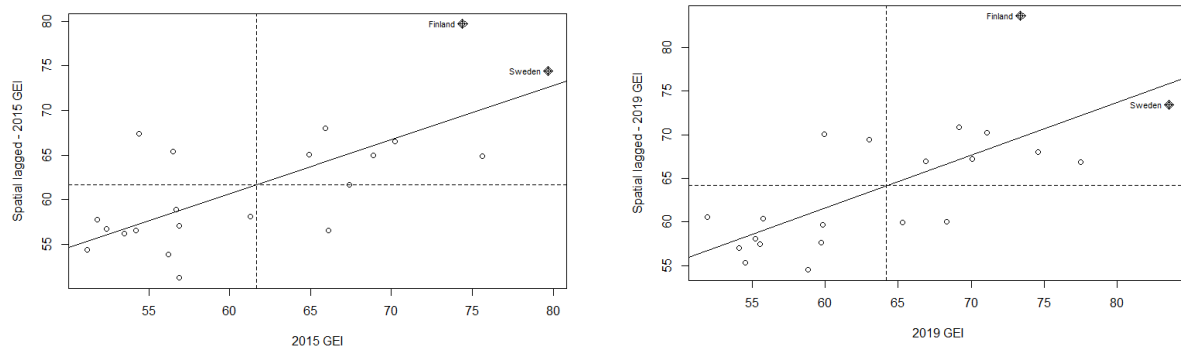
If we look at the variables in 2015, we can say that GDP, GEI, and EDU variables are not randomly dispersed. It means that values are spatially clustered in noticeable patterns. Contrarily, GPG, ER, and PEP are the variables whose values are randomly dispersed. The same is found in 2019.

Fig. 7: Moran's scatter plot: GDP



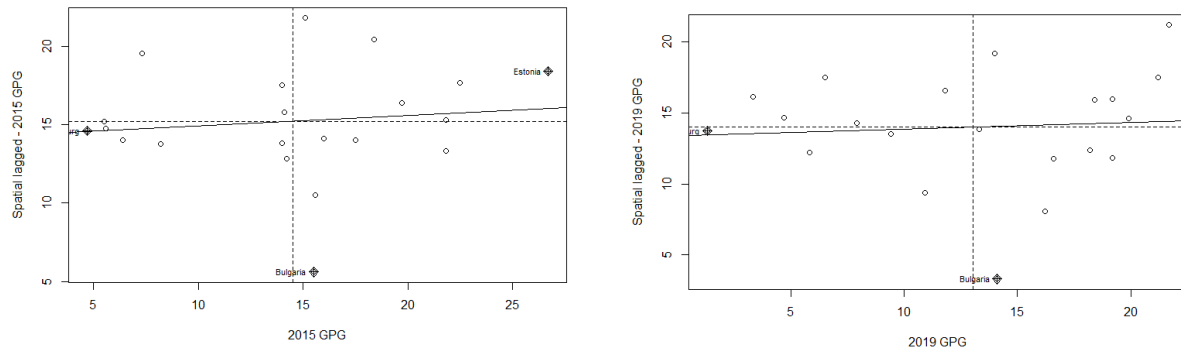
Source: Own based on Eurostat and EIGE

Fig. 8: Moran's scatter plot: Gender Equality Index



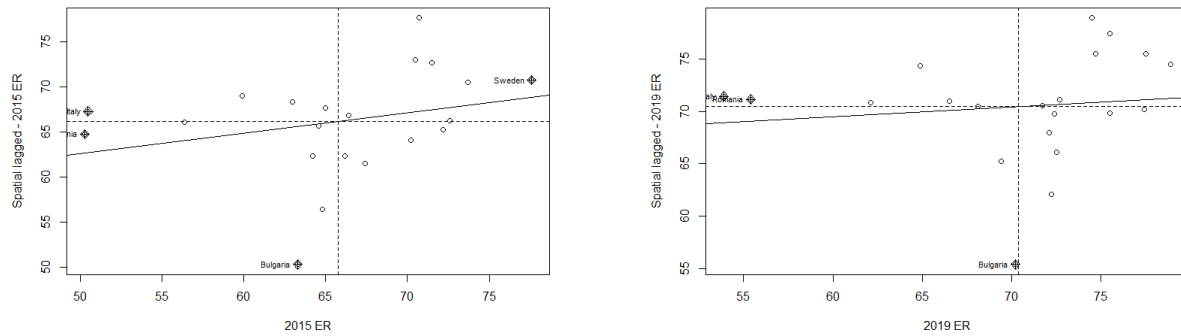
Source: own based on Eurostat and EIGE

Fig. 9: Moran's scatter plot: Gender Pay Gap



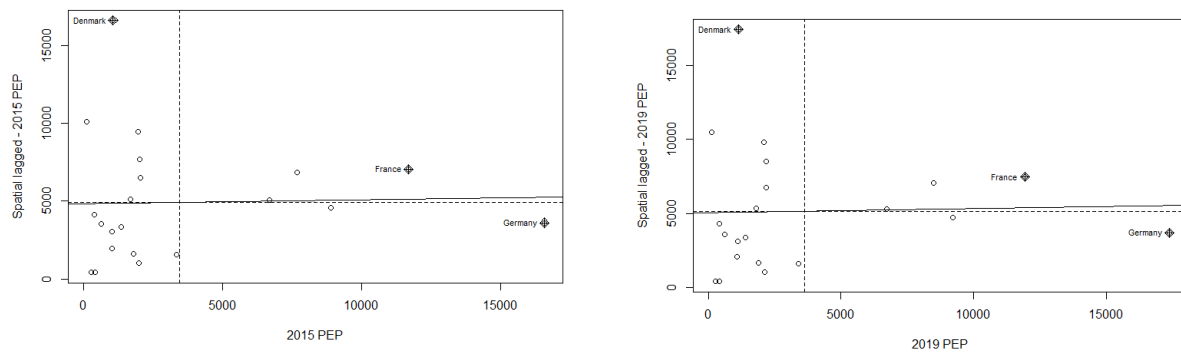
Source: Own based on Eurostat and EIGE

Fig. 10: Moran's scatter plot: Employment rate



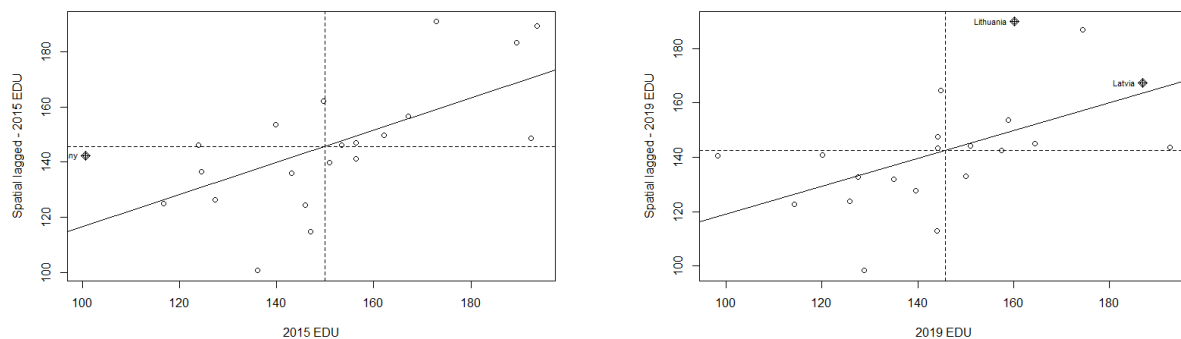
Source: Own based on Eurostat and EIGE

Fig. 11: Moran's scatter plot: Population of women



Source: Own based on Eurostat and EIGE

Fig. 12: Moran's scatter plot: Education



Source: Own based on Eurostat and EIGE

Tab. 3: Moran's / statistics

Year/variable	GDP	GEI	GPG	ER	PEP	EDU
2015	0.4398 (0.0029)	0.6058 (0.0006)	0.0676 (0.2805)	0.2252 (0.0806)	0.0249 (0.3415)	0.5838 (0.0007)
2017	0.4420 (0.0029)	0.5816 (0.0316)	0.0760 (0.2673)	0.1243 (0.1857)	0.0223 (0.3463)	0.4948 (0.0033)
2019	0.4451 (0.0029)	0.6035 (0.0006)	0.0462 (0.3184)	0.0940 (0.2277)	0.0262 (0.3385)	0.5125 (0.0023)

Source: Own elaboration by the authors based on Eurostat and EIGE

Note: *p*-values are in parentheses; significance level $\alpha = 0.05$.

Perugini and Martino (2008) examine income inequality in Europe and its impact on growth using spatial econometrics. The result is the demonstration of regional income inequality not only within Europe, but also within individual countries. The methodology also reveals spatial inequality patterns across regions that are not clearly captured by national borders. Gender inequalities persist in the labor market in almost all countries. Women are rewarded with lower wages, and these inequalities are not only demonstrated at the EU level, but even within individual countries. Castellano and Rocca (2019) analyze the aspects of spatial differences as well as the influence of EDU. While the difference in EDU appears to be a stable variable within countries, there is a large variability in results within differences in the labor market. Adapting national policies to regional aspects could be an effective strategy in the fight against gender inequality. Understanding the geographic context and perspective in explaining the development of countries is one of the most significant issues. For example, when examining well-being across regions of Europe, Pierewan and Tampubolon (2014) argue that it can be explained using a geographic dimension. Well-being is a spatially dependent variable, where regions with higher levels of well-being are surrounded by higher levels of well-being, confirming spatial dependence. One of the main consequences of public policy, which follows from the previous statement, is that introducing measures can bring development within the given region and in the surrounding regions.

DISCUSSION AND CONCLUSIONS

Gender inequality has received much attention in the past decades. A distinct feature of such discussion is women's employment, educational inequality, or wage gap in GDP results (e.g., Klasen & Lamanna, 2009; Falk & Leoni, 2010). Many studies confirm the mutual causality between gender inequality and the economic performance of countries. Economic progress empowers women, and thus promotes equality for both sexes.

On the other hand, there are developing countries that, based on gender equality, use human capital more effectively, and there is significant economic progress (Ghost & Ramanayake, 2020). Gender inequality is a phenomenon that is often the result of insufficient measures on the part of public institutions. Due to the influence of globalization, unequal status can also be transferred to neighboring countries. In the same way, increasing economic growth, which is supported by gender equality, can have a positive effect on neighboring countries due to globalization. EDU level only affects outputs within the home country and does not affect neighboring countries (Iqbal et al., 2022).

The result of the LISA cluster analysis brings an exciting conclusion about GDP per capita. At the beginning and end of the observed period, all countries belonged to the same clusters, even though the explanatory variables moved within the clusters over time. The clustering process is based on the factors that have arisen previously from the processed research. In their study, Klasen and Lamanna (2009) claim that gender inequalities in EDU and employment considerably reduce economic growth because such gender inequality reduces human capital in the society. It is also aimed at the EU policies focused on the equality of sexes. Such outcomes serve policymakers to prepare suitable regulations in this field to mitigate the differentiation in each field of the sexes inequality. The EU member countries' national policies should reflect these regulations' supranational aims. Hence, individual countries modify their national and regional policies to offer as many potential benefits as possible.

When monitoring GEI, we observe that the northern and eastern EU countries maintained their position in the monitored period. However, there are also countries where the change occurred, for example, Spain, which moved from the original high–low cluster to the high–high cluster. It means that it was positively influenced by the neighboring outcome values, improving the score and moving toward a gender-balanced country. Austria also moved within the clusters, but remained in the position of an outlier, that is, without positive spatial autocorrelation. According to EIGE (2019), with 70.1 out of 100 points, Spain was the ninth in the EU, and its score was even 2.7 points higher than the score for the whole EU. Since 2005, it has progressed toward gender equality faster than other EU countries. Austria has 65.3 out of 100 and ranks 13 in the EU ranking according to achieved GEI score and its score is 2.1 points lower than the score for the EU.

When examining GPG, there was a change in the classification into individual clusters in several cases. The total number of countries included in a different cluster at the end of the observation is seven, representing up to one-third of the examined countries. The GPG shows many countries that are not spatially autocorrelated with each other. Based on this, the level of wages of women in a given country does not affect neighboring countries. Falk and Leoni (2010) claim that decreasing GPG increases the female participation ratio in the labor market. Ilić (2022), in his study, focused on the Balkan countries and confirmed that the wage gap between women and men can have adverse economic consequences, which include, for example, a decrease in the rate of employment or economic activity. This results in a significant drop in GDP per capita. A GPG can also be understood very specifically. Various fields are not directly associated with such an issue.

Nevertheless, undoubted ties can be found. Orthopedics as a medical specialization offers an interesting perspective as women earn significantly less than men here. The suggested fee code should prepare a compromise to make the wages more similar. It needs to be a proper policy proposal, but as it makes a consensus between two or more sides, this would be perceived as a guideline or a protocol for practice (Halim et al., 2023). Gender wage inequality is lowest in public institutions, followed by public and private enterprises. These findings can significantly contribute to understanding and addressing gender inequality in earnings, primarily through policies to promote gender equality (He & Wu, 2017).

As for the ER variable, there was also a movement of countries between clusters in most cases. During the observed period, ER of women was mainly maintained by the Nordic countries (Sweden, Finland, Denmark, Estonia, Latvia), which also belong to the cluster with a high spatial autocorrelation. The biggest jump was recorded for Slovakia, which moved from the original cluster four to cluster one, but was always in the cluster with a positive spatial autocorrelation. Women hold high management positions much more rarely than men. It is an obvious fact. Nonetheless, it is not related to their responsibility, performance, or labor productivity. This fact is understood as a historical phenomenon. Usually, there are no rules or policies to diminish this state. On the one hand, it is not required in private enterprises. On the other hand, the state, regional, or local authorities are not in a situation where such a policy would play a role. National gender-related policies are associated with differences in corporate governance outcomes. The gender-related topics represent the critical inputs to organizational and individual selection (Thams et al., 2018).

Participation of women in employment still varies widely within the EU, but female employment is increasing rapidly in Europe. A key factor for improving employment and earnings is women's increasing EDU. This fact leads to overall higher efficiency and support of economic growth (Gudrun, 2007). The participation of women in the labor market is improving due to the policy. The proof is, for example, the family policy focused on the labor market, the positive effect of which has been manifested in recent years. However, it is again essential to correctly set and verify the given measures because sometimes, alongside effective policies, some have the opposite effect and strengthen the existing gender inequality in the labor market (Seo, 2023). GDP per capita, labor force participation, EDU, and PEP share are among the primary sources where gender inequality can be identified. The regression model results show a positive relationship between GDP per capita and female labor force participation (Acar & Dogruel, 2012). Constraints to female labor force participation can result in lower economic growth (Alonso et al., 2019). Getting the policy right is very important.

For example, the EU's pension policy appears gender neutral, but ultimately harms most women. Its goal was to reduce the state's responsibility and increase individual responsibility, but this reform favors male work models, thereby disadvantaging women and their work engagement (Earles, 2013). The EU also has a range of equal opportunity policies and higher EDU programs (Bourabain & Verhaeghe, 2022). Female employment also plays a substantial role in mitigating a pay gap. Increasing EDU brings a new aspect to this area. It is reflected in the focus of the national and regional policies and at the international level. The EU pays attention to many measures that describe the position of women in society. One of the incomes of the female PEP should be bound to the benefits of employing women. Altogether, this brings many perspectives to be investigated in further research.

The discussed indicators possess a very close relation to the policymaking processes. It is indisputable that the gender inequality index, GPG, ER, PEP, and the tertiary EDU graduates influence many policy fields of each country's economy. Without proper analytical processing, the policymaking process would lack a statistical basement with fundamental backing. Hence, a deep investigation should be carried out before constructing a national policy related to a field of the national economy. Generally, a pay gap introduces a pay system distortion. It causes more unwanted points followingly. For instance, women are subsequently paid lower pensions at retirement age. Although they can retire earlier than men, it is not enough to make the arisen gap cleared away. The People's Republic of China retirement policy includes strict restrictions for potential pensioners. One of the main issues is the industry heterogeneity. Several factors cause this. For instance, an aspect of the explored ones is the ownership of the enterprises (Liu & Xu, 2023).

Governments should apply a holistic approach to gender inequality in their policies and legislation and, in this way, regulate the state of equality (Ovadia, 2022). Examining political support for basic income from the point of view of income inequality indicates that the correct setting of income taxation is significant, which affects the effects of gender inequality (Day, 2022). Disclosure of gender equality policies and their impact is essential for subsequent evaluation of such interventions (Escamilla-Solano et al., 2022). Researches show that countries with a more favorable status of gender equality have developed better approaches in the field of gender policy, especially at the level of institutions (Reidl et al., 2020). All these aspects can be considered in the political-economic models of the particular countries (Tkáčová et al., 2018).

A policymaking process at every authority level, from national through regional to local, is based on many inputs. It is not possible to simulate all these inputs. Hence, policymakers not only consider the obtained findings from the processed studies, but also concentrate on the ways of their achievement. From a perspective of gender inequality, the policy at a local level does not have such ruling power as a higher-positioned policy. This is a naked fact that should be considered when analyzing the policymaking process. Therefore, it is important to push on policymakers at the highest national level to make a national policy as practical as possible, and thus, it becomes a crucial point in each process related to the explored field, that is, the gender inequality issue. Besides the policy construction recommendations, the outcomes are also interesting for academia. The values of the statistical outcomes demonstrate the statistical significance of the applied gender-related indicators, and hence, these numbers show the strength of the employed methodology in the explored field.

All the particular policies are aimed at the main points of the gender inequality field. These aspects represent the key areas to which the policymaking authorities should pay attention to diminish the differences for all the indicators related to the discussed topic – from a pay gap issue through female employment to tertiary EDU of the female PEP. It is necessary to set the national policies of the EU member states, so that these crucial perspectives come to the forefront. Therefore, this should be performed in all the analytical models associated with the discussed fields. Successively, the desired outcomes are brought by the appropriate aim of the ratified EU policies and the other norms for mitigating gender inequalities.

Gender inequality is a fundamental and multidimensional problem not only for the EU countries, but for the whole world. The biggest problem is that countries strive for fast economic growth when equal opportunities are forgotten, and gender inequality deepens in all areas, ultimately harming economic development. Understanding the determinants of gender differences in the economic field and subsequently dealing with their impacts is a matter of interest for policymakers who try to establish a balance through various measures. Tracking gender differences, especially in economic areas, is important when explaining economic results. Reducing gender inequality is a long-term political commitment of the EU. The situation is gradually improving, although public policies are expected to have a more substantial impact. However, inequalities persist in almost all areas where there is a reduction in economic opportunities for women, ultimately affecting the global economy.

Regarding the limitation of the analysis, the data comes from the Eurostat and EIGE databases. These offer a large amount of data, but the observed data before 2015 are unavailable. Hence, such a shorter period is explored. Nevertheless, this does not lower the quality of the analytical outcome as the other authors applied the time series very similarly. The explained variable through regression analysis is in the form of the most applied macroeconomic indicator, that is, GDP. This is selected by inspiration from the other referenced studies in the paper, as many of them examined it as the explanatory variable. Hence, this indicator has been considered from the other perspective to bring a novel approach to deal with the socioeconomic and sociodemographic indicators in the field of gender inequality.

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Factors Influencing the Involvement of Nurses in Preventive Care and Health Literacy in the Czech Republic

ABSTRACT: *The aims of this article were to discuss the position of Czech nurses in the country's health care system, to assess their role in the preventive care and health literacy (HL) promotion and to define main factors, which may negatively impact their involvement in preventive care. We checked by the questionnaire, what is the position of nurses working in the primary care in the Czech health system, how nurses perceive their role in the preventive care and which factors influence their involvement. The expert opinion method was used to discover main barriers limiting the role of primary care nurses in prevention and HL promotion. A total of 204 nurses participated between May and June 2022 in an online survey. The survey was completed by interviews with five experts. Our main finding is that nurses are willing to be proactive in prevention and HL; however, their autonomy and responsibilities in these areas remain rather low. The main factors influencing the involvement of nurses in preventive care are the type of practice, age of nurses, and the administrative burden. The expert interviews propose that nurses are overloaded and that, in many cases, they do not really know their responsibilities in the field of preventive care. The core policy lesson derived from our research is that appropriate definition of roles and responsibilities of nurses and their related empowerment might represent critical measures towards increasing health system resilience and sustainability.*

KEYWORDS: primary care, preventive care, health literacy, nurses, Czech Republic

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INTRODUCTION

The health policy literature sees primary care (hereinafter referred to as 'PC') as the backbone of modern health system (Shi, 2012; Starfield et al., 2005). The role of the PC is not only to serve as the 'solver' of less complicated cases and the 'gatekeeper' for more complicated cases, but also to promote prevention and health literacy (hereinafter referred to as 'HL') (Phillips et al., 2009).

The priority to preventive care and the need for permanently increasing HL are perceived as the core orientation of any modern health system (WHO, 2021). However, health systems and PC in the Central and Eastern Europe (and not only in this region), focus more on the curative care (Murante et al., 2017) and do not sufficiently motivate to prevention and growing HL. Both as the source of such dichotomy and the result of it, health spendings in the region overwhelmingly go on curative care, not prevention (OECD, 2020).

The health workforce, the key component of any health system (i.e. Burau et al., 2022; Campbell et al., 2013; Chamberland et al., 2019), forms a prerequisite for promoting the prevention and HL. On the level of PC, the main workforce involved in these areas are general practitioners (hereinafter referred to as 'GPs') and nurses. The goal of this research is to check the role of Czech PC nurses in preventive care and HL. The focus on nurses is related also to the fact that the literature on health workers' competencies and tasks acknowledges the importance of nurses' role, even so far that some sources claim that nurse-led PC achieves the same or better results as physician-led PC (i.e., De Maeseneer et al., 2019; Gong et al., 2018; Laurant et al., 2018; Martínez-González et al., 2015).

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The research goals of this article are as follows:

- RQ1: What is the profile of nurses working in the Czech PC?
- RQ2: How nurses working in the Czech PC perceive their role in preventive care and HL?
- RQ3: What are the factors that influence the involvement of PC nurses in prevention and HL promotion?
- RQ4: What are the critical barriers of effective involvement of PC nurses in prevention and HL promotion?

In the literature (Jusot et al., 2012), there is limited access to systematic comparative evidence in relation to how and by whom preventive care is delivered. This manuscript reacts to this gap by providing the evidence as to the way preventive services are provided in Czech Republic (hereinafter referred to as 'CZ')—this is very timely in the context of the ongoing PC reform.

PREVENTION, HL AND NURSES' S ROLE

Increasing HL⁴ as well as an emphasis on preventive care are considered as a driving force for strengthening and enhancing the health systems' resilience (WHO 2021, OECD 2020a). Research provides evidence that prevention and HL-oriented policy is effective in improving the population's health as well as in contributing to financial sustainability of the system (i.e. Jackson et al., 2006; McDonald, Shenkman, 2018; Rasu et al., 2015). Yet, the preventive services account for only 9% of PC spending on average across the EU (OECD, 2020b) and the OECD health policy study (2020 a) shows insufficient focus on prevention when pointing out that too many patients do not receive preventive care, especially the most vulnerable populations.

Healthcare workforce in PC (Eurostat, 2019) have a key role to play in the delivery of preventive care and are best placed to influence their patients in terms of increasing HL (WONCA⁵, 2011). In particular, their communication with patients and the appropriate design of the practice environment is crucial (Kickbusch et al., 2020). The communication interactions between PC healthcare workforce and their patients are the fundamental processes through which people are informed, educated, convinced and motivated to take care of their health and adopt healthy behaviours (Schulz, Nakamoto, 2013).

Among the existing PC healthcare workers involved in HL and prevention, nurses are particularly important (Iriarte-Roteta et al., 2020). Nurses have a very close contact with patients and, according to Wilhelmsson & Lindberg (2009), also a positive attitude and interest in prevention and HL. At the same time, they have the necessary expertise and skills – thus, nurses are the most appropriate and competent health professionals for the development of HL and prevention activities (Pender, 2013).

Higher HL as well as rapid progress in medicine, technology or medical devices is leading to different (not only) preventive care delivery patterns. These dynamics also call for a more comprehensive general education and skills of health professionals to meet the changing needs of their patients, so the nurse's role is changing. This often entails shifts in the roles of health professionals, for example from GPs to nurses. In general, when nurses take over some tasks that were previously reserved for physicians, usually in the context of a single condition with a clear protocol with defined cut-off points, they can achieve as good or better care outcomes as physician-led treatment (De Maeseneer, 2019). Research by Laurant et al. (2018) shows that nurse-led PC leads to fewer deaths in certain patient groups, better treatment of high blood pressure, better quality of life, and also higher patient satisfaction with care. In particular, patient satisfaction is higher because nurses take longer to discuss treatment with patients, provide more information than physicians, and communication is generally better according to patients (Laurant et al., 2018).

However, the literature related to the role of nurses shows that there is no consensus on what the appropriate role of nurses in (not only) HL and prevention is (i.e. Gonzaga et al., 2014; Hoekstra et al., 2016; Iriarte-Roteta et al., 2020; Lundberg et al., 2017). As indicated by the research of Iriarte-Roteta et al. (2020), this role confusion remains one of the barriers to address for developing nurses' involvement in HL and prevention.

⁴ HL is defined as 'the skills to obtain, understand, evaluate, and use health-related information so that an individual is able to make decisions about health care, disease prevention, and health promotion' (Kickbusch et al., 2020).

⁵ World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians

BACKGROUND: THE CZECH HEALTH CARE SYSTEM AND THE POSITION OF NURSES IN IT

The CZ has a system of statutory health insurance based on compulsory membership in one of seven health insurance funds. Most health expenditure is financed from public sources. The Czech system provides a broad benefits package. Despite the life expectancy showing an increasing trend (except during pandemics), the country – although first among Central and Eastern European countries – still lags behind the EU average. A relatively high rate of preventable mortality rates remains, nearly half of all deaths in CZ in 2019 could be attributed to behavioural risk factors – particularly poor diet, smoking and alcohol consumption (OECD, 2021). HL of the Czechs is at a very low level (Kučera et al., 2016; Veselá et al., 2023). Therefore, promoting prevention and HL remains an opportunity for the Czech system.

As per the WHO reports (2022), by 2030 there will be a shortage of up to 10 million health workers worldwide, especially in certain specialties and regions. CZ currently suffers more from a shortage of nurses than doctors, data indicate a shortage of almost 3,000 general nurses in Czech hospitals (MoH, 2021). A total of 4,678 nurses work in GPs offices in the CZ (IHIS CZ, 2022). The availability of nurses has been a challenge long before the COVID-19 pandemic in the country, this situation has been driven by a mix of factors, with relatively low wages and limited career progression opportunities being the key drivers (OECD, 2021). Even if a variety of measures have been taken to address this shortage – most importantly a law in 2017 that updated the requirements on nursing qualifications and an increase in salaries across all health care professions, the scarcity of practising nurses remains an issue.

Nursing is a state-regulated profession and can only be practised by those who meet the standards of a regulated profession. Professional competence to exercise the profession of general nurse is obtained in the CZ by completing at least three years of accredited medical bachelor's degree studies for the preparation of general nurses, or at least three years of studies in the field of diploma general nurse at higher medical schools (Act No. 96/2004 Coll. 'Non Medical Healthcare Workers Act'). Nurses' responsibilities are defined by the decree on activities (Decree No. 55/2011 Coll. 'Healthcare Workers Competencies Decree'). Table 1 demonstrates the differences in nurses' responsibilities in selected European countries showing that nurses in the United Kingdom, Austria, Poland and Slovakia have higher autonomy than in CZ. In Germany, on the other hand, a lower level of nurse autonomy is evident.

Tab. 1: Differences in nurses' competences compared to the CZ (MoH, 2021)

Country	Differences in nurses' competences compared to the Czech Republic
Slovakia	- inserts duodenal probes - performs continuous abdominal dialysis - performs functional diagnostics
Austria	- performs arterial blood sampling - performs dialysis solution exchange during peritoneal dialysis - measures residual urine using non-invasive methods - performs measurement of residual urine volume using non-invasive methods, including a decision on the need for a single catheterisation - performs exchange of suprapubic catheters and percutaneous gastric exchange systems
Poland	- Master degree educated nurses can prescribe selected medications and therapeutic agents - Master degree educated nurses can indicate selected examinations
Germany	- lower degree of autonomy of nurses, they perform professional procedures based on a doctor's indication only
UK	- prescribes medicinal products - prescribes other medical devices - performs and interprets the results of selected examinations

There are two ongoing policy initiatives taking place in CZ in the domains of the role of nurses, prevention and HL: (1) The Strategic Framework for Healthcare Development in CZ until 2030 (hereinafter referred to as 'Health 2030') and (2) the country's Nursing Conception, focused on the role of nurses. As summarised in Table 2, increasing and expanding nurses' competencies is a priority in both policy initiatives.

Tab. 2: Objectives of policy initiatives in the field of PC, Prevention and Role of Nurses (Authors, based on MoH 2021, 2023)

Aims of Policy initiative	Policy initiative		'Nursing conception'
	'Health 2030'	'Health promotion and literacy initiative'	
	Reform of PC		
	Strengthening the GPs and nurses' competences	Increasing HL	Strengthening the nurses' competences
	Increasing the number of periodic preventive check-ups	Intensify nurses' education system in HL and health promotion	Increasing the attractiveness and prestige of the nurse's work
	Establishing group practices		Increasing the nurses' well-being

METHODOLOGY

Study design and sampling

In order to get as complete a picture as possible of the nurse role in preventive care and HL in CZ, a mixed method approach was adopted for the purpose of this study. Since data were first collected through an online survey, and then individual expert structured commentaries followed, the explanatory sequential design was chosen.

The survey was designed for nurses working in GP practices only. Out of the 4,678 nurses working in GP practices in CZ, a total of 204 respondents completed the online questionnaire. The respondent population $N = 204$ constitutes approximately 4% of the nurse total. At the chosen significance level of 95% and a sample result at the 50% level, the sampling error of the sample is less than 7%. At the same significance level but with the sample result at 10%, the sampling error is 4%.

Participants were given a description of the study's purpose and invited to participate voluntarily and anonymously in a message sent via the mailing list of the Czech Nurses Association (the professional organisation of non-medical healthcare workers, hereinafter referred to as 'CNA').

The online survey was further evaluated by five individual expert structured commentaries.

Instruments and data analysis

Online survey

To map the role of nurses in preventive care and HL in CZ, the online survey among the nurses was conducted to learn how they perceive their role in those two areas, what preventive services they consider crucial, how they educate their patients and whether they are satisfied with the level of responsibilities assigned to them by law as well as with the level of responsibilities that GPs delegate to them. The data collection took place from May to June 2022.

The questionnaire design was consulted upon with representatives of the CNA and the Society of General Practice of the Czech Medical Association (professional organisation of GPs). The questions in the survey were formulated partly as closed-ended with a choice of answers, partly as semi-closed-ended with the possibility of adding a comment and enumeration items that were used to allow respondents to choose more than one possible answer.

The questionnaire was created as an Internet-based survey using the Click4Survey platform and consisted of three sections. The initial part established general demographics, including age, region of practice, length of experience in healthcare and PC and the model of practice. The second part focused on prevention and the continuing voluntary education of nurses in this area. The last part was devoted to HL and the issue of trust between patients and nurses.

Expert commentaries

Following the completion of the online survey and data analysis, five experts in PC and nursing were contacted by e-mail and asked to comment on the main findings of the research. The aim of the commentaries was to map the views and positions of key experts in relation to the findings of our research. The structure of the commentary form was identical for all invited experts and consisted of the main findings of the research.

The experts were selected based on their expertise and position within the areas under study. Among the invited experts were representatives of both the professional associations (nurses and GPs) as well as representatives of the Ministry of Health. All five experts (3 females, 2 males) accepted our request; four accepted mention of both their professional background and their name in the manuscript. Table 3 summarises the expert characteristics.

Tab. 3: Expert characteristics

Expert	Expert name	Expert position
1	Dana Jurásková	Ex-minister of health
2	Martina Šochmanová	President of Czech Nurses Association
3	Bohumil Seifert	Academic expert; Scientific Secretary, Society of General Practice of Czech Medical Association
4	Alice Strnadová	Chief Nurse of the Czech Republic, Ministry of Health
5	Anonymous	Academic expert

Data analysis

Based on the results of the online survey, the expert commentary form was designed. The results from both parts were then integrated to obtain the overall results.

Quantitative research was processed using the software IBM SPSS (v18 with the custom tables module). The data were imported from the online Click4Survey environment. Descriptive statistics were used for all questions, and all questions were sorted and tested according to type of nurse, work practice and length of employment and experience. In all tables, testing between columns (z-test) was used, with the *P* value adjusted by the Bonferroni correction in the case of multiple comparisons. The value $P < 0.05$ was considered statistically significant. IBM SPSS was very useful for processing and evaluating the quantitative research data. The program provides very easy access to data and quick results and allows for automatic corrections, such as Bonferroni's *P* value correction, that could be used to evaluate the data. This quantitative research methodology was effective and useful in obtaining the necessary research information. Data were coded, and a structured codebook was used.

The expert commentaries were received by e-mail and then analysed.

RESULTS

A total of 204 respondents completed the online survey. First the demographic and descriptive data of respondents are presented (Table 4), then the results are presented according to our four research questions.

The profile of nurses working in the Czech PC (RQ1)

Most of the nurses surveyed (81.4%) work in a solo practice (1 GP and 1 nurse). The group practice model was mentioned by less than 10% of respondents. About 92.2% of nurses who have longer experience of working in a GP practice (15–30 years) work in a solo practice. The survey demonstrates that patients confide in nurses about their personal concerns – 94.1% of respondents confirmed this fact. Czech patients mostly confide in senior nurses who have more than 36 years of professional experience and also in nurses who work in solo practice rather than nurses who work in group practice.

Tab. 4: Demographic and descriptive data

Variable	N	%
Study population	204	
Age		
20–35	12	5.90%
36–50	95	46.60%
51–65	88	43.10%
66 and more	9	4.40%
Length of experience in healthcare	204	
1–20 years	52	25.50%
21–30 years	58	28.40%
31–40 years	67	32.80%
41 and more	27	13.20%
Length of experience as a nurse with a GP	204	
less than 5 years	66	32.40%
5–15 years	62	30.40%
15–30 years	64	31.40%
more than 30 years	12	5.90%
How many inhabitants does the municipality in which your practice operates have?	204	
up to 1,000 inhabitants	2	1.0%
1,001–5,000	41	20.1%
5,001–30,000	58	28.4%
30,001–100,000	29	14.2%
more than 100,000	74	36.3%
Region	204	
Prague	60	29.4%
Bohemia except Prague	97	47.5%
Moravia	47	23.0%
What is the model of your practice?	204	
Solo practice (1 doctor, 1 nurse)	166	81.4%
Solo practice + administrative assistant	1	0.5%
Group practice (multiple doctors, 1 nurse, administrative worker)	8	3.9%
Group practice (multiple doctors, multiple nurses, administrative staff)	20	9.8%
Solo practice (1 doctor, 2 nurses)	6	2.9%
Another model	3	1.5%

Our respondents actively participate in continuous education programs in preventive care, senior nurses prefer in-person education while younger nurses prefer e-learning. Only 2.5% of respondents stated that they do not participate in any continuing education in the field of preventive care. These nurses cited lack of motivation and low competence as reasons for not pursuing continuing education. A statistically significantly higher percentage of respondents pursuing any continuing education are nurses working in solo practices.

Based on our results, Czech nurses seem to be satisfied with the level of their responsibilities and (lower) autonomy and do not call for their expansion. About 92.6% of the respondents (especially in the age categories over 51 years and with more than 20 years of professional experience) perceived their responsibilities in preventive care and HL as sufficient. Only the nurses working in group practices are more likely (25%) to perceive their responsibilities in prevention as insufficient. Among the responses expressing a preference for expanding responsibilities, two ways in which nurses' responsibilities in preventive care should be expanded prevailed, namely defining and delegating responsibilities between the nurse and the GP (53.3%) and patient education (40%). Only 6.7% of respondents perceived changes in responsibility settings as related to the level and/or type of reimbursement for preventive care.

About 63.7% of the respondents reported that their GP delegated some specific preventive care tasks to them – the longer a nurse has been practising in a GP office, the more often the physician delegates preventive care tasks to the nurse. GPs delegate the most tasks to nurses with 31–40 years of total professional experience and to nurses working in solo practices. The most frequently reported delegated tasks are screening (66.9%), administrative tasks (29.2%), ECG measurements (27.7%), blood pressure measurements (26.2%) and vaccinations and patient education in HL (identical at 25.4%).

How nurses working in the Czech PC perceive their role in preventive care and HL (RQ2)

Czech nurses stay proactive in the field of prevention. Vaccination (89.2% of respondents), screenings (68.1% of respondents) as well as increasing HL and electrocardiograms⁶ (both indicated by 24.5% of respondents) are perceived as the most important activities in the area of preventive care.

Chart 1 demonstrates what nurses perceive as the key priority areas to focus on in preventive care, these priorities vary depending on the age of the nurse.

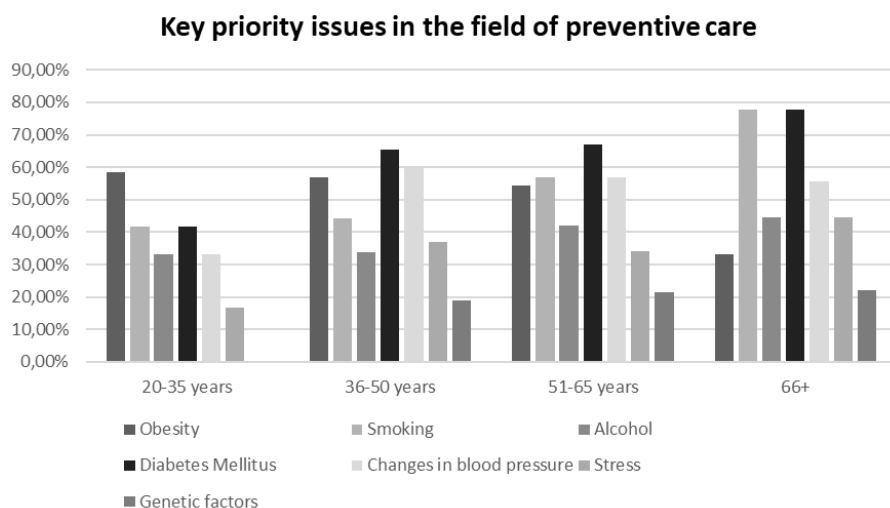


Chart 1: Key priorities issues in the field of preventive care (%)

Czech nurses stay proactive when it comes to the motivation of their patients to participate in preventive check-ups. Most of the respondents actively invite patients for preventive check-ups (87.3 % of respondents), these are mainly nurses in the age category of 51–65 years (90.9%) and 66 years and more (88.9 %) who have been working as a PC nurse for more than 5 years. Patients are mostly invited to preventive check-ups in person (72.5% of respondents). Remote invitation are reported by 26.4% of respondents method. Only 27.9% of respondents reported that they do not invite patients for preventive check-ups.

Respondents perceive interest in preventive check-ups mainly among people aged between 40 and 60 years. On the contrary, patients in the age group of 20 to 30 years (3.9%) and seniors over 70 years (3.4%) show very low interest in preventive check-ups.

Czech nurses reported that they are satisfied with the content (85% of the respondents) and the frequency (94.1% of respondents) of preventive check-ups. Among the respondents who do not consider the current content of preventive check-ups to be sufficient, nurses from the age category of 20–35 years are predominantly represented (25%). The most frequent suggestions for expanding the content of preventive check-ups include more detailed blood analysis (43.3% of respondents), pulmonary examination (30%), sonographic examination (23.3%) and cardiological examination (20%).

⁶ ECG; part of a preventive check-up

Concerning HL, the vast majority of nurses are involved in improving the HL of their patients. Most respondents (92.2%) stated that they discuss the lifestyle and diet with their patients. These are mainly nurses with 31–40 years of healthcare experience (94%) and nurses working in large cities with a population over 100 000 (91.9%). No regional differences were noted. Nurses who do not discuss their lifestyle and diet with patients cite high nurse workload and low financial reimbursement of preventive care by health insurance companies as reasons.

Regarding the methods used to educate patients, nurses strongly prefer face-to-face discussions (96.5% of respondents), followed by information leaflets distributed to patients (79%) and then information posted in the waiting room (53.6%). In-person contact prevailed in solo practice, while education based on information leaflets was reported mainly in group practices. Some of the other methods of patient education mentioned by the nurses' included booklets by diagnosis in the waiting room, telephone-based education and Internet links.

On the contrary, only 60.3% of nurses are dedicated to checking the patient compliance and adherence. The highest number of positive responses was recorded among nurses with 31–40 years of total experience in healthcare (67.2%), as well as those who have been working as a nurse in GP practice for more than 30 years (75%). Neither the size of the municipality nor the region played a significant role in this response. More positive responses were recorded for nurses to whom the physician delegated some preventive care tasks (70.8%). Nurses who check patient compliance and adherence primarily do so verbally (59.3%), followed by laboratory tests or scales (38.2%).

The factors that influence the involvement of PC nurses in prevention and HL promotion (RQ3)

The results show that the involvement of nurses in prevention and HL is influenced by the type of practice and the age of the nurse (the engagement is higher for nurses working in solo practices and also for senior nurses, to whom GPs are more likely to delegate competencies).

Czech nurses do not perceive the method and level of reimbursement for preventive care as important for their decision to actively engage or not in prevention and literacy. On the contrary, the results show that the involvement of nurses in HL may be influenced by the level and/or type of reimbursement. The respondents report that they would be more committed to HL if it was better reimbursed and also if the administrative burden was reduced.

Critical barriers of effective involvement of PC nurses in prevention and HL promotion (RQ4)

Nurses working in PC stay proactive in both prevention and HL. The lower level of nurses' autonomy and responsibilities (not only) in these areas may represent one of the barriers of higher involvement in prevention and HL. Our results show that the nurses themselves are satisfied with the level of their autonomy and responsibilities.

The lack of interest of patients in preventive care (41.2%) represents another barrier of higher involvement of nurses in prevention and HL.

Overwork and high administrative burden are other barriers to the effective involvement of nurses in prevention and HL. Czech nurses feel overworked and under time pressure. According to our respondents, the time pressure (32.4%) is one of the main obstacles for the respondents to devote more time to preventive care in their work.

The main findings from the online survey are as follows:

- Nurses working in PC stay proactive in both prevention and HL. However, their autonomy and responsibilities (not only) in these areas are rather low compared to other countries. Nonetheless, the results show that the nurses themselves are satisfied with them.
- The involvement of nurses in prevention and HL is influenced by the type of practice and the age of the nurse (engagement is higher among nurses working in solo practices and for senior nurses, to whom GPs are more likely to delegate responsibilities) and, conversely, is not influenced by the level and/or type of preventive care reimbursement.
- The analysis shows that patients confide more in nurses working in solo practices than in nurses working in group practices.

Expert commentaries results

Five experts were asked to comment on the three abovementioned main findings from the online survey. The first finding relates to nurse responsibility setting in prevention and HL. In their comments, the experts agreed that Czech nurses indeed do not seek an increase in responsibilities. Among the reasons is that nurses are overworked and overloaded, but they also do not have sufficient competence in the responsibilities as specified in the law, and the defined responsibilities do not reflect the needs of real work in practice.

The second finding relates to factors influencing the involvement level of nurses in prevention and HL. The experts confirm that both age and type of practice have a significant impact on nurse engagement, with age and length of GP practice reported as other drivers. Our research shows that nurses do not perceive the method and level of reimbursement for preventive care as important in their decision to actively engage or not in prevention and literacy. According to experts, this may be explained by the fact that preventive care provided by a nurse cannot be reimbursed by health insurance companies (only physician-led care); hence, this area is usually beyond nurses' interests. Conversely, experts report that nurses are usually employed by a GP, and therefore the GP frequently reflects the extent of a nurse's involvement in prevention in the level of a nurse's salary.

The last finding relates to the level of trust between nurse and patient and, respectively, how much patients confide in them about their personal concerns. All five experts perceive trust as important in (not only) primary and preventive care. They agreed that a group practice might be perceived as more anonymous for patients. On the other hand, they refer to a relatively small number of group practices in CZ and to the fact that Czech patients need time to accept the new concept. The experts also highlight the quality of the practice as crucial.

DISCUSSION AND LESSON LEARNED

Following the objectives of the manuscript, the main findings of our research can be divided into two groups. The first group relates to research questions one and two when providing a profile of Czech nurses working in PC and maps how they perceive their role in preventive care and HL. The second group relates to third and fourth research questions and discusses the factors and critical barriers of effective involvement of PC nurses in prevention and HL promotion.

Czech PC nurse profile and the way they perceive their role in prevention and HL

Half of our respondents work in the Central Bohemian Region or the city of Prague. Most respondents are between 36 and 65 years of age, work in a solo practice (1 GP and 1 nurse) and remain active in their own continuous education.

Most nurses reported that, generally, they try to motivate their patients towards prevention. The surveyed nurses agreed on the two most important areas in preventive care: vaccinations and voluntary preventive check-ups. Most actively invite patients for preventive check-ups and do so personally. Respondents perceive interest in preventive check-ups mainly among people aged 40–60 years old. This is in line with a 2021 Czech survey showing that one in three Czechs has not had a preventive check-up with a GP in the last two years and that the economically active part of the population is the most neglectful of check-ups (Zentiva, 2021). Czech nurses reported that they are satisfied with the content and frequency of preventive check-ups.

Concerning HL, the vast majority of nurses are involved in improving the HL of their patients. On the contrary, only 60.3% of nurses are dedicated to checking patient compliance and adherence – nurses to whom GPs have delegated more responsibilities in preventive care (i.e., senior nurses and nurses in solo practices) are more involved in compliance and adherence checks. According to Martínez-González et al. (2015), De Maeseneer et al. (2019) and Leong et al. (2021), nurse-led PC would achieve even better outcomes if treatment was linked to patient education, leading to better patient adherence.

In contrast to preventive check-ups, nurses report that they would be more committed to HL if it was better reimbursed and if the administrative burden was reduced.

Factors and critical barriers of effective involvement of nurses in prevention and HL

The type of practice represents the first barrier of effective involvement of nurses in prevention and HL. Solo practice is the predominant practice model in CZ. According to Maier et al. (2017), this model of practice has long been the leading model in OECD countries; however, the increase in chronic diseases is causing pressure to change the practice model—that is, to group practices, health centres, integrated care programmes or provider networks (Nolte et al., 2014). This was voiced by Expert 5.

Expert 5

‘Establishing more group practices represents the solution. More GPs, more nurses and more administrative workers would be employed in them, and this would open the space for nurse involvement in prevention.’

Our findings indicate that the responsibilities of nurses working in preventive and, respectively, PC in CZ are generally rather low. This is in line with Delamare and Lafortune (2010), who claim that countries relying primarily on solo practices are less likely to employ nurses in advanced roles compared to countries with group practices. The **low level of nurse responsibilities** may also indicate persistent paternalism in the Czech health system and may present a **second critical barrier** of effective involvement of nurses in prevention and HL.

Czech nurses seem satisfied with the level of their responsibilities and (lower) autonomy and do not call for their expansion. Only nurses working in group practices would more often welcome an expansion of their responsibilities. The fact that nurses do not call for an expansion of their responsibilities might relate to the type of healthcare system. The corporatist system (Kuhlmann, 2006), with its typically strongly integrated medical powers, may present a challenge or read as a kind of communist legacy (Křížová and Šimek, 2007; Martin and Carter, 2018). The experts voiced their concerns regarding this level of nurses’ competencies.

Expert 1

‘Nurses do not require any broader competencies as long as there is responsibility attached to them. Moreover, nurses do not really know their responsibilities in the field of preventive care; these responsibilities are set out in a rather general way. The next question, however, is where other healthcare professions will allow nurses to enter. This is also related to the personality of the GP, whether he or she is willing to delegate some of the tasks (such as education, for example) to the nurse.’

Expert 2

‘It is unfortunately true that the majority of nurses do not call for the expansion of their responsibilities. That is why it is crucial to talk more about it.’

Expert 4

‘Nurses often do not know how their responsibilities (not only) in preventive care are set. Moreover, the responsibilities must be set in a way which reflects the needs of the real work practice. The Ministry of Health is continually working on this.’

The abovementioned prevalence of the solo practice model and lower reliance on teamwork suggest a **lower level of task shifting/sharing in preventive care provision – the third critical barrier**. Based on a study by Groenewegen et al. (2022) in which task shifting from GPs to nurses in PC in 34 countries was examined, CZ ranked below average. Our results do generally confirm this trend. Our data show that task shifting and/or sharing in preventive care in CZ are influenced by the practice model and the age of the nurse, not reimbursement issues. Based on Van Schalkwyk et al. (2020), providing care for and coordinating patients with chronic illness and prescribing medications are the tasks most often transferred to nurses.

Czech patients confide in nurses working in PC about their personal concerns, because they trust them. This is in line with literature (Gong et al., 2018) claiming that patients are often more satisfied with the care provided by nurses than with the care provided by GPs. This might be explained by the fact that nurses tend to take longer to discuss treatment with patients, provide more information than GPs and, according to patients, generally communicate better. In contrast to the abovementioned literature, our research indicates that tasks in preventive care are more often delegated to nurses working in solo practices than those in group practices. The survey also shows that Czech patients confide more in nurses who are working in a solo practice than nurses working in group practices. Experts 2, 3, 4 and 5 confirmed these findings.

Expert 2

‘The nurse is more autonomous in solo practice. This gives her the chance to be closer to patients. Group practice is anonymous; the space for the nurse might be reduced.’

Expert 3

‘I can understand that [higher level of trust in solo practice]. Patients are continually in close contact with one person.’

‘There are not that many group practices in CZ. People have only started to get used to them.’

Expert 4

‘Often, Czech patients are registered with their GPs for years; the relationship with and trust in the GP as well as the nurse is continuously built. I can easily understand that they prefer a practice in which GPs and nurses remain the same.’

Expert 5

‘A patient can have his/her “own” nurse in a group practice too. The truth is that there are not many group practices that function well at the moment.’

Overwork and high administrative burden present the fourth barrier of the effective involvement of nurses in prevention and HL. Czech nurses feel overworked and under time pressure. This – along with the passivity of their patients – is the main barrier to their higher involvement in prevention. Experts 3 and 5 confirmed this.

Expert 3

‘Since nurses feel overworked in CZ, I am not surprised that they do not call for the expansion of their responsibilities. The situation would be different if more administrative workers [such as receptionists, telephonists, etc.] were employed in the practices.’

Expert 5

‘As nurses are overloaded, any expansion of responsibilities is impossible.’

POLICY RECOMMENDATIONS

Establishing group practices in CZ may constitute the first policy recommendation. It is also one of the main objectives of the PC reform. The first step planned is the introduction of new legislation that clearly defines how group practices should operate. The draft legislation should have been ready by the end of 2022, allowing five hundred group practices per year to be established between 2023 and 2030 (MoH, 2023). This has not yet transpired. The reasons may be multiple, for example, the historical and cultural context, methodology, a lack of financial and/or human resources or low motivation. According to The Society of General Practice of Czech Medical Association of Jana Evangelisty Purkyně (2022), it seems that the main barrier in CZ is this lack of personnel – which is a global trend.

Group practices are expected to place more emphasis on teamwork and, according to Maiorova et al. (2007), this opens up space for expanding the responsibilities of non-medical staff, including nurses. Appropriate definition of the roles of individual health professionals and higher level of task shifting/task sharing resulting in increasing nurse responsibilities represent the second policy recommendation. This is in line with the main aims of the Czech Nursing Conception. Because of the low level of nurse (and GP) responsibilities in the country, PC providers may struggle to meet the increasing demands of an ageing and chronically ill population in the near future. Given the expected demographic development in CZ, the demand for healthcare will increase, and the proportion of patients who will need care from GPs will rise (MoH, 2021). It is particularly the involvement of nurses in the prevention and monitoring of patients and management of comorbidities in an ageing population that will enable GPs to focus more on patients with more serious illnesses (MoH, 2021).

Our results show that patients are more likely to confide in nurses working in solo practices and at the same time, expert 5 points out that not all group practices in the Czech Republic function well. Thus, organization of a series of interventions, addressed to both health professionals and patients constitutes the third policy recommendation. The aim of these interventions could be both to provide information about the challenges of group practice in terms of preventive care delivery patterns, and how group practice should be managed to maintain good quality of care. At the same time, preparing a campaign for patients explaining the added value of group practice would be beneficial.

CONCLUSIONS

The profile of PC nurses as well as their role in the preventive care and HL promotion were studied. Our result suggests that Czech nurses feel overloaded but remain proactive in prevention and HL. Age and practice type, not reimbursement model, determines the level of engagement in prevention. The nurses' autonomy and responsibilities remain low in international comparison but they do not call for their expansion. A shift from solo to group practices as well as an adequate definition of the roles of individual health professionals that would result in nurse empowerment may constitute a major policy recommendation.

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APPENDIX 1

Questions in the field of prevention

P 1. Do you consider the current frequency of health checks to be sufficient?

- ☐ Yes
☐ No

If not, please indicate what time interval you would consider appropriate

P 2. Do you consider the content of the preventive examination set at the same time to be sufficient?

- ☐ Yes
☐ No

If not, please indicate what other examinations you would consider appropriate as part of the preventive check-up

P 3. If you answered no to at least one of the previous questions, what do you think prevents you from giving more space to preventive care in your work?

- ☐ Nurse's time commitment
☐ Lack of patient interest in preventive care
☐ Low financial valuation of preventive care by health insurance companies
☐ Other factors, please specify.....

P 4. Are you trying to motivate patients to get preventive check-ups?

- ☐ Yes
☐ No

If yes, please indicate how

P 5. Do you invite patients for preventive check-ups?

- ☐ Yes
☐ No

If so, what method do you use to invite patients?

- ☐ SMS
☐ E-mail
☐ Other method, please specify which one.....

P 6. Based on your experience, which age group is most interested in preventive examinations?

- ☐ 20 – 30
☐ 30 – 40
☐ 40 – 50
☐ 50 – 60
☐ 60 – 70
☐ Over 70 years of age

P 7. Please indicate what you see as the three most important activities in the area of prevention:

- ☐
☐
☐

P 8. Did the physician delegate any specific preventive care tasks to you?

☐ Yes

☐ No

If yes, please specify which ones

P 9. Do you feel that your responsibility in prevention is sufficient?

☐ Yes

☐ No

In case of a negative answer, please indicate how you think the nurses' responsibilities in the field of preventive care could be expanded?.....

P 10. Did you notice a decrease in interest in preventive examinations during the COVID-19 pandemic compared to previous periods?

☐ Yes

☐ No

P 11. Now that the COVID pandemic is over, do you expect your practice to:

☐ Rather an increase in interest in preventive examinations

☐ Less interest in preventive examinations

☐ I don't know

P 12. Do you consider vaccination to be an essential part of preventive care?

☐ Yes

☐ No

P 13. Do you provide patients with information about vaccination against infectious diseases as part of their preventive check-ups?

☐ Yes

☐ No

P 14. Do you discuss vaccination-related issues with patients?

☐ Yes

☐ No

P 15. What is your preferred method of self-education in the area of preventive care (more than one option can be ticked)

☐ Literature (studies, articles)

☐ Online training courses

☐ Face-to-face training

☐ Internet

☐ Other, please specify.....

☐ I have no training in preventive care – if so, why?

Questions in the field of health literacy

ZG 1. Do you discuss with patients about their lifestyle?

☐ Yes

☐ No

ZG 2. Do you educate patients about their lifestyle and motivate them to modify and improve it?

☐ Yes

☐ No

If yes, how do you educate patients? (multiple options can be ticked in the table)

Personal interview with patients	Information leaflets	Information posted in the waiting room	Other method
☐	☐	☐	☐

ZG 3. Do you check and monitor patients' compliance with your advice and any changes in their lifestyle?

☐ Yes

☐ No

If yes, how?

ZG 4. Do patients confide in you about their personal problems?

☐ Yes

☐ No

ZG 5. Which of the following risk factors are of active interest to you? (In the table, please give each factor a weight between 0 and 5, with 5 being the highest weight).

Factor weight (highest weight is 5)	0	1	2	3	4	5
Obesity	☐	☐	☐	☐	☐	☐
Smoking	☐	☐	☐	☐	☐	☐
Alcohol	☐	☐	☐	☐	☐	☐
Diabetes mellitus	☐	☐	☐	☐	☐	☐
Changes in blood pressure	☐	☐	☐	☐	☐	☐
Stress	☐	☐	☐	☐	☐	☐
Genetic factors	☐	☐	☐	☐	☐	☐

Other factors, please specify

Borbála Dombrovsky¹, István Hoffman²

When social policy walks into the justice system...

ABSTRACT: *This paper aims to elaborate on the dilemmas Hungarian courts face when they appear in the forefront of policy implementation. Firstly, what kind of (legal) sources and documents should the court involve in its legal interpretation? Secondly, what are the trade-offs between offering effective remedy sanctions and respecting the differences between branches of law and the division of power? For purpose of this analysis, we turn to the example of school segregation lawsuits between 2007 and 2022. In terms of equal and equitable education, the regulatory frameworks in the CEE Countries are harmonized to the EU standards and are strongly based on the anti-discrimination approach. In theory, policy programs and documents could be used as a source of facts, as well as a source of information regarding legislative goals and policy context. In theory, courts should aim to opt for sanctions with the most potential to achieve effective remedy. If this leads to specific policy-type sanctions, within the bounds of the parties' actions courts should be able to decide so. However, courts tend to refrain from such sources and decisions. In the context of democratic backsliding the possibilities of such activism are somewhat unclear. Issues around the independence of the judiciary, the attitude of the executive branch towards certain social policy issues, and the practice of overwriting by amendment on part of the National Assembly supermajority may discourage courts and judges from policy-sensitive or innovative adjudication of cases with social policy relevance.*

KEYWORDS: policymaking, education, public policy, courts, judgement analysis, Hungary

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INTRODUCTION AND RESEARCH QUESTIONS

What is the role of jurisprudence in deciding cases that are not strictly legal issues, rather revolve around social policy questions with far-reaching societal consequences? The present paper aims to explore the dilemmas arising from this question around policy implementation and enforcement by the court system. We present these dilemmas through example of Hungarian case law concerning school segregation and equal education, although this time the focus is on the nature of the dilemmas and not on the individual cases or the empirical findings.

School segregation is a serious social, legal, and political issue: on a societal level, school segregation is an obstacle to social mobility and cohesion (Gorard and See 2013). On a personal level, studying in a segregated environment is usually devastatingly ineffective, but even if the quality of the education is good, the separation itself harms the sense of self-worth and the potential relationship structure of the person experiencing it. School segregation is a special issue, as it is both an individual legal injury and a social problem. While justice systems are well equipped to deal with individual complaints, social problems are usually solved by policy measures usually associated with the executive branch of governance. Therefore, the dilemma arises: in a school segregation lawsuit, how should the court treat certain elements of the case, as a social problem in the background or as the central element of an individual injury just waiting to be sanctioned? In practice this leads to the two research questions explored in this paper:

- (1) What kind of (legal) sources and documents should the court involve in its legal interpretation?
- (2) What are the trade-offs between offering (policy-type) effective remedy sanctions and respecting the differences between branches of law and the division of power?

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Similarly, it is an important question, which is the nature of the application of the policy programs and documents: are mainly used by courts only as a source in finding the facts and or as a supplementary resource in the interpretation of the law (Androniceanu and Tvaronavičienė 2019)?

While these dilemmas could occur in relation to most or all policy fields, in the case-law of Hungary, they are the most visible in the lawsuits concerning school segregation. More importantly, the school segregation lawsuits cited below show how the courts' stance on these issues can determine the outcome of individual cases.

As the empirical basis of the present paper comes from Hungarian case law, the questions are understood in the context of the continental legal system where the distinction between public and civil law rather defined (Zweigert and Kötz, 1998). While these dilemmas may as well apply to constitutional courts as well, the specific aim of this paper to show the balancing of the regular court system as they are the entities obligated to adjudicate and offer effective remedy in the cases brought in front of them – even if it leads to concepts outside of the black letter law.

CONTEXT IN LAW AND LITERATURE

The discussion of the presented dilemmas requires both the legal and the policy analysis angle. Public policy is a broad term describing the actions (or non-actions) of public actors (typically the government or executive) regarding a particular issue (or field) (Knill and Tosun 2012 and Vakulenko and Mattei 2023). Policymaking (and implementation) is generally dominated by the executive; however, other actors are also relevant: the legislature, the judiciary, the bureaucracy, political parties, and private actors such as interest groups, NGOs, and experts (Knill and Tosun 2012). The role of the courts in this context is multifold: they enforce policies by applying the law, set agenda or form policies (especially higher level or constitutional courts) (Knill and Tosun 2012) by their decisions, they provide forums and publicity to those who suffer from exclusion or injury (Carney 2019), and they serve as a line of feedback for the executive and legislative branch. The extent of courts' involvement in social policymaking and implementation likely differs depending on the country (or supra-national entity), the legal system. In the common law system of the United States the policy role of courts has been thematized ever since the school of legal realism (Mertz 2016), albeit the social policy involvement of the judiciary can be described as sequence of expansion and contraction (Horowitz 1977). In contrast, in European continental legal systems such as the Hungarian, this topic is far less discussed and mainly focuses on the European integration, for example on how the European Court of Justice admittedly became a major center of policymaking (Wasserfallen 2010 and Varju 2020).

Looking at our example specifically, the policy goal regarding school segregation is twofold: to provide vulnerable students with an integrated environment, and to close the academic achievement gap between students from different racial, ethnic, socio-economic or other backgrounds in order to create equal opportunity. In the Hungarian context both aspects are extremely relevant. In the years preceding the COVID-19 pandemic, roughly half of Roma pupils were studying in segregated classes, and this proportion was even higher in the Northern Hungary region (Ónodi-Molnár 2016). Year after year, vulnerable students, many of whom are of Roma origins perform worse than their peers in the National Competence Assessment. According to the data from the OECD PISA test, family background explained about 22% of the child's results, which puts the Hungarian education system last in the EU and the OECD in terms of compensating for differences in family background (OECD 2018). These data also show that a significant proportion of vulnerable children attend segregated schools, where the education provided by the institution fails to compensate for or even exacerbates the disadvantages of their situation (Kézdi and Kertesi 2009), thus violating their right to an adequate education and right to equal treatment (Dombrovsky 2019). This situation appears in the context of free school choice and its where the market-type behavior of actors the white flight phenomenon, where students from middleclass background leave schools with worse reputations causing these schools to become segregated (Kézdi and Kertesi 2014) as an (officially) unanticipated consequence (Urbanovič, de Vries and Stankevič 2021).

Courts interacting with social policy and serving different roles in terms of policymaking and implementation through enforcement is not unprecedented. In the United States where the segregation of Black and Latin students was challenged through a series of lawsuits (Powers 2014). Despite the many differences, such as legal systems, societal context, timeline of cases, social movements etc. the nature of the school segregation issue and the presence of related lawsuits make the lessons comparable (Greenberg

2010). In the United States decisions such as *Brown v. Board of Education of Topeka* 347 U.S. 483 (1954), and the *Brown II*³ decisions served as agenda setters dictating the goal of desegregation in American public education as a constitutional standard; together with later cases, court rulings “established national legal policy” (Giles and Walker 1975). Among the most significant decisions *Green v. New Kent County School Board* 391 U.S. 430 (1968) prescribed the standard to measure the compliance of school districts’ desegregation policies: effectiveness in achieving proportionate student bodies (Allen, Daugherty and Trembanis 2004). In the *Swann v. Charlotte-Mecklenburg Board of Education* 402 U.S. 1 (1971) case the court issued a more specific ruling: the court ordered the implementation of a policy program, the so-called Finger Plan. According to the Finger Plan, the school district was divided into non-contiguous zones students were required to attend the school designated by their zone, with racial ratios that allow for no more than 15 percentage points of deviation between schools, while the school district provides the buses that transported students to their assigned schools. The Supreme Court upheld this decision, and the Charlotte-Mecklenburg School District became a positive example for creating diverse classrooms and decreasing the gap in academic achievement between students from different racial and socio-economic backgrounds (Jackson 2009, Mickelson 2001). While these court rulings were certainly catalysts of change, their effectiveness and relevance in terms of substantive results are debated (McNeal 2009). As for effectiveness, full desegregation never happened, while re-segregation appeared in the post-Brown era. (McNeal 2009, Jackson 2009) As for the relevance of United States court decisions, research suggested that the decrease in segregation in the following years can be more closely attributed to the legislative changes than judicial activism (Boozer, Krueger and Wolkon 1992), albeit courts still shape the school segregation landscape by deciding on cases that were filed to overturn previous desegregation policies (McNeal 2009, Jackson 2009, Mickelson 2001).

Hungarian law creates a framework in line with the EU Council Directive 2000/43/EC of 29 June 2000 implementing the principle of equal treatment between persons irrespective of racial or ethnic origin. On the constitutional level, Article B) paragraph (1) of Fundamental Law of Hungary (hereafter: Fundamental Law) states that Hungary shall be an independent, democratic rule-of-law State, while Article C) paragraph states that the functioning of the Hungarian State shall be based on the principle of the division of powers. According to Article XXVIII everyone shall have the right to have his or her rights and obligations in any court action, adjudicated within a reasonable time in a fair and public trial by an independent and impartial court, and to seek legal remedy against any court, authority or other administrative decision which violates his or her rights or legitimate interests. Concerning legal interpretation Article 28 states that courts shall interpret the text of laws primarily in accordance with their purpose and with the Fundamental Law. It is stated by the article 28 of the Fundamental Law, that “[i]n the course of ascertaining the purpose of a law, consideration shall be given primarily to the preamble of that law and the justification of the proposal for, or for amending, the law. When interpreting the Fundamental Law or laws, it shall be presumed that they serve moral and economic purposes which are in accordance with common sense and the public good” (Szente 2022). In terms of school segregation, the Act V of 2013 on the Civil Code (hereafter: Civil Code) and the Act CXXV of 2003 on equal treatment and the promotion of equal opportunities (hereafter: Equal Treatment Act) name the legal basis for a lawsuit. The Civil Code names the right to equal treatment as a personality right (Fuglinszky 2015). The Equal Treatment Act elaborates on the equal treatment requirement and declares that unlawful separation (the legal term for purposeful or neglectful segregation) is in breach of the requirement. Those who suffer segregation, can claim unlawful separation and file a civil lawsuit and action for damages or the no-fault sanctions (e.g., cease and desist) of the Civil Code. In this procedure the court and the parties should follow the Act CXXX of 2016 on the Code of Civil Procedure (hereafter: Code of Civil Procedure) which provides the principle of free disposition. Section 2 states the parties may freely dispose of the claims they raise in the proceedings, and unless otherwise provided by an Act, the court shall be bound by the requests and juridical acts submitted and made by the parties.

BACKGROUND AND METHODOLOGY

The present paper aims to highlight the above-mentioned dilemmas that were discovered as part of a research focusing on the “equality in education” case law of Hungary between 2007 and 2022. In the research a total of 224 decisions were gathered from the

³ *Brown v. Board of Education of Topeka II* 349 U.S. 294 (1955)

publicly available database of the Hungarian court system. Judgements were accessed from the “Bíróági Határozatok Gyűjteménye” (Collection of Court Decisions) based on two search criteria: 1. Judgement contains reference to either the current or the previous Public Education Act 2. Judgement contains at least one mentioning of either the term “egyenlő bánásmód” (equal treatment) or the term “esélyegyenlőség” (equal opportunity). Judgements not fitting these criteria were included if they were issued in a lawsuit where the higher or lower instance decision did fit the criteria. It should be mentioned that the majority of the cases are available at CCD. According to the Act CLXI of 2011 on the organization and administration of the courts the CCD contains all judgements of the Curia, the Supreme Court of Hungary, the final judgements of the five Courts of Appeals, the final judgement of the county courts in cases on the judicial review of administrative decisions and the 1st and 2nd instance cases on which the Curia and Court of Appeal cases are based. Because the cases on privacy and the judicial review of administrative bodies belong to the competences of the county courts, therefore, the majority of these cases are accessible at the CCD. Cases concerning elections or referenda were excluded by default. The methodology of this research draws on lessons learned from the research design of a previous research about guardianship cases in Hungary (Kiss et al 2021). The selected and analyzed judgements are available at the following repository: https://docs.google.com/spreadsheets/d/16fKzuk5__3L5Q-PmnEBqGD9wldrdUw_odZhgp8YFU78/edit?usp=sharing.

224 judgements were sorted based on their contents. Cases that revolved around an equal treatment dispute within the educational system and cases that revolved around education policy but raised the issue of equality were subjected to the analysis. Out of the 224 judgements the research examined 110 decisions from 53 cases – the ones that focused on the questions of equality in the context of education policy – to see how courts use policy and social science in their decisions and whether courts used specific sanctions to enforce policy. Among these cases there were the 18 school segregation lawsuits. This group emerges as a special subset due to the societal relevance of the issue at hand, the concentration of cases, the presence of strategic litigation, but also the extent to which the parties and the court engaged with the underlying social and education policy aspects of these cases.

Tab. 1: Significant cases by issue, legal branch, and contents of verdicts 2007-2022

	Civil lawsuit			Administrative lawsuit			Labor and employment lawsuit		
	P&S elements ⁴	Programs & documents ⁵	Number of cases	P&S elements	Programs & documents	Number of cases	P&S elements	Programs & documents	Number of cases
School segregation	89%	31%	15	100%	0%	3	-	-	0
Employment	0%	0%	1	0%	0%	2	41%	13%	14
School provision	-	-	0	40%	6%	10	-	-	0
Special needs children	100%	50%	2	50%	33%	4	-	-	0
Other	0%	0%	1	0%	0%	1	-	-	0

As it is visible from the table, compared with other cases, the school segregation judgements cited policy programs and documents to a greater extent, considered education, special education, sociology, and social policy angles more often. In these cases, courts also exhibited slightly more activism in terms of effective sanctions (Farkas and Körtvélyesi 2022). However, looking at the policy-relevant elements more closely, two peculiar tendencies occur. One, the policy programs and documents are almost exclusively referenced by plaintiffs, and not offered by the defendant, or used ex officio by the court – even if the policy material in question is a document (e.g., strategy, directive, development plan etc.) adopted or issued by lawmaker such as the Parliament or a representative body of a local government. Furthermore, these materials are mostly used only as a source in finding the facts and not as a supplementary resource in the interpretation of the law. Two, despite declaring the breach of the equal treatment requirement in most cases, the courts (with only

⁴ The percentage of court decisions where the verdict contained statements with social policy, education policy, social science, or education science content.

⁵ The percentage of court decisions where the verdict referenced a social policy or education policy program or document.

two exceptions) resort to issuing sanctions only using the general terms of no-fault sanctions instead of issuing the specific remedies pleaded by the plaintiffs, citing the differences between legal branches (and the division of powers principle).

The following chapters look through the context and explore the two dilemmas that arise from the mentioned contradictions. The analysis of the examples (court rulings on individual and normative administrative decisions on public education conflicts and policies) shows the tools of enforcement of the legal regulations in Hungary. It should be emphasized that the Hungarian framework of the legal regulation on education policies are based on strict anti-discrimination regulation (Menyhárd 2020), however it is one of the characteristics of the countries of the global semi-periphery, that the law enforcement is not very effective, therefore, the strict regulations remain as ‘law in books’ (Guibentif 2020). Similarly, it should be noted, that the transformation of public services and transfers (Szikra 2018), such as public education, (especially, the change of the access to the high-quality services) is an attribute to populist democratic backsliding (Moynihan 2021, Babšek et al 2020, Barwicka-Tylek & Ceglarska 2022 and Biernat 2020).

Dilemma (research question) 1 – What kind of sources should the court involve?

First of all, we would like to examine the status of policy programs and documents mentioned or referenced in a lawsuit. As mentioned before, in the Hungarian school segregation lawsuit policy programs and documents were only present in two contexts: as a source of information for the facts of the case, or simply listed that the plaintiffs action contained references for such element (Árva 2020). The position of this paper is that if policy programs and documents were to be sought out by courts more actively or be used more extensively in cases that revolve around social policy questions with far-reaching societal consequences, it could help them to issue judgements more suitable to the individual case and more in line with the social policy goals.

The main barrier to further application is the legal nature of policy programs and documents. Policy programs and documents are usually not adopted in the form of law, even if some are adopted as such. They can be calls for application, strategies, reports, recommendations, circulars, etc. They can be adopted by a legislative body, such as the Parliament, representative body of a local government, or by the Government itself in form of a resolution or similar measure. For example, Hungary’s most comprehensive medium-term strategy that aims for the fight against poverty and inclusion of the Roma population, the National Social Inclusion Strategy 2020 (then the Hungarian National Social Inclusion Strategy 2030) was approved by Government Resolution no. 1430/2011. (XII. 13.), while local governments are required by the Equal Treatment Act to create local equal opportunity programs that are also typically adopted by resolution of the representative body. If such contents are adopted according to Chapter IV of Act no. CXXX of 2010 on law-making as a “normative decision”, they fall under the category of public law regulatory instrument and enjoy a quasi-law status in the context of public organs, in contrast to resolutions issued as individual decisions (Gárdos-Orosz 2021). However, the empirical research only found policy programs and decisions that were issued or approved in individual decisions. Whereas recommendations, circulars and similar documents (usually) coming from members of the executive branch outside of the scope of the public law regulatory instruments are considered to be “pseudo-norms”⁶, hence cannot be enforced as a universal norm. Reports are clearly not legal norms, even if they were created within the public administration, but typically these documents are written by experts or expert-activist on request of either a public actor or an interest group (Wilkins et al. 2017) based on the previous empirical research.

Despite their mostly non-legal nature, policy programs and documents can still become a part of the judicial process, albeit only in very limited ways. If either of the parties references such programs or documents in a lawsuit only as a source of information they will likely be considered by the court. For example, in a diagnosis-based school segregation lawsuit from Heves County,⁷ Hungary the NGOs conducting the public interest litigation brought in a report made on the request of the Heves County Municipality detailing the state of diagnosis-based segregation in the county and the program aiming to mitigate it; and the court relied heavily on the findings of this report. The non-legal nature of public policy programs and documents becomes a problem in two settings: one, if such source could provide important information but neither parties motion for their inclusion. Two, if such source could offer guidelines or assistance to the court in its legal interpretation for the specific case. These barriers are especially pronounced in civil lawsuits,

⁶ Hungarian Constitutional Court Ruling no. 60/1992. (XI. 17.), ABH 1992, 275.

⁷ Eger Regional Court ruling no. P.20166/2014/92.

and school segregation cases were mostly filed as such.⁸ In Hungarian law in general, courts and judges shall make their decisions in accordance with the law based on their own personal judgment according to Section 3 to Act CLXI of 2011 on the organization and administration of the courts. As for civil lawsuits, the Code of Civil Procedure declares the principle of free disposition and the non-ultra-petita principle. In practice, when deciding in a lawsuit the Hungarian courts look at the relevant legislation *ex officio*, but in terms of aspects of a case, evidence, sanctions etc. the exploration and the decision of the courts strictly remain in bounds of the parties claims and actions (Varga 2018).

As mentioned before, procedural guarantees such as free disposition or the non-ultra-petita principle do not block the use of policy programs and documents in general, they are sometimes included as a source of information regarding the facts of the case. If a plaintiff looking for legal remedy references a policy program or document as a source of information about the facts of the case it will likely be used in the court's assessment, as it happened in multiple school segregation lawsuits between 2007 and 2022. However, in all these cases either the plaintiff or the legal representative of the plaintiff was an NGO specializing in educational justice and advocacy for Roma and low-income children. Knowing about policy programs and documents, properly referencing and using them in a civil action presupposes certain resources on the plaintiff's part: mostly the means to access well-prepared legal representation with a certain level of expertise in the given social policy field (Plaček et al. 2023). While a dedicated NGO or interest group can make up for these resources even for the most at-risk social groups, a private individual seeking remedy for an injury with social policy relevance would likely lack the monetary and other means to bring in the policy programs and documents in any form.

As for those contents of policy programs and documents that could supplement the application of a legal norm, courts seemingly refrain from including and interpreting them. In the 18 school segregation cases in Hungary between 2007 and 2022 no judgement referenced any statements, principles, targets or other elements when applying the law, despite the fact that there were cases where the court elaborated on the responsibilities and positive obligation of the state and its actors, while simultaneously the plaintiff specifically mentioned the National Social Inclusion Strategy, or other programs and documents that contain policy goals and principles regarding school segregation, the inclusion of the Roma population, and the fight against poverty. Furthermore, side-effects of the procedural guarantees mentioned earlier apply here as well (Farkas and Körtvélyesi 2022).

This paper argues that the more active inclusion of policy programs and documents is already rather feasible in the current legal context. In terms of them being a source of information, Section 266 of the Code of Civil Procedure opens up the possibility for courts to take evidence from policy programs and document, as facts that are considered by the court to be commonly known, or of which the court has official knowledge, shall be taken into account by the court even if they are not invoked by any of the parties. Policy programs and documents can fall within the scope of “commonly known” if they have national or local relevance to the legal issue at hand, especially if the given source was adopted, approved, or previously heard by a lawmaker entity, or published regularly to the general audience. The extensive interpretation of the “commonly known” would not be unprecedented, as courts had already used extensive interpretation of this legal instrument to help plaintiffs secure appropriate legal consequences in personality rights lawsuits in the context the previous Civil Code (Lábady 2016). Using this instrument to involve the relevant policy content *ex officio* may help the cases of those plaintiffs who do not have sufficient resources to provide the information or social policy context themselves. As for policy, the interpretation rule of Article 28 of the Fundamental Law can allow courts to consider programs and documents to guide or assist legal interpretation. As mentioned before, Article 28 declares that courts shall interpret the text of laws primarily in accordance with their purpose and with the Fundamental Law. In the course of ascertaining the purpose of a law, consideration shall be given primarily to the preamble of that law and the justification of the proposal for, or for amending, the law. When interpreting the Fundamental Law or laws, it shall be presumed that they serve moral and economic purposes which are in accordance with common sense and the public good. Policy programs and documents that are adopted, approved, or were previously heard by a law-making entity can provide information to the court about the purpose of the law, similar to the preamble and the justification, but probably in more detail. These sources can also offer vital information in reconstructing the concept of “moral”, “economic”, and “public good” in relation to the given legal issue or its social policy context (Bouma et al. 2018).

⁸ In contrast, in administrative court procedure, there are exceptions for the free disposition principle in terms of taking evidence.

Dilemma (research question) 2 – What are the trade-offs in sanctioning?

What kind of sanctions can be imposed by the court in a case that revolves around social policy questions with far-reaching societal consequences? Is it possible for a civil court to give any specific mandate to the executive branch or public organs (and if yes, what can that specific mandate be)? In Hungarian school segregation cases the courts answered no to this question with only two exceptions. As mentioned before, most school segregation lawsuits were filed as civil lawsuits. In most of them the courts found that the right to equal treatment was breached, students were subjected to unlawful separation and/or (direct or indirect) discrimination. While the violations were established by the court more-or less according to the plaintiff's claims, courts refrained from issuing the specific consequences the plaintiffs actioned for (e.g.: mandating the defendant to adopt a desegregation plan or to redraw the compulsory catchment areas of the schools) under the no-fault sanction rules. In these cases, the courts issued only general no-fault sanctions, often simply repeating verbatim the phrases of the Civil Code, for example, only ordering the defendant school provider to “end injurious situation” without giving the specific instructions the plaintiffs actioned for (see above). The difference between civil law and public law, practical implications such as the impact on the free school choice system, and enforceability were cited as reasons for refraining from more specific sanctions.

In the case of a segregated elementary school located on the outskirts of Kaposvár (a city of approx. 60 000 residents in Southwestern Hungary), the in first instance court ruled that the institution unlawfully separated Roma students and ordered the provider to cease the violation, but did not specify the method of doing so because (as later the Supreme Court approved) “segregation in the school in question was not established in a civil law relationship, but in a public law relationship, and therefore civil law with its regulatory system is not suitable to provide for the manner of desegregation and desegregation. The determination of these measures falls within the scope of public law, i.e., the violation of rights that has occurred can only be remedied by means of public law.”⁹ This argument and the ruling of the Supreme Court (now Curia) occurred in multiple cases after this lawsuit.

This position was contradicted in the later stages of the same case when (due to the unlawful situation persisting despite the previous ruling) the plaintiff brought the case before the court for the second time. The second instance ruling of the second lawsuit ordered the closure of the segregated school and mandated the provider to adopt desegregation measures as no-fault sanctions. The plaintiff specifically requested the closure of the school, arguing that the location of the school and the characteristics of the local educational structure made it impossible to keep the school open and make it integrated. The judgment accepted this argument and ordered the school to close gradually in the following years. “The unlawful separation established by a final judgment in the case of the school can therefore only be eliminated by implementing a desegregation program based on the closure of the school. According to the attached desegregation plan, the closure of the school can be implemented either by a one-off measure, as a result of which all pupils attending the school will be transferred to another school within a relatively short period of time, or by a gradual, ascending desegregation system, by prohibiting opening new first grades.”¹⁰ The court argued that “the nature of the sanction to be imposed in a particular case depends primarily on the nature of the harm and the complexity of the remedy, so a relatively long obiter dictu part should not be an obstacle to an injunction. Nor can concerns about enforcement be derived from the existing law, since the action has specified when, by whom and what must be done. The sanction is an order for ending the injurious situation, the elements of which are clearly and comprehensibly set out in the action. And it is manifestly contrary to the rule of law for the court to make it dependent on the political will of the defendants whether desegregation can be ordered. The political position of the defendants on the subject-matter of the action is irrelevant, since the court must decide on a question of law, regardless of its possible political consequences.”¹¹

In a case where the action was brought against the (former) Ministry of Human Capacities as the governing body of public education, the court prescribed in exceptional length and detail the specific technical measures to be implemented by the Ministry in order to put an end to the infringement: to clarify its professional guidelines on school segregation, as specified in the judgment, and to oblige the Government Offices to conduct investigations in accordance with the amended criteria, as well as to declare the reasons for the situation detected and to decide on the steps to be taken to eliminate the segregation detected, and to make all of

⁹ Supreme Court of Hungary (now Curia) decision published as Ruling no. BDT. 2010. 2309.

¹⁰ Pécs Regional Court of Appeal ruling no. Pf.20004/2013/4.

¹¹ Ibid.

these public.¹² It also ordered the Ministry to instruct the maintainers of 13 schools to stop starting first grade classes, to instruct the authority to modify the district boundaries in certain municipalities, and to pay a public interest fine of HUF 50 000 000 (approx. 150 000 EUR at the time), which “shall be used for monitoring the implementation of desegregation programs by NGOs for five years after the launch of the programs.”¹³ The operative part also contains a summary table to be used in the investigation of the state of school segregation. In the explanatory memorandum, the court goes on to state that the measures requested by the applicant in its application are included in the operative part as a remedy for the cessation of the infringement.

In this case the second instance ruling essentially left only a skeleton of the very detailed sanctions imposed in the first instance judgment: the establishment of unlawful separation, the obligation to prepare desegregation plans and the public interest fine. This “withdrawal” is in line with the previous idea promoted in the decisions of the first Kaposvár lawsuit. The court explained that it was not legally possible to comply with the individual requests for measures in relation to the Ministry, since “the elimination of the segregation that has been established and maintained is possible within the framework of a public law relationship”¹⁴ and “only by implementing a complex program based on aspects that go beyond the subject of the present personal action, is it possible to effectively eliminate the harmful situation”.¹⁵ It is important to note that the defendant’s appeal also raised concerns about the division of powers. The defendant claimed that “the first instance ruling violated the constitutional requirement of the division of powers, as declared in Article C) and Article 25 of the Fundamental law. The infringement occurs by not requiring the public administration bodies with direct powers and responsibilities to exercise their statutory powers to remedy the unlawful situation, but by imposing an obligation (and penalty) on the governing body to give instructions on the basis of its management power. Therefore, the ruling prescribes the execution of certain acts in within administrative bodies who belong to the executive branch.”¹⁶ It can be inferred from the wording of this ruling that the second instance court broadly agreed with the defendant’s concerns about the division of powers as regards the sanctions not imposed.

As the present examples show the courts view of policy type sanctions are not homogenous, even after the latter Kaposvár ruling in 2016. In that case the second instance court established the framework of the application of policy-like mandates: nature of the specific no-fault sanction should depend primarily on the nature of the harm and the complexity of the remedy; a long operative part is no obstacle; the plaintiff’s action should specified when, by whom and what must be done; the court should not leave decisions about remedies to the political will of the defendants, hence the civil court can issue specific (policy-type) mandates as a no-fault sanctions to public law organs in relation to public law relationships. The Curia later approved this approach and maintained the ruling in effect.¹⁷ However, the case of the Ministry of Human Capacities demonstrates that the idea how the civil court shall not issue specific (policy-type) mandates to public organs in relation to public law relationship still prevailed.

This paper argues that in lawsuits where the actions of the parties and the legal issue at hand fit the criteria based on the latter Kaposvár ruling, there shall be no obstacle in ordering policy-type specific sanction regardless the public or executive branch affiliations of the defendant. Firstly, in terms of regulation, Section 4 of the Equal Treatment Act declares that the equal treatment requirement applies to public organs, while neither this Act nor the Civil Code offer any sector-specific exemption. Therefore, the rights under the Equal Treatment Act should be enforced against public organs, even if they belong to another branch of governance. Secondly, ordering the application specific measures that are scientifically founded and are in line with declared social policy goals (e.g., the execution of a desegregation plan that was approved by experts) provide real effective remedy for the persons affected by the school segregation in the individual case. As a welcome side-effect such rulings promote social equality, cohesion, and highlight good practices on a more general level.

In cases similar to the Ministry of Human Capacities lawsuit the assessment of policy-type specific sanctions is less clear. On one hand, one can argue that civil courts should be able to aim for effective legal remedy if a personality right violation occurs, regardless

¹² Capital City Regional Court ruling no. P.20351/2011/47.

¹³ Ibid.

¹⁴ Capital City Regional Court of Appeal ruling no. Pf.21145/2018/6.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Curia ruling no. Pfv.20085/2017/9.

of the legal or political status of the defendant public organ or its legal relationship with the plaintiff. On the other hand, the concerns explored in Chapter 2 of this paper should not be ignored. Unfortunately, there is no Constitutional Court decision on the Ministry of Human Capacities case or a similar lawsuit to settle or elaborate on the issues regarding the competence of civil courts and the division of power.

Finally, it is important to add that if a plaintiff wishes to avoid the potential pitfalls of civil procedure described above, there is one other option. Outside of civil procedure, there is the “action for failure to act” based on Section 8 point h) of Act I of 2017 on the Code of Administrative Court Procedure (hereafter: Code of Administrative Court Procedure). The legal instrument of “action for failure to act” can make omissions of public service providers and other public organs actionable. The strategy to file a lawsuit for “failure to act” can be utilized either in itself or in combination with a civil lawsuit (more specifically, in the event of non-enforcement of a previous civil court decision). The basic idea behind an action for failure to act is that the rule of law principle and the aim of ensuring the legality of public administration require public authorities to act in matters within their competence even where no meaningful procedural rule exist (for the particular activity) (Rozsnyai 2022). In order to bring a “failure to act” action, the following conditions must be fulfilled according to Section 4 paragraph (3), Section 127, and Section 127 point a) of the Code of Administrative Court Procedure: the defendant must be an administrative body, the administrative body must be under a statutory obligation to perform an administrative act (individual decision, provision of general application applicable to an individual case), the defendant administrative body must have failed to perform the act, and the failure directly affects the plaintiff’s rights.

Equal treatment is one of the basic principles of Act CXC of 2011 on the national public education (hereafter: National Public Education Act). Both the National Public Education Act and the Government Decree 229/2012 (VIII. 28.) on the implementation of the national public education act name the duties and obligations of public authorities, primarily the Government Offices and their divisions that serve as the public education authority. One of their duties is to take measures to enforce the requirement of equal treatment according to Section 38/A paragraph (1) of the aforementioned Government Decree. It can be argued that if the actors in the public education system fail to act in a certain way and this failure unlawfully affects the rights of individuals, there is ground for bringing an action for failure to act under the Code of Administrative Court Procedure (at least against the Government Office) (Barabás et al. 2018). In cases where there is a civil court ruling establishing that unlawful separation happened, but the defendant has not been ordered to take specific action, the action for failure to act may also be able to resolve the problem of the civil court’s reluctance to interfere in public law relationships. Following a civil court decision declaring that there should be no interference with public law and/or only generally citing no-fault sanctions, if the unlawful separation has not been resolved, an order for more effective, specific policy-type actions can be supplemented by the administrative court. The administrative court can specify which exact administrative measure of desegregation has been omitted and the defendant is already obliged to implement. Administrative courts were designed to intervene in public law relations, their knowledge of the administrative system, their mandate to interpret principles and specific provisions of the sectoral legislation makes the administrative court procedure a good option for legal remedy in school segregation cases (Rozsnyai 2020).

There is one caveat. No such lawsuit has ever been filed in Hungary regarding public education or a similar human service system. Furthermore, the action for failure to act has only limited case law at this point. Therefore, a failure to act lawsuit in relation to school segregation would certainly count as an innovation and a new precedent. As Hungary has the limited precedent system, where the unity of Curia case-law is protected (Pozsár-Szentmiklósy 2022), filing such lawsuit could generate precedent case. Depending on the content of the precedent ruling, seeking effective remedy for school segregation or similar social policy problems could become either easier and more straight forward or exponentially harder in the future.

CONCLUSION

When faced with the dilemmas explained above, courts can take up an active role in the implementation of policies through issuing specific, enforceable decisions, even if the defendant is a public actor. However, previous research showed that Hungarian courts tend to err on the side of caution and the black letter law. In this paper we find that most policy programs and documents are of non-legal nature and the presence of procedural guarantees indeed puts a limit on the use of such sources. Furthermore, the application of specific policy-type no-fault sanctions can also be limited by the procedural guarantees, but the most relevant barrier is how the distinction between public and private law is understood by most civil courts.

We argue that it is legally possible for courts to issue judgements where social policy programs and documents are used (ex officio if needed and applicable) either as a source of facts, information on the policy background of an individual case, or as tool for legal interpretation. The inclusion of policy programs and documents can provide information about the social policy context of the cases and insights into the considerations of the lawmaker. This enables courts issue judgements that are more in line with the policy goals set and approved by the executive and legislative branches, and more importantly more in line with the social context and the needs of the individuals seeking the protection of the law.

We argue that if the legal interpretation is sufficiently well-founded, civil courts should aim to opt for sanctions with the most potential to achieve effective remedy. If this leads to specific policy-type sanctions, courts should be able to decide so – within the bounds of the parties' actions. The examples of the Kaposvár ruling, and (the first instance ruling on) the Ministry of Human Capacities show that such decisions had already been issued under Hungarian jurisdiction. These examples, however, also demonstrate that currently such decisions only have the chance to happen if the plaintiffs are able to bring the right case with the right framing to court. In both cases the plaintiff was an NGO specializing in advocacy and legal representation of Roma and low-income children. With their expertise in both de-segregation and anti-discrimination law the NGO in question was in the right position to convince the court – in a far better position than the average law-seeking individual.

Despite the existing possibility for policy-sensitive jurisprudence, most courts do not exhaust the limits of the Hungarian legal framework. In the context of democratic backsliding the possibilities of such activism are somewhat unclear. Issues around the independence of the judiciary, the attitude of the executive branch towards certain social policy issues, and the practice of overwriting by amendment on part of the National Assembly supermajority may discourage courts and judges from policy-sensitive or innovative adjudication of cases with social policy relevance.

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